

WORLD METEOROLOGICAL ORGANIZATION

Copyright in this electronic file and its contents is vested in WMO. It must not be altered, copied or passed on to a third party or posted electronically without WMO's written permission.

FOURTEENTH

WORLD METEOROLOGICAL CONGRESS

GENEVA, 5–24 MAY 2003

ABRIDGED FINAL REPORT WITH RESOLUTIONS



WMO-No. 960

Secretariat of the World Meteorological Organization - Geneva - Switzerland

REPORTS OF RECENT WMO SESSIONS

Congress and Executive Council

- 902 — Thirteenth World Meteorological Congress, Geneva, 4–26 May 1999
- 903 — Executive Council, fifty-first session, Geneva, 27–29 May 1999
- 915 — Executive Council, fifty-second session, Geneva, 16–26 May 2000
- 929 — Executive Council, fifty-third session, Geneva, 5–15 June 2001
- 932 — Thirteenth World Meteorological Congress, Proceedings, Geneva, 4–26 May 1999
- 945 — Executive Council, fifty-fourth session, Geneva, 11–21 June 2002

Regional associations

- 924 — Regional Association II (Asia), twelfth session, Seoul, 19–27 September 2000
- 927 — Regional Association IV (North and Central America), thirteenth session, Maracay, 28 March–6 April 2001
- 934 — Regional Association III (South America), thirteenth session, Quito, 19–26 September 2001
- 942 — Regional Association VI (Europe), thirteenth session, Geneva, 2–10 May 2002
- 944 — Regional Association V (South–West Pacific), thirteenth session, Manila, 21–28 May 2002
- 954 — Regional Association I (Africa), thirteenth session, Mbabane, 20–28 November 2002

Technical commissions

- 921 — Commission for Hydrology, eleventh session, Abuja, 6–16 November 2000
- 923 — Commission for Basic Systems, twelfth session, Geneva, 29 November–8 December 2000
- 931 — Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, first session, Akureyri, 19–29 June 2001
- 938 — Commission for Climatology, thirteenth session, Geneva, 21–30 November 2001
- 941 — Commission for Atmospheric Sciences, thirteenth session, Oslo, 12–20 February 2002
- 947 — Commission for Instruments and Methods of Observation, thirteenth session, Bratislava, 25 September–3 October 2002
- 951 — Commission for Agricultural Meteorology, thirteenth session, Ljubljana, 10–18 October 2002
- 953 — Commission for Aeronautical Meteorology, twelfth session, Montreal, 16–20 September 2002
- 955 — Commission for Basic Systems, extraordinary session, Cairns, 4–12 December 2002

**In accordance with the decision of Congress,
the reports are published in the following languages:**

Congress	—	Arabic, Chinese, English, French, Russian, Spanish
Executive Council	—	Arabic, Chinese, English, French, Russian, Spanish
Regional Association I	—	Arabic, English, French
Regional Association II	—	Arabic, Chinese, English, French, Russian
Regional Association III	—	English, Spanish
Regional Association IV	—	English, Spanish
Regional Association V	—	English, French
Regional Association VI	—	Arabic, English, French, Russian
Technical Commissions	—	Arabic, Chinese, English, French, Russian, Spanish

WMO issues authoritative publications on scientific and technical aspects of meteorology, hydrology and related subjects. These include manuals, guides, training materials, public information and the WMO *Bulletin*.

WORLD METEOROLOGICAL ORGANIZATION

FOURTEENTH

WORLD METEOROLOGICAL CONGRESS

GENEVA, 5-24 MAY 2003

ABRIDGED FINAL REPORT WITH RESOLUTIONS



WMO-No. 960

**Secretariat of the World Meteorological Organization - Geneva - Switzerland
2003**

© 2003, World Meteorological Organization

ISBN 92-63-10960-5

NOTE

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Meteorological Organization concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

CONTENTS

	<i>Page</i>
GENERAL SUMMARY OF THE WORK OF THE SESSION	
1. ORGANIZATION OF THE SESSION (Cg-XIV/PINK 1).....	1
1.1 Opening of the session	1
1.2 Establishment of a Credentials Committee (Cg-XIV/PINK 1.2(1))	9
1.3 Approval of the agenda (Cg-XIV/Docs. 1.3(1); (2))	9
1.4 Establishment of Committees.....	9
1.5 Report of the Credentials Committee (Cg-XIV/PINKS 1.5(1); (2); (3)).....	9
1.6 Approval of the minutes	9
2. REPORTS..	9
2.1 Report by the President of the Organization (Cg-XIV/Doc. 2.1; PINK 2.1)	9
2.2 Report by the Secretary-General (Cg-XIV/PINK 2.2)	10
2.3 Report by the chairperson of the Financial Advisory Committee (Cg-XIV/Doc. 2.3(1), CORR. 1; PINK 2.3).....	10
2.4 Consolidated report on amendments to the Technical Regulations (Cg-XIV/Doc. 2.4; PINK 2.4)	10
3. SCIENTIFIC AND TECHNICAL PROGRAMMES	10
3.1 World Weather Watch Programme.....	10
3.1.0 WWW basic systems and support functions; the report of the president of CBS (Cg-XIV/Doc. 3.1.0; PINK 3.1.0)	10
3.1.1 Global Observing System (Cg-XIV/Doc. 3.1.1; PINK 3.1.1)	13
3.1.2 WWW information system and services, including the Global Telecommunication System and data management (Cg-XIV/Doc. 3.1.2; 3.1.2, ADD.1; PINK 3.1.2)	14
3.1.3 Global Data-processing System; including emergency response activities (Cg-XIV/Doc. 3.1.3; PINK 3.1.3)	18
3.1.4 WWW System Support Activities, including the Operational Information Service (Cg-XIV/Doc. 3.1.4; PINK 3.1.4)	22
3.1.5 Instruments and Methods of Observation Programme; the report of the president of CIMO (Cg-XIV/Doc. 3.1.5; PINK 3.1.5).....	23
3.1.6 WMO Satellite Activities (Cg-XIV/Doc. 3.1.6; PINK 3.1.6)	24
3.1.7 Tropical Cyclone Programme (Cg-XIV/Doc. 3.1.7; PINK 3.1.7).....	27
3.1.8 WMO Antarctic activities (Cg-XIV/Doc. 3.1.8; PINK 3.1.8)	28
3.2 World Climate Programme.....	29
3.2.0 World Climate Programme; the report of the president of CCI (Cg-XIV/Doc. 3.2.0(1); PINK 3.2.0(1)).....	29
3.2.1 Coordination activities within the Climate Agenda (Cg-XIV/Doc. 3.2.1; 3.2.1, ADD.1; PINK 3.2.1)	31
3.2.2 Support to climate change-related activities, including IPCC and the Conventions on Climate Change, on Biodiversity, and on Desertification (Cg-XIV/Doc. 3.2.2; 3.2.2, ADD.1; PINK 3.2.2)	33
3.2.3 Global Climate Observing System (Cg-XIV/Doc. 3.2.3; 3.2.3, ADD.1; PINK 3.2.3)	35
3.2.4 World Climate Data and Monitoring Programme (Cg-XIV/Doc. 3.2.4; PINK 3.2.4).....	38
3.2.5 World Climate Applications and Services Programme, including CLIPS (Cg-XIV/Doc. 3.2.5; PINK 3.2.5)	41
3.2.6 World Climate Impact Assessment and Response Strategies Programme (Cg-XIV/Doc. 3.2.6, REV.1; PINK 3.2.6)	44
3.2.7 World Climate Research Programme (Cg-XIV/Doc. 3.2.7; PINK 3.2.7)	44
3.3 Atmospheric Research and Environment Programme	49
3.3.0 Atmospheric Research and Environment Programme; the report of the president of CAS (Cg-XIV/Doc. 3.3(1); PINK 3.3(1))	49
3.3.1 Support to ozone and other environment-oriented conventions (Cg-XIV/Doc. 3.3(2), CORR.1; PINK 3.3(2))	51
3.3.2 Global Atmosphere Watch (Cg-XIV/Doc. 3.3(2), CORR.1; PINK 3.3(2))	51
3.3.3 World Weather Research Programme (Cg-XIV/Docs. 3.3(2), CORR.1; 3.3(3); PINKS 3.3(2); 3.3(3)).....	53
3.3.4 Tropical Meteorology Research Programme (Cg-XIV/Doc. 3.3(2), CORR.1; PINK 3.3(2))	54
3.3.5 Programme on Physics and Chemistry of Clouds and Weather Modification Research (Cg-XIV/Doc. 3.3(2), CORR.1; PINK 3.3(2))	54

	<i>Page</i>
3.4 Applications of Meteorology Programme.....	55
3.4.1 Public Weather Services Programme (Cg-XIV/Doc. 3.4.1; PINK 3.4.1).....	55
3.4.2 Agricultural Meteorology Programme; the report of the president of CAgM (Cg-XIV/Doc. 3.4.2; PINK 3.4.2).....	60
3.4.3 Aeronautical Meteorology Programme; the report of the president of CAeM (Cg-XIV/Doc. 3.4.3(1); PINK 3.4.3).....	62
3.4.4 Marine Meteorology and Associated Oceanographic Activities Programme; the report of the co-president of JCOMM (Cg-XIV/Docs. 3.4.4(1); (2); PINKS 3.4.1(1); (2)).....	66
3.5 Hydrology and Water Resources Programme (Cg-XIV/Doc. 3.5; PINK 3.5).....	70
3.5.0 Hydrology and Water Resources Programme; report of the president of CHy.....	70
3.5.1 Programme on Basic Systems in Hydrology.....	73
3.5.2 Programme on Forecasting and Applications in Hydrology.....	75
3.5.3 Programme on Sustainable Development of Water Resources.....	76
3.5.4 Programme on Capacity Building in Hydrology and Water Resources.....	77
3.5.5 Programme on Water-related Issues.....	77
3.6 Education and Training Programme (Cg-XIV/Doc. 3.6(1); PINK 3.6).....	80
3.6.1 Human resources development.....	80
3.6.2 Training activities.....	81
3.6.3 Education and training fellowships.....	83
3.6.4 Support to training events under other WMO major Programmes.....	83
3.7 Technical Cooperation Programme.....	84
3.7.1 General review of the Technical Cooperation Programme (Cg-XIV/Doc. 3.7(1); 3.7(2); PINK 3.7).....	84
3.7.2 Organization and funding of the Technical Cooperation Programme (Cg-XIV/Doc. 3.7(1); PINK 3.7)....	89
3.8 Regional Programme.....	90
3.8.1 Reports of the presidents of regional associations (Cg-XIV/ Docs. 3.8.1(1); (2); (3); (3), ADD.1; (4); (5); (6); PINK 3.8).....	90
3.8.2 Regional activities (Cg-XIV/Docs. 3.8.2; (2)).....	91
4. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS.....	92
4.1 Conferences (Cg-XIV/Doc. 4.1, CORR. 1; PINK 4.1).....	92
4.2 Languages (Cg-XIV/Doc. 4.2; PINK 4.2).....	92
4.3 Publications (Cg-XIV/Doc. 4.3; PINK 4.3).....	93
4.4 Office automation and information technology support (Cg-XIV/Doc. 4.4; PINK 4.4).....	94
5. INFORMATION AND PUBLIC AFFAIRS PROGRAMME (Cg-XIV/Docs. 5; (2); PINK 5).....	95
6. LONG-TERM PLANNING.....	97
6.1 Report on the monitoring of the implementation of the Fifth WMO Long-term Plan (Cg-XIV/Docs. 6.1; 6.1, ADD. 1; PINK 6.1).....	97
6.2 Sixth WMO Long-term Plan (Cg-XIV/Docs. 6.2; 6.2, ADD. 1; ADD. 2; PINK 6.2).....	98
6.3 Preparation of the Seventh WMO Long-term Plan (Cg-XIV/Doc. 6.3; PINK 6.3).....	99
6.4 WMO structure (Cg-XIV/Doc. 6.4; PINK 6.4, REV. 1).....	100
7. SPECIFIC CHALLENGES FACING WMO.....	103
7.1 International exchange of data and products (Cg-XIV/Doc. 7.1; PINK 7.1).....	103
7.2 Role and operation of National Meteorological and Hydrological Services (Cg-XIV/Docs. 7.2; (2); (3) PINKS 7.2(1); (2)).....	108
7.3 Cooperation with other disciplines and programmes (Cg-XIV/Doc. 7.3; PINK 7.3).....	116
7.4 Disaster reduction activities (Cg-XIV/Docs. 7.4; 7.4, ADD. 1; PINK 7.4).....	117
8. CONSOLIDATED PROGRAMME AND BUDGET — 2004-2007 (Cg-XIV/Docs. 8(1); (1), ADD. 1; ADD. 2; (2); (3); PINK 8).....	119
9. COOPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS.....	121
9.1 Cooperation with the United Nations and other organizations (Cg-XIV/Docs. 9.1; (2); (2), ADD. 1; (3); (4); PINKS 9.1(1); (2); (3); (4), REV. 1).....	121
9.2 World Summit on Sustainable Development (Cg-XIV/Doc. 9.2; PINK 9.2).....	124

	<i>Page</i>
10. ADMINISTRATIVE AND FINANCIAL QUESTIONS	125
10.1 Financial matters (Cg-XIV/Docs. 10.1(1); (2); PINKS 10.1(1); (2))	125
10.2 Proportional contributions of Members (Cg-XIV/Doc. 10.2(1); PINK 10.2(1))	127
10.3 Staff matters (Cg-XIV/Docs. 10.3(1); (2); (2), ADD. 1; PINKS 10.3(1); (2))	127
10.4 Secretary-General's contract (Cg-XIV/PINK 10.4)	128
11. GENERAL AND LEGAL QUESTIONS	129
11.1 IMO and WMO Prizes (Cg-XIV/PINK 11.1)	129
11.2 Questions concerning the Convention (Cg-XIV/Docs. 11.2(1), REV. 1; (2); (3); PINKS 11.2(1); (2); (3))	129
11.3 Revision of the General Regulations (Cg-XIV/Docs. 11.3(1); (2); (3); (4); (5); (6); PINKS 11.3(1); (2); (3); (4); (5); (6))	130
11.4 Review of previous resolutions of Congress (Cg-XIV/Doc. 11.4; PINK 11.4)	132
11.5 Requests for membership of the Organization (Cg-XIV/PINK 11.5)	132
12. ELECTIONS AND APPOINTMENTS	132
12.1 Election of the President and Vice-Presidents of the Organization (Cg-XIV/PINKS 12.1(1); (2), REV. 1; (3), REV. 1)	132
12.2 Election of members of the Executive Council (Cg-XIV/PINKS 12.2(1); (1), ADD. 1; (2))	132
12.3 Appointment of the Secretary-General (Cg-XIV/Doc. 12.3; PINK 12.3; (2); (3))	132
13. SCIENTIFIC LECTURES AND DISCUSSIONS (Cg-XIV/Doc. 13; PINK 13)	132
14. DATE AND PLACE OF FIFTEENTH CONGRESS (Cg-XIV/PINK 14)	133
15. CLOSURE OF THE SESSION (Cg-XIV/PINK 15)	133

RESOLUTIONS ADOPTED BY THE SESSION

<i>Final No.</i>	<i>Session No.</i>		
1	2.4/1	Technical Regulations of the World Meteorological Organization	134
2	3.1.0/1	World Weather Watch Programme for 2004-2007	134
3	3.1.2/1	Radio frequencies for meteorological and related environmental activities	138
4	3.1.5/1	Instruments and Methods of Observation Programme	139
5	3.1.6/1	WMO Space Programme	140
6	3.1.6/2	WMO Consultative Meetings on High-level Policy on Satellite Matters	141
7	3.1.7/1	Tropical Cyclone Programme	142
8	3.2.2/1	Intergovernmental Panel on Climate Change	143
9	3.2.3/1	GCOS Climate Monitoring Principles	144
10	3.2.3/2	Global Climate Observing System	145
11	3.2.5/1	Services of the World Climate Programme (covering the World Climate Data and Monitoring Programme and the World Climate Applications and Services Programme)	147
12	3.3/1	THORPEX: A Global Atmospheric Research Programme	150
13	3.4.1/1	Public Weather Services Programme	150
14	3.4.2/1	Agricultural Meteorology Programme	151
15	3.4.3/1	Aeronautical Meteorology Programme	152
16	3.4.4/1	Marine Meteorology and Oceanography Activities Programme	153
17	3.5/1	Hydrology and Water Resources Programme	155
18	3.5/2	Panel of Experts on Fresh Water	156

			<i>Page</i>
19	3.6/1	Education and Training Programme	157
20	3.7/1	The WMO Voluntary Cooperation Programme.....	158
21	3.7/2	WMO Programme for the Least Developed Countries	159
22	4.3/1	Publications Programme for the fourteenth financial period	160
23	5/1	Information and Public Affairs Programme.....	162
24	5/2	A subtitle for WMO.....	163
25	6.2/1	Sixth WMO Long-term Plan.....	163
26	6.3/1	Preparation of the Seventh WMO Long-term Plan	163
27	7.2/2	Quality management	164
28	7.2/1	Role and operation of National Meteorological and Hydrological Services (NMHSs).....	165
29	7.4/1	Natural Disaster Prevention and Mitigation Programme.....	166
30	8/1	Maximum expenditures for the fourteenth financial period	167
31	8/2	Results-based budgeting.....	172
32	9.1/1	Agreement between the Preparatory Commission for the Comprehensive Nuclear- Test-Ban Treaty Organization and the World Meteorological Organization.....	175
33	9.1/2	Equal opportunities for the participation of women in meteorology and hydrology	179
34	9.1/3	Holding of a third International Polar Year in 2007-2008	179
35	10.1/1	Establishment of the Financial Regulations of the World Meteorological Organization	180
36	10.2/1	Assessment of proportional contributions of Members for the fourteenth financial period	188
37	10.2/2	Review of the Working Capital Fund.....	193
38	10.4/1	Secretary-General's contract.....	193
39	11.2/1	Amendments to Article 13(c) of the Convention	195
40	11.2/2	Questions concerning the WMO Convention	195
41	11.2/3	Amendments to the Convention — Translation of the term “Regional Association”...	196
42	11.3/1	Amendments to Annex II of the WMO General Regulations	196
43	11.3/2	Amendment to General Regulation 85(a).....	197
44	11.3/4	Application of General Regulations 177 and 194	197
45	11.3/5	Amendment to the General Regulations — Translation of the term “Regional Association”	198
46	11.3/6	Use of Portuguese	198
47	11.4/1	Review of previous Congress resolutions	198
48	12.3/1	Tribute to the Secretary-General	199

ANNEXES

I	Recommendations of the Financial Advisory Committee to Fourteenth Congress (paragraph 2.3.1 of the general summary).....	200
II	Study on policy-level implications of the future WMO information system (paragraph 3.1.2.11 of the general summary).....	201
III	Memorandum of Understanding between WMO and the Intergovernmental Oceanographic Commission regarding regulatory and procedural aspects of the conduct of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (paragraph 3.4.4.31 of the general summary)	202

IV	WMO Programme for the Least Developed Countries (paragraph 3.7.1.33 of the general summary)	206
V	WMO Trust Fund for the NMHSs of Least Developed Countries (paragraph 3.7.1.35 of the general summary)	206
VI	Provisional programme of sessions of constituent bodies during the fourteenth financial period (2004-2007) (paragraph 4.1.1 of the general summary)	208
VII	Trust Fund for Information and Communication Technology Development (paragraph 4.4.6 of the general summary).....	209
VIII	List of relevant terms for which working definitions were suggested (paragraph 7.2.54 of general summary)	210

APPENDICES

A.	List of persons attending the session	211
B.	List of abbreviations	219

GENERAL SUMMARY OF THE WORK OF THE SESSION

The World Meteorological Organization (WMO) held its Fourteenth Congress at the Geneva International Conference Centre from 5 to 24 May 2003, under the chairmanship of Mr J.W. Zillman, President of WMO. The list of participants is given in Appendix A to this report.

1. ORGANIZATION OF THE SESSION (agenda item 1)

1.1 OPENING OF THE SESSION (agenda item 1.1)

1.1.1 The President of the Organization, Mr J.W. Zillman, opened the Fourteenth Congress at 10.10 a.m. on 5 May 2003 and welcomed the Prime Minister of the Kingdom of Tonga, Ministers, delegates, representatives of international organizations and the following distinguished guests:

- H.E. Mr Jean-Marc Boulgaris, Ambassador, Permanent Mission of Switzerland to the United Nations Office and other International Organizations in Geneva;
- Mr Laurent Moutinot, President of the State Council of the Republic and Canton of Geneva;
- Mr Alain Comte, President of the Municipal Council, of the City of Geneva;
- Mr André Hediger, Mayor of Geneva.

1.1.2 The President focused his remarks on the broad picture of the past, present and future of international cooperation in meteorology and its sister sciences and their contributions to the safety and welfare of people throughout the world. The scientific and institutional linkages between meteorology, hydrology and oceanography, he believed, were now very strong.

The President expressed special empathy with the hydrological community, which had brought great strength to meteorology through their acceptance of WMO as the appropriate United Nations system framework for international cooperation and coordination on operational hydrology. The close partnership with the International Hydrological Programme of UNESCO helped to address the most important issues facing humanity over the century ahead. Over the past four years, a genuine partnership had been forged between WMO and IOC of UNESCO through JCOMM.

The President believed the greatest challenges facing WMO were to find more effective ways of moving scientific and technological progress in the developed countries into operations and service improvement in the NMHSs of the developing world. The main problem remained that of resources. It was fair to observe that the developed world had collectively failed to do as much as it might have, through technology transfer,

to underpin the capacity building efforts of the NMHSs of the developing countries, despite the acknowledged achievements of the WMO VCP and the substantial contribution of individual countries through bilateral assistance with equipment and staff training.

On the issue of climate change, among other things, the design and implementation of WCP, followed later by its refocusing through the Climate Agenda, had served the world extremely well as it helped Governments to face the far-reaching implications of greenhouse warming and the prospect of long-term climate change. He noted with particular satisfaction the establishment of the joint WMO/UNEP IPCC and its subsequent role in pioneering the use of science to inform policy in that important area. The WMO's *Guides* and *Manuals* and occasional firm statements on issues such as weather modification and the scientific basis and limitations of weather and climate forecasting would continue to be critically important to the integrity of the science and the services based on it.

The President believed strongly in the need to commit to implementation of an integrated global observing system. For 150 years, the global meteorological community had shown remarkable foresight in laying the foundation, often decades or more ahead of the wider perception of the need, for reliable internationally-comparable records of past environmental conditions. It now faced a new challenge related to the planning for the integrated earth observing system that was clearly emerging as an essential foundation for addressing a wide range of global environmental issues over the decades ahead.

Regarding the current state of NMSs around the world and their place in the total international meteorological science and service system, the President believed that the established concept of the primarily government-funded NMS would remain fundamental to the effectiveness of essential public meteorological services through the twenty-first century.

The President expressed his appreciation for the excellent progress made by the Executive Council since Thirteenth Congress, in spite of the considerable turnover in its membership. He highlighted some of the major decisions facing Fourteenth Congress, including: determining the role that WMO should play in a world that was simultaneously more comprehensively integrated and more sharply divided than at any previous time; reaching consensus on a new vision for the future of WMO and a realistic strategy for achieving it; agreeing on the objectives of all major Programmes and deciding how to achieve them with the best

combination of resources; electing a new President, Vice-Presidents and Executive Council members; appointing a new Secretary-General; and recommitting the new generation to the unity of meteorology and its sister sciences in pursuit of the noble aspirations of the WMO Convention and the continued effectiveness of WMO as the model of international cooperation within the United Nations system.

1.1.3 Professor G.O.P. Obasi, the Secretary-General of WMO, extended a warm welcome to His Royal Highness the Prime Minister of the Kingdom of Tonga, ministers and other high-level government officials as well as to all delegates and representatives of international organizations. He drew attention, in particular, to the two countries that had most recently acceded to the WMO Convention — Bhutan and Kiribati.

The Secretary-General recalled that the year 2003 marked the one hundred and fiftieth anniversary of the First International Meteorological Conference which formally underlined the importance of meteorology and stressed that international cooperation in the science was a *sine qua non* condition to progress. That spirit of cooperation led to the establishment of the International Meteorological Organization in 1873 and subsequently in 1950 to the World Meteorological Organization, a specialized agency of the United Nations system.

The World Meteorological Congress remained WMO's highest policy-making organ. As such, it offered to each of its 187 Members the forum to contribute to the formulation of WMO's policies and programmes and to the implementation strategies that should guide the Organization into the future. He emphasized that Congress decisions had strong implications on the effectiveness of WMO and provided the framework for the contributions of NMHSs in addressing many of the long-term concerns of humankind at the national, regional, and global levels.

The Secretary-General remarked that Fourteenth Congress would consider, and provide guidance, on a number of major issues relevant to the sustainable development of nations, including: mitigation of natural disasters; challenge of water resources management; climate change; depletion of the ozone layer; support to food security; support to other vital sectors of the economy including transport, health and tourism; and assistance to Members to meet their international obligations related to the Conventions on climate change, on desertification and on ozone as well as those arising from global conferences such as the United Nations Millennium Summit and the 2002 World Summit on Sustainable Development.

The Secretary-General noted that in view of its leadership role in its own field of competence, WMO was recognized universally as the United Nations system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interactions with the oceans, the climate it generated and the

resulting distribution of water resources on Earth. The Secretary-General expressed his confidence that the collective wisdom of Congress would prevail in forging a consensus towards enhanced progress and strengthened contribution of the science of meteorology and hydrology to society through unity and in harmony. He concluded by noting that a journey of 1 000 miles began with a single step, and that even now that single step could be taken to ensure that WMO continued to serve the cause of humanity and to enhance international cooperation.

1.1.4 H.E. Mr J.-M. Boulgaris, Ambassador and Permanent Representative of Switzerland with the United Nations and other International Organizations in Geneva, on behalf of Swiss Authorities, welcomed all the participants to Fourteenth Congress. He noted that it was only a few weeks ago that Geneva celebrated the victory of the Alinghi team that won the America Cup. That success would not have been possible without the knowledge of meteorologists who were given the task of anticipating changes in wind and without people from many countries working together.

He highlighted the many accomplishments of Professor Obasi, who had been serving as Secretary-General of WMO for 20 years. Those included the current Headquarters of the Organization. He noted that the futuristic construction of the building symbolized both the role fulfilled by WMO and its Members, and also the close relationship that existed between the Organization and Switzerland. A number of programmes had been launched or strengthened such as WCRP and the WWW Programme.

Regarding the new challenges facing the world, he noted that each year, more than 200 million human beings were victims of natural disasters and many of them lost their lives. For Switzerland, whose alpine territory made it particularly exposed, it was essential to reduce that vulnerability in the face of extreme meteorological, hydrological and climatic conditions. He underscored the importance of regional cooperation to assist the two billion inhabitants on Earth who did not have access to drinking water and stressed the need to address the growing scarcity of fresh water.

H.E. Mr J.-M. Boulgaris noted that since the foundation of WMO, enormous progress had been made with regard to atmospheric science. The excellent quality of climate models and the technological development in the world of satellites were the result of international cooperation. Sometimes, it was more efficient to invest in Member countries, which were less privileged, than to obtain a sophisticated computer. WMO played a decisive role in the area of transferring knowledge. The strength and the success of the Organization could be measured against the development offered to less favoured Member countries.

1.1.5 H.R.H. Prince Ulukalala Lavaka Ata, Prime Minister, Minister for Civil Aviation and Meteorological

Services of the Kingdom of Tonga, addressed members of the World Meteorological Organization for the first time at Fourteenth Congress.

He remarked that with the adoption of the long-term plan for 2004-2011, Congress would provide a vision and world leadership in expertise and international cooperation in weather, climate, hydrology and water resources, and related environmental issues, thus contributing to the safety and well being of people throughout the world and to the economic benefit of all nations.

The Prime Minister viewed cooperative regional programmes as the framework for sustainable development in the South-West Pacific and fully supported WMO's initiative in that area. Cooperative regional programmes were also seen to be the most cost effective means of sharing the limited resources and of overcoming the dire effects of isolation. To that effect, his Government firmly supported and endorsed the strategic action plan for the long-term development of meteorology in the Pacific region.

The Prince, nonetheless, emphasized that it was imperative that national interests were not eclipsed and that maximum independence was attained. That was one of the principles on which the WMO Convention was founded. As Tonga was a micro-State with very small and fragile economy and resources, it was subjected and vulnerable to severe and harsh meteorological conditions. The *El Niño* phenomena was now recognized as having a profound influence on the occurrence of tropical cyclones, extreme rainfalls and drought. In that context, the growing demand for improved hydrometeorological services from the public and the private sector, together with financial pressures, had led the Government of Tonga to commit itself to the establishment of an autonomous forecasting service.

1.1.6 Mr A. Bedritsky, principal delegate of the Russian Federation, conveyed a message from H.E. Mr Mikhail Kasyanov, Chairperson of the Government of the Russian Federation. He congratulated all participants of Fourteenth Congress on behalf of the Government of the Russian Federation.

As a specialized agency of the United Nations, WMO united countries in a single system of global, mutually advantageous partnerships directed at evaluating current and predicting weather and climate conditions both in separate countries and regions, and on Earth as a whole. In that way, it actively promoted the social and economic progress of humankind.

The Russian Federation had always been actively involved in the development and improvement of WMO activities at all stages, and had contributed significantly to the implementation of its scientific and technical programmes.

Given that the problems of global climate change were exceptionally relevant today, he hoped that WMO and representatives of WMO Members

would be actively involved in the World Conference on Climate Change being organized in Moscow in the autumn of 2003 at the initiative of the President of the Russian Federation, H.E. Mr V. Putin. He wished Congress every success in its work.

1.1.7 H.R.H. Prince Turki Bin Nassir Bin Abdulaziz, Minister for Meteorology and Environment of the Kingdom of Saudi Arabia extended his appreciation for the opportunity of addressing Fourteenth Congress and noted that for many years, and since the start of the international scientific collaboration in the domain of meteorology, Saudi Arabia had always been a partner to the international community. He informed Congress that Saudi Arabia continued to assume its role at the regional level, in view of its geographical situation, its conviction that meteorological services depended principally on observation, collection and analysis of information, and on the full cooperation with the international community in matters related to the exchange of information, knowledge and scientific work. Like many other countries and regions, Saudi Arabia had to face a number of problems such as the monitoring of drought and desertification.

He noted the challenges and problems linked to meteorological and hydrological services in all the regions of WMO and reaffirmed his Government's strong determination to work closely with the parties concerned to realize the objectives of the Organization and those of the international community. In that regard, the Presidency of Meteorology and the Environment, had put in place recently a centre for monitoring drought and desertification. It had also launched, in collaboration with WMO, the second phase of a project on cloud seeding, and had been participating in the AMDAR programme. Furthermore, opportunity for the training of specialists were offered to WMO Members and in particular, to the neighbouring States at the meteorological faculty of the University of King Fahd Abdul Aziz. It was projected to reinforce actions in that area. Saudi Arabia also contributed to the efforts of the international community in the area of climate change and provided assistance to studies relevant to that field.

The Prince informed Congress that the candidature of Mr Nizar Ibrahim Tawfiq for the position of Secretary-General of WMO had been withdrawn.

1.1.8 H.E. Mr M.F. Poku, Ambassador of the Permanent Mission of Ghana with the United Nations and other International Organizations in Geneva, conveyed a goodwill message from H.E. Mr A.K. Dapaah, Minister of Communications and Technology of Ghana. He stressed that Ghana had fully participated in the activities of WMO because of the importance it attached to the objectives of the Organization and of the benefit that had accrued to it as a Member through voluntary cooperation programmes in the area of human resources development and the acquisition of equipment. He

thanked WMO and its Members for their work in the field of meteorology and operational hydrology as well as for the continued attention focused on NMHSs' staff and on resources to carry out their work.

Ghana was particularly pleased to observe that WMO was actively committed to the further development of information systems and services, including the development of ICT aimed at improving quality and at enhancing effective dissemination of weather and climate information for the benefit of society. Ghana had adopted a development policy which relied on exploiting to the maximum the potential of ICT in achieving sustainable development which would address the issues of poverty in the country. The Government was aware of the vital role which reliable weather and climate information played in ensuring food security, in the availability and management of water resources, and in meeting its economic objectives.

For that reason, the Government had committed substantial resources to improve the quality of the services of Ghana's NMHS. In that regard, it was transforming the Meteorological Services Department from a civil service institution into an autonomous institution that would free it from the main civil service bureaucracy. Appropriate infrastructural reforms, marked by the necessary regulatory framework, would only benefit the Ghana Meteorological Services Department by generating income to support some of the operations, improve efficiency and minimize external support in the long term. In the short term, Ghana would require support to enable it to acquire basic equipment and train personnel to facilitate a successful transformation.

1.1.9 H.E. Hon. Monyane Moleleki, Minister of Natural Resources (including Meteorology) of the Kingdom of Lesotho, pointed out that national cooperation was fundamental to meteorological applications such as systematic observation of weather. In many countries, in the developing world in particular, the role of meteorology in enhancing and sustaining economic productivity and social development was increasingly being recognized.

Fourteenth Congress therefore had to provide guidance on strengthening international cooperation and on improving the efficiency of NMSs to address challenges related to poverty eradication, food insufficiency, natural disasters and others. In doing so, Congress had to note and take advantage of the advances in information technology and should emphasize the role of NMHSs as data provider as data and information had become some of the most valuable resources. He noted that Congress decisions should be in harmony with the African development platform, the NEPAD initiative and should support the SADC protocol on meteorology.

Lesotho had a peculiar geography and its alpine climate highly variable with extremes. Lesotho was also highly vulnerable to climate change. In

particular, vulnerability of its biodiversity, agriculture, ecosystems, etc., had been assessed. In view of its mandate, WMO should be a partner in mitigating the effects of climate change. Therefore, noting the importance of meteorology, in addressing those issues, Lesotho's Government had upgraded the status of the Lesotho Meteorological Service in 2000, strengthened its human resources base and enhanced the professional capability of its meteorologists. There had also been notable improvements to the Lesotho Meteorological Service infrastructure and facilities.

1.1.10 H.E. Honourable J. Chikwenga, Deputy Minister of Transport and Public Works of the Republic of Malawi, highlighted the important role that meteorology should play in the face of increased weather- and climate-related natural disasters such as droughts, floods and tropical cyclones. He noted that those natural disasters were working against Malawi's primary developmental goal of poverty reduction.

He urged Congress to consider both training and the provision of equipment to least developed countries, so that they could keep abreast of rapid technological advancement in the meteorological profession. He therefore stressed that Malawi had high expectations in the outcome from the deliberations of Congress.

H.E. Honourable Chikwenga thanked donor countries that had assisted Malawi in the meteorological sector, including Australia, Egypt, France, Germany, Japan, the United Kingdom and the United States just to mention a few. He reiterated the Government's commitment to improving its National Meteorological Service.

1.1.11 H.E. Mr A. Zahoud, Secretary in Charge of Water of the Kingdom of Morocco thanked WMO and its Members for the efforts deployed to the service of the international community. He thanked, in particular Mr Zillman and Professor Obasi for the competence and the devotion with which they directed the Organization.

He noted that the scientific progress and the technological advances realized had largely contributed to the development of the science, and had shown the potential benefits that could be derived by a country, where the knowledge of atmospheric phenomena constituted a major stake for the economy and the security of the population. The general objective of the development of meteorology was sustained by the constant ambition to become in the mind of the public and of the economic operators, the daily reference on matters regarding the weather and climate. For that purpose, information and advice provided to the users should be both useful and adapted to their needs.

H.E. Mr A. Zahoud informed that the National Meteorological Service of Morocco, strengthened by political support, had concentrated its efforts for the last 12 years on modernization, which consisted of acquiring modern services,

launching research and development programmes in numerical weather prediction, climate prediction and weather modification. He highlighted the difficulties of developing countries, in particular, those in the African region in maintaining their infrastructure and the risk posed to the WWW in the middle and long term. In that regard, it was necessary and urgent to put in place a priority programme to improve the basic system of the WWW in Africa in the coming years.

1.1.12 H.E. Ms Kema Chikwe, Honourable Minister of Aviation of the Federal Republic of Nigeria, expressed the appreciation of the Government and people of Nigeria to Member States of WMO for the support and cooperation they extended to Professor G.O.P. Obasi during his tenure of Office as Secretary-General. The Minister thanked WMO for addressing the challenges faced by humankind on planet Earth. She reminded Congress to take decisions that would continue to put WMO in the forefront of eradicating poverty, thus reducing the impact of natural disasters and other environmental problems.

She reiterated the importance that African countries place on the NEPAD initiatives and called on Congress to support those efforts through adequate meteorological information and products that would promote accelerated economic development in the Region. She also drew the attention of Congress to the daily burden of the African women in providing food and potable water for the family. She called on Congress to make policies that would reduce that suffering by the provision of timely meteorological products and information for increased food production.

The Minister called for increase in financial support to developing countries' NMHSs through more fellowships for training, equipment for observations and other capacity building projects through the VCP to ensure balanced development of Meteorological Services in developed and developing countries.

1.1.13 H.E. Mr Al-Noaimi, Chairperson and Managing Director of the Civil Aviation Authority of the State of Qatar welcomed all participants to Fourteenth Congress. He noted that the National Meteorological Service of Qatar was established in the early 1960s and that Qatar had joined WMO in 1974. It was now concentrating its efforts on climate matters.

Qatar had developed a 10-year plan to improve the Meteorological Service. The goals were to provide better services and to encourage scientific research. There were currently five meteorological stations in Qatar, and those were to be increased to eight automatic weather stations. Furthermore, the plan called for 30 automatic weather stations by 2010, each to be installed according to international specifications.

H.E. Mr Al-Noaimi noted that Qatar would be establishing a national climate centre and that it

would serve as an archive for climate data. He noted that training and the development of human resources in Qatar were especially important. He wished Fourteenth Congress every success.

1.1.14 H.E. Mr Dominique Bussereau, Secretary of State for Transport of France, stressed the importance of meteorology, in particular for transport and the safety of people and goods. He praised the work of WMO and its support for the activities of the NMHSs.

WMO, furthermore, had an important role in respect of the environment. Mr Bussereau recalled President Jacques Chirac's words at the Johannesburg Summit: "Our house is burning, and we are looking elsewhere. Humankind is suffering from unhealthy development". WMO therefore had an important role in fields such as water resources and climate change. Regarding the latter, France particularly appreciated WMO's support for IPCC.

France, which had always contributed very actively to the work of the Organization, was doing so again by putting forward the candidacy of Mr Jean-Pierre Beysson to succeed Professor G.O.P. Obasi, to whom Mr Bussereau paid tribute. The Secretary of State highlighted the valuable work of the Organization in promoting meteorology, hydrology and related sciences in support of the efforts of the NMHSs of Members. Mr Bussereau assured Congress of the continued support of France to WMO's Programmes and activities, and in particular to its technical cooperation activities.

1.1.15 H.E. Honourable (Ms) Rejoice Mabudaffasi MP, Deputy Minister of Environmental Affairs and Tourism of South Africa, indicated that weather-related disasters entrenched more poverty to people who were already vulnerable to such disasters. It was thus a priority to capacitate people with the necessary knowledge and skills to understand such phenomena and to respond adequately in order to minimize its impact. A challenge to the continent and globally was to harmonize scientific knowledge and indigenous knowledge to expand the knowledge base, which would ultimately capacitate humanity to come up with better solutions. That was the message that should be taken cognizance of during deliberations as it represented the interests of historically marginalized communities.

She indicated that WMO continued to be the body that facilitated cohesion between South Africa and other sister agencies on the continent as well as other global institutions which enabled improved understanding of our environment, resulting in improved decision-making, thus facilitating better preparedness and planning. She indicated that South Africa was committed to working together with sister organizations on the continent in line with the NEPAD objectives. She requested Congress to seek synergies and to consolidate WMO Programmes with NEPAD initiatives to avoid duplication.

She also indicated that she would welcome some of WMO's meteorological programmes listed

among NEPAD programmes, which could only take the African continent from strength to strength. She also indicated that South Africa was committed to collaboration with its counterparts globally in areas such as data exchange, research, technology and skills exchange, capacity building and many other under the umbrella of WMO in order to ensure global sustainable development.

1.1.16 H.E. Honourable Willy Posen, Minister of Infrastructure and Public Utilities, extended very warm greetings to all participants on behalf of the Government of Vanuatu. Congress offered Vanuatu the opportunity to review the implementation of the Organization's programmes and what needed to be addressed that had practical implication for the development of meteorology at the global, regional, subregional and national levels during the next four years (2004-2007). At the regional and subregional levels, Members of the Organization, in collaboration with regional organizations such as SPREP, SOPAC and other regional partners had developed and completed the Pacific Islands Framework on Climate Change, Climate Variability and Sea level Rise; the Strategic Action Plan for the Development of Meteorology in the Pacific Region (2000-2009); the Needs Analysis for the Strengthening of Pacific Islands Meteorological Services; hydrological initiatives, and others. Those initiatives were complementary to the development of meteorology at the national level and when implemented would translate into the improvement of basic meteorological infrastructure and provision of information to users' communities.

Vanuatu had developed its Meteorological Service Strategic Development Plan (2000-2009) in March 2000. The development of meteorology was one of the high priorities for the Government. H.E. Honourable W. Posen requested the Secretary-General, WMO Members, donor agencies and development partners to provide assistance to Vanuatu and other Pacific island Nations to implement those initiatives.

He was confident that Congress would address the concerns and issues raised by Members with foresight and determination in the traditional spirit of cooperation and mutual understanding and start the millennium with increased commitments, hope and optimism.

1.1.17 H.E. Ms Susan Waffa-Ogoo, Secretary of State for Fisheries, Natural Resources and the Environment of Gambia, highlighted the developments in the science and application of meteorology and operational hydrology that was witnessed during the later part of the twentieth century. That was achieved by WMO, in collaboration with other sister United Nations and multilateral agencies and Governments.

She expressed her appreciation for the major contributions of the Gambian Meteorological and Hydrological Services to national development. That related to the provision of information and

advisories on activities related to the daily lives of the population. The Secretary of State warned that the effective performance of the Services could be effected in the future by the deterioration of the basic observations system and inadequate human resources. Her Government would fully support the future participation of Gambian meteorologists and hydrologists in international forum and in the implementation of national, regional and global meteorological and hydrological programmes.

She urged WMO to use the relevant components of the Millennium Declaration and Johannesburg Plan of Implementation to facilitate the initiation of partnership programmes between Member States and various national, regional and international bodies for strengthening the capacities of NMHSs. Those efforts would no doubt enhance the improvement of the quality of life and prosperity of generations of humankind.

1.1.18 H.E. Mr Souleamane Kane, Minister of Transportation of Niger, expressed his thanks for the cordial welcome, and expressed his Government's unflinching support for WMO and appreciation to the Secretary-General and the staff of the Organization. In 1994, Professor Obasi had become a member of Niger's Order of Merit. Niger had been transformed into a true research and development centre for meteorology through agencies such as ACMAD, AGRHYMET, EAMAC, NBA, HYDRONIGER and ICRIASAT, which it hosted.

The events of the past decade, in particular since the 1992 Earth Summit in Rio de Janeiro, had shown that the different challenges on a national, regional and global levels had given Meteorological Services a crucial role to play, as was proven by the impressive number of requests for services in a variety of fields. In Niger, as in many countries of the Sahel where climatic cycles underwent considerable perturbations, catastrophes such as drought, floods and storms, were no longer passively accepted by communities as inevitability of destiny. Rather, they were more inclined to believe what weather forecasts held in store for them.

The harm caused to persons and property in recent severe weather events and climatic phenomena were always at the forefront of people's attention and public authorities were constantly being put under pressure to address them. Congress should therefore evaluate national and regional capacities for early warning of severe events. The challenges were great and numerous while financial resources limited and few. However, that represented a source of stimulation, encouraging the Organization to make exceptional efforts so that national contributions could become a reality. He congratulated WMO on its successes, and hoped that it would continue to contribute effectively to the sustained development of the different regions by consolidating improvements in international cooperation.

1.1.19 H.E. Mr Bap Kesang, Permanent Representative of Bhutan to the United Nations and

other International Organizations in Geneva conveyed the warm greetings of His Majesty the King, and the people of the Royal Government of Bhutan to Fourteenth Congress. He expressed the appreciation of the Bhutan delegation for the opportunity to participate in Congress for the first time as a Member of the Organization.

He recalled that WMO had been carrying out the important task of promoting global cooperation in the field of meteorology. The scientific and technical programmes on weather watch, climate, atmosphere and the environment, hydrology and water resources were indeed of tremendous importance to all Members. The very survival of some of the ecosystems in various parts of the world were under real and increasing threat from natural disasters and the potential impact of climate change. The work of the Organization was becoming more important, not only in terms of preventing disasters but also for managing and sustaining natural resources.

He noted that the Royal Government of Bhutan, as a member of the Organization, would be able to benefit from the work of WMO while also contributing to its growth and strength through its active participation in the programmes and activities of the Organization.

1.1.20 Vice-Admiral Conrad C. Lautenbacher, Jr. (U.S. Navy, Ret.), Under Secretary of Commerce for Oceans and Atmosphere, Administrator of the National Oceanic and Atmospheric Administration (NOAA) of the United States addressed Fourteenth Congress and spoke of WMO as a model international organization. He referred to the achievements resulting from decade-long partnerships within WMO, and its Member countries. He noted the Global Observing System of the World Weather Watch as a good example on which to build. The system was focused on weather, but was also enhanced by new initiatives including GCOS. NOAA was allocating US\$ 4 million during the present year to strengthen the climate observing capabilities under GCOS.

His focused on the importance of a comprehensive, integrated, and sustained system for observing the Earth. He stated that the time had come for an "Earth Science Renaissance" — a new era in which a deeper understanding of the complex systems of planet Earth had to be reached — a system which would provide the tools to "take the pulse of the planet."

He emphasized the need not only to focus on building upon existing systems, but also to secure funding necessary to maintain and upgrade systems over time. To promote those concepts, he announced that the United States would host an Earth Observation Summit in Washington D.C. on 31 July 2003, to bring together ministers of the G-8 and other nations to discuss what was needed to build an optimized global observing system.

1.1.21 H.E. Honourable A. Ligale, EBS, MP, Assistant Minister of Transport and Communications of the Republic of Kenya, expressed the great privilege and honour at addressing Fourteenth Congress and extended warm greetings from the President of Kenya, the Government and the people of his country. Kenya had been a Member of WMO for the last 40 years. It had participated actively in its activities and had benefited greatly from its results. WMO's activities and results were recognized at the recently-held World Summit on Sustainable Development. A major challenge for the NMHSs of developing countries was the capacity to provide quality services, improve the application of climate information as well as improve their image. That could be done through workshops, publications and conferences as well as by enacting legislation on sound policies for factoring weather and climate into national planning and development strategies.

In most developing countries, including Kenya, 70 per cent of the natural disasters were related to severe weather and extreme climate events. However, negative impacts could be minimized by factoring weather and climate information into the decision-making process for the proper management of the associated hazards. A way forward in poverty reduction and sustainable development was to improve meteorological services and awareness among rural communities, which would enable them to factor weather and climate in the planning of those activities.

H.E. Honourable A. Ligale praised the work of the Organization and the untiring and dedicated work of Professor Obasi, who was due to retire after 20 years of service. Professor Obasi's contribution to meteorology had started in the late 1960s when he was a Professor and Dean at the Faculty of Science of the University of Nairobi. It would not be an understatement to say that a number of current Directors of National Meteorological Services in Africa had been at one time or another his students. Kenya had always contributed to the work of the Organization and was therefore forwarding the candidature of Mr Evans A. Mukolwe, to succeed Professor Obasi as Secretary-General of WMO.

1.1.22 H.E. Honourable Professor M.J. Mwandosya, Minister of Communications and Transport of the United Republic of Tanzania, on behalf of his Government, thanked the President and the Secretary-General for the opportunity to address Congress. WMO's mission was to understand the forces of nature in order to master the environment and anticipate events, with a view to promoting sustainable development.

The economies of most countries in Africa depended on rain-fed agriculture. However, in recent years, extreme and variable weather events had caused serious losses, particularly in southern and eastern Africa. The United Republic of Tanzania was experiencing a serious rainfall deficit in the current year. Over time, there had been significant

improvements in forecasting as well as in the quality of meteorological information. He appreciated the great contribution of the Climate Outlook Forums in the region, which started in 1996, in terms of capacity building and seasonal forecasting capacity of the NMSs.

It was imperative that countries in the region should find ways of improving weather and climate observing systems, data exchange and processing and forecasting skills. He also emphasized the need for enhanced use of information and communications technologies by NMHSs to exchange and obtain relevant data and products. He was pleased to note that the need for capacity building featured fairly prominently on the agenda of Congress. The United Republic of Tanzania was interested in exploring with WMO the possibility of upgrading the National Meteorological Training School.

He paid tribute to Mr Zillman's work as President, noting that he had maintained harmony among WMO Members, and congratulated Professor Obasi on having provided exemplary service to WMO and the world scientific community during his long tenure of office, during which WMO had contributed enormously to socio-economic development and the mitigation of natural disasters, owing largely to improvements in WMO Programmes, particularly the WWW. The Minister further thanked WMO for developing a strategy for RA I to rehabilitate and strengthen basic systems, services and infrastructure in the near future, and requested WMO and its Members to support it.

1.1.23 Mr Tekena Teitiba, Principal Delegate of Kiribati, conveyed the appreciation of his Government for the warm welcome received on joining WMO and for the kind invitation to participate in the Congress session. He noted that Kiribati was one of the small island developing States with its scattered low-lying islands straddling the Equator, stretching from the northern to the southern hemisphere.

The NMS of Kiribati relied mainly on RSMC Nadi for the provision of its weather bulletins with assistance from other advanced meteorological centres such as those in Australia, Honolulu and New Zealand. The Service served primarily the aviation and maritime communities. He believed that by joining WMO, the capability of the Meteorological Service, in the provision of the required services and information, would be strengthened and enhanced.

On behalf of the Government of Kiribati, he acknowledged and expressed gratitude and appreciation to those countries, especially Australia, New Zealand and the United Kingdom, which had pioneered the establishment of the meteorological programmes in Kiribati. He also expressed thanks to those countries that had assisted and continued to assist Kiribati in other meteorological and climatological programmes, thus contributing

towards its social, economic and sustainable national development.

1.1.24 Mr M. Mbenga, Executive Secretary of the Permanent Interstate Committee for Drought Control in the Sahel expressed his great appreciation for the long, fruitful cooperation with WMO, as evidenced in the establishment of the AGRHYMET Regional Centre and the capacity building of the NMHSs through WMO's Technical Cooperation Programme.

Faced with current challenges, CILSS was trying to give a higher dimension to that exemplary cooperation through active "working arrangements", and by raising and broadening the functions and scope of the Regional Centre, that made it a drought monitoring centre for the whole of West Africa.

Involved as it had been in research into food security and the rational management of natural resources, CILSS had, in conjunction with institutions such as the Niger Basin Authority and ACMAD, initiated and led such projects as AOC-HYCOS, seasonal forecasting, and the Platform for Regional Institutions for the Environment and Meteorology (PIREM). Despite the worthwhile results obtained, the climate of the Sahel was still not fully mastered, though it had been of prime concern for the success of development activities mainly directed towards agriculture.

To minimize the harmful impacts of the climate on development efforts, the States of the Sahel had chosen to focus on water resources, concentrating on increasing water availability as a key link. Thus, CILSS was planning to develop and implement a regional precipitation enhancement programme using cloud seeding. Support from WMO and the international meteorological community was crucial to that endeavour. The programme formed part of the activities of IPCC/Sahel, which CILSS had set up to take advantage of the tools and instruments of UNFCCC.

1.1.25 Dr Patricio Bernal, Executive Secretary of the Intergovernmental Oceanographic Commission and Assistant Director General of UNESCO, expressed his greetings and best wishes to Congress, on behalf of the IOC, of its Chairperson, Professor Su Jilan, and of the Director General of UNESCO, Mr Koichiro Matsuura. In doing so, he expressed his thanks to WMO for the ongoing high level of cooperation and mutual support between the two Organizations, which was manifest in particular through JCOMM. The Commission was demonstrating a new style of work within the United Nations system, which had already proven to be very successful.

Dr Bernal continued by noting that support for JCOMM within IOC was provided through both the Ocean Services and Operational Observing System Sections. The latter had responsibility for the coordination of the development of GOOS for which JCOMM was providing a major implementation mechanism. In addition to implementation at the

global level, GOOS was also developing rapidly through different regional components, supported in many areas by newly-established GOOS regional offices. An important pilot project of GOOS was the Argo Project of profiling ocean floats, for which the Argo Information Centre, a part of JCOMMOPS, provided a major support facility. Dr Bernal stressed that, overall, the major challenge for the oceanographic community was the step-by-step consolidation of operational oceanography, which was significantly different to the challenge faced in the development of operational meteorology, and for which GOOS and JCOMM were crucial.

Dr Bernal concluded by recognizing that the eventual implementation of operational oceanography required a common strategy and a clear common plan, involving all sectors of society, public and private. That could only be done jointly, and he expressed his confidence that IOC and WMO, together, already had a strong base to succeed.

1.2 ESTABLISHMENT OF A CREDENTIALS COMMITTEE (agenda item 1.2)

In accordance with General Regulations 22 and 23, the President proposed the establishment of a Credentials Committee, recommending that all Regions be represented as at previous sessions of Congress. The membership comprising the principal delegates of the following Members was approved, as followed:

- RA I — Burkina Faso, Libyan Arab Jamahiriya, Mozambique and Nigeria
- RA II — Oman, Republic of Korea and Thailand
- RA III — Brazil
- RA IV — Bahamas and Jamaica
- RA V — Malaysia
- RA VI — Denmark, Estonia, Lebanon and Romania

Mr L.E. Akeh (Nigeria) was elected chairperson of the Credentials Committee.

1.3 APPROVAL OF THE AGENDA (agenda item 1.3)

Congress approved the proposed provisional agenda.

1.4 ESTABLISHMENT OF COMMITTEES (agenda item 1.4)

The following committees were set up:

NOMINATION COMMITTEE

1.4.1 In accordance with the provisions of General Regulations 24 and 25, the Committee was composed of the principal delegates of the following 12 Members:

- RA I — United Republic of Tanzania, Congo and Malawi
- RA II — Bahrain and Maldives
- RA III — Paraguay

RA IV — Netherlands Antilles and Aruba, and Belize

RA V — Singapore

RA VI — Lithuania, Greece and Jordan

Mr A. Majeed H. Isa (Bahrain) was elected chairperson of the Nomination Committee.

WORKING COMMITTEES

1.4.2 Mr J.-P. Beysson (First Vice-President) chaired the meetings of the Committee of the Whole for all items except item 13. The Committee of the Whole reported to Congress on the following agenda items:

2.3, 6.4, 7.2, 7.4, 11.2, 11.3, 13

1.4.3 Two Working Committees were set up to consider various agenda items as indicated below:

(a) Working Committee A

Co-chairpersons: Mr T. Sutherland (British Caribbean Territories)
Mr A. Diouri (Morocco)
Mr A. Ndiaye (Senegal)

The Committee reported to Congress on the following agenda items:

2.1, 2.2, 2.4, 3.6, 3.7, 3.8, 4, 5, 7.1, 7.2, 8, 9, 10, 11.1, 11.2, and 11.3

(b) Working Committee B

Chairperson: Mr Ali Mohammad Noorian (Second Vice-President)

Vice-chairperson: Mr A.I. Bedritsky (Russian Federation)

The Committee reported to Congress on the following agenda items:

3.1, 3.2, 3.3, 3.4, 3.5, 6, 7.3 and 7.4

1.5 REPORT OF THE CREDENTIALS COMMITTEE (agenda item 1.5)

The Credentials Committee submitted four reports concerning the credentials of the delegates of Members and those of international organizations. Those reports were approved by Congress.

1.6 APPROVAL OF THE MINUTES (agenda item 1.6)

The minutes of the first, third, fourth and fifth plenary meetings were approved during the session. Congress decided to approve by correspondence, the minutes of other plenary meetings.

2. REPORTS (agenda item 2)

2.1 REPORT BY THE PRESIDENT OF THE ORGANIZATION (agenda item 2.1)

2.1.1 Congress noted with appreciation the report by the President including his summary of the activities of the Organization, its constituent bodies and the Secretariat since the close of Thirteenth Congress. It expressed its thanks to the outgoing Executive Council for its role in coordinating the work of the Organization and in utilizing its budgetary resources over the past four years and for the action

taken to implement the decisions of Thirteenth Congress.

2.1.2 Congress recognized the increasingly heavy responsibilities being carried out by the officers and members of the constituent bodies and the Secretary-General and staff of the Secretariat and recorded its appreciation for their important contribution to the substantial progress of the Organization over the past four years.

2.1.3 Congress reviewed the various matters affecting the current operation and future development of the Organization as summarized in the President's report and expressed its satisfaction with the work done on those and other issues in preparation for their consideration by Fourteenth Congress.

2.1.4 Congress welcomed the actions taken by the Executive Council, the regional associations, the technical commissions and the Secretariat to ensure that it was presented with clear proposals for the future vision of WMO and a coordinated set of proposed policies, strategies, resource allocations and implementation activities for the achievement of the vision.

2.1.5 Congress noted, in particular, the growth in mutually beneficial relationships with a number of United Nations system and other international organizations. Such collaboration was valuable in enhancing the visibility of NMHSs and in ensuring greater recognition of their vital contributions to sustainable development.

2.1.6 Congress expressed its deep appreciation for the tireless efforts of the President over the past eight years. Through his unwavering dedication and leadership, he provided wise guidance to WMO bringing Members together toward a common vision.

2.1.7 Those matters in the President's report which called for specific action by Congress were considered under the appropriate agenda items.

2.2 REPORT BY THE SECRETARY-GENERAL (agenda item 2.2)

Congress noted that issues raised in the report of the Secretary-General were covered in the documents submitted to Congress under various agenda items. It further noted that the financial report by the Secretary-General would be taken up under agenda item 10.1.

2.3 REPORT BY THE CHAIRPERSON OF THE FINANCIAL ADVISORY COMMITTEE (agenda item 2.3)

2.3.1 Congress considered the report of the Financial Advisory Committee. It noted with appreciation the various recommendations of the Committee contained in Annex I to this report. Congress took account of those recommendations in making its decisions under the various related agenda items.

2.3.2 Congress decided to keep in force Resolution 29 (Cg-X) — Financial Advisory Committee, on the establishment of the Financial

Advisory Committee during the fourteenth financial period.

2.4 CONSOLIDATED REPORT ON AMENDMENTS TO THE TECHNICAL REGULATIONS (agenda item 2.4)

2.4.1 Congress noted with satisfaction the work carried out by the technical commissions, regional associations and the Executive Council in keeping under review the Technical Regulations in their respective fields of responsibility.

2.4.2 Congress noted that a substantial number of amendments to Annexes II, III, IV and V to the *Technical Regulations* (WMO-No. 49), which had been proposed by CBS, and to Annex VI, which had been proposed by JCOMM, had been approved by the Executive Council in accordance with the authority delegated to it by Thirteenth Congress. Congress further noted that in view of the urgency of implementing a modified version of a certain number of codes, the President had approved, on behalf of the Executive Council, relevant CBS recommendations under the authority given to him in General Regulation 9(5).

2.4.3 Congress confirmed the usefulness of the provision of Article 14(c) of the Convention and General Regulation 9(5) in enabling prompt action by the Executive Council or the President in cases of new or amended regulations which had to be implemented before the next session of Congress. Congress re-affirmed the authority delegated to the Executive Council to approve amendments to the Technical Regulations, including those proposed by CBS-Ext.(02). That decision was reflected in Resolution I (Cg-XIV).

3. SCIENTIFIC AND TECHNICAL PROGRAMMES (agenda item 3)

3.1 WORLD WEATHER WATCH PROGRAMME (agenda item 3.1)

3.1.0 WWW BASIC SYSTEMS AND SUPPORT FUNCTIONS; THE REPORT OF THE PRESIDENT OF CBS (agenda item 3.1.0)

Fortieth anniversary of the WWW

3.1.0.1 Congress was proud to commemorate the fortieth anniversary of the WWW. It recalled that in April 1963, Fourth Congress approved the concept of the WWW, and set WMO on the journey that dramatically changed and enhanced the development of meteorology and the atmospheric sciences. The challenge laid down 40 years ago had resulted in a unique success story of international cooperation and opportunity. The basic systems of the WWW had become in many ways the "core" operational facility, not only for weather forecasting, but for all WMO Programmes as well as many international programmes of other agencies. Understanding climate and climate change, natural disaster reduction and response, and environmental

protection were but three of a growing list of those broader programmes.

3.1.0.2 Congress stressed that WMO should expect the next years to be of even faster technological advancement, and WMO could also expect new requirements to be placed on the basic systems by the more integrated earth science programmes. The flexible, evolving system that was originally conceived needed to adjust continuously in order to accommodate those new demands.

3.1.0.3 Congress was pleased to note in that connection that the January 2003 edition of the *WMO Bulletin* had been dedicated to the anniversary of the WWW and thanked the key authors for their valuable contributions. It received with particular interest and appreciation the report of the acting president of CBS on the status of implementation of the WWW and also recognized the publication entitled *WWW — Twenty-first Status Report on Implementation (2003)* (WMO-No. 957), which was being distributed to all Members and posted on the Web.

Report of the president of CBS

3.1.0.4 Congress noted with appreciation the report of the acting president of CBS on the activities of the Commission since Thirteenth Congress. It recalled that the twelfth session of CBS, after Mr S. Mildner (Germany), the president of CBS at that time, decided not to stand for a second term, had elected Mr G. Love (Australia) as president and Mr A. Gusev (Russian Federation) as vice-president. Mr Gusev became acting president of CBS as from 10 May 2002, when Mr Love relinquished the office of the president. The acting president expressed his sincere appreciation to all CBS members for their enthusiastic cooperation. He also thanked the Secretary-General of WMO and the staff of the Secretariat, in particular the WWW Department, for their support and cooperation. The continued progress in the development of the WWW, especially with regard to the introduction of new technology, was noted, as were the steps taken by the Commission in fulfilling its responsibilities for public weather services.

3.1.0.5 The membership of CBS continued to grow. At the end of 2002, 150 Members had designated 315 experts to serve on the Commission compared with 311 experts from 139 Members in 1998 and 194 experts were registered as members of the four CBS OPAGs.

3.1.0.6 Congress noted that CBS had held its twelfth regular session in 2000 in Geneva, and the extraordinary session 2002 in Cairns, Australia. The regular session had been preceded by the Technical Conference on Information Systems and Services. One important outcome of that Conference was the beginning of the development of the FWIS. The extraordinary session had been preceded by the Technical Conference on Data-processing and Forecasting Systems, which developed significant

recommendations on enhancing the use of EPS forecast products.

3.1.0.7 Congress noted that the coordination of the intersessional activities and much of the preparatory work for the sessions were carried out by the CBS Management Group. Numerous expert and implementation/coordination team meetings, designated rapporteurs and consultants addressed all specified tasks with respect to the component programmes of the WWW including activities related to the redesign of the GOS, automatic weather stations and satellite system utilization, the development of the FWIS, the Improved MTN project, the use of the Internet, the quality management framework, innovative collaboration mechanisms and infrastructure needs for seasonal to interannual climate predictions; WMO satellite activities; data representation and codes including the WMO-wide migration strategy to table-driven code forms; radiofrequency issues; the emergency response activities programme, COSNA and GCOS matters; and the PWS programme. Congress noted with satisfaction that CBS had intensified collaboration with CAS concerning the WWRP (in particular THORPEX and PWS matters), with CCI concerning seasonal to interannual climate predictions as well as data management and GCOS matters, with CIMO concerning AWS and radiosonde systems, and with CAeM concerning aeronautical codes and AMDAR.

3.1.0.8 Congress noted that apart from his role as programme representative for the WWW and the PWS Programme reporting regularly to Congress and the Executive Council, the president of CBS represented the Commission at sessions of other technical commissions and regional associations, at the Meetings of the Presidents of Technical Commissions, at the Executive Council Advisory Group on the International Exchange of Data and Products and at the Consultative Meetings on High-level Policy on Satellite Matters. Given the fact that the WWW was the provider of basic infrastructures for most WMO Programmes, Congress emphasized that the inter-programme collaboration was a matter of overriding importance which required a high level of attention.

3.1.0.9 Since Thirteenth Congress, CBS submitted to the Executive Council recommendations concerning amendments to the Technical Regulations and the *Manuals*, in particular two concerning GOS, three concerning GTS, three concerning GDPS, two concerning RSMC designation, seven concerning codes, one concerning the collaboration of WMO with CTBTO, and one concerning AMDAR activities. The Commission also proposed amendments to the 6LTP.

3.1.0.10 Congress noted with appreciation that the trial of the more flexible and cost-effective working structure of the Commission started in 1998 was successful and that the twelfth session of the Commission had confirmed and adopted the new working structure for implementation. The working

structure continued to confirm its potential for modern management, increased efficiency and flexibility. Congress noted further the new role of the CBS Management Group as a management body with a high level of competence, efficiency and responsiveness, and was particularly pleased with the increased flow of information through the use of the Internet and e-mail services, which had contributed in no small measure to the work of CBS on all levels.

3.1.0.11 Congress recognized the value of the continuing practice of facilitating the participation of the chairpersons of the six Regional Working Groups on the WWW in the sessions of the Commission. That had, over the years, greatly invigorated the collaboration between the regional associations and the Commission, improved the WWW implementation activities in the Regions and ensured a better understanding of region-specific aspects in the planning work of CBS. Congress also encouraged the participation of representatives of other technical commissions and programmes in sessions of CBS, as that promoted inter-programme coordination and collaboration.

WMO quality management framework

3.1.0.12 In connection with the WMO quality management framework and the related international standard on quality management ISO 9000/9001, Congress noted that CBS had submitted valuable input to the Executive Council Advisory Group on the Role and Operation of NMHSs and that the fifty-fourth session of the Executive Council had agreed that WMO should work towards its own quality management framework by making use of the already developed comprehensive system of documented WMO procedures and practices in the *Technical Regulations* (WMO-No. 49), *Manuals*, *Guides*, *Guidelines* and *Technical Publications*.

3.1.0.13 The acting president recalled that development of documentation to incorporate specific quality management procedures into the WMO *Technical Regulations*, at a level of detail similar to the ISO 9000 procedures, would amount to a challenging task, because the operational *Manuals*, such as those on the *GOS* (WMO-No. 544), the *GTS* (WMO-No. 386) and the *GDPS* (WMO-No. 485), had evolved over decades and would need fundamental revision and restructuring. Other more recently produced guidance material, such as the *Guide to Public Weather Services* (WMO-No. 834) and the *Guide on World Weather Watch Data Management* (WMO-No. 788), contained elements of quality management, which would need to be adjusted or expanded for that purpose. Congress noted that if CBS was requested to carry out that work, it would need additional resources for that purpose. Congress reflected its decisions including resources aspects for development of the quality management framework under agenda item 7.2.

3.1.0.14 Congress noted that at CBS-Ext.(02) there was still a diversity of opinions regarding ways and

means of introducing a quality management system. Some Members expressed concern at the high cost involved, especially in developing countries. Some Members felt that it would be best to implement ISO 9000 procedures directly, while others were of the opinion that WMO should concentrate on the updating and improvement of the existing WMO quality management standards in the context of the WMO management framework. Concern had also been expressed that developing a WMO-specific quality management framework ran the risk of becoming too inward looking and in the end even more expensive overall than ISO 9000. CBS recommended to consider developing a quality management framework that could be used by NMHSs as a model for establishing quality management systems. Some Congress delegations noted that that could be achieved through a three phased approach where firstly WMO would compile a set of principles based on its existing standards and recommended practices (*Technical Regulations*, *Manuals* and *Guides*), secondly those principles would be adjusted taking into account the ISO 9000 procedures, and finally a model adaptable to all NMHSs, based on their capacity, would be used by NMHSs for establishing their quality management systems and/or seeking certification where required. Implementation of such a framework in NMHSs would be an opportunity for innovative collaboration.

3.1.0.15 In connection with the preparation of the draft 6LTP, Congress noted that the Executive Council requested the president of CBS to consider a proposal to rename CBS to reflect more clearly the services aspect of the work of the Commission. That issue was discussed at CBS-Ext.(02) but could not be resolved and the Commission agreed to refer that question to its next session for further consideration.

Future development of the WWW

3.1.0.16 Congress endorsed the view of the fifty-fourth session of the Executive Council, which emphasized that the WWW continued to be the most important core Programme of the Organization, which provided the basic infrastructure that supported all other WMO Programmes. It noted that traditionally the WWW Programme received less extrabudgetary support than other programmes and depended mainly on its higher proportion of the regular budgetary resources to fulfil the core activities of the Organization. Congress agreed that there was a need to seek more extrabudgetary resources from funding agencies to develop the WWW infrastructure and services, especially in developing countries. Particular attention was needed to ensure that the budget of the WWW Programme reflected the highest priority attributed to that Programme and was sufficient to carry out its important activities, in particular funding for the implementation support related to the various WWW infrastructure components, functions and services, especially addressing identified weak links in developing countries. Congress noted in that

connection the pertinent proposal made by the fifty-fourth session of the Executive Council, and addressed that issue under agenda item 8. Congress adopted Resolution 2 (Cg-XIV).

3.1.1 GLOBAL OBSERVING SYSTEM (agenda item 3.1.1)

3.1.1.1 Congress noted with appreciation that in the past four years, the overall implementation of surface and upper-air observational programme in the RBSNs had shown increasing stability and that the most recent monitoring results confirmed those encouraging trends compared to those of the years 1995 to 1999. While varying from region to region, the globally averaged availability in 2002 of surface and upper-air reports on the MTN was 75 and 63 per cent, respectively, of the reports expected from RBSN stations. Congress was pleased to note that recent improvements in data coverage of the upper-air network was due primarily to the successful replacement of obsolete OMEGA-based systems in certain regions, and the continued individual and international efforts of Members to reactivate RBSN performance in the central and northern part of Region II.

3.1.1.2 Congress, however, noted with concern that deficiencies in surface and upper-air data coverage over certain areas in Regions I, II, III and V continued to be caused to a large degree by inadequate funds to rehabilitate and operate both observational and telecommunication equipment, especially at remote stations. The lack of trained staff continued to be a serious problem in RA I. Financial difficulties resulted in some regions also due to the lack of equipment and consumables. Congress also noted that in spite of developed infrastructure, some countries in RA III were forced to have a very limited observational programme and silent stations because of continued financial constraints. Congress strongly encouraged individual and multilateral efforts of Members, including VCP support to rehabilitate and improve RBSN operation in the regions concerned.

3.1.1.3 In that connection, Congress supported the proposals of CBS related to the redesign of the GOS, which could potentially contribute to alleviating deficiencies in the surface and upper-air data coverage specifically of the RBSNs. Furthermore, Congress welcomed the development of a strategic plan for implementation and improvements of the WWW basic systems in RAs I and II. It noted, in particular, that special fact-finding missions had analysed the problems with the implementation of GOS in Region I and had developed achievable solutions. Congress urged that they be translated into fundable projects as soon as possible. Congress also noted with appreciation the activities to optimize data coverage over Europe carried out by EUMETNET's EUCOS programme and recommended use of the experience gained in cooperation and joint funding schemes in other regions.

Congress also encouraged improved links between surface-based and space-based components in RA VI established by EUCOS and EUMETSAT. Congress noted a valuable input to the GOS performance provided by some countries in RA II through deployment and operation of a large number of AWSs and wind profilers.

3.1.1.4 Congress noted with appreciation the improvements in the availability of data produced by other components of the GOS. In particular, it noted with satisfaction that marine networks had recovered from the loss of reporting stations and were at the level achieved in 1996. It noted that the total number of ship reports was about 160 000 per month, that the number of monthly pressure reports provided by drifting buoys had increased from 40 000 to 200 000, and that 535 Argo floats were operational in August 2002. The greatest achievement had been the significant increase in the number and quality of reports transmitted over the GTS. Those positive results were attributable to the continued efforts of Members and to the excellent interaction between CBS and JCOMM.

3.1.1.5 Congress noted that the number of AMDAR observations exchanged daily on the GTS was at about 140 000 in 2002 and was expected to increase to 200 000 over the next few years. Although, a large proportion of those AMDAR data were obtained over Europe and North America, and to a lesser extent over Australasia, Asia, South America and southern Africa, it was noted with particular appreciation that work was proceeding to develop new operational programmes and programmes of targeted observations in data-sparse regions, as recommended by Thirteenth Congress.

3.1.1.6 Congress reaffirmed the importance of the AMDAR Programme including the work carried out by the AMDAR Panel, and the significant contribution AMDAR continued to provide to the GOS. It agreed with the recommendation of CBS that AMDAR should be more fully integrated into the WWW Programme, and requested the Executive Council to consider the appropriate measures including the desirability of funding AMDAR activities in developing and coordinating the AMDAR Programme. Congress also encouraged WMO Members to contribute to the AMDAR Trust Fund on a voluntary basis.

3.1.1.7 Congress noted with satisfaction the challenging work being continued by CBS on the redesign of the GOS, which so far had resulted in updated observational requirements of all WMO Programmes and a first assessment of the evolution of the surface- and space-based components of the GOS. It noted, in particular, that:

- (a) User requirements and observing system capabilities were elaborated in 10 application areas, the rolling requirements review was pursued and Statements of guidance were issued in those areas which were now available in several WMO technical documents;

- (b) Several OSEs were pursued to test possible re-configurations of the GOS;
- (c) Candidate observing systems (space-based and ground-based) for the coming decade were studied and a WMO Technical Document was published;
- (d) Recommendations for evolution of the space- and surface-based components of GOS were developed which summarized the most pressing observational needs and recommendations for the most cost-effective actions for meeting them in the near term and the next 10-15 years;
- (e) A vision for the GOS in 2015 and beyond had been developed and endorsed by CBS-Ext.(02);
- (f) Targeted observations in NWP sensitive areas would be important in addressing the future needs of NWP.

3.1.1.8 Furthermore, Congress supported the following views and conclusions of CBS on redesign issues:

- (a) The rolling requirements review was readily applied to a diversity of application areas, provided the database of user requirements and observing system capabilities was accurate;
- (b) Hypothetical changes to the GOS could be explored in OSEs with NWP centre assistance, provided data assimilation procedures were well understood and impact studies were conducted in a statistically-significant way. Present weaknesses and possible future improvement of data assimilation systems and NWP should also be taken into account when assessing the results of OSEs. Furthermore it was made apparent that the OSSEs required huge human and computer resources and were beyond the available resources;
- (c) The future GOS should build upon existing components, both surface and space based, and capitalize on existing and new observing technologies not presently incorporated or fully exploited; each incremental addition to the GOS would be reflected in better data, products and services from the NMHSs;
- (d) The impact of the changes to the GOS in the next decades was anticipated to be so massive that new revolutionary approaches for science, data handling, product development, training and utilization would be required. There was an urgent need to study comprehensive strategies for anticipating and evaluating changes to the GOS. That should take into account the possibility of adapting the observing programmes to prevailing atmospheric conditions.

3.1.1.9 Congress reiterated the view of the Executive Council that the structure of the future GOS and the implementation of new technologies should be driven by Members' requirements rather than by technological opportunities. It reaffirmed that new technologies should be implemented as soon as practical to replace older, more costly observing

systems with a view to reducing the expenditures. Congress also recognized the value of the inclusion of R&D satellites as a new component into the GOS. Congress noted the importance for the future GOS of the organization and implementation of observing systems envisaged by THORPEX. It stressed that CAS and CBS should coordinate their efforts in that experiment especially in carrying out the associated data management and data dissemination functions. It noted the comprehensive revisions developed to the GOS regulatory material. Congress requested CBS to continue vigorously its efforts in the redesign of the GOS, as a part of overall modernization of WWW systems.

3.1.1.10 Congress noted with satisfaction the enhanced cooperation that existed between CBS and GCOS in the implementation of GSN and GUAN, which had resulted in recommendations developed by the first CBS/GCOS Expert Meeting on Coordination of the GSN and GUAN (Offenbach, Germany, May 2002) concerning the improvement of climate data availability, and in a trial of a more effective monitoring mechanism of the network performance based on specialized CBS lead centres for GCOS data. Congress was pleased to note that Japan would assume responsibility for the CBS lead centre for GSN as from 2003, and encouraged other Members concerned to follow that initiative of hosting the other CBS lead centres for monitoring GUAN and archived GCOS data. Those lead centres should maintain a direct link to the countries with problems in their GCOS station operations. In that connection, Congress urged countries to designate national focal points to facilitate cooperation on that matter. Congress also welcomed the establishment of an RBCN in all WMO Regions and in the Antarctic, as the RBCN provided a strong justification for maintaining CLIMAT/CLIMAT TEMP reporting stations, and allowed a more effective and consistent performance monitoring. Realizing the continuing need to increase the overall availability of climatological data, Congress urged Members to ensure that their operational observing stations compiled and transmitted the CLIMAT/CLIMAT TEMP messages according to existing regulations.

3.1.2 WWW INFORMATION SYSTEM AND SERVICES; INCLUDING THE GLOBAL TELECOMMUNICATION SYSTEM AND DATA MANAGEMENT (agenda item 3.1.2)

Global Telecommunication System

3.1.2.1 Congress noted with satisfaction the significant progress made in the implementation of the GTS. All MTN circuits (except one) were in operation and most of them were using digital links at speeds from 64 to 256 kbit s⁻¹. Point-to-point links via leased circuits or data-communication network services and multipoint telecommunications systems via satellite had been significantly improved in all RMTNs, although serious shortcomings persisted in

some Regions at the regional and national levels. Considerable progress was also made in the implementation of computer-based systems for GTS/GDPS functions in WWW centres, including the introduction of cost-effective PC-based data handling systems in several developing countries.

3.1.2.2 Congress was pleased to note that, with the recommended practices and guidance developed by CBS, Members and regional associations had been able to take early benefit from the new opportunities in telecommunication and data management techniques and services, and to attain a more cost-effective GTS. In that regard, Congress emphasized the importance of providing information and advice to Members on those new information and communication techniques and services and, while noting with appreciation the various events that were implemented, it requested the Secretary-General to strengthen further those activities in the future. Congress encouraged Members and regional associations, with the technical support of CBS, to pursue their fruitful efforts towards cost-effective upgrade of the GTS, while giving particular attention to the specific areas where the GTS was weak or deficient, particularly in developing regions and areas with adverse conditions. In that respect, Congress made a plea for resolute cooperative efforts to support the modernization of national data-collection of NMCs and RTHs systems in developing countries, in order to overcome the persisting shortcomings in national and regional data collection, particularly in parts of Regions I and II.

3.1.2.3 Congress noted with appreciation that in several regions, the RMTNs were being improved by the continued implementation of advanced data-communication network services, such as frame relay services. Moreover, managed data-communications network services, as currently used in Region VI, had proven to be a cost-effective implementation of the GTS, with a very high reliability and full security, a guaranteed quality of service and an easy connectivity and scalability of capacity. Congress noted that new and imaginative administration and financial arrangements were required to share and take full benefit from those new data-communication network services, and it invited NMHSs to be as flexible as possible in that regard, taking account of respective national policies. Congress fully supported the conclusions of CBS on the IMTN, which facilitated a progressive but rapid implementation of data-communication network services for the core GTS services. Congress noted with much satisfaction that the IMTN implementation and operation had started at the end of 2002/early 2003, as initially planned, and it expressed its great appreciation for the collaborative effort made by the NMHSs concerned.

3.1.2.4 Congress particularly welcomed the adoption and rapid introduction of standard data-communication protocols, applications and techniques, such as TCP/IP, FTP, etc. for the GTS

and for WWW information systems and services more generally, and the consequent improvements of efficiency and flexibility. The rapid development of industry standards and technology had resulted in a significant reduction of recurrent and investment costs of related equipment and services. Congress emphasized the prime importance of using relevant international standards to the largest extent possible, which were providing better opportunities for considerable enhancements in the capacity, versatility and cost effectiveness of information systems and services, especially the GTS. The use of international standards was also greatly facilitating effective cooperation assistance towards strengthening the GTS. Congress noted with appreciation the work that had been performed and requested CBS to pursue the continuous review, update, further development and promotion of relevant recommended practices and guidance, with a view to applying to the extent possible international information and communication technology standards.

3.1.2.5 Congress noted the increasing use of the Internet for meteorological and related data exchange, in particular in developing areas and/or sparse areas, e.g. for linking small NMHSs in the Pacific or Indian Ocean. Congress supported the views of CBS in recognizing that the Internet, despite its possible shortcomings (in particular delays and security) was the only affordable telecommunication means for transmitting meteorological information for several small NMHSs. The Internet was also providing NMHSs with useful communications services to complement the GTS. Congress noted with appreciation the guidance developed by CBS on procedures and implementation options that would minimize the operational and security risks, and requested CBS to develop further those materials, in the light of technological developments and of the experience, including operational tests, gained by NMHSs and relevant entities.

3.1.2.6 Congress noted with satisfaction the extensive implementation of satellite-based multipoint telecommunications systems that were playing an important role as integrated components of the GTS for the distribution of large volume of information, in complement to the dedicated connections. Each WMO Region was completely covered by at least one satellite-based data-distribution system. Congress expressed its appreciation for the upgrades, planned or already implemented, of several data-distribution systems, including some radiobroadcasts. It particularly noted the introduction of advanced digital data transmissions, using satellite-based DVB and DAB techniques, that were enabling a very cost-effective distribution of large volume of data encompassing the whole range of data and products, including satellite data. Congress expressed its gratitude to all Members and organizations operating satellite-based meteorological data distribution systems for the benefit of all NMHSs.

Future WMO information system

3.1.2.7 Congress noted that the current WMO information systems had been developed to meet a diverse set of requirements. The principal system was the GTS along with the related data management functions that had been developed to serve the WWW for the exchange of real-time high-priority data. Other information systems had been developed to meet the needs of other programmes and commissions. Congress recognized that the multiplicity of systems operated for different programmes had, however, resulted in incompatibilities, inefficiencies, duplication of effort and higher overall costs for Members. A further uncoordinated development would exacerbate those problems and would isolate the WMO Programmes from the wider environmental community.

3.1.2.8 Congress supported the views and conclusions of CBS that an overarching approach was required: a single coordinated global infrastructure, the FWIS. The FWIS would be used for the collection and sharing of information for all WMO and related international programmes. The FWIS vision provided a common roadmap to guide the orderly evolution of the information system functions performed by current WMO Programmes into an integrated system that met efficiently all of the requirements of Members for the relevant international environmental information. Congress noted that the FWIS concept was consistent with the WWW structure, and would identify the global, regional and national levels. It also noted that the information and communication responsibilities of existing WWW and other WMO Programme centres could be mapped into the corresponding functions within the FWIS. Noting that NMHSs spanned a range of responsibilities and capabilities, the FWIS would provide a flexible and extensible structure that would allow NMHSs to enhance their capabilities as their national and international responsibilities grew.

3.1.2.9 Congress emphasized that the implementation of FWIS should build upon the most successful components of existing WMO information systems in an evolutionary process. It stressed that the FWIS development should pay special attention to a smooth and coordinated transition. In particular, the FWIS would build upon the GTS with respect to the requirements for highly reliable delivery of time-critical data and products, and the IMTN would be the basis for the core communication network. Taking into account that information systems technology was evolving rapidly, and strengthening further the current trend of the current GTS development, FWIS should utilize international industry standards for protocols, hardware and software. Use of those standards should reduce costs and would facilitate capacity building and allow exploitation of the wide range of modern data-communication services, including the ubiquitous Internet and Web services. Pilot projects and prototypes would play an essential role in the further

development of the FWIS. Congress noted with appreciation the development of the virtual GISC prototype being undertaken by RTHs Bracknell, Offenbach and Toulouse in association with the ECMWF and EUMETSAT; the outcome of related studies would be shared on dedicated Web pages, that would be notified through the CBS Newsletter.

3.1.2.10 Congress emphasized that, as the objective of the FWIS was to support the information exchange requirements of all WMO Programmes, the comprehensive requirements as regarded information types and volumes, timeliness, sources and users, security, etc., needed to be taken into account to consolidate the FWIS concept, and to develop design and implementation plans. Congress requested CBS to pursue the further development of the FWIS towards the refinement and consolidation of the concept and then the design and implementation planning phases. It noted that, since all WMO Programmes stood to benefit, each should actively participate and contribute its own expertise and resources in all phases of the development of the FWIS. Congress emphasized that the support and involvement of many members of the WMO community, including especially regional associations and technical commissions, was needed as early as possible, in all phases of the FWIS development in order to ensure a full and shared ownership of the project, and its effective implementation. Congress also emphasized that the forthcoming World Summit on the Information Society (Geneva, December 2003 and Tunis, 2005) would be an important opportunity for strengthening information and communication development of interest for NMHSs and WMO (see agenda item 9.1).

3.1.2.11 Congress considered the outcome of the study on policy-level implications of the FWIS that had been requested by the Executive Council. Congress noted the impact on Members' responsibilities and resources and other policy aspects that were identified by the study, as summarized in Annex II to this report. In conclusion, Congress agreed that the impact of the FWIS on Members' responsibilities and resources appeared to be commensurable with the development that would be anyhow needed to face the general evolution of information and communication technologies and of Members' requirements. Congress was of the opinion that the benefit expected from the FWIS should outweigh the efforts and resources needed for its development and implementation. It requested the Executive Council and CBS as well as the other technical commissions involved in the FWIS development to give particular attention to the impact on Members' responsibilities and resources and the policy aspects, with a view to optimizing the overall FWIS functionality and efficiency.

WWW data management

3.1.2.12 Congress was pleased to note that a large and increasing number of WWW centres were participating in the annual global monitoring of WWW

operations. The special MTN monitoring was providing complementary results enabling more detailed analysis. It noted that CBS continued to improve monitoring procedures and was refining an integrated monitoring plan, and it agreed that efforts should be pursued to monitor all types, including binary forms, of data and products.

3.1.2.13 Congress noted with appreciation that CBS developed a WMO core metadata standard, based on the ISO standard for geographic metadata, with a view to describing data exchanged by all WMO Programmes in an unambiguous way. Noting the crucial importance of metadata for the FWIS, Congress requested all WMO Programmes to join their efforts in the further development of detailed WMO metadata standards.

3.1.2.14 Congress noted with satisfaction the continuous development of the WMO codes and code tables, in particular table-driven code forms FM 92 GRIB Edition 2, FM 94 BUFR and FM 95 CREX, in response to new and evolving requirements, including ensemble and long-range forecasts, satellite image and radar data and transport model products.

3.1.2.15 Congress supported the conclusions of CBS that table-driven code forms, with their self-description, flexibility and expandability, were the solution to satisfy the demands of the rapidly evolving science and technology. The table-driven code forms FM 94 BUFR and FM 95 CREX offered great advantages in comparison with the traditional alphanumeric codes like FM 12 SYNOP and FM 35 TEMP. The reliability of binary data transmission had provided for an increase in data quality and quantity received at meteorological centres, which would lead to the generation of better products.

3.1.2.16 Congress noted with satisfaction that CBS had developed a thorough plan for a WMO-wide migration to table-driven code forms. The goal of the plan was the replacement of traditional alphanumeric codes for observational data exchange by the binary code BUFR. Congress noted that the plan was ensuring a smooth transition without negative impacts on the WWW operations. The basic principles of the plan were:

- (a) The migration process was flexible. Within the target dates defined in the plan (spanning from 2005 to 2015, depending on the data type), WMO Members could choose their own timetable for the migration; it was the data producer, not the user, who was the initiator of the migration process;
- (b) The use of CREX was an interim step in the migration to BUFR;
- (c) Data users must have access to new data produced in BUFR or CREX and be able to receive data exchanged in BUFR or CREX; data users should have first priority for training; data users should implement BUFR and CREX decoders as soon as possible; dual transmission (initially in BUFR and TAC, later in

BUFR and CREX) should be provided, where data users were unable to receive or process BUFR or CREX;

- (d) Conversion into table-driven code forms of observations from ships should be undertaken by NMSs responsible for the insertion of the data into the GTS.

3.1.2.17 Congress stressed that the successful migration in developing countries would depend on capacity building. Assistance to developing countries in the form of pilot and specific projects would be necessary for implementation of new coding procedures, new software and possibly hardware for automation. Congress was pleased that ECMWF would make software for encoding/decoding BUFR, CREX and GRIB Editions 1 and 2, available free of charge for WMO Members with limited remote assistance. It also noted that some WMO Members would make their encoding/decoding software available at request. Congress recognized that the costs involved in the implementation of the migration plan should be compensated by the benefits to be gained, noting that the migration plan allowed sufficient time and flexibility for implementation. It stressed that training was a fundamental prerequisite of the migration process. Congress requested the Secretary-General to organize a training programme covering all WMO Regions over the period 2003-2005.

3.1.2.18 Congress endorsed the migration plan developed by CBS and urged every Member country to develop as soon as possible a national migration plan, derived from the international plan, with analysis of impacts, costs, solutions, sources of funding (as necessary), national training, technical planning and schedule. Congress highlighted the complexity of the migration process and requested CBS to put in place an effective implementation/coordination mechanism for guiding, assisting and monitoring the migration to table-driven code forms.

Radio frequencies for meteorological activities

3.1.2.19 Congress noted with satisfaction the current radio-frequency allocations and regulatory provisions of the ITU Radio Regulations that were addressing requirements for meteorological and related environmental activities, through specific radiocommunication services (meteorological aids, meteorological satellite, Earth exploration satellite — including passive remote sensing — and radiolocation for weather and wind profiler radars). Noting the favourable outcome of the World Radiocommunication Conference 2000 (WRC-2000) in that regard, Congress expressed its appreciation for the active preparation and participation of WMO, including CBS, NMHSs, meteorological satellite agencies and the WMO Secretariat, which ensured that meteorological frequency issues had been recognized and supported. It further expressed its satisfaction with the joint ITU/WMO publication *Handbook on Use of Radio Spectrum for*

Meteorology and the WMO Workshop on Radio Frequencies for Meteorology (Geneva, October 2002).

3.1.2.20 Nonetheless, Congress stressed that the threat on the full range of radio-frequency bands allocated for meteorological and related environmental systems was continuing with the increasing development and expansion of new commercial radiocommunication systems. Congress noted with particular concern, as regarded the WRC-03 agenda, the threat on portions of the 1 670–1 690 MHz band that was essential for meteorological satellites and radiosondes operation. Congress also emphasized that the utmost importance should be attached to ensuring absolute protection of the special bands allocated to space-borne passive sensing, which were a unique natural resource for atmospheric measurements and had an increasing importance in meteorology (e.g. observation, NWP, climatology). In that regard, Congress re-affirmed the crucial importance of the exclusive 23.6–24 GHz passive band. That band which was associated with a water vapour absorption line was essential for the measurement of atmospheric water vapour and of the Earth surface characteristics, including sea ice; that band was also essential to determine the microwave land surface emissivity needed for the correction of measurements from space-borne passive sensors (e.g. NOAA/AMSU-A) in other microwave channels.

3.1.2.21 Congress strongly urged Members to participate actively in radio-frequency activities, especially in the preparation of WRC issues, conducted by their national telecommunication administrations, by regional radiocommunication organizations (CEPT for Europe, APT for Asia-Pacific, CITEL for the Americas, PATU and the Arab League for Africa and the Middle East), and by the ITU. It urged Members to involve experts from their Meteorological Services in the work of the ITU Radiocommunication Sector (ITU-R), especially ITU-R Study Group 7 on Science Services and Conference Preparatory Meetings. It requested CBS to pursue the continuous review of regulatory and technical radio-frequency matters, and the Secretary-General to continue the active role of the Secretariat in coordinating and supporting radio-frequency activities. Congress re-affirmed the prime importance of radio-frequency matters for meteorological and related environmental operations and research, and adopted Resolution 3 (Cg-XIV).

3.1.3 GLOBAL DATA-PROCESSING SYSTEM; INCLUDING EMERGENCY RESPONSE ACTIVITIES (agenda item 3.1.3)

3.1.3.1 Congress noted with satisfaction the remarkably increasing accuracy of NWP and in the large number of models now implemented at more than 67 NMHSs worldwide. That progress had been underpinned by growing computing power at affordable costs leading to implementation and subsequent update at frequent intervals of new data

assimilation methods. Likewise, greater availability and more types of remote-sensed data and evolutions of prediction models that had higher resolution and more sophisticated schemes of physical processes had contributed to the progress of NWP. Congress encouraged Members to invest in NWP activities that were an indispensable tool for weather forecasting so as to contribute effectively to social economic development.

EPS forecasting methodology and progress

3.1.3.2 Congress noted that ensemble forecasting was becoming increasingly important and would evolve as a future vital tool for weather forecasting on all timescales from short-range to seasonal-range and beyond (ensembles are potentially valuable in assessing the uncertainty in climate change predictions). Congress further noted that medium-range and short-range ensemble forecasting were viewed as a “seamless suite” of products. Those systems enabled estimates in the forecast confidence of specific weather threats, first, in the context of the larger-scale circulation pattern and associated weather at medium-range and, then, in the details of the weather system and sensible weather in the short range. There was a growing interest in EPS and the numbers of EPS producers and users had been increasing. The focus of targeted meteorological phenomena in the use of EPS products now included extratropical systems, tropical phenomena and mesoscale features. EPS could provide, for example, information on possible tropical cyclone tracks and on the strike probability associated with them. The application of short-range regional model EPS and medium-range model EPS for National early warning systems were operational in many centres. Other notable trends included an increased number of ensemble members and a higher model resolution, more frequent runs per day and the use of relevant post processing for enhancing severe weather forecasting. As the amount of EPS grid fields would increase, the need for additional bandwidth in telecommunication and for software to extract information would also increase.

3.1.3.3 Congress noted with satisfaction that CBS-Ext.(02) recommended an updated list of EPS products consisting of a basic set of simple products, which WMO Members could all receive and use directly, and a more complex set, which NMCs could use to generate their own products. Those sets comprised the following three types of products:

- (a) Text and graphical products on the Internet;
- (b) Gridded-derived products such as probabilities of exceeding various thresholds, ensemble mean and spread;
- (c) Full model fields of ensemble members.

3.1.3.4 Congress noted that the volume of the (a) and (b) sets of products recommended for routine transmission would probably be about 50 megabytes per day (about 7 MB per day per production centre at 2.5 x 2.5 degree global grid). If divided into

quadrants, the amount necessary to disseminate would be reduced, as the whole globe would not be required for everybody. Where the GTS could not handle that amount, the EPS fields could be transmitted by other available means such as FTP services on the Internet, dedicated lines, etc. Satellite distribution should also be considered. Congress urged Members to give priority to implementation and related technological cooperation activities to enhance facilities and human resources for data-processing and forecasting systems and related communication services.

3.1.3.5 Congress noted that the FM-92 GRIB Edition 2 format would be used for the exchange of EPS fields and grid-point value products. It noted and accepted with appreciation the offer and commitment of ECMWF to develop, maintain and make available to WMO Members encoding/decoding software for table-driven data representation forms and codes. That would facilitate the exchange of EPS products and the transition by Members from alphanumeric codes to table-driven forms.

3.1.3.6 Congress noted with satisfaction that CBS had recommended standard verification measures of medium-range EPS, as an extension of the current NWP verification scores defined in the *Manual on the GDPS* (WMO-No. 485), in particular:

- (a) Ensemble mean verified in the same manner as deterministic NWP forecasts;
- (b) Measures of spread (standard deviation) provided for the same parameters as the ensemble mean;
- (c) Reliability tables for event probabilities.

From the reliability tables, key measures could be derived, for example reliability diagrams and associated frequency distributions, Brier skill scores, Relative Operating Characteristics (ROC) and economic value diagrams. Congress urged Members to take steps to effectively participate in the verification scheme.

Severe weather forecasting

3.1.3.7 With regard to severe weather forecasting, Congress noted that CBS had agreed to give priority to intense extratropical storms, large-scale and high intensity precipitation and convective events with associated phenomena. It noted that CBS had also encouraged the implementation of forecast guidance associated with tropical cyclones and related developments in that area. It encouraged NWP centres to produce additional products to locate better conditions in which severe weather convection was likely to take place. It agreed that improvements of severe weather forecasting would be facilitated through the use of EPS information, other NWP products and products based on remote sensing and nowcasting tools. Congress emphasized the importance of technical cooperation to help NMSs set up or improve such systems. It urged NMSs without adequate technical environment to strive to

enhance their technical capabilities, increase their bandwidth to access EPS and other products, make use of available information and guidance provided by other centres, and develop the necessary good knowledge of efficient use of products from NWP centres. Congress invited CBS to enhance further its coordination activities in that area.

3.1.3.8 Congress noted that, especially in the case of severe weather events, the evolution of current models was very sensitive to model physics as well as initial conditions so that it was not possible to completely rely on the solution given by the model. There was need to increase further resolutions of regional models to below 10 km to capture mesoscale features, and to 2 to 3 km for an explicit representation of convection. There was a need to enhance further data availability in data sparse areas in the tropics and southern hemisphere. To detect the outbreak of fine-scale severe weather events such as tornadoes, and to anticipate their development, it was important to stress the importance of mesoscale prediction systems and nowcasting techniques. The mesoscale model could be used to assess the potential for severe weather. Thus methods were being developed that combined extrapolation techniques of observed meteorological fields with NWP, through improved blending of the two types of products and through improved assimilation of detailed mesoscale observations. Congress urged operational implementation of research results on nowcasting. Significant research was still required to improve forecasts (location and timing) of fine-scale severe weather such as severe thunderstorms, tornadoes, hailstorms, and downbursts. Congress welcomed the useful linkages established between CBS and WWRP was focusing its efforts on research into high impact weather events and was conducting projects such as the nowcasting demonstration project at the Sydney 2000 Olympics. Congress emphasized the need for forecasters to acquire a good knowledge to be able to examine carefully model output guidance before warnings of severe weather were issued.

3.1.3.9 Congress urged implementation and/or enhanced collaboration between the NMHSs to optimize the use of meteorological forecasts and warnings of intense precipitation in assessments of severe hydrological events such as floods, as well as rain induced land-slide. It urged Members as a matter of highest priority to develop and/or enhance linkages with disaster management agencies to assure effective community response to severe weather forecasts and warnings, through integrated strategies identifying project areas and the development of projects and resource mobilization leading to implementation of such priority regional, subregional and their related national components as integrated projects.

Emergency response activities

3.1.3.10 Congress noted that issues that needed to be addressed included development of

improvements required for the standard map product display to facilitate the comparison both of products between centres and of detailed guidance. That might involve investigating and adopting a standardized Web product presentation tool that could be used by all users including relevant international organizations. Congress noted that the focus would be on making use of appropriate distribution technologies, such as Internet-based technologies, in addition to facsimile and on developing operational facilities to exchange basic and other products using the Web. Congress noted that RSMCs with specialization in ERA were charged with development of password protected Web sites based on minimum standards for delivery of RSMC products, which could also be used for request/reply of, and update to, products. Other activities would include experiments with GRIB conversion of transport model products to facilitate comparison of products, and posting of the information on Web pages, so that RSMCs and NMSs could begin to use it during exercises and eventually in operational emergency response. Congress urged all Members to engage actively in the implementation of operational Internet and Web facilities in relevant NMHS facilities and services. The importance of backup operational redundancy in the implementation of such facilities was emphasized. Some of the RSMCs would explore the use of ensemble methods and exchange results. Future priority issues included definition of a standard set of general meteorological products to be generated and made available by the RSMCs to NMHSs upon request, for use in the interpretation of transport model products and the provision of backward trajectories to identify the origin of observed pollutants.

3.1.3.11 Congress noted that CBS had addressed the need to develop the capability for response to non-nuclear environmental emergencies. It noted that from an RSMC perspective, that could raise the requirement for having the operational capacity for running deployable finer-scale models for various localities within their regional area, with the functionality to predict the atmospheric transport of dangerous compounds. It supported the view that RSMCs with that capability and able to do so should explore development and application of such models with a view to providing such services and contributing to capacity building of such facilities and tools in NMHSs for use in response to local and national scale events. It was noted that there was a need for regional associations to define better the requirements for RSMCs response to non-nuclear environmental emergencies.

3.1.3.12 In a wider environmental emergency perspective, including wildland fires, chemical explosions, volcanic eruptions or air-borne viruses, Congress considered that, in the absence of source parameters, there was a need to define default values to be used in response to a request for

products. Also, associated with the standard products for the different types of emergencies, there would be the need to set up relevant Web sites. Congress agreed that CBS should include those aspects as part of its future ERA programme.

The role of NMHSs in environmental emergency response

3.1.3.13 Congress noted that NMHSs were a critical component of the total environmental emergency response system. The NMHS role in an emergency included: monitoring alert distribution channels, defining source characteristics, notifying various agencies and other meteorological centres at the onset of an emergency, collating and interpreting meteorological data including asynchronous transfer mode products, and disseminating meteorological guidance to the local and national agencies. In addition, there were a number of ongoing maintenance functions necessary for ensuring that the NMHS remained in a state of readiness for an environmental emergency.

3.1.3.14 Environmental emergencies, because of their relatively unexpected or ad hoc character, had the potential to generate a certain degree of confusion at their onset resulting in unacceptable delays in the preparation of a meaningful response by the various authorities. Although the response time was critical when considering human health and safety matters, a delicate balance needed to be maintained between accuracy and speed of response. Congress agreed that the timeliness of the response should be improved through ongoing development and formalization of procedures, coordinated by WMO, which would integrate and coordinate the capabilities and facilities of the NMHS and RSMC for environmental emergency response.

3.1.3.15 Congress noted that some Services were already able to issue special volcanic ash products and air pollution forecasts for volcanic gas using the products based in part on atmospheric transport model using the tools of movable mesoscale models products. Congress, noting that that could contribute to assuring public health and safety, agreed that RSMCs with the operational capability to do so, should consider the development and application of such models with a view to responding to volcanic gas and to other aspects of eruptions which had an impact on public health.

3.1.3.16 To enhance model development, Congress noted that the designated RSMCs would participate in the use and exchange of results of a common database designed for the verification and development of long-range atmospheric transport models for environmental emergency response.

3.1.3.17 In the context of the verification of the Comprehensive Nuclear-Test-Ban Treaty by means of atmospheric transport modelling, Congress noted with satisfaction that cooperation between the WMO RSMCs and the CTBTO International Data Centre had been agreed upon. As part of that cooperation, it

was envisioned that specific products were computed by collaborating RSMCs and disseminated by the International Data Centre, together with its own results, to assist the Treaty State Parties in identifying possible source regions of detected radionuclides. Eventually, a Technical Operations Manual for WMO/CTBTO center cooperation would be developed and agreed upon. Congress recognized the benefits of collaboration with CTBTO, and noted that meteorological data from the CTBTO were made routinely available to WMO Members via the GTS.

Agreement with CTBTO

3.1.3.18 Congress noted with satisfaction that the fifty-third session of the Executive Council considered and endorsed the Draft Agreement between the Preparatory Commission for CTBTO and WMO. That draft Agreement formed the basis for current development and coordination of implementation in progress of provisional measures for collaboration between the two Organizations. Congress considered and decided on the Agreement under agenda item 9.1.

Seasonal to interannual forecast

3.1.3.19 Based on conclusions of WMO working and constituent bodies, Congress noted that a reliable operational global LRF system should include three different types of centres:

- (a) The Global Producing Centres;
- (b) The Regional Climate Centres;
- (c) The National Meteorological Centres and/or Climate Centres

3.1.3.20 Congress noted with satisfaction that CBS, in collaboration with other WMO bodies, had developed and recommended a list of global products to be made available by global-scale production centres. It noted that the WMCs and RSMCs with geographical specialization were in principle required to produce long-range forecasts according to the Manual on the GDPS. Thus they were seen as the globally producing centres in the framework of the WWW. The ECMWF, certain institutes and advanced meteorological organizations outside WMO could also serve as global scale LRF producing centres. Congress noted that global LRF products were currently available on Web sites from many institutions and were used by agencies including NMHSs in preparing LRF products. Congress urged that extensive and organized research efforts should be supported by the research communities for establishing the scientific basis and the enhancement of necessary infrastructure and skill for long-range forecasting. It further noted with satisfaction that a workshop of potential global production centres was held in February 2003 to facilitate the experimental coordinated sharing of the products. Many global producer centres were already providing access or were committed in the near future to making products available to RCCs and NMHSs according to a fixed time schedule,

including skill measures, and relevant documentation. As a follow up, RAs II and VI had established regional networks on implementation of research and development and operational long-range forecasting activities. Congress urged all Members to participate actively in that arrangement as either users or producers of LRF information and to provide feedback from users to production centres to improve long-range forecasting skills and contribute to the social economic development of all Members.

Verification of LRF

3.1.3.21 Congress noted with regard to the responsibilities for verification that CBS was to develop and implement verification schemes for seasonal to interannual forecasts in collaboration with CAS, while CCI would provide leadership in the development and implementation of post-processed products, including their verification, to end users. The aim of the standard verification system was to provide estimates of the skill of the global-scale products in support of NMHSs and RCCs in their use of those products to provide long-range forecasts to end users.

3.1.3.22 Congress noted with satisfaction that CBS, in collaboration with the other Commissions, had recommended revised standard procedures as the basis for operational use that focused on providing information on the spatial variability of the forecast skill, and gave an emphasis on measures appropriate to probabilistic forecasts. The statistics were designed to meet a variety of needs, and to feed in to more advanced measures of utility such as calculations of economic value.

Lead Centre role

3.1.3.23 Congress noted that, in order to facilitate convenient means of assimilating the information on the various prediction systems, CBS had designated WMC Melbourne and the Canadian Meteorological Centre in Montreal as co-lead centres for verification of long-range and seasonal to interannual forecast activities. The co-lead centre functions included creating and maintaining coordinated Web sites for the LRF verification information, so that potential users would benefit from a consistent presentation of the results. Congress urged all Members to participate actively in that activity as either users or producers of LRF verification information to assure the use of the best available products.

Regional user requirements

3.1.3.24 Congress noted that there was a growing interest by all regions to utilize NWP products, and that many Members requested workshops or training seminars on nowcasting, EPS, and modelling. Several Members in all regions were interested in the development of an NWP system on workstations or PCs. Technical assistance through technical cooperation and bilateral cooperation was desired. Cooperation in establishing transport models and multi-model EPS in transport modelling was an area

that needed exploration in the regions. Congress supported the development of regional approaches and strategies to address gaps in WWW infrastructure and to enhance the application of warnings, forecasts and related community response.

Training

3.1.3.25 Congress agreed that emphasis on training should be given to severe weather forecasting and enhanced use of EPS products and definition and response to related regional requirements. Noting that probabilistic forecasts were very different from deterministic forecasts, Congress agreed on the need for education and training on EPS approach and on the interpretation of EPS. It emphasized the need for WMO to plan and implement regional workshops with a focus on EPS training, in particular the training of forecasters to make the best use of the new products, promote development and use of CAL modules on EPS, and organize EPS roving seminars and workshops. It endorsed the need for production of guidance material on the use of EPS products by forecasters that could be a new chapter in the *Guide on the GDPS* (WMO-No. 305) Congress urged Members to promote workshops and bilateral and technical cooperation in order to implement visualization facilities and post-processing methods for those who intended to build their own products from EPS data.

3.1.3.26 Capacity building activities should also include implementation of NWP models on workstations or PCs and development of packages (Web based) for specialists involved in environmental emergency response and considered to be of benefit to all those active in the provision of services and interpretation of products.

Change of GDPS programme name

3.1.3.27 Congress considered and approved the recommendation of CBS-Ext.(02) on the need to include the word "forecasting" in the definition of the GDPS so that the GDPS programme would be named the "Global Data-processing and Forecasting System (GDPFS)". It noted that that was already implemented within CBS's new structure by the creation of the OPAG on Data-processing and Forecasting Systems. Congress agreed that that decision should be reflected, as appropriate, under agenda items 6 and 8 and also in future updates to *Manuals and Guides*.

3.1.4 WWW SYSTEM SUPPORT ACTIVITIES, INCLUDING THE OPERATIONAL INFORMATION SERVICE (agenda item 3.1.4)

3.1.4.1 Congress noted with appreciation that the technical advisory services provided in the form of expert missions, guidance materials and meetings in the framework of the WWW system support activities had contributed to the development and improvements of the WWW components. As regarded related technical cooperation activities,

Congress was pleased to note that in the period 2001-2002, 73 countries received support in the implementation of 124 VCP projects related to the WWW. However, 192 VCP projects related to the WWW, for which Members had requested support, had not yet been fully supported as of 31 December 2002. Congress noted that CBS defined guidelines for the allocation of priorities in the support of the WWW systems and services, and encouraged donors to take into account those guidelines when considering their support to the WWW (see also agenda item 3.7).

3.1.4.2 Congress noted with satisfaction that regional associations had been, or were, in the process of developing and implementing the integrated WWW strategic plan for improvement of infrastructure and services of meteorological services. The plans focused on identified gaps, proposed solutions and justifications while the implementation of the plans focused on integrated subregional projects including national components and were based on, and supported by, relevant economic groupings. Congress emphasized the fact that addressing identified deficiencies in all regions would improve the meteorological services of the entire globe with regard to safety, climate monitoring, disaster reduction, poverty alleviation in developing countries and economic growth. Congress requested the Secretary-General, in collaboration with Members and development partners, to give high priority to resource mobilization and to the implementation of integrated project proposals based on current WWW regional strategic plans. It also urged all regional associations to develop and implement such plans, in particular with respect to developing areas.

3.1.4.3 Congress recalled that the objective of the Operational Information Service was to collect from, and distribute to, WMO Members and WWW Centres detailed and up-to-date information on facilities, services and products made available in the day-to-day operation of the WWW. Congress was pleased to note that the operational information, which was now updated in quasi-real time was available on the WMO server. Congress agreed that an important goal was to facilitate the access to the information through interactive on-line access services. It requested the Secretary-General to post on the WMO server the relevant content of the *Manual on Codes* (WMO-No. 306) and the *Manual on the GTS* (WMO-No. 386), in order to facilitate electronic access to reference information required for WWW operations. Congress was also pleased to note that the Secretariat had started the distribution of the operational information on CD-ROM instead of paper format.

3.1.4.4 Congress noted with satisfaction that the Secretariat had established a data quality monitoring index page on the WMO server with links to Web sites containing quality monitoring information. Congress invited all the quality monitoring centres to

provide the Secretariat with the relevant URL addresses of their Web sites and their subsequent updates.

**3.1.5 INSTRUMENTS AND METHODS OF OBSERVATION PROGRAMME;
THE REPORT OF THE PRESIDENT OF CIMO**
(agenda item 3.1.5)

3.1.5.1 Congress noted with appreciation the report of the president of CIMO on the work accomplished within IMOP. It was stressed that IMOP was of fundamental importance for ensuring the quality and reliability of meteorological data that were essential to the Organization's operational and research activities. Congress urged Members to continue to participate actively in the work of the Commission and to support the implementation of IMOP.

3.1.5.2 Congress expressed general satisfaction with the achievements of IMOP. Congress was, however, of the opinion that the programme output fell somewhat short of the targets of the 5LTP, specifically concerning the technical and training support planned for developing countries' instrument maintenance and calibration. Furthermore, it noted that progress was slower than expected in some specific areas of instrument development and standardization of procedures and practices. The reasons for those shortfalls were seen in the insufficient number and/or time of experts made available by Members for that work, which was compounded by the limited financial resources allocated to that programme by Thirteenth Congress.

3.1.5.3 Congress welcomed the fact that the Commission had implemented a new working structure in view of its further growing tasks and responsibilities. It noted that the new working structure was aimed at increasing efficiency, flexibility and responsiveness of carrying out CIMO tasks while strengthening the participation of experts from developing countries. Congress noted that CIMO had replaced its systems of large working groups with a system of smaller, task-oriented expert teams grouped together and handled by OPAGs. Congress also noted that within a short time the Commission was already able to address, through the new working structure, the problem of training support for developing countries.

3.1.5.4 Congress noted that there had been definite progress in improving the quality and reliability of instruments through calibrations and intercomparisons, specifically with respect to GPS-based radiosondes, raingauges and pyrliometers. In addition to total irradiance, there was also an increased need for intercomparisons of instruments measuring short-wave and long-wave radiation. In that regard, Congress welcomed the offer of Switzerland to operate the World Infrared Radiometer Calibration Center at the Physicalisch-Meteorologisches Observatorium in Davos as from 2004. Congress noted the request for calibration and

intercomparisons of equipment used in marine observations. It was noted that intercomparisons were essential for ensuring the long-term quality and homogeneity of data, and agreed that those activities should continue. Congress also urged Members to calibrate regularly their instruments to achieve reliable data sets. In that connection, it was noted that the RICs play an important role in providing assistance and advice in calibration of national standards/reference instruments within the region.

3.1.5.5 Congress was pleased to note that the technical conferences, TECO-2000 and TECO-2002, and the exhibitions of meteorological equipment and systems, METEOREX-2000 and METEOREX-2002, held in Beijing, China in 2000 and in Bratislava, Slovakia in 2002, were very successful. Congress underlined the importance of such technical conferences as a means of exchanging technical information and experience and of facilitating technology transfer and capacity building. It was emphasized that the side by side organization of the technical conferences and the exhibitions provided for a unique interaction between the manufacturers of meteorological and related instruments and the user community so that the manufacturers understood better the needs of users, and users understood better how new developments in observing technology could help them satisfy their needs in the near future. Congress urged Members and the Secretary-General to continue supporting the organization of, and the attendance at, such conferences within the available resources.

3.1.5.6 Congress underscored the importance of capacity building and training in the field of instruments and methods of observation as a prerequisite for the uninterrupted operation of instruments and the generation of high quality of data. It encouraged Members to arrange for required training through national and regional training programmes and urged Members as well as the private industry to sponsor IMOP training events. In that regard, Congress noted with appreciation the offer of India to hold training courses at the RMTTC in Pune, India for surface, radiation and calibration practices at no cost of training under the VCP umbrella. Congress also underlined the role that the RICs played in capacity building, such as the active support towards the organization of training workshops, and noted with appreciation the efforts of CIMO to enhance services provided by RICs. It requested CIMO to explore the possibility of strengthening cooperation among RICs by the establishment of a mutual relationship between RICs in the developed and the developing countries. In that regard, Congress recognized the need of developing countries for assistance, such as calibration of instruments, maintenance of the instrument network, expert advice, provision of consumables and spare parts at a reasonable cost, and replacement of obsolete instruments or equipment damaged during natural disaster events.

Congress also recognized the need of developing countries to become more self-reliant and therefore urged to build further the capacities of Members concerned by strengthening the RICs, by providing training to instrument specialists, and through workshops (calibration) and seminars. Congress also noted the usefulness of the Instrument Catalogue, of which a second edition had been produced by the China Meteorological Administration, under the auspices of CIMO, for assisting Members in selecting the most suitable instruments for application within their operational networks. The Instrument Catalogue would be distributed to Members by the end of May 2003.

3.1.5.7 Congress noted with appreciation that close collaboration with the instrument industry, inter alia, resulting in the establishment of the Association of Hydrometeorological Equipment Industry (HMEI), strengthened the position of the Members' NMHSs vis-à-vis that community and furthered mutual understanding of needs and opportunities. In that regard, Congress underlined the need for continued collaboration with manufacturers as that would also help in creating possibilities to set up fabrication facilities for conventional instruments in developing countries with the aim of facilitating technology transfer, of decreasing production costs and of making the countries more self-reliant with respect to spare parts and consumables. Congress also noted the need for better adaptation of instruments and observing practices to the needs of users with a view to meet effectively those needs. Congress encouraged CIMO, in collaboration with the HMEI, to explore a possibility for the establishment of a certain mechanism, such as joint procurement, to assist in achieving a reduction in the cost of consumables, in particular radiosondes.

3.1.5.8 Congress stressed the need for continued collaboration of CIMO with other technical commissions and bodies inside and outside WMO in the field of instrumentation and methods of observation, including ISO, the International Bureau of Weights and Measures and the European Cooperation in the Field of Scientific and Technical Research.

3.1.5.9 In that connection, Congress adopted Resolution 4 (Cg-XIV).

3.1.6 WMO SATELLITE ACTIVITIES (agenda item 3.1.6)

3.1.6.1 Congress noted with appreciation that in the past four years the use by WMO Members of satellite data, products and services had experienced tremendous growth to the benefit of almost all WMO Programmes and supported Programmes. The agreement by the Executive Council at its fifty-third session to expand the space-based component of the GOS to include appropriate R&D environmental satellite missions was a landmark decision in the history of WWW. Congress noted that the space-based component of the GOS

was now comprised by satellites of three types: operational meteorological polar-orbiting and geostationary satellites and environmental R&D satellites. Congress expressed its deep appreciation to those countries and organizations providing the satellite systems within the space-based component of the GOS.

3.1.6.2 With regard to meteorological satellites, both polar-orbiting and geostationary, Congress noted that they had continued to prove invaluable to WMO NMHSs through the provision of a multitude of services including imagery, soundings, data collection and data distribution. In particular, the present operational meteorological satellites included the following geostationary and polar-orbiting satellites: GOES-8, GOES-10, NOAA-15, NOAA-16 and NOAA-17 operated by the United States; GMS-5 operated by Japan; GOMS N-1, METEOR 2-20, METEOR 2-21, METEOR 3-5 and METEOR 3M N1 operated by the Russian Federation; Meteosat-5, Meteosat-6 and Meteosat-7 operated by EUMETSAT; and FY-2B, FY-1C, FY-1D operated by China. Additional satellites in orbit or in commissioning included GOES-9, GOES-10 and GOES-11 operated by the United States and MSG-1 operated by EUMETSAT. Congress noted that most space agencies contributing operational polar-orbiting and geostationary satellites had in place contingency plans for satellite systems that would guarantee the continued daily flow of satellite data, products and services which WMO Members had come to depend on. In that regard, WMO Members in Regions II and V expressed their profound gratitude for the efforts of Japan and the United States to initiate the back-up operation of GMS-5 with GOES-9 on 22 May 2003. Congress noted that advanced notification and implementation plans had ensured that there would be no adverse impacts to operations in NMHSs.

3.1.6.3 With regard to R&D satellites, Congress noted with pleasure the participating agencies and missions in the newest constellation. In particular, NASA's Aqua, Terra, NPP, TRMM, QuikSCAT and GPM missions, ESA's ENVISAT, ERS-1 and ERS-2 missions, NASDA's ADEOS II and GCOM series, Rosaviakosmos's research instruments on board ROSHYDROMET's operational METEOR 3M N1 satellite, as well as on its future Ocean series and CNES's JASON-1 and SPOT-5, were all now part of the R&D constellation.

3.1.6.4 Dr Tillmann Mohr, Director-General of EUMETSAT, briefed Congress on the current status and plans for EUMETSAT. In particular, he described EUMETSAT's plans for the continuation of satellite systems in geostationary orbit and the commissioning of the first Meteosat Second Generation satellite. He also noted EUMETSAT's plans for a new polar-orbiting satellite series called Metop, as well as a new joint oceanographic mission called JASON-2. Congress expressed its deep appreciation to EUMETSAT for its activities in the

PUMA Project, its continued coverage of the Indian Ocean with Meteosat-5, its co-sponsoring of two RMTCs in RA I, convening User Forums in RAs I, II and VI, and its new initiative to provide satellite data and products through alternative dissemination methods with the potential to expand the present data flow to WMO Members. Congress urged EUMETSAT to consider increasing the available data beyond that currently contained in the meteorological data distribution data stream for inclusion in alternative dissemination methods. Congress also urged EUMETSAT to continue coverage over the Indian Ocean. Congress was also briefed on the ongoing plans by the People's Republic of China to continue its geostationary and polar-orbiting satellites with the launch of FY-2C in 2004 and FY-3A in 2005 as well as its plans for the next generation geostationary satellite series, FY-4. The Russian Federation described its plans to continue the Meteor 3M polar-orbiting satellite series and the GOMS series geostationary satellite series. The Russian Federation also described education and training activities that were expected to increase in the next four years. The Republic of Korea described its multi-purpose satellites that were expected to be available commencing in 2008. The United States informed Congress of the transition in the eastern GOES position (75 degrees West) from GOES-8 to GOES-12. GOES-12 would provide for the first time real-time solar imagery. It also described its plans for the next generation of geostationary and polar orbiting environmental satellite systems, GOES-R and NPOESS, respectively. Japan also informed Congress of its future plans for geostationary orbit and in particular for MTSAT-1R and MTSAT-2 scheduled to be launched in 2004 and 2005, respectively.

3.1.6.5 Congress noted with deep satisfaction and appreciation the ongoing dialogue between the United States and Europe over the harmonization of satellite missions in polar-orbiting for both the near and long term as well as the excellent coordination between the respective organizations based on their inter-dependence for full data sets and needs for complementary instruments. Congress was pleased to note that the dialogue had already resulted in an agreement between NOAA/NESDIS and EUMETSAT that would provide for optimized and efficient polar-orbiting capabilities for the next decade. Congress also noted in the same spirit of international cooperation and in recognition of the requirement for the continuation of the valuable altimeter data from JASON-1 that four organizations, namely CNES, EUMETSAT, NASA and NOAA/NESDIS, had jointly agreed to the JASON-2 mission. JASON-2 would represent a milestone in the transition from research to an operational oceanographic satellite mission.

3.1.6.6 India described its current national meteorological satellites systems including INSAT-2E, INSAT-3A and KALPANA. India noted that in the

past, technical constraints in the INSAT data dissemination service limited its ability to distribute data. However, due to new alternative dissemination methods, India would make satellite data and products, including imagery, GTS data, weather charts and NWP model analyses and forecasts, available through a commercial telecommunication satellite provider, World Space. The data would be in conformance with WMO's data policy for free and unrestricted access. The Asia Star telecommunication satellite could provide data to all WMO Members in RA II from its eastern extreme to the Middle East through an inexpensive reception system comprised of a digital decoder and a UNIX-based workstation.

3.1.6.7 Congress was informed of the process proposed by the Consultative Meetings on High-Level Policy on Satellite Matters and endorsed by the Executive Council to expand the space-based component of the GOS. First, there would be a recognition of the potential for the satellite system to contribute to the space-based component of the GOS. Second, there would be a formal indication by the space agency of its agreement to the Guidelines for requirements for observational data from operational and R&D satellite missions as endorsed by the fifty-third session of the Executive Council. Congress was deeply appreciative of India's potential contribution to the space-based component of the GOS and encouraged India to commit formally to the Guidelines. Congress also suggested that the next session of the Consultative Meetings should consider potential new participants in the space-based component of the GOS including the Swedish National Space Board's ODIN mission.

3.1.6.8 Congress expressed its deep appreciation to all satellite operators, including those from WMO Members, as well as inter-governmental organizations, that made the large financial commitments necessary to launch, operate and maintain the satellite systems contained within the new space-based component of the GOS.

3.1.6.9 Congress agreed that a significant growth in satellite activities had also occurred in the ground segment. In particular, it expressed its pleasure with the now established Virtual Laboratory for Education and Training in Satellite Meteorology. The Virtual Library had already made a tremendous impact throughout WMO Regions through its six "centres of excellence". The "centres of excellence" were now co-sponsored by the satellite operators and thus provided a worldwide nucleus of RMTCs in Niger and Kenya for RA I, in China for RA II, in Costa Rica and Barbados for RA IV and in Australia for RA V. Noteworthy was a recent training event that included lectures on new R&D instruments. Congress was pleased to see the integration of the new R&D constellation into education and training activities. It also noted that the WMO Space Programme Long-term Strategy and associated Implementation Plan

provided for increased utilization of the Virtual Library to the benefit of WMO Members especially for fuller exploitation of R&D data, products and services as well as those from new and existing operational meteorological satellite systems. Congress also agreed that the recently formed International Precipitation Working Group would provide a necessary forum and focus to improve the use of precipitation-related estimates from satellites.

3.1.6.10 Congress also noted that in response to that momentous expansion and in recognition of the increase in responsibilities for WMO, the fifty-fourth session of the Executive Council agreed to establish a WMO Space Programme as a matter of priority. The scope, goals and objectives of the new WMO Space Programme should respond to the tremendous growth in the utilization of environmental satellite data, product and services within the expanded space-based component of the GOS that now included appropriate R&D environmental satellite missions. Congress supported the WMO Space Programme Long-term Strategy reviewed at the third session of the Consultative Meetings on High-level Policy on Satellite Matters. Congress agreed that the WMO Space Programme Long-term Strategy provided an excellent balance to the 6LTP and to the programme and budget for 2004-2007. In that connection, Congress adopted Resolution 5 (Cg-XIV).

3.1.6.11 Congress agreed that the main thrust of the WMO Space Programme Long-term Strategy should be:

To make an increasing contribution to the development of the WWW GOS, as well as to the other WMO-supported Programmes and associated observing systems (such as AREP's GAW, GCOS, WCRP, HWRP's WHYCOS and JCOMM's implementation of GOOS) through the provision of continuously improved data, products and services, from both operational and R&D satellites, and to facilitate and promote their wider availability and meaningful utilization around the globe

3.1.6.12 The main elements of the WMO Space Programme Long-term Strategy were as followed:

- (a) Increased involvement of space agencies contributing, or with the potential to contribute to, the space-based component of the GOS;
- (b) Promotion of a wider awareness of the availability and utilization of data, products — and their importance at levels 1, 2, 3 or 4 — and services, including those from R & D satellites;
- (c) Considerably more attention to be paid to the crucial problems connected with the assimilation of R&D and new operational data streams in nowcasting, numerical weather prediction systems, reanalysis projects, monitoring climate change, chemical composition of the atmosphere, as well as the dominance of satellite data in some cases;

- (d) Closer and more effective cooperation with relevant international bodies;
- (e) Additional and continuing emphasis on education and training;
- (f) Facilitation of the transition from research to operational systems;
- (g) Improved integration of the space component of the various observing systems throughout WMO Programmes and WMO-supported Programmes;
- (h) Increased cooperation amongst WMO Members to develop common basic tools for utilization of research, development and operational remote-sensing systems.

3.1.6.13 Congress noted that the third session of the Consultative Meetings on High-level Policy on Satellite Matters had reviewed the vision for the GOS to 2015 that contained an integrated vision for both the surface and space-based components. With regard to the description of the different constellations, satellite missions and expected instruments, the third session agreed that the vision provided a good first indication but that future technological developments could influence the actual implementation. The third session was strongly of the opinion that WMO should take a leading role in the coordination of OSEs that would be part of the redesign effort. Thus, Congress requested CBS to develop an appropriate mechanism to provide for the optimization of those OSEs needed to identify the best mix of in situ and space-based observing components that would lead to the most effective GOS.

3.1.6.14 Congress considered the progress and results from the sessions of the Consultative Meetings on High-level Policy on Satellite Matters. Congress recalled that it had agreed to build a new and closer partnership under the auspices of WMO between the meteorological and hydrological services and environmental satellite communities. It had agreed that a mechanism for such discussions should be provided through the convening of Consultative Meetings on High-level Policy on Satellite Matters. Congress was convinced that the now established dialogue between WMO and the environmental satellite communities in the sessions of the Consultative Meetings had matured rapidly to the great benefit of all and that they should be continued and institutionalized. Thus Congress considered it appropriate to institutionalize the sessions as WMO Consultative Meetings on High-level Policy on Satellite Matters in order to establish more formally the dialogue and participation of environmental satellite agencies in WMO matters. It urged close cooperation with the IOC and other related international organizations to ensure a coordinated and integrated approach to space-based Earth observations.

3.1.6.15 Congress was unanimous that the WMO user community should be represented at the highest level at the sessions and that the space

agencies should also be represented by their Directors. Future sessions of the Consultative Meetings on High-level Policy on Satellite Matters should be chaired by the President of WMO as had been the case for the first three sessions. The Consultative Meetings would continue to provide advice and guidance on policy-related matters and would maintain a high level overview of the WMO Space Programme. Congress agreed that CBS should continue the lead role in full consultation with the other technical commissions for the new WMO Space Programme. In that connection, Congress adopted Resolution 6 (Cg-XIV).

3.1.7 TROPICAL CYCLONE PROGRAMME (agenda item 3.1.7)

3.1.7.1 Congress expressed its appreciation of the achievements and the further progress being made in the implementation of both the general and regional components of TCP towards the reduction of tropical cyclone disasters, especially in association with ISDR and in the context of the sustainable development of SIDS. It commended the five regional tropical cyclone bodies and the six tropical cyclone RSMCs for their efforts to implement their respective regional cooperation programmes towards the development of comprehensive services for tropical cyclone disaster mitigation.

3.1.7.2 Congress noted that TCP should give greater attention to capacity building, through training activities for forecasters of developing countries and the provision of guidance materials, with a view to upgrading further the capabilities of Members to provide better tropical cyclone, flood and storm surge forecasts and warnings. It agreed to support training of such operational forecasters, mainly in the form of dedicated courses and workshops, and training attachments to TC RSMCs during the cyclone season. Special attention was given to the training of forecasters of SIDS in the tropical cyclone basins. Congress affirmed therefore the continuation of co-sponsorship by WMO for the annual RA IV Workshops on Hurricane Forecasting and Warning organized by NOAA at RSMC Miami, the biennial Southern Hemisphere Training Courses on Tropical Cyclones by the Australian Bureau of Meteorology; the biennial RA I Training Courses on Tropical Cyclones by *Météo France* at the RSMC La Réunion, and annual training attachments of storm surge experts to the Indian Institute of Technology. Congress requested that forecasters from other regions be accommodated in those training events, whenever feasible. Congress was pleased to note that the ESCAP/WMO Typhoon Committee had initiated a programme of roving training seminars on tropical cyclones, the first three of which would take place in Seoul, Hong Kong and Shanghai in 2003.

3.1.7.3 Congress encouraged continued close cooperation and collaboration between the TCP and the PWS Programme, with the common aim of

assisting Members improve their provision of support for safety of life and property. It requested the Secretary-General to continue to organize regional workshops on modern techniques of tropical cyclone forecasting and warning and skills for interaction with the media, with special focus on operational forecaster responsibilities during tropical cyclone events. Those workshops should be organized in conjunction with regular sessions of the tropical cyclone regional bodies or planned TCP training events for tropical cyclone forecasters, whenever possible. Congress was pleased that the TCP enhanced the collaboration further with JCOMM by establishing a strategic partnership concerning storm-surge related activities in the South China Sea and the Bay of Bengal region. It was pleased to note that a series of workshops on South China Sea storm surges, waves and ocean circulation forecasting has been organized jointly by JCOMM and TCP since 2002. Congress recognized the importance of enhanced participation of hydrologists in activities of the TCP in general and those related to capacity building in particular. It, therefore, noted with pleasure the planned second Regional Technical Conference on Tropical Cyclones, Storm Surges and Floods to be held in 2004.

3.1.7.4 Congress urged the five regional tropical cyclone bodies to upgrade further their Members' capabilities to provide better tropical cyclone forecasts and more effective warnings, and encouraged them to establish national disaster prevention and preparedness measures, by implementing the respective Technical Plans at the regional level. Special efforts were needed by some NMHSs who still had inadequate or lacking tropical cyclone forecasting and warning systems, to rehabilitate and strengthen their forecasting and warning facilities and services, in particular the communication systems in developing countries in the South-West Pacific. To that effect, Congress requested the regional bodies to give greater attention to capacity building aspects. It noted that there was a need for development of partnerships to provide the assistance required to implement items effectively in their Technical Plans which could not be funded nationally. Congress strongly appealed to financial institutions and donor Members to provide support, as needed, to implement fully such items within a reasonable time frame.

3.1.7.5 Congress was pleased to note that the Fourth TC RSMC Technical Coordination Meeting, held in Nadi, Fiji from 26 to 29 November 2002, was highly successful. Taking into account the major outcome of the Meeting, Congress:

- (a) Requested the Secretary-General to invite NWP centres to use the proposed standard format for verification of their tropical cyclone forecasts;
- (b) Invited the Secretary-General to issue an updated version of the brochure on TC RSMCs to include information on TCWCs and the

updated standard terminology list for TC RSMCs and TCWCs;

- (c) Invited the Secretary-General to request ECMWF and other NWP centres that produced tropical cyclone track forecasts and model outputs to provide six-hourly forecast positions and intensities on the GTS for the use of all forecast centres and selected wind and sea-level pressure fields in the regions of tropical cyclones to designated regional centres that would make the fields available to forecast centres in that region via a Web site.

3.1.7.6 Congress invited the Secretary-General to incorporate, as much as possible in TCP-related training events, the application of the multi-model ensemble forecast technique.

3.1.7.7 Congress expressed its appreciation to the NWP Centres of JMA, NCEP, ECMWF, and UKMO for their significant contributions to operational forecasting.

3.1.7.8 Congress was pleased to note that the RSMC Tokyo — Typhoon Center was developing a typhoon forecasting Web site aimed at providing numerical prediction of tropical cyclone tracks made by nine major NWP Centres and relevant information on ensemble predictions.

3.1.7.9 Congress noted the need for closer liaison and enhanced coordination among the six TC RSMCs and TCWCs concerned. To that end, Congress agreed on the continuation both of the series of technical coordination meetings among the six TC RSMCs and TCWCs concerned with regard to their role, function and responsibility, and of technical matters of common interest. It approved the organization of the Fifth TC RSMC Coordination Meeting in 2005.

3.1.7.10 Congress noted with satisfaction the highly successful Fifth International Workshop on Tropical Cyclones held in Cairns, Australia from 3 to 12 December 2002. The Workshop brought together operational tropical cyclone forecasters from all the five regional tropical cyclone bodies as well as many researchers, with a view to encouraging the application of research results to operational usage.

3.1.7.11 Congress endorsed the following TCP subprojects for the period (2003-2007):

- (a) TCP subproject No. 23: Combined effects of storm surges/wind waves and river floods in low-lying areas;
- (b) TCP subproject No. 24: Establishment of a tropical cyclone forecaster Web site;
- (c) TCP subproject No. 25: Study on the economic and societal impacts of tropical cyclones;
- (d) TCP subproject No. 26: Evaluation of tropical cyclone warning systems (their effectiveness and deficiencies).

3.1.7.12 Congress urged the Rapporteur on Tropical Cyclone Prediction Research of the CAS Working Group on Tropical Meteorology Research to promote research initiatives on tropical cyclones with a view to improving operational tropical cyclone

forecasting techniques. To that effect, it recognized the need to undertake studies on:

- (a) The effects of impending climate change to tropical cyclone behaviour;
- (b) The indirect effects of tropical cyclones over equatorial regions, including East equatorial Africa;
- (c) The possible relationships of ENSO events on tropical cyclone frequency and intensity.

Congress recalled the establishment in 1999 of the Cyclone Research Cell at the RSMC La Réunion which had since addressed important research aspects of tropical cyclones, in particular to improve current forecasting techniques.

3.1.7.13 In view of the vitally important role of TCP in ISDR and, in particular, with regard to sustainable development of developing States, including SIDS, Congress decided that the TCP should be accorded very high priority under Programme 1.8 — Tropical Cyclone Programme of the 6LTP. Accordingly, it adopted Resolution 7 (Cg-XIV).

3.1.8 WMO ANTARCTIC ACTIVITIES (agenda item 3.1.8)

3.1.8.1 Congress noted with appreciation the work of the Executive Council through its Working Group on Antarctic Meteorology in coordinating the meteorological programmes in the Antarctic. It was pleased to note that, despite the extreme environmental conditions and difficult logistics, the ABSN had been well implemented and the number of reports received at MTN centres met the agreed requirement.

3.1.8.2 Congress was pleased to note that Argentina's first Antarctic station located in the southern part of the country on Laurie Island (South Orkney Islands), established in 1904, was nearing its 100 years of uninterrupted operations. It noted with appreciation that Argentina and Finland had been jointly carrying out stratospheric ozone measurements for more than 15 years from Vicecomodoro Marambio Base, providing essential data on ozone layer depletion in the Antarctic. It further noted Argentina's kind offer to the international community to carry out ozone soundings from GAW station Ushuaia. Congress was also pleased to note that the Russian Federation had in May 2003, commenced operations of its fifth station, "Progress", as part of ABSN/ABCN.

3.1.8.3 Congress noted with satisfaction that the Antarctic Weather Forecasting Handbook was compiled and published by the Australian Bureau of Meteorology with support from WMO. It was now available on CD-ROM and in hard copy form.

3.1.8.4 As regarded the climate observations in the Antarctic, Congress noted that all Antarctic upper-air stations and most of the manned surface stations were included in the GCOS upper-air or surface networks, and emphasized their importance for compiling the GCOS data sets. Furthermore,

Congress was pleased to note that in order to improve the availability of climate data and to apply more fully WWW monitoring procedures for that purpose, the ABCN was established which included all GSN and GUAN stations in the Antarctic as well as CLIMAT and CLIMAT TEMP reporting stations.

3.1.8.5 As regarded the ozone measurements in the Antarctic, Congress urged Members concerned to expand ozone research, where possible, and to generate ancillary observations of ozone-related chemical compounds, stratospheric clouds, aerosols and spectral radiation measurements as well as dynamical measurements like those provided by the STRATEOLE campaign. Congress encouraged Members to provide ozone data to WMO in near-real-time during the August-December period and, thereafter, to provide complete sets of observations on ozone and ultraviolet to the WMO World Ozone Data Centre Toronto.

3.1.8.6 Congress stressed the importance of satellite data in providing a variety of important observations in polar regions. Congress was pleased to note that the integration of certain R&D satellites into the GOS would allow for, and impact, advanced observations in the future. Congress noted in particular, the great value of the current and future satellite measurements of ozone, ice cover, ice type, aerosols, sea surface, temperature, clouds, upper level air chemistry, icebergs, ocean surface winds, earth gravity, sea level anomaly and winds at mid-levels.

3.1.8.7 Congress noted substantial improvements in the quality of NWP forecasts in the southern hemisphere mainly due to the increased use of satellite measurements. It reiterated, however, that because of very unique atmospheric and maritime conditions in the Antarctic, any changes in the Antarctic observational network, especially a decrease of upper-air observations, would have a negative impact and therefore should require coordinated scientific argumentation.

3.1.8.8 Congress confirmed that cooperation between WMO and other international organizations related to the Antarctic, such as the Antarctic Treaty Consultative Meeting, SCAR, the Council of Managers of National Antarctic Programmes and IOC, had been very fruitful and should be continued. Congress supported the initiative of the Antarctic Treaty Consultative Meeting to prepare a state of the Antarctic environment report, which would serve as a "current account" of the state of the Antarctic environment. The development of a comprehensive state of the Antarctic environment report could be an important tool to increase general knowledge of Antarctica and of the impact of global climate change on the pristine environment. The report would benefit Governments and the scientific community as well as the general public. Noting that SCAR had recently developed an outline for the report, Congress recommended to Members to provide their input to that report.

3.1.8.9 Congress noted substantial progress in the SCAR Project Reference Antarctic Data for Environmental Research (READER) which was designed to produce a validated database of Antarctic key climate variables, such as near-surface temperature, pressure and wind data. Recognizing the high value of such a project for climate research in the Antarctic as well as for meteorological services for marine and air navigation and logistic operations, Congress urged relevant Members to support that new SCAR initiative and to contribute to its implementation. It also agreed that all historical data in the form of a comprehensive database should be compiled and made available to all Members.

3.1.8.10 Congress stressed the importance of the implementation of the International Programme for Antarctic Buoys (IPAB) and the array for real-time geostrophic oceanography. It also noted the kind offer of the Russian Federation to deploy buoys of those observing programmes from its ships operating in the Antarctic area.

3.1.8.11 The development of a code of practice for ships operating in the Polar regions (Polar Code) had been under consideration by the International Maritime Organization since early 1998 and was nearing completion. In that connection, Congress noted that WMO had already provided its contribution to make the Antarctic shipping guidelines adequately address weather and sea ice conditions experienced in Antarctic waters. Congress also noted that Antarctic and sub-Antarctic ship-based tourist cruises provided an opportunity to support environmental research and monitoring programmes and felt that that issue should be further addressed by the International Association of Antarctica Tour Operations.

3.1.8.12 In view of the importance of WMO Antarctic activities for meteorological services in support of marine and air navigation as well as for climate research and prediction, Congress decided to keep in force Resolution 6 (Cg-XII) — WMO Antarctic activities. Congress also noted the proposal for an International Polar Year in 2007-2008 (see agenda item 9.1) and agreed that there was a role for the Executive Council Working Group on Antarctic Meteorology to consult on the establishment and activities of an ad hoc working body.

3.2 WORLD CLIMATE PROGRAMME (agenda item 3.2)

3.2.0 WORLD CLIMATE PROGRAMME; THE REPORT OF THE PRESIDENT OF CCI (agenda item 3.2.0)

3.2.0.1 Congress noted with appreciation the report of the president of CCI on its activities since Thirteenth Congress. It expressed satisfaction with the very successful CCI-XIII and with the Technical Conference on Climate Services for the Twenty-first Century that had preceded it. Congress was pleased to note that over 116 scientists participated in the

Conference and that 149 participants from 82 Members attended CCI-XIII. Congress noted the increased importance that Members were placing on climate-related activities, as evidenced by the highest ever participation at a Commission meeting.

3.2.0.2 Congress noted with appreciation the working structure of the Commission which was divided into three main programme areas: climate data and data management; monitoring and analysis of climate variability and change; and climate applications, information and prediction services. The structure was headed by the CCI Management Group, and each of those areas was managed through an OPAG, with various Expert Teams assigned to complete specific tasks.

3.2.0.3 Congress was pleased to note the advance planning by the CCI Management Group in developing a vision statement for the Commission which read as followed:

The vision of the CCI is to stimulate, understand and coordinate international technical activity to obtain and apply climate information and knowledge in support of sustainable social-economic development and environmental protection.

It further approved the theme for the Technical Conference that would precede CCI-XIV: Climate — A resource for social and economic development.

3.2.0.4 Congress noted the efforts of the Commission to maximize on resources by drawing from intercommission activities especially those concerning data collection for climate purposes and activities. In that respect, it commended the effort of the Commission to have joint activities with GCOS.

3.2.0.5 Congress noted the significant progress made by the Commission in completing Part 1 of the third edition of the *Guide to Climatological Practices* (WMO-No. 100) and urged the Commission to expedite matters to complete Part 2 as soon as possible. Furthermore, Congress urged Members to provide the necessary input to Part 2. Congress agreed to Members' requests for the timely distribution of the *Guide* through the most easily accessible media for all Members.

3.2.0.6 Congress expressed satisfaction with the results of the CCI Management Group Meeting (Berlin, 5–8 March 2002), which established priorities for the Commission's work and which activated the various Expert Teams. Congress was especially pleased to note that the seventh *Global Climate System Review* (WMO-No. 950), covering the period June 1996 to December 2001, had now been completed, as had the publication *Climate into the 21st Century*. Concerning the priorities for CCI, Congress noted that the Commission had been very successful in establishing climate databases within Members' NMHSs. However, several Members had expressed concern about ease of access to those and other global climate databases.

3.2.0.7 Congress urged CCI, as a matter of priority, to continue the improvement to climate databases through the implementation of the CDMS project and to begin a new effort to improve access and expand the use of those data. Congress noted that through the access and use of those databases, Members would be in a position to understand, interpret and use better climate information to benefit their constituents. Congress expressed appreciation to Australia, the Czech Republic, France, Jordan, the Russian Federation, Tunisia, and Zimbabwe, who had contributed towards the development of advanced and better performing CDMSs, which would be acquired by Members through the WMO VCP, bilateral and multilateral funding agencies, and national agreements.

3.2.0.8 Congress commended the Commission for its efforts and dedicated activities regarding CLIPS and, in particular, capacity building and the Climate Outlook Forums. It further urged the Commission to expand those Forums to other regions and subregions.

3.2.0.9 Congress recognized the growing role that satellites had in climatology and urged CCI to develop data and information requirements, to be provided to the satellite operators, that would satisfy the needs of operational climatology and climate applications.

3.2.0.10 Noting the requests of Thirteenth Congress as well as the fifty-second and fifty-third sessions of the Executive Council, Congress expressed its appreciation to CCI for the excellent work completed by the Intercommission Task Team on Regional Climate Centres. Congress concurred with the recommendations of that Task Team and encouraged the regional associations, in collaboration with LRF/GPCs, to consider carefully and efficiently the needs and requirements of RCCs, and to develop the appropriate terms of reference prior to initiating the process needed to establish RCCs, with the guidance of CCI and CBS. Congress took note of the offers made by Members to host RCCs. It urged CCI to develop guidelines and procedures to assist the regional associations in the implementation of the RCCs.

3.2.0.11 Congress noted the increasing emphasis that CCI was placing on proxy climate data, especially in the ARCHISS effort and in the new initiative for collecting and archiving phenological data. Congress recognized the importance of those new data sources and urged CCI to determine how best to incorporate those data into the long-term databases as a means of filling gaps in the historical record.

3.2.0.12 Congress commended the initiative of the Commission to sensitize Members to organize available climate data for its use in the development of renewable energies, namely wind and solar energy. In addition, Congress noted with appreciation the application of climate data in the

health sector as well as for the development of urban and building climatology.

3.2.1 COORDINATION ACTIVITIES WITHIN THE CLIMATE AGENDA (agenda item 3.2.1)

Report of the fourth session of the Executive Council Advisory Group on Climate and Environment

3.2.1.1 Congress was informed that the fifty-first session of the Executive Council had established its Advisory Working Group on Climate and Environment to simplify and clarify responsibilities on climate and environment matters within WMO, to address priority setting and to establish resource requirements for climate activities. It also recognized that focused attention should be applied to existing and required mechanisms for collaboration and coordination of the WCP at three levels, namely:

- (a) Inter-agency;
- (b) Inter- and intra-governmental; and
- (c) Internally within WMO.

3.2.1.2 The Executive Council had charged its Advisory Group with recommending an overall strategy through which NMHSs nationally and collectively, and WMO internationally, could enhance their participation in, and contributions to, national and international activities related to climate and the environment.

3.2.1.3 Congress noted that WMO had been a world leader in climate activities since IMO formed a Technical Commission on Climate in 1929. That leadership continued through the First and Second World Climate Conferences, the formation of WCP, the establishment of the IPCC and GCOS. That leadership continued to grow through the 1990s under the framework of the Climate Agenda. Congress noted that the successes had been many including the TOGA Programme, CLICOM, CLIPS and CLIVAR and, recently, the operational production of climate predictions. Congress agreed that the momentum in developing WMO's leadership must continue and expand in the next several years.

3.2.1.4 Congress was informed that the Executive Council Advisory Group had met four times, with its fourth session held from 27 to 28 January 2003. Congress expressed its appreciation to the chairperson of the Group, Mr Ali Mohammed Noorian, and to its members for their dedication and effort in carrying out its tasks and for the careful preparation of its recommendations and guidance to Congress on issues that were critical to the continuation of WMO's leadership role in climate and environmental activities.

3.2.1.5 Congress agreed that it was essential that WMO continue to maintain its focus on topics of key concern to the NMHSs of its Members and that, in concert with the implementation plan of WSSD, WMO should take steps and make appropriate recommendations on how to build partnerships within the climatological community to improve

effectiveness. It noted that the concept of partnerships was considered extremely important to the implementation of that plan and was strongly supportive of WMO's involvement in those major partnership initiatives, while at the same time being aware of the overheads they brought in terms of demands on resources of the Secretariat. Congress recommended continuation of those partnerships to take advantage of activities that were being undertaken by other agencies.

Methodologies for developing a new framework

3.2.1.6 Congress noted that several methodologies existed for strengthening WMO's role in climate and the environment. It was clear that the Climate Agenda was originally successful in energizing the international community, but in recent years it had fallen short of expectations. The method for coordination established as a result of the Climate Agenda was IACCA. The Climate Agenda had four thrusts that were closely aligned with the four components of the WCP. That created a general framework for the structure of climate activities, but did not provide guidance on how best to provide effective inter-agency coordination into the future. The reasons why the expectations had not been met were not entirely clear, and Congress agreed that it was critically important to understand why IACCA had not functioned as envisioned.

3.2.1.7 Congress agreed that there was a need to ensure an effective approach for coordination with other agencies, as the risk of not doing so was that WMO might face an ever-expanding set of bilateral partnerships with other agencies without an overall picture of the value to WMO. Partnerships were necessary and could prove beneficial. However, WMO needed to ensure that when a partnership or new relationship with another agency was being formed, the implications of that were clearly understood, both financially and scientifically, and most importantly that there was a clear benefit to WMO Members as well as the other agencies. Congress determined that the Climate Agenda had served a useful purpose for several years. However, that framework did not necessarily need to be at the forefront of coordination in the future.

3.2.1.8 Congress was pleased to note that the Secretary-General had taken measures to strengthen coordination of climate matters within the Secretariat, in particular through the establishment of an internal committee chaired by the Secretary-General.

New mechanism for inter-agency coordination of climate activities

Coordination of WCP and climate activities

3.2.1.9 Congress noted with pleasure that WMO had provided pre-eminent leadership in the significant international activities and structures that had guided developments of climate science and operational services over the years. It recognized

that various mechanisms had been established to assist in inter-agency coordination. It noted that some of those had been highly successful while others had not. The activities carried out under the WCP, GCOS and the Climate Agenda had been reviewed internally by their management structures and on a routine basis by the WMO Executive Council and by Congress every four years. Some expressed that, notwithstanding the current and somewhat unclear picture with respect to high-level international coordinating mechanisms and structures on climate and environmental matters, the original role intended for IACCA remained valid and necessary. Others indicated that it was unclear whether a group such as IACCA would be more efficient and effective than the current bilateral arrangements. Congress agreed therefore, that it would be appropriate to investigate the reasons why IACCA had not functioned as envisioned. In that respect, Congress requested the Secretary-General to consult with relevant international representatives of the original IACCA to determine why it had not functioned as envisioned and whether it should be reconstituted, or whether the current bilateral arrangements were sufficient. Congress requested the Secretary-General to report on the result of those consultations to the fifty-sixth session of the Executive Council.

3.2.1.10 Congress considered the overarching theme for inter-agency coordination, but was not able to reach consensus. Some Members noted that the global response and adaptation strategy programmes for climate change and variations would recognize that both natural climate variability and human-induced change had now been scientifically accepted through the scientific assessment process and that the international agencies now were prepared to move forward to assist countries and regions in the adaptation process. However, other Members recognized the duplication with the terms of reference and activities of other significant organizations that such a broad reaching theme implied. The view was expressed that it was important to ensure effective coordination with IPCC, the UNFCCC, UNCCD and the United Nations Convention on Biodiversity, as well as other relevant programmes, groups and organizations. Congress concluded that consultation with representatives of IACCA organizations mentioned in general summary paragraph 3.2.1.9 should also address a theme that would provide an adequate scope to cover the climate science and service issues that were unique to the WMO and its interrelated activities with its partner organizations.

3.2.1.11 Congress further agreed that, in view of the importance of ensuring effective WMO leadership on climate and environmental matters nationally and internationally, the Executive Council should consider re-establishing its Advisory Group on Climate and Environment to facilitate coordination on climate and environmental matters within WMO.

Third World Climate Conference

3.2.1.12 Congress considered the concept of a third World Climate Conference. A variety of views were expressed on the subject. Those supporting a conference considered that it should be at a ministerial or policy-making level and should be oriented around the topic of climate as a resource that needed attention and preservation, and that it should focus on making climate services more widely useful and beneficial in the various application sectors. While some Members favoured holding a conference within the fourteenth financial period for its relevance to the WSSD implementation plan and the results of various scientific international climate conferences that had been conducted recently or were planned to occur within that period, other Members noted that the schedule for conferences was heavy during the fourteenth financial period, and suggested conducting the conference shortly after the Fourth IPCC Assessment Report was issued. Another group of Members questioned the need for another high level Climate Conference, and favoured suspending consideration during the fourteenth financial period.

3.2.1.13 Congress felt that given the disparity of Members' views on the subject of the Third World Climate Conference, it requested the Executive Council to keep the matter under consideration.

World Climate Change Conference (Moscow, 29 September–3 October 2003)

3.2.1.14 Congress noted with satisfaction the United Nations General Assembly Resolution A/57/532/Add.3, in which the General Assembly had welcomed the initiative of the Russian Federation to hold a World Climate Change Conference. The General Assembly had encouraged Member States and relevant organizations and institutions of the United Nations system, as well as other international and national organizations, the scientific community, the private sector and other representatives of civil society to participate actively in the Conference, and invited Member States, the United Nations system and all other actors to take advantage of the Conference in order to increase awareness of the importance of international efforts to address climate change.

3.2.1.15 Congress noted with satisfaction the active participation of WMO in the International Organizing Committee for the Conference.

3.2.1.16 Congress took note that the International Organizing Committee for the Conference had already received over 470 applications from 43 countries to take part in the plenary and sectional meetings of the Conference and in the work of the roundtable discussions.

3.2.1.17 Congress acknowledged the importance of the results expected to emerge from the Conference to be held in Moscow (29 September–3 October 2003), whose primary purpose was the

comprehensive discussion of the scientific issues related to natural and anthropogenic change in, and influences on, the climate, of measures for adapting human society, economy and ecosystems to observed and expected changes in the climate, and of integrated approaches to limiting anthropogenic influence on climate. The Conference was intended to promote the achievement of maximum mutual understanding between different spheres in society (Government, business circles, the scientific community, non-governmental organizations and the public at large) on those issues.

International Symposium on Climate Change (Beijing, 31 March to 3 April 2003)

3.2.1.18 Congress noted with appreciation the report of China on the International Symposium on Climate Change (ISCC), which was successfully held from 31 March to 3 April 2003 in Beijing, China. The Symposium was co-sponsored jointly by the China National Climate Committee and WMO, together with China's State Development and Reform Commission, the Ministry of Education, the Ministry of Science and Technology, the Chinese Academy of Sciences, the National Natural Science Foundation, the China Association for Science and Technology and the China Meteorological Administration. Under the organization of the China Meteorological Administration, the Symposium comprised three days' active discussion and deliberations and produced valuable results. Congress noted with pleasure that the Chinese Vice-Premier, Mr Hui Liangyu, and Professor Obasi, Secretary-General of WMO, had attended the opening ceremony and gave keynote speeches.

3.2.1.19 Congress noted that about 500 scientists from 46 WMO Member countries had participated in the Symposium and that 13 invited, 163 oral, and 111 poster presentations were made within nine topics. Broad exchanges of views and communication in a number of sessions were made, which had provided a stage for acknowledged experts to show their latest research results in the field of climate and climate change.

3.2.1.20 Major results of the Symposium were reported in the following topics: extreme weather and climate events and climate change; detection and attribution of climate change and climate variability; and, climate change impact, adaptation and sustainable development.

3.2.2 SUPPORT TO CLIMATE CHANGE-RELATED ACTIVITIES, INCLUDING IPCC AND THE CONVENTIONS ON CLIMATE CHANGE, ON BIODIVERSITY, AND ON DESERTIFICATION (agenda item 3.2.2)

United Nations Framework Convention on Climate Change

3.2.2.1 The Chairperson of the IPCC, Mr R.K. Pachauri, reported to Congress on the work the IPCC had undertaken over the past four years. He

noted the completion of the Third Assessment Report in 2001 and of a number of other Special Reports and Technical Papers since the last Congress. He advised that the IPCC was currently responding positively to a number of requests made from the UNFCCC, including those relating to:

- (a) The technologies available for carbon dioxide capture and storage;
- (b) The relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate system;
- (c) Developing definitions for direct human-induced degradation of forests and devegetation of other vegetation types, and methodological options to inventory and report on emissions resulting from those activities;
- (d) The second revision of the 1996 IPCC Guidelines for National Greenhouse Gas Inventories.

3.2.2.2 Mr Pachauri also noted that by the time Fifteenth Congress, the IPCC would be on the verge of delivering its Fourth Assessment Report. He informed Congress that scoping of the Report was now ongoing, and substantial efforts were being made to capture the latest advances in the science of climate change in the next Assessment Report, and also to ensure a greater degree of consistency and coherence between its various elements, which he hoped would add great value to that Report.

3.2.2.3 Congress expressed its satisfaction with the high level of cooperation that existed between the IPCC and the SBSTA of the UNFCCC. In particular the use by the UNFCCC of the IPCC's Third Assessment Report in developing policies to deal with climate change issues was noted.

3.2.2.4 Congress noted with appreciation the involvement of CCI in the work of IPCC and encouraged strengthened participation of CCI and other technical commissions such as CAgM and CHy. Congress also encouraged the WMO Secretariat to explore further ways of incorporating material from the IPCC reports in its public information materials.

3.2.2.5 Congress noted that with the Fourth Assessment Report, and the number of requests from the UNFCCC for special assessments, IPCC faced a heavy workload over its next assessment period (until 2007 when the Fourth Assessment was scheduled for completion) and suggested that IPCC give priority to the Fourth Assessment in its work programme. Congress also urged IPCC to find further ways of incorporating scientific results, published in languages other than English, into the Fourth Assessment Report, and of engaging scientists from the developing world in the Assessment.

3.2.2.6 Congress urged Governments and intergovernmental organizations to continue their support for IPCC through both donation to the IPCC Trust Fund and by making experts available to

contribute to the assessment process. In that connection, Congress adopted Resolution 8 (Cg-XIV).

3.2.2.7 Congress welcomed the priority placed by GCOS on responding to the decisions of the UNFCCC and working with SBSTA on issues related to systematic observation, including development of the Second Report on the Adequacy of the Global Observing Systems for Climate. It agreed that the process currently under way should be continued in order that Governments be clearly given the opportunity to address deficiencies in the observational systems required to meet their needs in all aspects of climate variability and change.

United Nations Convention to Combat Desertification

3.2.2.8 Congress expressed its satisfaction with the progress being made in the implementation of UNCCD. Congress was pleased to note that the Second Assembly of GEF had adopted a decision to establish it as a financial mechanism of UNCCD. It supported the continuing fruitful collaboration that existed between WMO and the UNCCD Secretariat and requested the Secretary-General to continue to assist in the implementation of the Convention.

3.2.2.9 Congress noted that WMO's role in the implementation of UNCCD continued to be of paramount importance in view of the fact that realistic monitoring of drought, and desertification required homogeneous systematic and timely observations of meteorological/climatological and hydrological parameters, in the arid, semi-arid and dry sub-humid areas. Congress reiterated the need to draw the attention of the donors and of GEF to the inadequacy of the present networks for climate and desertification monitoring due to lack of appropriate financial support and within country skills to support the networks.

3.2.2.10 Congress expressed its appreciation to the Secretary-General for his wide-ranging actions in support of UNCCD within the programmes and activities of WMO, such as the International Workshop on Coping with Drought in Sub-Saharan Africa: Better Use of Climate Information (Kadoma, Zimbabwe, 4-6 October 1999), the Expert Group Meeting on Early Warning Systems for Drought Preparedness and Drought Management (Lisbon, Portugal, 5-7 September 2000) and the active participation of WMO in the sessions of COP-3, COP-4 and COP-5 to the Convention. Congress appreciated the initiative taken by the Secretary-General to inform the Members of the major decisions taken at COP-3, COP-4 and COP-5.

3.2.2.11 Congress expressed its strong support for training in the fields of drought and desertification, taking advantage of the funding facilities available under the Convention. Congress noted with appreciation the initiative taken by WMO to organize workshops and roving seminars such as those on the Application of Climatic Data for Drought Preparedness and Management for Sustainable

Agriculture, in Accra, Ghana (1-12 November 1999) and Beijing, China (15-24 May 2001) in collaboration with FAO, UNEP, and the UNCCD Secretariat.

3.2.2.12 Congress expressed its satisfaction with WMO's active participation in the International Workshop on Land Degradation Assessment in Drylands, which was held at FAO in December 2000. Congress agreed that weather and climate issues should be appropriately factored into the proposed Land Degradation Assessment in Drylands project.

3.2.2.13 Congress encouraged the establishment of strong synergies between the Rio Conventions and other legal instruments dealing with the conservation and sustainable use of natural resources critical to the survival of arid, semi-arid and dry sub-humid ecosystems and people living in affected areas. In that regard, it emphasized that the National Adaptation Programmes of Action under UNFCCC should relate closely to the National Action Programme under UNCCD. Their better linkages would increase the benefits of these respective programmes, especially for LDCs.

3.2.2.14 Congress noted that the thirteenth session of CAgM had agreed to create an expert system on extreme meteorological events (including drought and desertification) and meteorological information to issue early warnings and to contribute to the implementation of UNCCD. An Expert Team had been convened under OPAG 3 (Climate change/variability and natural disasters in agriculture) to consider that issue. CCI was investigating the development and provision of climate alert systems that would inform Members of pending significant climate anomalies.

3.2.2.15 Congress strongly urged Members to continue to strengthen and expand their activities related to research, training and capacity building; observation data collection and exchange; and on matters related to drought, early warning, preparedness and public awareness.

Regional Drought Monitoring and Early Warning Centre at Jeddah, Saudi Arabia

3.2.2.16 Congress recognized the importance of establishing a Regional Drought Monitoring and Early Warning Centre in Jeddah, Saudi Arabia to serve all Arab States in accordance with the terms of reference as agreed by the NMSs of the League of Arab States. Congress requested the Secretary-General to assist the Members concerned in the establishment of the Centre.

Convention on Biological Diversity

3.2.2.17 Congress expressed its appreciation to the Secretary-General for the initiative taken by WMO to establish collaborative links with the CBD Secretariat. The Council noted that WMO had participated in the fifth, sixth and seventh sessions of the CBD SBSTTA and that the attention of the participants in those meetings was drawn to several important weather- and climate-related issues related to biological diversity.

3.2.2.18 Congress reiterated that building knowledge on physical processes such as droughts, floods and fires that affected the biological diversity of dry and sub-humid lands, especially ecosystem structure and functioning, was an important issue. Congress also agreed that baseline assessment and long-term monitoring of meteorological variables relevant to coral bleaching, mortality and recovery was crucial to the conservation of marine and coastal biological diversity. Congress was pleased to note that SBSTTA-5 had included those two important aspects in their recommendations submitted to CBD COP-5, held in Nairobi, Kenya in May 2000.

3.2.2.19 Congress noted that IPCC had prepared a technical paper on the interlinkages between biological diversity and climate change, as requested by SBSTTA-6 in its Recommendation VI/7, as input to the Convention's pilot assessment on biological diversity and climate change.

3.2.2.20 Prevention and mitigation of the adverse effects of forest fires and fire suppression, including the development of systems for risk assessment and early warning, were important for the conservation and sustainable development of forests. Congress expressed its agreement with the emphasis placed by SBSTTA-7 on those aspects and on the need to advise on fire-risk prediction systems.

3.2.2.21 Congress noted that WMO was represented at the Ad Hoc Technical Expert Group on Biodiversity and Climate Change, held in Montreal in September 2002. Congress supported the decision of SBSTTA to carry out a pilot assessment to prepare scientific advice to integrate biodiversity considerations into the implementation of the UNFCCC and its Kyoto Protocol, and for that purpose, established the Ad Hoc Technical Expert Group.

3.2.2.22 Congress invited the Secretary-General to continue the participation of WMO in the CBD activities and to keep Members fully informed of ongoing developments in matters related to the Convention.

Participation of NMHSs in the Conventions

3.2.2.23 Congress reiterated the importance of strengthening the participation of NMHSs in the national delegations to the sessions of COP and other subsidiary bodies to the Conventions on Climate Change, on Biological Diversity and to Combat Desertification to ensure that weather and climate related issues received the due attention in the implementation of those Conventions, especially in research, monitoring and capacity building.

3.2.3 GLOBAL CLIMATE OBSERVING SYSTEM (agenda item 3.2.3)

3.2.3.1 Congress noted with appreciation the report on developments regarding GCOS and the activities of the GCOS Steering Committee, presented by the chairperson, Mr Paul Mason, and the substantial progress made in the programme

since Thirteenth Congress. Congress also expressed its appreciation to Mr Kirk Dawson, chairperson of the committee from 1998 to 2001, for his efforts in guiding the programme during that period and for the progress achieved under his leadership.

3.2.3.2 Congress thanked the Secretary-General for his active support to the GCOS programme, as well as the other sponsoring agencies (ICSU, IOC of UNESCO and UNEP) for their contributions. It recognized, however, that the reported progress had only been achieved through the expenditure of substantial extrabudgetary resources. Congress expressed appreciation to those Members who had made contributions to the GCOS programme, including support for the travel of experts, the engagement of consultants and the hosting of meetings. It nevertheless noted with concern that major extrabudgetary resources would be necessary for GCOS to be able to carry out its planned activities in the next financial period.

3.2.3.3 Congress welcomed the continuing close collaboration that existed between GCOS and several other WMO Programmes, notably WWW and WCP regarding GSN and GUAN and relevant marine networks; AREP regarding GAW; and HWRP in establishing GTN-H. It welcomed also the continuing close cooperation that existed between GCOS and relevant WMO technical commissions, in particular CBS, CCI, CHy and JCOMM in developing and implementing the GCOS networks.

3.2.3.4 Congress noted the progress in the implementation of GSN and GUAN, with the assistance of the GCOS/WCRP Atmospheric Observation Panel for Climate, while recognizing the urgent need to improve the availability and quality of data from many of the stations. It noted, for example, that only about 65 per cent of expected reports from GSN stations and 75 per cent of reports from GUAN stations were being received at the GCOS Monitoring Centres, with some regions reporting as low as 30 per cent, often due to local telecommunications problems and the unavailability of consumables and adequately trained staff. It noted also that historical data for only about one-third of the GSN stations had been submitted to the GSN archive (WDC-Asheville), and urged Members to provide those data for the remaining stations as soon as possible. Congress reiterated the importance of strong collaboration and coordination between CBS and GCOS toward improving network performance and welcomed recent activities which had resulted in a modest but noticeable improvement, including the organization of a dedicated CBS/GCOS expert meeting to address reporting problems, the establishment of CBS Lead Centres for GCOS Data, and direct communications to Members from the Secretary-General. Congress expressed its appreciation to the GCOS Monitoring Centres and Analysis Centres (DWD, JMA, NCDC, ECMWF and the UK Met. Office Hadley Centre) for their contributions in that regard, and requested Members

to nominate focal points for GSN and GUAN observations at the working level that could assist them in fulfilling their roles. It also noted with appreciation the recent contributions of the United States and some other Members in support of the relevant work of the GCOS Secretariat and the strengthening of the GCOS baseline networks. Congress urged all Members to continue, and where possible to strengthen, their support for the GSN and GUAN networks, noting that robust, backbone networks which met the goals of GCOS would also provide fundamental support for the regional climate networks, such as the RBCN, that were needed for regional applications and impacts studies.

3.2.3.5 Congress noted with satisfaction the solid progress in establishing an operational ocean observing system for climate under the guidance of the GCOS/GOOS/WCRP Ocean Observations Panel for Climate. It welcomed the positive developments related to the SOOP, VOS and DBCP programmes under the coordination of JCOMM and the encouraging increase in commitments of floats for the Argo initiative, as well as progress in GODAE. Congress noted with appreciation the financial support of the IOC of UNESCO for GCOS, recognizing that the climate module of GOOS was also the ocean component of GCOS.

3.2.3.6 Congress was pleased to note the progress by the GCOS/GTOS Terrestrial Observation Panel for Climate in defining a key set of terrestrial variables for climate and in developing proposals for moving forward in the terrestrial domain. It welcomed the continuing development and operation of GTN-G and GTN-P. Congress also welcomed the progress in establishing a GTN-H, noting with appreciation the effective collaboration in that effort among HWRP, GCOS and GTOS and the particular support from Germany and Canada.

3.2.3.7 Congress noted the significant benefits that could accrue to Members through tangible recognition of positive achievements in the implementation of the GCOS networks and requested the Secretary-General to facilitate the establishment of such recognition in appropriate situations.

3.2.3.8 Congress recognized the importance of space-based observations for climate monitoring and the need for full integration with in situ networks in a comprehensive global climate observing system. It welcomed the participation of GCOS as a partner in the IGOS Partnership dedicated to that objective, as well as in the activities of the Committee on Earth Observation Satellites. It also noted with satisfaction the cooperation that existed between GCOS, CBS and CCI in developing Statements of guidance on observations required in support of climate applications from all systems. Congress welcomed GCOS participation in the WMO Consultative Meetings on High-Level Policy on Satellite Matters and the increased attention that climate requirements had received at recent meetings of that

group. It was pleased to note that a set of climate monitoring principles for satellite missions dedicated specifically to long-term climate monitoring had been developed, with the encouragement of the Consultative Meetings, and had been endorsed by the fifty-fourth session of the Executive Council for consideration by Congress. Those principles would also serve as a target for other missions involving climate-relevant observations. Congress fully recognized the importance of such principles for long-term climate monitoring from both satellite and in situ systems and therefore adopted Resolution 9 (Cg-XIV). Congress also reiterated the need to adhere to appropriate standards for climate observations, such as those established by the WMO technical commissions.

3.2.3.9 Congress strongly commended the actions taken by the GCOS Secretariat, on behalf of WMO Members and the global observing systems for climate, in responding to two major Decisions on research and systematic observation (4/CP.5 and 5/CP.5) adopted by COP-5 to the UNFCCC in 1999. It welcomed the initiative taken by GCOS to develop guidelines for national reporting on global climate observing systems, adopted in those decisions, and to report regularly to the UNFCCC SBSTA on developments regarding systematic observation of the climate system. Congress noted with appreciation the actions taken by the Secretary-General in addressing regularly the Parties at COP sessions and in encouraging Members to participate actively in the preparation of detailed national reports on systematic observations and other activities which would lead to strengthening the global observing systems for climate. It expressed appreciation to those Members that had provided national reports to the UNFCCC/COP and urged those who had not done so to submit their reports as soon as feasible.

3.2.3.10 Congress welcomed the *Second Report on the Adequacy of the Global Observing Systems for Climate* (GCOS-82, WMO/TD-No. 1143) that had been developed under the leadership of GCOS, with the participation of IPCC, in response to a request made at the ninth session of the GCOS Steering Committee and endorsement by SBSTA at its fifteenth session in November 2001, as well as by the fifty-fourth session of the Executive Council in 2002. It noted that the GCOS Steering Committee had endorsed the report at its eleventh session in April 2003, following a period of open review of the initial draft, and that GCOS would be submitting the final version to SBSTA-18 in June 2003 for consideration by COP-9 in December 2003, as had been requested by SBSTA-15. Congress strongly endorsed the conclusions of the report and urged all Members to support the implementation of its recommendations as a matter of urgency, as well as to assist other Members in their implementation to the extent possible. It also endorsed in particular the proposal to establish a multinational GCOS donor

fund and associated donor board to support GCOS implementation activities, especially in developing countries. Congress recognized that facilitating implementation of the *Report* would be a major guide for GCOS activities in the foreseeable future.

3.2.3.11 Congress noted the conclusion of the *Report* that some form of an international infrastructure could be very beneficial for developing and implementing standards for terrestrial observations, as was already the case in the atmospheric domain through WMO technical commissions and in the oceanic domain through, for example, JCOMM. It requested the Secretary-General, in cooperation with appropriate partners, to explore the potential benefits and mechanics of establishing such an infrastructure and to report preliminary findings to the fifty-sixth session of the Executive Council.

3.2.3.12 Congress noted also the conclusion of the *Report* regarding the need for an internationally-coordinated approach to developing, and making accessible, integrated global climate products related to specific, high-priority variables obtained from both satellite and in situ observing systems, including the use of re-analysis techniques both for product generation and for the identification of gaps and deficiencies in the systems themselves. It welcomed the activities of a number of IGOS Partners in that regard, and noted the development of a Satellite Applications Facility for Climate Monitoring, hosted by Germany with the support of several other Members.

3.2.3.13 Congress recognized that preparation of the *Report* had been a major undertaking by the GCOS Secretariat, given the complexity of the task and the urgency placed on its completion by SBSTA. It expressed its appreciation to the Members and other participants that had contributed financially as well as scientifically to its development, in particular the Japan, United Kingdom and the United States.

3.2.3.14 Congress expressed its strong support for the GCOS Regional Workshop Programme, developed in response to Decision 5/CP.5 and aimed at identifying observing system deficiencies and capacity-building needs in developing countries. It noted with satisfaction that five of the 10 planned workshops had been completed (Pacific Islands, Eastern and Southern Africa, Central America and Caribbean, East and South-East Asia, and Western and Central Africa) and that Regional Action Plans aimed at eliminating deficiencies had been or were being developed for all of those regions. Congress emphasized, however, that the Action Plans required implementation on an urgent basis in order to reap the full benefits of the Regional Workshop Programme. It noted the activities under way to explore the concept of a voluntary donor fund in support of GCOS implementation activities and encouraged countries able to do so to consider contributions to such a fund. Congress welcomed the

financial support of GEF for the Regional Workshop Programme, while recognizing that matching funds from other sources were needed for its full implementation. It expressed its strong appreciation to the Members that had provided and would be providing support for the workshops and encouraged all Members to participate fully in implementation of the regional Action Plans. Congress welcomed in particular the offers of Argentina and Germany and to support regional workshops in their respective regions and noted that a workshop for the Mediterranean Basin region was planned which would include the countries of northern Africa. It also welcomed the offer of India to provide technical assistance in support of climate networks in their subregion.

3.2.3.15 Congress welcomed and endorsed the high priority placed by the GCOS Steering Committee to respond to the decisions of the UNFCCC, noting with satisfaction the appreciation expressed by the UNFCCC Secretariat for GCOS and WMO cooperation and support in the area of research and systematic observation, and especially in leading the development of the *Second Report on the Adequacy of the Global Observing Systems for Climate*. It urged Members to continue to support GCOS in responding positively and effectively to UNFCCC decisions. Congress agreed that the process currently under way of engaging the UNFCCC and its subsidiary bodies regarding systematic observation should be actively continued in order that Governments be clearly given the opportunity to address deficiencies in the observational system required to meet their needs in all aspects of climate change and variability. Congress noted with approval that that approach was fully in accord with the GCOS Implementation Strategy that had been developed as requested by the fifty-second session of the Executive Council and supported by the fifty-third session of the Executive Council.

3.2.3.16 Congress welcomed the considerable progress that had been made by GCOS in implementing the GCOS networks and in responding to the decisions of the UNFCCC/COP, and reiterated its appreciation to those Members that had made significant contributions to the GCOS programme. It nevertheless noted that the demands on the GCOS Secretariat had increased beyond the capabilities of the current level of resources as additional networks were being defined and implemented and activities in support of the UNFCCC were increasing. Congress strongly urged Members to consider additional support for the Secretariat, for example through secondment of personnel, contributions to the Climate Observing System Fund and/or other appropriate means.

3.2.3.17 Congress decided that WMO should continue and strengthen its support for the GCOS programme and therefore adopted Resolution 10 (Cg-XIV).

3.2.4 WORLD CLIMATE DATA AND MONITORING PROGRAMME (agenda item 3.2.4)

3.2.4.1 Congress noted with satisfaction the progress in the implementation of the WCDMP. It concluded that the WCDMP activities and plans described in the programme and budget for the fourteenth financial period supported the Members' requirements related to comprehensive climate data management systems and the availability of high-quality data and analyses.

Observing requirements and standards for climate

3.2.4.2 Congress welcomed the progress in the programme to support the development of observation networks to meet the needs of specific applications, including the use of traditional in situ surface and upper-air observations, satellite systems and new observing technologies. It welcomed the strong CCI focus provided through its relevant OPAG, and Expert and Implementation Coordination Teams. It endorsed the CCI efforts to promote increased cooperation with the GCOS Atmospheric Observation Panel for Climate, and requested the president of CCI to report to the fifty-sixth session of the Executive Council on the resulting activities under way and planned.

3.2.4.3 Congress noted the active contributions of CCI and GCOS experts on the CBS Expert Team on Observational Data Requirements and Redesign of the GOS. It noted the significant contribution made through the issuance of initial Statements of guidance on observational needs to provide land, atmospheric and marine data for monitoring, applications, climate change detection and input to seasonal to interannual climate prediction models. It urged the regional associations to take into account climate Statements of guidance in determining the networks of meteorological observing stations and requirements for data exchange, in support of WMO Programmes.

3.2.4.4 Congress noted the need to strengthen climate observation networks through the cooperative efforts of the NMHSs and CCI, CBS and GCOS. Practical steps must be taken to maintain the existing network of Reference Climatological Stations in the Regions and to assist in the revival of those stations that had ceased to operate. It urged Members that, in the establishment and management of the operational networks, special attention should be paid to the guidelines set out in the *Guidelines on the Selection of Reference Climatological Stations from the Existing Climatological Station Network* (WMO/TD-No. 130, WCP-116) and noted that where CLIMAT messages based on those observations were disseminated regionally and globally, the stations could also serve as RBCN stations.

3.2.4.5 Congress recalled the recommendation of the fifty-third session of the Executive Council on CLIMAT reporting performance of the GSN stations.

It noted that monitoring results had shown no significant improvement in the percentages of GSN CLIMAT and GUAN CLIMAT TEMP reports received by the *Deutscher Wetterdienst* and the Japan Meteorological Agency in comparison with the reception rates for the CLIMAT and CLIMAT TEMP networks as a whole. It expressed appreciation that the Secretary-General had sent notification of those results to Members and urged them to work to improve the transmission of their messages. Congress welcomed the work of CCI with GCOS and CBS to establish a mechanism for regular feedback between the monitoring centres and country focal points to ensure prompt corrective actions on data and transmission errors. In that regard, it welcomed the information provided by the Russian Federation on a request/reply capability to handle requests for CLIMAT and CLIMAT TEMP reports.

Climate alert system

3.2.4.6 Congress placed high priority on CCI's intention to complete the implementation of a climate alert system to inform Members of pending significant climate anomalies. It noted the linkage of that activity with Strategy 1 of the 6LTP. Congress recognized that climate system monitoring and climate change detection were increasingly important inputs to high priority activities such as early warning and disaster prevention planning. It further recognized the contribution that regular climate system monitoring made in hydrometeorological decision-support systems. Congress stressed the critical importance of eliminating confusion and of minimizing duplication in the provision of operational products and services related to warning services. It requested the president of CCI to liaise with CBS on the definition and guidelines for climate alert systems and to report on progress made to the fifty-seventh session of the Executive Council. It welcomed the offers by Germany and the Russian Federation to assist in activities to refine the definition of the climate alert system concept.

3.2.4.7 Congress noted with satisfaction the related CCI activities that addressed Strategy 6 of the 6LTP, by forging closer links with the modelling community to ensure that data analysis methods were closely aligned with the model assessments, particularly where those related to extreme events. It welcomed CCI's assignment of high priority to the development of guidelines for the calculation of climate variables (e.g. daily mean air temperature) and new climate indicators (e.g. sub-monthly climate variability), which made use of the higher resolution data that was becoming widely available. It further noted the need to assess trends of tropical cyclones and other extreme events.

Climate analysis and monitoring techniques (including climate change detection)

3.2.4.8 Congress noted with satisfaction the coordination of the provision of monitoring of climate anomalies, regular assessments and authoritative

statements on the interpretation and applicability of instrumental and proxy data for the study of climate variability, the detection of climate change, and the validation of climate models and forecasts. It endorsed the CCI work programme to develop guidance for Members related to the climate information and analysis tools that characterized the extremes and the trends in near-term climatic events as well as over the spectrum of climate change. It urged that training and capacity building activities address the use of statistical analysis and visualization techniques and the utilization of geographical information system and satellite information in national and regional climate monitoring. Congress requested the president of CCI to report to the fifty-sixth session of the Executive Council on the status of related guidance materials and on the assistance needed by Members. Congress also noted CCI's leadership through the presidents of technical committees to establish an ad hoc expert team on archiving data related to phenology, and requested the president to report to the fifty-sixth session of the Executive Council on its activities.

Climate system monitoring

3.2.4.9 Congress expressed its support for the activities and plans to develop awareness of the interannual variability of the global climate system and to facilitate the generation, interpretation and dissemination of that information regarding global- and regional-scale climate fluctuations. It noted that regional and global climate system monitoring activities must be enhanced to help Members improve their support for natural disaster mitigation in their countries.

3.2.4.10 Congress welcomed the completion of the seventh *Global Climate System Review* (WMO-No. 950) for the period mid-1996 through 2001. Congress expressed its appreciation to the national climate centres and the individual scientists who had contributed to it, to the annual *WMO Statements on the Status of the Global Climate* and to the publication *The 1997–1998 El Niño Event: A Scientific and Technical Retrospective* (WMO-No. 905) (initiated by WMO under the framework of the ISDR and published in 1999). Congress recognized that the WMO activities of documenting the climate system and its anomalies, including the Reviews and the annual *Statements*, continued to ensure that WMO was the authoritative international voice on climate conditions. It urged that the annual *Statements* continue to be printed and distributed each year by World Meteorological Day.

3.2.4.11 Congress noted with satisfaction the WCDMP Web pages with links to international and national centres providing global and regional products for climate system monitoring. It expressed its gratitude to those Members who had responded positively to the request made by the Secretary-General to provide Web page addresses for that purpose. It noted with appreciation the contribution

that the European Climate Support Network had made for all RA VI countries through its project to Generate Climate Monitoring Products.

DARE, digitization and data exchange

3.2.4.12 Congress noted the status of plans to facilitate the development and implementation of methods to enable the rescue, preservation and management of climate data by WMO Members, especially developing countries, and to promote the international exchange of climate data and related products. It stressed the importance of high quality, homogeneous climate data sets and urged that efforts be taken as a matter of urgency to rescue the high priority climate data and metadata that had not been digitally archived or could not be digitally accessed. It recalled that CCI-XIII had stressed the importance of cooperative linkages among the scientific research, operational meteorology and user communities in stating the need for adequate climate data and in addressing the necessary steps to ensure its availability. It endorsed the goal of the DARE project to increase the number of observations rescued in participants' services and the number of observations provided to the global databases through WMO coordinated assistance. It urged Members to develop national DARE projects and requested the president of CCI to report on progress in the DARE project to the fifty-seventh session of the Executive Council.

3.2.4.13 Congress noted the recommendation of CCI to rescue data currently held in media that could no longer be read due to the breakdown of hardware and the deterioration of media, or due to incompatibility of hardware and software. It urged Members to ensure that data already in computer compatible media be routinely migrated to new storage media. It requested the Secretary-General to explore ways to provide appropriate assistance to Members, particularly to those whose hardware was no longer operable and/or media was no longer readable.

3.2.4.14 Congress noted with satisfaction that guidance on all aspects of climate data management (including DARE) was developed as Chapter 3 in Part I of the draft third edition of the *Guide to Climatological Practices* (WMO-No. 100), and posted to the CCI Web site.

3.2.4.15 Congress noted that the fifty-fourth session of the Executive Council had endorsed the CCI's statement " that the accessibility and use of climate data was at least as important as its collection and archiving, and that WMO and NMHS policy and activity should reflect that comparable importance". Congress noted with concern that instances of difficulties being encountered in accessing climate data for public good activities in research and education had been noted by CCI-XIII, often exacerbated by insufficient resources within the Meteorological Services of developing countries. Congress agreed that such barriers resulted in a loss of benefits of new knowledge and new applications

and effectively, lower returns on the heavy public investments in past data gathering. Congress requested the president of CCI to liaise with the Executive Council Advisory Group on the International Exchange of Data and Products on ways to obtain and summarize quantitative information on Members' policies and practices with respect to data provision and their outcomes in terms of costs and benefits of the different options, and to report to the fifty-sixth session of the Executive Council.

3.2.4.16 Congress noted with appreciation the linkage of the ARCHISS project with DARE in order to economize resources and provide synergy between the two activities. It further noted CCI's recommendation that future efforts should focus on locating and digitizing high priority climatological and hydrological data and metadata.

3.2.4.17 Congress noted with appreciation the project by France to restore from its archives a considerable set of surface and upper-air climatological data from 14 west African countries whose own holdings had been lost or were no longer readable. The sets, which comprised 143 stations and the earliest data were nearly 150 years old, were made available to the countries in CLICOM database structure.

Data sets and metadata

3.2.4.18 Congress noted with satisfaction the programme to coordinate the preparation and distribution of global and regional data sets, including metadata, as required for both research and the development of climate information and prediction services. It recognized that activity as a foundation stone in the analysis, monitoring, prediction and application of climate information of all scales in support of the needs of the Members.

3.2.4.19 Congress noted with appreciation the work done by the NCDC of the United States (hosting the WDC-A for meteorology) to complete all volumes of the *World Weather Records* for the period 1981-1990. Congress endorsed the proposal to reconfigure the *World Weather Records* volumes for the ninth series (1991-2000) to match precisely WMO regional boundaries, and welcomed the offer of NCDC to prepare the 1991-2000 series and make the data set available on CD-ROM. It urged individual Members to volunteer to act as Regional Data Collection Centres to facilitate the task of delivering the data to NCDC in the appropriate format. Congress also welcomed the information from the Netherlands that the European Climate Assessment and Data project dataset now comprised long period climatic timeseries for 150 locations in many RA VI and bordering countries.

3.2.4.20 Congress noted that non-climatic influences and biases had been removed from many global data sets in an effort to create a homogeneous record and that the data sets were generally supported by station history, instrumentation and other metadata. It urged

Members to ensure that metadata of observing sites, including instrumentation and observing procedures, were maintained so that homogeneous records were available into the future. In addition, Members were urged to include information about the methods used for homogenization when providing homogenized data sets or, alternatively, to send the metadata along with any data set of original data provided. Congress requested CCI to develop and adopt an international format for the exchange of station metadata, in a collaborative effort with other commissions. It urged Members to perform quality control on data intended to be provided into regional and global data sets.

3.2.4.21 Congress urged that research be undertaken on homogenization of daily data sets, that guidelines be established on homogenization methods for climate data sets, and that special attention be given to homogenization on data sets following the introduction of automatic weather stations.

Climate database management systems

3.2.4.22 Congress noted with satisfaction the status of the programme to coordinate the development and implementation of advanced CDMSs, with associated capacity building and technology transfer.

3.2.4.23 Congress noted with appreciation the work of CCI in defining the standards of functionality and capability of the future WMO CDMS. It further noted the completion of the review of the testing and documentation of the seven CDMSs being offered by Members. Congress stressed the critical importance of that activity, especially for developing countries, and noted with appreciation that the fifty-fourth session of the Executive Council had encouraged the VCP donors to give a high priority to implementing future CDMSs, including training. The report of the evaluation and documentation of the seven systems was distributed so that Members might compare them and determine which systems would best meet their future CDMS needs. Congress regarded that as critically important, as the systems that used the CLICOM project software were becoming obsolete. In view of the importance of that project, Congress requested the Secretary-General to ensure that CDMS training material and *Manuals* be prepared and distributed, together with a programme of regional workshops, and that evaluation and testing of subsequently offered CDMSs be conducted.

3.2.4.24 Congress further noted that the CLICOM data management system was still in use in many countries and recommended that WMO continue to support Members still using it. It stressed that efforts must be made to assist in the transition from CLICOM systems to future CDMSs.

3.2.4.25 Congress urged Members to provide the necessary climate experts and technical assistance to the developing countries in support of the WCDMP. It urged Members to exploit fully the information being provided for the benefit of their

service, and requested the Secretary-General to explore the provision of extrabudgetary funds to support the installation of the CDMS and data rescue hardware in developing countries, and to support pilot projects to resolve issues related to the transition to CDMSs. Congress requested the president of CCI to liaise with the presidents of regional associations to ensure that climate data, data management, monitoring and analysis needs were addressed in the implementation of RCCs.

3.2.4.26 With regard to software capabilities, Congress recommended that a mechanism be established to enable the free exchange of CDMS components for functions such as the generation of products. It further recommended, to those Members who offer their CDMS for others, that they integrate functions to handle hydrological database management.

3.2.5 WORLD CLIMATE APPLICATIONS AND SERVICES PROGRAMME, INCLUDING CLIPS (agenda item 3.2.5)

Implementation of CLIPS

3.2.5.1 Congress noted that many significant advances had taken place in both the science and the approaches to delivering climate information and prediction services over the period. Those included overall progress and specific achievements in observing the climate system, in modelling and forecasting on seasonal to interannual timescales, and in interpreting, combining and distributing climate forecasts from different centres. It further noted that there had also been significant growth in the Regional Climate Outlook Forum process, in understanding the links between the climate system and socio-economic activities, in identifying beneficial applications, in estimating the potential value of climate services, and in collaborating with decision makers in specific applications sectors. An increasing demand for climate services in many parts of the world had accompanied those developments, encouraged in part by the Forum process.

3.2.5.2 Congress noted the establishment of a CLIPS Web Site to promote, inter alia, the sharing of information among Member countries, relevant WMO Commissions' OPAGs and the Secretariat. It noted its importance in promoting further the sharing of information on data management, climate prediction, applications and user requirements, and capacity building of Member countries.

3.2.5.3 Congress urged all NMHSs to create and implement plans for the development of climate services where those did not yet exist, taking into consideration current activities throughout their respective countries and regions. Within that context, Congress stressed the importance of the CLIPS project for underpinning the improvement of climate services in a wide range of sectors. Considering that

critical role of CLIPS, Congress highlighted the need for adequate financial support for the project and for resources to be made available within NMHSs to CLIPS-related activities. Congress acknowledged the support provided by various Members, organizations and institutions to the delivery of CLIPS outcomes.

3.2.5.4 Congress observed that one objective of the CLIPS project, namely the fostering of an end-to-end approach to the development and delivery of climate services, would benefit from a focused research agenda. That research agenda should be broadly based, encompassing the development of operational forecasting, application techniques, communication and presentation methods, and verification. The research agenda should also include issues like impact analysis and the development of various tools for use in seasonal forecasting and applications. The agenda should therefore integrate and complement the existing research being conducted within the WCRP, related WMO Programmes, and other institutions. It should be developed further through broad consultation, and its implementation should be planned in consultation with WCRP.

Requirements for integrated data and products

3.2.5.5 Congress stressed that progress in developing application services was critically dependent on ready access to climatological data by those concerned with the development of those services. Congress, therefore, urged NMHSs to examine their data distribution policies with the objective of eliminating any impediments to the provision of climatological data, within the terms of Resolution 40 (Cg-XII) — WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities.

Developments in operational seasonal to interannual climate prediction

3.2.5.6 Congress noted that the survey conducted on the present status of climate forecasting provided the first comprehensive overview of the rapidly developing state of operational seasonal climate prediction among WMO Members. Congress noted the usefulness of the review and urged that the survey be repeated at appropriate intervals. It requested the Secretariat to examine how future surveys, such as those available on verification methodologies, might be coordinated with existing annual reviews covering long range or seasonal forecasts carried out by other WMO Programmes, such as CAS and CBS.

3.2.5.7 Congress noted that several projects were currently examining the integration of climate prediction information into the decision processes. Congress also noted that there was a need for further work in that area and that many conversions of forecasts into decisions for applications were currently made, employing subjective processes of

unproven validity. Congress requested the Secretary-General to consider as a matter of priority the organization of a multidisciplinary conference on decision processes in climate applications. The participants to that meeting would include policy makers, climate experts and users from various sectors. The structure of the conference should be designed to ensure that its outcomes and recommendations were applicable to the roles and functions of NMHSs. Some Members expressed their willingness to help in the preparations for the conference.

3.2.5.8 In considering the current stage of development of seasonal to interannual prediction and the need to develop and advise end-users of improved methods for using available forecast information, Congress requested that:

- (a) Additional techniques be developed to provide the full probability distributions of seasonal to interannual predictions, with special emphasis on intraseasonal variability, onset and cessation of rainfall;
- (b) Further attention be given to the development of ensemble prediction techniques and downscaling methods using, for example, nested limited area climate models;
- (c) Efforts continue on the development of methods for reaching consensus on the optimal approaches to combining predictions from the diverse seasonal to interannual methodologies in use.

3.2.5.9 Recognizing the current limitations of seasonal to interannual climate prediction, Congress stressed that any method chosen to inform users should be consistent with user needs, such as intraseasonal variability, onset and cessation of rainfall. Congress recommended that forecast products be tailored to user-specific needs, e.g. soil moisture and river discharge. Congress agreed that verification methods for quality assessment of probability forecasting and for communication of uncertainties, scope, and limits of forecasts to users would need greater attention by establishing expert teams which would work on those issues in more detail. Recognizing the importance of that matter, Congress noted the need to schedule a workshop to explore those subjects.

Integrating CLIPS with climate applications and services

3.2.5.10 Congress encouraged NMHSs to make further efforts to collaborate with users, including other government bodies at all levels, from local through national, for the application of climate information. Congress was pleased to note the successful outcome of the CLIPS Food Chain Showcase Project and expressed its gratitude to the United Kingdom for supporting the work. Of particular interest were the demonstrations of the need for close coordination between meteorologists and end-users, and of the effectiveness of objective methods for determining forecast value and for

defining application strategies. Congress expressed the need to have similar projects carried out in other countries.

3.2.5.11 Congress observed that, for some regions and during some seasons, advances in prediction capabilities in recent years had been converted into substantial benefits. That applied especially to countries in and around the Pacific Basin during *El Niño and La Niña* events, as well as to parts of Africa and the Americas. Congress appreciated the *El Niño* update regularly issued by WMO and recommended its continuation. Congress recognized that advances in seasonal prediction capabilities were yet to be realized for other parts of the world. It therefore called for more research, e.g. through CLIVAR, to determine the potential for seasonal predictability in such regions, for instance, in regard to Asian monsoon.

3.2.5.12 Congress expressed its appreciation for the contribution of other WMO Commissions in fostering the goals of CLIPS, noting in particular the CLIMAG project, a joint initiative of international global system research programmes such as START and others, and supported by CAgM. It further recognized the need for CLIPS to foster or align itself with similar activities in other application areas, for example, the Development of a European Multimodel Ensemble System for Seasonal to Interannual Prediction (DEMETER) Project.

Infrastructure for intraseasonal and seasonal to interannual climate prediction

3.2.5.13 Congress noted with appreciation the important role played in recent years by the Regional Climate Outlook Forums, centres like the Drought Monitoring Centres, and especially the CLIPS contribution, in providing some infrastructure for delivering authoritative forecast information to NMHSs and, ultimately, to end-users. Congress noted that more than 30 Forums had been held throughout Africa, South and Central America, the Caribbean, the Pacific and Asia. The Forums were now regularly scheduled in most of those regions. Congress further noted the contribution made by various stakeholders, including the private sector, to the success of Regional Climate Outlook Forums. However, Congress noted the concerns expressed in different Forums on the sustainability of the Climate Outlook Forums. Congress expressed the need for more resources to be allocated to sustain the process. It also urged regional associations, in collaboration with WMO and other partners, to consider alternative approaches in conducting Regional Climate Outlook Forums.

3.2.5.14 Congress noted with appreciation the contribution made by Climate Outlook Forums to bring together climate forecasters, policy makers and end-users. It recommended that that collaboration be strengthened. Furthermore, Congress appreciated the establishment of a CLIPS national centre in Russia as well as climate centres in Beijing and in Tokyo. The centres were planned to support the

Climate Outlook Forum process in their respective regions.

3.2.5.15 Congress commended the organizers and participants of the International Expert Meeting on Regional Climate Outlook Forums (Pretoria, South Africa, 16-20 October 2000) and expressed its appreciation to the Government of South Africa for hosting the event. Congress endorsed the recommendations of the Meeting and urged the relevant WMO technical commissions to contribute to their implementation.

3.2.5.16 Congress noted that the Intercommission Task Team on Regional Climate Centres, established by the fifty-second session of the Executive Council, had proposed that Regional Climate Centres might undertake some of the responsibilities of organizing Regional Climate Outlook Forums. Congress emphasized the need that any development in the Forum process itself take due consideration of progress towards establishing the role and functions of Regional Climate Centres.

Capacity building

3.2.5.17 Congress noted the success of the CLIPS Focal Points Training Workshops on Climate Applications and Prediction in RAs I and V and acknowledged the support of contributing Members and of other institutions. Additionally, Congress expressed its appreciation to the Cooperative Institute for Mesoscale Meteorological Studies at the University of Oklahoma (United States), for arranging follow-up training for the Focal Points. The increased potential for using the Internet to assist NMHSs to undertake climate prediction research was noted. In that connection, Congress agreed that further development of new and existing Web sites for that purpose by Members would be a tangible contribution to the implementation of the CLIPS capacity-building objectives. Congress urged that CLIPS Training Workshops should be arranged for the outstanding regions and subregions as quickly as resources permitted.

3.2.5.18 Congress was pleased with the development of the CLIPS Focal Point programme. It stressed that an effective way to build capacity, given the relative complexities in handling intraseasonal and seasonal to interannual forecasts and their applications, was to concentrate training on a number of identified individuals. Congress noted that RAs I, II, III, V and VI had agreed to the concept of appointing national CLIPS Focal Points, whereas RA IV opted for the appointment of regional CLIPS Focal Points. It urged all Permanent Representatives who had not yet appointed Focal Points to do so at the appropriate time.

3.2.5.19 Recognizing the value of developing a culture of mutual support among CLIPS Focal Points, Congress recommended that subregional groupings of Focal Points be developed, based around appropriate rapporteurs and climate working groups appointed by the regional associations.

Congress urged each regional association to consider an approach appropriate to its region and to establish mechanisms by which such subregional coordination could best be achieved.

3.2.5.20 Congress commended the development of the CLIPS Curriculum as an effective means for involving a large number of organizations in the CLIPS project and also for making available a high level of expertise in all aspects of capacity building within the CLIPS project. Congress requested all organizations with the appropriate level of expertise to cooperate to the maximum possible extent in the further development of the Curriculum.

Climate and human health

3.2.5.21 Congress noted the interest in biometeorological activities within CCI, including the development of a variety of climate indices. It noted the particular CCI activity for exploring the need for a "universal thermal climate index", an activity initiated as a result of the Memorandum of Understanding between WMO and the International Society of Biometeorology. Congress urged CCI, in collaboration with CBS, to determine the efficacy and validity of such an index for the operational assessment of human stress in extreme thermal environments and to ensure that it took into account local health effects. Congress stressed the application of climate information in issuing warnings on outbreaks of endemic diseases.

3.2.5.22 Congress noted with appreciation the reports of the Workshops on Health Impacts of ENSO and Climate-related Severe Events in the Greater Horn of Africa (Nairobi, 11-15 February 2002) and on Climate Variability and Change and their Health Effects in the Caribbean, (Barbados, 21-25 May 2002). Congress recommended that those initiatives be extended to other regions.

Showcase Projects: Heat/Health Warning Systems

3.2.5.23 Congress noted the progress made in the Showcase Projects on Heat/Health Warning Systems. It noted with appreciation that the Heat/Health Warning Systems in Rome and Shanghai had progressed on schedule. Congress stressed the need for capacity building for NMHSs in such methodologies and urged CCI to continue to support those activities by organizing other showcase projects on other climatological factors, in addition to heat, and to expand them to other cities in the world. Congress further urged CCI to prepare guidelines on Heat/Health Warning Systems which could be used by NMHSs.

Urban and building climatology

3.2.5.24 Congress was pleased to learn of the activities that addressed environmental issues related to megacities and urban areas. In particular, it noted the active participation of CCI in the International Conference on Urban Climatology, held in Sydney in November 1999. It also noted that the

Commission was preparing a syllabus for specialized training in urban and building climatology. It requested CCI to complete that syllabus as early as possible. It also commended the effort of CCI to address particularly the issues which dealt with urban issues in the context of human health. Congress noted that CCI had given considerable emphasis to that theme and recommended that it be further developed by the Commission through developing specialized training and software that could be readily made available among Members. Congress further urged CCI to include urban heating in addressing activities related to urban climatology.

3.2.5.25 Congress recognized the growing demand for climate data and services to support the various energy sectors. It noted that initiatives to limit greenhouse gas emissions, driven by international concerns and agreements about climate change, were likely to lead to greater demand for services to support the development and operation of renewable energy generation. Congress noted that CCI, at its thirteenth session, had agreed that it should expand its activities in climate services for energy to provide more emphasis on renewable energy and, thus, make climate a resource.

3.2.5.26 Congress requested Members to update their instrumentation and to enhance or establish networks for solar radiation and wind measurements, including the use of satellite remote-sensing data. Congress noted that those enhanced measurements would assist in describing and identifying atmospheric conditions that might benefit the development of renewable energy sources. Congress urged CCI to prepare a report on climate data needs for supporting renewable energy development and also pointed out the necessity both for capacity building and for the development of guidelines for Members in that important area.

3.2.5.27 Congress adopted Resolution 11 (Cg-XIV).

3.2.6 WORLD CLIMATE IMPACT ASSESSMENT AND RESPONSE STRATEGIES PROGRAMME (agenda item 3.2.6)

3.2.6.1 Congress noted with interest the report of the representative of UNEP on the WCIRP. Congress was pleased to note the effort by UNEP to revitalize the WCIRP activities. It was recognized that although financial difficulties were experienced by the programme, a number of important actions were undertaken, including the continuing support to IPCC, support to the 1997-1998 *El Niño* study and some other activities related to climate change. It was further noted that UNEP had improved cooperation with the UNFCCC Secretariat.

3.2.6.2 Congress endorsed the WMO intention to continue partnership with UNEP and the other organizations concerned, in order to implement WCIRP as part of the WCP. Congress requested an enhanced linkage between the WMO components of WCP (WCDMP and WCASP) and the UNEP component (WCIRP). Congress further stated that

with the implementation of ISDR and WMO's involvement in that work, the UNEP/WMO relationship could be closely linked in developing response strategies to climate extremes and the impacts of *El Niño/La Niña*. In that respect, Congress was pleased to note the ongoing cooperation that existed between UNEP and WMO in the scientific and technical assessment of the recent *El Niño*-related anomalies and their widespread social and economic impacts.

3.2.6.3 Congress also reiterated its request to Governments to consider strengthening or establishing, as appropriate, national climate programmes covering climate applications, services and impact assessments and to provide additional resources for coordinating the implementation of related parts of the Climate Agenda.

3.2.6.4 Congress noted the continued support from UNEP for IPCC and GCOS activities. That support, along with that of WMO, funded the majority of the Secretariat activities. Congress was pleased that UNEP was attempting to revitalize the WCIRP activities, through cross-cutting priorities of scientific assessments, analytical tools and guidelines, public awareness and information, and through capacity building. Especially noteworthy was the rapidly developing relationship with WMO on disaster related activities under the ISDR umbrella. Congress requested the Secretary-General to continue the close collaboration with UNEP on all those activities.

3.2.7 WORLD CLIMATE RESEARCH PROGRAMME (agenda item 3.2.7)

3.2.7.1 The report on the scientific progress of WCRP since Thirteenth Congress was presented by Mr P. Lemke, Chairperson of the WMO/ICSU/IOC JSC for the WCRP.

3.2.7.2 Congress expressed its appreciation for the advances being made in the WCRP, under the terms of the Agreement between WMO, ICSU and the IOC of UNESCO. In that respect, the leadership of the WMO/ICSU/IOC JSC in formulating the overall scientific strategy for the programme was especially acknowledged. It was also recognized that WCRP had continued to serve the needs of WMO Members by contributing significantly to the development of climate-related services and applications and to the advances in understanding and modelling climate change, as reflected in the IPCC Third Assessment Report, published in 2001. Those achievements and other results gained from WCRP over the past two decades had demonstrated clearly and in a most practical way the value of investment in long-term research programmes. Such coordinated and collaborative international research efforts were needed for the future maintenance, improvement and extension of our predictive capabilities and their associated services and applications. In that context, Congress re-affirmed its belief in the strength and value of the productive partnership between WMO, ICSU and IOC, and encouraged that such successful

international coordination between institutions and disciplines should be extended to the national level. Congress proposed that the occasion of the twenty-fifth anniversary of WCRP, in 2005, should be used to publicize more widely the achievements and benefits gained from WCRP to date, the challenges still to be addressed, and its plans for the future.

3.2.7.3 Congress was informed that ICSU had been responsible for the input from the scientific community to WSSD. In reporting on successes and failures since the Earth Summit in 1992, ICSU had argued that high-quality, independent research results were essential for integrated assessments needed by the policy makers. IPCC had been able to take advantage of the rapid expansion in global environmental change research, such as TOGA, that had significantly enhanced our understanding of the role of oceans in climate processes. The report to WSSD had concluded that one of the major successes over the past 10 years had been the unprecedented international collaboration within the scientific community to address global environmental change. The recently concluded eleventh session of the United Nations Commission on Sustainable Development had reaffirmed the role that science must play by not only being one of the nine Major Groups but by also providing best available knowledge. That could only be done through the type of excellent partnerships that WCRP was a prime example of. The sponsorship by WMO, ICSU and IOC ensured that the programme had both a solid scientific basis as well as a firm governmental framework. In 2001, the four global change programmes, sponsored by ICSU, had decided to form an Earth System Science Partnership (ESSP). ICSU was very pleased with that development and the strengthening of global change science through the close collaboration of WCRP with the other programmes. That would provide essential components of the follow-up to WSSD and would provide an interdisciplinary science aimed at global sustainability. New challenges, such as ESSP, were demanding from a scientific point of view, and necessitated new and innovative approaches based in the forefront of basic research in many disciplines. A basis for that new partnership was the growing collaboration that existed between WCRP and IGBP, which was critical to the success of that unprecedented undertaking. ICSU welcomed the recent deliberations of JSC on the future scientific directions, structure and priorities of the WCRP. ICSU had also recently launched the Priority Area Assessment on its portfolio in the environment area and its relationship to sustainable development, which was anticipated would lead to additional support for the development of WCRP as well as continued development of the ESSP partnership. The ICSU statement stressed the importance that WCRP be given sufficient financial support to develop its programme. In particular, it stressed the need for Governments and various funding

agencies to realize the importance of providing at least 2 per cent of the research funding in support of the international planning and coordination efforts. ICSU, through its national members, would continue efforts to increase funding for WCRP. ICSU also urged national delegations to Congress to ensure continued and stabilized funding of that important undertaking. ICSU remained fully committed to supporting WCRP and viewed the past successes and future directions as essential components in making science more policy relevant. WCRP provided one fundamental building block in the attempts by the world scientific community to address the challenges of sustainable development.

3.2.7.4 The representative of IOC expressed satisfaction with the arrangements and management of the WCRP, and informed Congress that the twenty-first IOC Assembly had expressed great satisfaction at the achievements of the WOCE programme. The Assembly had attributed the programme's unqualified success to the sustained WMO/ICSU/IOC WCRP partnership and cited WOCE as an outstanding example for planning, managing, and executing large-scale, international ocean science programmes. Recognizing the fundamental role of the ocean in the climate system, IOC was now strongly committed to working with WCRP and WMO to ensure the success of CLIVAR. The GCOS/GOOS/WCRP Ocean Observations Panel for Climate and the CLIVAR Ocean Observations Panel were working together to provide the necessary scientific underpinning for climate research and observations, as well as supporting projects such as GODAE and the Argo profiling-float programme. In November 2002, IOC, with the participation from CLIVAR, had hosted a conference to establish the Indian Ocean GOOS with a focus on ocean observations needed to understand and forecast climate in the Indian Ocean region. In February 2003, the Ocean Observations Panel for Climate and CLIVAR, together with the Inter-American Institute for Global Change Research, had sponsored a workshop to discuss the needs for a South Atlantic Climate Observing System. That workshop had been developed to produce a design strategy for observations and process studies in the South Atlantic required by GOOS/Ocean Observations Panel for Climate and CLIVAR. The IGBP/IHDP/ WCRP Global Carbon Project and the Scientific Committee on Oceanic Research/IOC Advisory Panel on Ocean CO₂ had developed a joint pilot project, the International Ocean Carbon Coordination Project, to facilitate the coordination of large-scale ocean carbon observations over the next decade. The International Ocean Carbon Coordination Project was working closely with CLIVAR to develop an inter-nationally-coordinated approach for hydrographic sections with carbon measurements and a proactive policy of international information and data sharing. In conclusion, the

representative of IOC re-affirmed the continuing commitment to supporting the Joint Climate Research Fund, and through IOC governing bodies, continuing efforts to encourage IOC Member States to support and participate in the marine-related activities of WCRP.

3.2.7.5 Congress voiced its full satisfaction with the significant achievements of WOCE, the oldest of WCRP's projects, which had formally concluded at the end of 2002. Through its planning, observational and analysis phases, WOCE had lasted two decades and had been by far the biggest and most successful ocean programme to date. Its achievements were celebrated at a final international scientific conference, 'WOCE and Beyond', held in San Antonio, Texas (United States) in November 2002. Congress was pleased to acknowledge that the legacy of WOCE included: significantly improved ocean observational techniques (both in situ and satellite-borne); a first quantitative assessment of the ocean circulation's role in climate; improved understanding of physical ocean processes; and improved ocean models for use in weather and ocean forecasting, and in climate studies. The observations and technical advances made during WOCE had laid the foundation for successful implementation of many aspects of the activities of GOOS and JCOMM. That applied especially to GODAE and the associated Argo project of global profiling floats. Congress commended all concerned for ensuring that, within four years of the last data being collected, the WOCE data resource (about 20 Gbytes) had been quality-controlled and freely distributed on DVDs and via the Internet. WOCE results had been documented in almost 1 800 refereed publications, a highly-regarded WOCE book entitled *Ocean Circulation and Climate: Observing and Modelling the Global Ocean*, had been published in 2001, and a four-volume WOCE Atlas was near completion. Much remained to be done in the exploitation of WOCE observations and in the further development of schemes to assimilate data into ocean models. Congress therefore noted with approval that those aspects of ocean research and model development would be incorporated, as planned, into WCRP's CLIVAR study.

3.2.7.6 Congress noted with appreciation the progress that had been made in all the other WCRP core activities since Thirteenth Congress. Most significant had been the implementation of many projects under the auspices of the CLIVAR study, which had started in 1995 and had published its implementation plan only in 1998. CLIVAR aimed at understanding natural climate variability and human-induced climate change as well as extend the range and accuracy of seasonal to interannual climate predictions. It had been designed as a successor to both the TOGA project (1985-1994) and WOCE (1982-2002). Congress took particular note that regional studies to improve our ability to predict climate on seasonal to decadal timescales had been

implemented in Africa, the Americas, and the Asian-Australian region. Activities specific to the Atlantic, Pacific and Southern Ocean basins and adjacent areas were also being organized. Particular emphasis had been placed on the study of monsoons, which affected much of the world's population and which had major societal and economic consequences. Another fundamental concern was ocean-atmosphere interaction. Congress acknowledged the comprehensive report on the intercomparison and validation of ocean-atmosphere energy flux fields, which had been produced by the joint WCRP/Scientific Committee on Oceanic Research of the ICSU Working Group on Air-Sea Fluxes in November 2000. That assessment of the state-of-the-art air-sea flux determination and the accuracy of available air-sea flux products had been reviewed subsequently at the joint WCRP/Scientific Committee on Oceanic Research Workshop on Intercomparison and Validation of Ocean-atmosphere Flux Fields, held in Potomac, Maryland (United States) in May 2001. With respect to the CLIVAR global framework, it was a major challenge to find the resources and to gain commitments to ensure that key observations could be sustained for multi-year periods and that homogeneous records of acceptable quality could be maintained. Another priority was the validation and refinement of the models needed for predicting climate variations such as ENSO. Efforts were being made to ensure that the maximum benefit would be drawn by all nations from improving climate predictions, and that results were disseminated as widely as possible. In recognizing the complexity of the climate system and the often chaotic nature of its dynamics, Congress reaffirmed its support for CLIVAR and stressed the need to continue to give a high priority to the study of climate variability at all spatial and temporal scales, including intra-seasonal timescales. In particular, the need for more information on, and understanding of, the frequency, severity and potential changes in extreme events was stressed.

3.2.7.7 Congress was impressed with the continuing accomplishments of GEWEX, which focused on studies of atmospheric and thermodynamic processes that determined the global hydrological cycle and energy budget and their adjustment to global changes. The first phase of GEWEX had been celebrated at its fourth International Scientific Conference, held in Paris in September 2001. GEWEX Phase I accomplishments included 10-25 year global datasets of clouds, precipitation, water vapour, surface radiation and aerosols (those had served as a first global reference for such parameters, indicating some regional variability, but not yet indicating significant global trends); implementation of improved land-surface and cloud parametrizations in most regional and global weather forecasting and climate models (that had led to improved representation and

prediction of precipitation); initial results from the first five GEWEX continental-scale experiments (those had made progress towards the closure of the regional water and energy budgets and were helping to determine the importance of 'recycling' and diurnal processes for regional predictions). Congress recognized that the GEWEX global data sets, which now covered up to 20 years, made use of both in situ as well as remotely-sensed data, with a major participation of environmental satellite agencies, and that they served as a reference for the assessment of present climate and the validation of climate change models. In that context, Congress was informed of the significant contribution of the Global Precipitation Climatology Centre of the *Deutscher Wetterdienst* (Offenbach, Germany), which continued to produce a gridded gauge analysis for the GEWEX Global Precipitation Climatology project, and was reminded that such critically-needed and valuable climate data sets could only be produced if Members provide their data in a proper and timely fashion. Congress requested therefore that a further request for such data should be organized by WCRP. Congress also noted that the continental-scale experiments had been extended in order to document most major climate patterns, and now included semi-arid regions in Australia and the Sahel. Those continental-scale experiments allowed, for the first time, the comprehensive modelling and evaluation of the components of the water cycle over large river basins. In that context, Congress was pleased to hear that China would continue its strong support for, and direct involvement in, such WCRP activities by embarking on a second series of major field experiments during the period 2004-2007. Congress was also pleased to note that, throughout its Phase I, GEWEX scientific results had led to over 20 special issues of respected journals, a dozen or so review articles, over 5 000 citations and the widespread distribution of over 5 000 CD-ROMS of GEWEX data.

3.2.7.8 Congress was informed that GEWEX had begun a new major phase of its implementation, aimed at a fully global description of the Earth's water cycle and energy budget, at the development of improved capabilities for forecasting of precipitation and for predicting changes in the water cycle associated with climate variability and change, and at the development of tighter links with the water resource and applications communities. An excellent illustration of that evolution was the development and implementation of a major new component, the Coordinated Enhanced Observing Period (CEOP). CEOP aimed at collecting a comprehensive data set (from in situ, satellite and modelling sources), in order to achieve a global description of the various components of the water cycle for the years 2002-2004, as a basis for simulation and prediction experiments. CEOP had been recognized by the IGOS Partnership as a pilot study contributing to the IGOS Integrated Global Water Cycle Observations

Theme, for which WCRP was playing the leading role. Congress noted with approval the development and implementation of GEWEX Phase II since Thirteenth Congress.

3.2.7.9 Congress recalled that the WCRP SPARC project had the objectives of investigating the influence of the stratosphere on climate and the coupled chemical and dynamical radiative processes that controlled changes in the stratospheric circulation and composition, including particularly ozone depletion and increased penetration of ultraviolet radiation into the troposphere. Congress learned that the achievements of the project, to date, had been summarized at the Second General Assembly of SPARC, held in Mar del Plata, Argentina, in November 2000, which had generated significant attendance and interest. Congress noted with approval that SPARC had continued its significant efforts in the detection of stratospheric trends, which could indicate climate change or could affect climate. That included assessments of trends in stratospheric temperature, vertical distribution of ozone, upper tropospheric and stratospheric water vapour. In particular, Congress commended the publication of the SPARC *Assessment of Upper Tropospheric and Stratospheric Water Vapour* (WCRP-113, WMO/TD-No. 1043), in December 2000. Congress was also delighted to hear that the Norbert Gerbier-MUMM International Award for 2003 had been conferred on an international team of 17 SPARC scientists for their paper "Stratospheric temperature trends: observations and model simulations", published in *Reviews of Geophysics*, Volume 39, Number 1, February 2001. Work was now under way on a stratospheric aerosol climatology; an updated stratospheric reference climatology had been finalized; and the SPARC data centre, established in June 1999, was being used extensively. Also, SPARC studies in the dynamics and transport in the lower stratosphere and upper troposphere had demonstrated convincingly the existence of additional predictive potential associated with stratospheric observations and the inclusion of stratospheric layers in general circulation models of the atmosphere. A two-month field experiment had been conducted in the region of Darwin, Australia, in October-December 2001. Scientists from Australia, Japan and the United States had participated in the experiment, which had been designed to study gravity waves that were generated by tropical convection and were capable of entering the lower stratosphere. Congress acknowledged that the first decade of SPARC research had generated significant and important results and that the project had received wide international recognition.

3.2.7.10 Congress was informed that WCRP Arctic Climate System Study (ACSYS), established in 1994 to understand better the role of the Arctic in the global climate system, would finish with a final international scientific conference, to be held in

St. Petersburg, Russia, in November 2003. Congress acknowledged that the achievements of the ACSYS decade included:

- (a) Creation of a basis for improved numerical simulations and re-analysis studies of the complex system involving polar atmosphere, oceans, sea-ice and land;
- (b) Provision of a framework for active deployment of drifting buoys by the International Arctic Buoy Programme, declassification of submarine observations, deployment of moored sonars, intensification of ship-based studies, generation of new satellite products, and collection and upgrading of circumpolar data sets;
- (c) Providing a rationale to Members for maintaining meteorological observing networks in remote locations;
- (d) Stimulation of enhanced regional (Arctic) process studies;
- (e) Intercomparison projects which had led to advances in modelling of the polar environment and created a better basis for projections of amplified impact of the climate change in the polar region (an important aspect of the IPCC assessments).

Congress congratulated all those concerned with the development and implementation of ACSYS and expressed its best wishes and support for a successful final conference in St. Petersburg.

3.2.7.11 Congress was delighted to learn that the JSC had endorsed the CliC project in 2000, which aimed at understanding all components of the cryosphere and its interactions with the global climate system. Unlike ACSYS, CliC was a global project, which would build on the experience and results gained through ACSYS. The first Science and Coordination Plan for CliC had been published in January 2001, and an implementation strategy was being developed. Congress expressed the need to support CliC not only by Members with direct interests in polar environments but by the wider global community.

3.2.7.12 Since 1995, WCRP had also been supporting the International Programme for Antarctic Buoys, which had proved its high value in filling gaps in surface meteorological observations in the Southern Ocean. Furthermore, recent assessments had shown that the International Programme for Antarctic Buoys had helped to reduce uncertainties in the analysis of mean-sea-level pressure in that region and created a significant positive impact on the accuracy of satellite altimetry. Congress therefore urged Members to continue their support for that programme by the coordinated deployment of drifting buoys which reported their observations through the WMO GTS.

3.2.7.13 Congress observed that the fundamental unifying and integrating theme in the WCRP was the development of comprehensive global models of the full climate system, pulling together and building on the scientific and technical advances in the other

discipline-oriented WCRP activities. Such models were the fundamental tools for understanding and predicting natural climate variations and for providing reliable estimates of anthropogenic climate change. WCRP modelling activities were centred mainly on the CAS/JSC Working Group on Numerical Experimentation and on the WCRP Working Group on Coupled Modelling. Congress appreciated the substantial work in WCRP devoted to internationally-coordinated model intercomparison exercises as a means of identifying and reducing errors in climate simulations. The current situation had been reviewed at a workshop on model systematic errors, hosted by the Australian Bureau of Meteorology Research Centre in Melbourne in October 2000. Congress observed that most systematic errors had diminished considerably over the past decade, particularly as a result of finer spatial resolution models and refinements in the representation of physical processes. Nevertheless, some common errors (e.g. excessive zonality, characteristic regions of positive or negative anomalies in geopotential height) still appeared in model integrations after a few days. The second Atmospheric Model Intercomparison Project Workshop, held in Toulouse in November 2002, had brought out the need to focus on the dynamical mechanisms and better representation of processes in models. Coupled model intercomparison projects had also been organized, and standardized experiments were being undertaken, which should help in reaching consensus on climate change. The results produced by those activities in WCRP had been a key input to all the IPCC Assessments. Congress noted with approval that closer cooperation had been established with the Global Analysis, Integration and Modelling element of the ICSU-sponsored IGBP, in particular in the organization of the Coupled Carbon Cycle Climate Model Intercomparison Project.

3.2.7.14 Congress re-affirmed the importance of the series of re-analysis projects (providing homogeneous data sets for climate diagnostic studies and model validation) that had been promoted by WCRP in recent years. In particular, the ongoing ambitious and comprehensive 40-year analysis project at ECMWF (ERA-40) was progressing well and was already providing multi-year homogeneous data sets that were essential for a wide range of climate diagnostic studies in support of not only WCRP-related research, but also many operational services and applications. Congress recognized that those re-analyses were highly sought after and used by the international research and operational communities. An exciting development was the decision of JMA to conduct a new 25-year re-analysis for the period 1979-2004, which was expected to be completed in 2005. Congress was pleased to learn that JMA would provide results and related products to both NMHSs and the international research community. An Internet site would be established to enable that.

3.2.7.15 Congress was pleased to note that the WCRP had continued to promote the development of regional climate research capabilities through the active involvement of scientists worldwide in its activities. In particular, WCRP had achieved that through the GEWEX continental-scale experiments being conducted in Africa, the Americas, Asia, Australia and Europe; through the over 30 CEOP reference sites, which had extended the geographical distribution of experimental sites related to the continental-scale experiments; and through the major CLIVAR studies of monsoon systems in Africa, the Americas, Asia and Australia. Congress re-emphasised the importance of WCRP's continued co-sponsorship, with IGBP IHDP, of START.

3.2.7.16 Congress welcomed the increased and closer cooperation that existed between WCRP and the other global environmental change programmes, IGBP, IHDP, and now also DIVERSITAS (an international programme of biodiversity science). A particular highlight of that collaboration had been the Global Change Open Science Conference, held in Amsterdam in July 2001 which had been an outstanding success. Of the 1 400 participants from 105 countries, more than 400 had come from 62 developing countries; there had also been 150 students. The Conference had presented exciting scientific advances of the past decade, drawing primarily on the work of the international global change programmes. In recognition of the growing need for such collaborations, WCRP, IGBP, IHDP and DIVERSITAS had established the Earth System Science Partnership (ESSP) for the integrated study of the Earth system, the changes that were occurring to the system, and the implications of those changes for global sustainability. In that context, three projects (on the global carbon cycle, on food systems, and on global water system) were being developed and implemented, with a fourth on global change and human health being actively considered. Congress applauded the new collaborative initiatives that had been taken by WCRP as a member of the ESSP, and encouraged their further development and implementation.

3.2.7.17 In considering the future scientific direction, structure and priorities of WCRP, the JSC had begun to explore the concept of a comprehensive WCRP-wide initiative on predictability and prediction under the tentative title, "Climate system observational and prediction experiment (COPE)". Among other priorities, JSC intended to reinforce WCRP's efforts in the research priority areas signalled in the IPCC Third Assessment Report (especially those listed under modelling and process studies).

3.2.7.18 In conclusion, Congress agreed that WCRP had continued to be most effective in pursuing its objectives through a number of large-scale research, observational and modelling projects that focused on climate problems that required international commitment, coordination and

collaboration. Congress therefore duly approved the continuation of the Agreement between WMO, ICSU and IOC on the conduct of WCRP as adopted in Resolution 9 (Cg-XIII) — World Climate Research Programme. Congress also agreed on the priorities set for WCRP in the programme and budget for the fourteenth financial period.

3.3 ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME (agenda item 3.3)

3.3.0 ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME; THE REPORT OF THE PRESIDENT OF CAS (agenda item 3.3.0)

3.3.0.1 Congress expressed its appreciation for the information provided in the documents presented concerning AREP. It thanked both the president of CAS and the Secretary-General for their efforts. The information confirmed that the activities within the Programme followed the direction provided by the 5LTP and the relevant resolutions of Congress and the Executive Council.

WMO Research Award for Young Scientists

3.3.0.2 Congress noted with satisfaction the significant increase in the number of applicants for the Award, thus showing the interest of WMO Members and the increased credibility of the Award. Furthermore, Congress encouraged its Members to continue to support the Awards, in particular by encouraging the submission of papers in atmospheric science and hydrology.

Report of the president of CAS

3.3.0.3 Congress reiterated the satisfaction expressed by the fifty-fourth session of the Executive Council at the manner in which CAS was conducting its activities and was of the opinion that the modifications to the CAS terms of reference proposed by CAS and endorsed by that session of the Executive Council were appropriate and consistent with its perceived role in support of WMO, Programmes and Long-term Plans. Congress also noted that CAS maintained its Working Groups' structures and that the fifty-fourth session of the Executive Council had decided not to re-establish as Executive Council Panels of Experts the CAS Working Group on Environmental Pollution and Atmospheric Chemistry and the CAS Working Group on Physics and Chemistry of Clouds and Weather Modification Research.

Sixth WMO Long-term Plan (2004-2011)

3.3.0.4 Congress noted that the present orientation and priorities of activities would significantly contribute to the WMO vision, desired outcomes, strategies and associated goals of the 6LTP. In particular, it stressed the role of WWRP in addressing aspects of the socio-economic consequences of high impact weather and its activities with respect to improved forecast technologies which would allow WMO Members to

meet their responsibilities regarding protection of life and property. In addition, the contribution of GAW to the protection of the environment, on scales from local to global, was also highlighted.

Support to Ozone and Other Environment-oriented Conventions

3.3.0.5 Congress noted that the Commission strongly supported a number of activities within GAW that had led to high quality atmospheric composition information from that programme being used by scientists and policy makers in support of a number of environmental conventions. Those conventions were concerned with stratospheric ozone destruction, climate change, long-range transboundary air pollution and environmental impacts of persistent organic pollutants. Congress, furthermore, agreed with the views expressed by the fifty-fourth session of the Executive Council (general summary paragraph 5.2.2 of the *Abridged Final Report with Resolutions of the Fifty-fourth Session of the Executive Council* (WMO-No. 945)) and CAS-XIII (general summary paragraph 4.1.16 of the *Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Atmospheric Sciences* (WMO-No. 941)) that GAW should investigate the possibility of conducting scientific assessments on, for example, one of the greenhouse gases and aerosols.

Global Atmosphere Watch

3.3.0.6 Bearing in mind the continued public and governmental concerns for environmental issues, Congress supported the overall strategy for implementing GAW in the period up to 2007, as approved by the Commission. It noted that the network of GAW Regional and Global Stations was being stabilized and complemented by infrastructure improvements in areas such as education and training, quality assurance mechanisms, station audits and scientific assessments. Those, Congress emphasized, were necessary for maintaining consistent and known data quality in the GAW programme. Members and the international GAW community were kept informed of programme developments through dissemination of newsletters and, increasingly, through the Web.

3.3.0.7 Considering the growing need for integration of satellite and non-satellite data on atmospheric composition, Congress welcomed the initiative of CAS and its Working Group on Environmental Pollution and Atmospheric Chemistry to assist GAW in developing partnerships with space agencies to develop a plan for an Integrated Global Atmospheric Chemistry Observations (IGACO) activity under IGOS that would eventually lead to a more comprehensive description of global atmospheric composition.

3.3.0.8 Congress agreed with the Commission that the urban component of GAW — the GURME project — was viewed by Members as an important undertaking by WMO. It provided an international

framework for urban air pollution modelling and other environmental issues while underscoring the role the NMHSs had in supporting the observation, study and management of urban environments. Congress recognized that that project needed to work with other WMO partners such as WWRP, WCP and CIMO, as well as WHO and city governments.

World Weather Research Programme

3.3.0.9 In reviewing progress with WWRP, Congress supported the view of CAS that that programme had made an excellent start since its creation at the twelfth session of CAS. It had concentrated on high impact weather events that had realistic chances of being addressed through research campaigns: that were judged as having the capacity to produce a verifiable and significant outcome; and that they would be important for society. Congress agreed with the Commission that the programme should not over-extend itself, but rather concentrate on a relatively small number of high priority projects. In that regard, Congress recognized the importance of THORPEX and endorsed the views of CAS that its development should be strongly encouraged. THORPEX, it was recalled, would examine predictability and issues concerning observing systems, and would establish the potential to produce significant statistically-verifiable improvements in forecasts of high-impact weather. In addition, Congress supported the view of CAS that the programme should establish enhanced systematic procedures to secure sufficient resources to sustain approved projects over a number of years.

3.3.0.10 Congress commended the Commission for its substantial efforts in developing a WMO Statement on the scientific basis for, and limitations of, weather and climate forecasting. Congress agreed with the fifty-fourth session of the Executive Council that the Statement presented the issues in a balanced manner and that it would provide important guidance for NMHSs in their dealings with Government officials, users, the media and the general public.

Activities of the CAS/JSC Working Group on Numerical Experimentation

3.3.0.11 Congress was satisfied with the fundamental role played by the CAS/JSC Working Group on Numerical Experimentation regarding all relevant CAS activities, and the essential cooperation through the Working Group, between CAS numerical weather prediction research and the climate modelling efforts of the WCRP.

3.3.0.12 Congress noted that the great improvements in general weather forecasts that had occurred over recent decades were not yet reflected in the quality of quantitative precipitation forecasting. That was because forecasting precipitation quantitatively, especially heavy convective precipitation, was technically a more challenging problem. Considering the advances in observing and computing capability, and bearing in mind the

increasing problems of flooding, Congress emphasized that quantitative precipitation forecasting should be addressed by the scientific community and NMHSs as one of its grand challenges.

3.3.0.13 With respect to the performance of the main global operational forecasting models, the Working Group routinely reviewed the skill from a number of main operational centres in terms of verification scores. Congress was interested to learn that despite distinct increases in skill in the northern and southern hemispheres in recent years, it was disappointing that that was not matched in tropical regions. Therefore, Congress agreed with CAS that the development of improved understanding and techniques for numerical weather prediction in the tropics was another challenging problem for the scientific community and operational NWP centres.

Tropical Meteorology Research Programme

3.3.0.14 In its consideration of that priority programme, Congress agreed that considerable progress had been made since the Tropical Meteorology Research Programme was re-designed by the twelfth session of CAS. Congress recognized that great challenges existed for improving the prediction of tropical cyclone landfall. In an effort to expand the international expertise available for tropical cyclone forecasting studies, Congress noted with satisfaction the programmes of Canada and the United States to study hurricane structure, motion, amplification and extratropical transition, as well as similar activities being conducted in Australia; China; Fiji; Hong Kong, China; Japan; and the Republic of Korea in the western Pacific region, and welcomed the close collaboration that existed between WWRP and the Tropical Meteorology Research Programme.

Physics and Chemistry of Clouds and Weather Modification Research

3.3.0.15 Congress acknowledged the active role which CAS continued to play in promoting the improved understanding of the underlying science associated with the physics and chemistry of clouds and the translation of that knowledge into practical applications such as weather modification. The programme also provided the WMO Statement on the status of weather modification and the Guidelines for advice and assistance related to the planning of weather modification activities for use by Members, and recommended that those roles continue.

3.3.1 SUPPORT TO OZONE AND OTHER ENVIRONMENT-ORIENTED CONVENTIONS (agenda item 3.3.1)

3.3.1.1 Congress recognized that the GAW programme had a prominent role to play in monitoring global atmospheric composition. Through the GAW ozone network, WMO was providing unique and comprehensive continuous series of non-satellite ozone measurements available. Those data

were essential for the detection of long-term trends in ozone and therefore was a major contributor to the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol. Congress endorsed continuation and further development of that activity. Furthermore, it appreciated the leading role of WMO in periodic assessments of the state of the ozone layer, such as the recently published *Scientific Assessment of Ozone Depletion: 2002*, and for providing the annual series of *Antarctic Ozone Hole Bulletins*. Continued support by GAW of observations and analysis for UNFCCC and Climate Agenda activities was needed. Congress also recognized the important support provided by WMO to the Convention on Long-range Transboundary Air Pollution by co-chairing the Task Force on Measurements and Modelling of EMEP.

3.3.1.2 Congress welcomed the explicit mention in the *Strategy for the Implementation of the Global Atmosphere Watch Programme (2001-2007): A Contribution to the Implementation of the WMO Long-term Plan (GAW-142, WMO/TD-No. 1077)* of the need to expand the use of GAW data for, *inter alia*, scientific assessments. In that regard, the recognition of GAW as the key network for atmospheric composition measurements in GCOS was emphasized since GAW was global in scope and atmospheric chemistry data were critical to the assessment of climate change. Congress also urged CAS, in cooperation with relevant programmes and agencies, to investigate the possibility of conducting more periodic assessments for some of the greenhouse gases and aerosols. Such assessments would provide important information to both the IPCC and the Parties to the UNFCCC.

3.3.2 GLOBAL ATMOSPHERE WATCH (agenda item 3.3.2)

3.3.2.1 Congress expressed its satisfaction with the development of GAW, which was created in 1989 to encompass the existing WMO monitoring activities that focused on global issues of changing atmospheric composition. It noted that by strengthening the measurement network and by continuing to develop essential support facilities and training, WMO was positioned to contribute extensively to the implementation of the relevant parts of the Rio Declaration and Agenda 21, especially Chapter 9 — Protection of the atmosphere. Scientific advice was being provided by the GAW Scientific Advisory Groups. Congress especially acknowledged the global support facilities of GAW operated by Canada, Germany, Italy, Japan, the Russian Federation, Switzerland and the United States that maintained the GAW Station Information System, primary gas standards, measurement calibration, quality assurance/science activity and World Data Centres. Congress was pleased by the strong support provided by other Members in the development and maintenance of GAW activities. Congress urged all the Members operating GAW

global and regional stations to submit data to the World Data Centres in a timely manner. Recognizing the critical need to maintain and develop atmospheric composition measurements in developing countries, Congress urged Members to contribute to dedicated central Trust Funds through which their contributions could be focused on outstanding infrastructure problems in the global GAW network. A notable case was the Trust Fund for Research and Systematic Observations relevant to the Vienna Convention established by its Parties in 2003.

3.3.2.2 Congress noted that the scientific input to the debate on environmental issues must be derived from an adequate knowledge basis. That could only be achieved through high quality, strategically-oriented observations, and research related to the particular issues. That necessitated the maintenance and improvement of proper global environmental observing systems like GAW. Congress affirmed that GAW filled an important gap by ensuring systematic collection of atmospheric composition and related data worldwide, which was done according to comparable and clearly defined measuring criteria by promoting standardization, quality assurance and coordinated data processing and by facilitating the distribution and provision of available information to a varied group of users. It was noted that a key role of GAW was to promote capacity building for atmospheric composition measurements and modelling in developing countries. That complex international task, Congress acknowledged, was being addressed by WMO in collaboration with international organizations and the scientific community. In particular, Congress recognized the importance of the Brewer spectrophotometer component of the GAW global ozone and ultraviolet network and the urgent need for capacity building through training and the maintenance, calibration and upgrade of those instruments in developing countries similar to the current practices for the Dobson network. In that regard, Canada, as developer of the Brewer spectrophotometer and host of the GAW World Standard for Brewer measurements, was pleased to announce an annual contribution of US\$ 30 000 to a WMO Trust Fund dedicated to capacity building through training and the maintenance, calibration and upgrade of Brewer instruments in developing countries operating GAW stations. The WMO Secretariat was asked to coordinate the optimal use of those funds through its GAW programme and associated Scientific Advisory Groups and to encourage others to contribute to that Fund. With respect to the request of Region I countries operating GAW global stations, Congress recognized the importance of coordination of regional measurement activities facilitated by the Region and GAW. It urged that other regions consider the need for such coordination. Congress emphasized that the training and education needs for GAW participants from developing countries needed to be a continuing priority for GAW and

extended its appreciation to the Government of Germany for its substantive support for the GAW Training and Education Centre and to the Czech Republic for conducting training in ozone measurements.

3.3.2.3 Congress recognized the lead role that GAW was playing in developing strategies for integrated non-satellite and satellite measurement systems for atmospheric composition in the context of the multi-agency IGOS partnership. It also encouraged CAS to assist GAW in developing partnerships with space agencies for that important activity. Integrated data systems and the resulting chemical data sets were essential for the development and evaluation of atmospheric transport and climate models and for realizing the full potential of satellite observations in global trends detection.

3.3.2.4 Congress welcomed the close cooperation of GAW with the atmospheric sciences and environment protection communities both within and beyond NMHSs including many international, regional and national organizations and programmes such as EMEP, IAEA, IAMAS, IGAC, UNEP and WHO. The need for close cooperation and coordination of international activities was stressed in particular for such environmental issues as smoke and haze pollution resulting from biomass burning, urban pollution, persistent organic pollutants and other potentially toxic substances. It was the intent of GAW to increase the involvement of NMHSs in climate studies, for example, by encouraging GAW stations to be used as aerosols and chemical composition platforms for the Atmospheric Brown Cloud project, the goal of which was to reduce the uncertainty of natural and man-made aerosols and air pollutants in climate forcing.

3.3.2.5 Satisfaction was expressed by Congress with respect to continued GAW assistance and advice provided to address urgent environmental problems such as the transboundary transport of smoke and air pollution in South and South-East Asia and long-range atmospheric transport and deposition of pollution. GAW was encouraged to continue to provide its expertise to existing and emerging environmental issues where possible. Continued GAW collaboration with established major chemistry precipitation deposition networks in North America, Europe and East Asia and the development of networks in areas with critical gaps in measurement was needed. CAS was encouraged to foster merging regional precipitation chemistry data sets into a global GAW database handled by the appropriate GAW World Data Centre and to make the data available through a central Web site.

3.3.2.6 In reviewing the GAW GURME Project, Congress noted the excellent progress made in the GURME pilot projects in Beijing and Moscow. It also noted that workshops had been held in China and the Russian Federation to determine the requirements of Member countries for development

of the project. Those workshops resulted in guidelines for GURME. A workshop on Air Quality Forecasting was held in Malaysia followed by an experts workshop in Mexico (supported by the United States). Congress was pleased that training and technology transfer aspects and information exchange in operational and applied air quality forecasting capabilities had been addressed in GURME. Congress recognized the importance of including heat island studies in GURME and noted with satisfaction that the city projects had already begun to address that question. Congress recommended that forecasting workshops and pilot projects be continued in other parts of the world.

3.3.2.7 Congress was pleased that Australia and the United States had developed a prototype database containing results of a number of research campaigns relating to transport and dispersion of atmospheric pollutants. Those results would be of great interest to the modelling community in conducting both sensitivity and verification studies. Congress noted that the database had been provided to each Regional Specialized Meteorological Centre for emergency response.

3.3.3 WORLD WEATHER RESEARCH PROGRAMME (agenda item 3.3.3)

3.3.3.1 Congress noted with satisfaction the continued progress made in the programme, aimed at facilitating international action to improve forecasting of high impact weather in support of the operational meteorological community. It was noted that the programme focused on weather events where there was a good likelihood of garnering sufficient international resources and where such research would lead to a verifiable and significant outcome.

3.3.3.2 Congress was informed that both the WWRP Mesoscale Alpine Programme, whose objective was the understanding and prediction of intense weather in mountainous areas, and the Aircraft In-Flight Icing Project were successfully conducting research campaigns. Congress, aware that both those projects were addressing topics which affected the safety of human life, encouraged the international research teams in their efforts to develop societal applications of their work.

3.3.3.3 Congress noted with satisfaction the great success in the implementation of the WWRP Sydney 2000 Forecast Demonstration Project, and urged that further steps be taken for technology transfer to the operational community. Congress noted with satisfaction the efforts of the China Meteorological Administration to prepare a WWRP Forecast Demonstration Project in association with the 2008 Olympic Games in Beijing. The Sydney 2000 Forecast Demonstration Project team was encouraged to maintain continuous interaction with the planning efforts for the Beijing 2008 Forecast Demonstration Project.

3.3.3.4 Congress was pleased with the substantial progress made in developing the Mediterranean Experiment on Cyclones that Produce High Impact Weather in the Mediterranean, and urged active participation of Members in the region.

3.3.3.5 Congress considered that sand and dust storms could result in serious socio-economic dislocation in many arid and semi-arid regions of the world. It, therefore, supported the organization of a multidisciplinary international symposium on sand and dust storms, to be held next year in China — with co-sponsorship of the China Meteorological Administration, WMO and other scientific organizations — and a WWRP workshop focusing on development of coordinated research plans, to be held in conjunction with the symposium.

3.3.3.6 Congress noted with satisfaction the efforts made by the Meteorological Service of Morocco for research development and operational performance of its NWP system based on the ALADIN model. In that connection, Congress encouraged that further efforts for transfer of limited-area models to developing countries should be continued.

THORPEX

3.3.3.7 Congress noted that THORPEX was being developed as a 10-year international research programme, under the auspices of CAS and its WWRP, to accelerate improvements in short-range (up to three days), medium-range (three to seven days) and extended-range (week-two) weather predictions and the social value of advanced forecast products. THORPEX would examine global-to-regional influences on the predictability of high-impact weather and establish the potential to produce significant statistically-verifiable improvements in forecasts of those timescales. Therefore, Congress fully endorsed the rationale and basic ideas of THORPEX, and the establishment of an International Science Steering Committee and an International Core Steering Committee for THORPEX to lead the planning and implementation of the programme.

3.3.3.8 Congress noted that THORPEX would not address directly the overall question of the optimization of the GOS, but would rather demonstrate through regional projects that by adding observations in specific areas, by using new observing techniques including targeting observations, by applying advanced data assimilation systems, the numerical weather prediction products could be improved. Research results of THORPEX would serve as advice and recommendations to CBS to facilitate the overall coordination of the GOSs. Congress therefore considered it to be essential to have a strong link between CAS and CBS on that question, and requested that an expert designated by the president of CBS serve as a member of the International Core Steering Committee.

3.3.3.9 Congress noted that THORPEX would emphasize improvements in the observing strategy

over sparse areas of the globe and especially the oceans. Therefore, in addition to coordination with CBS, THORPEX should maintain strong links with JCOMM to coordinate oceanic and atmospheric measurements. In that connection, Congress supported the plan for carrying out Pacific, Atlantic, Asian and other THORPEX Observing System Tests and regional forecast demonstrations, and urged Members to participate actively in those tests.

3.3.3.10 Congress noted that THORPEX and the WCRP, particularly in the design and complementary objectives to improve predictability with THORPEX, focused on timescales of two weeks and shorter. Congress considered it essential for close cooperation between THORPEX and WCRP particularly in the design and implementation of GOS tests and numerical model development.

3.3.3.11 Congress endorsed the decision of the International Core Steering Committee to set up a THORPEX International Programme Office in Geneva, with the understanding that the Office would have to be jointly financed by the THORPEX participants, and encouraged the continued efforts of the International Science Steering Committee, WWRP and the International Core Steering Committee to seek sponsorship for THORPEX from Members and international bodies.

3.3.3.12 In order to ensure that the full benefits of the programme were realized, Congress emphasized that it would be essential for THORPEX to address science and technology transfer issues, and coordinate its activities with other WMO Programmes and a number of existing international research and application programmes.

3.3.3.13 In that connection, Congress adopted Resolution 12 (Cg-XIV).

3.3.4 TROPICAL METEOROLOGY RESEARCH PROGRAMME (agenda item 3.3.4)

3.3.4.1 Congress noted the evident progress made in the programme since its last session. It recalled that the series of International Workshops on Tropical Cyclones had been a feature of WMO's Tropical Meteorology Research Programme for many years and had resulted in several publications as well as a forecast guide. Congress, therefore, was pleased to note that the fifth workshop in the series, held in Cairns, Australia in December 2002, resulted in important recommendations addressed to WMO, research communities and practicing forecasters, thus the essential global and forecaster-researcher character of the series had been maintained.

3.3.4.2 With respect to the role of the Monsoon Activity Centres in New Delhi, Nairobi and Kuala Lumpur, Congress agreed with the CAS Working Group on Tropical Meteorology Research that those Centres should also serve as dissemination and coordination centres for NWP products relevant to monsoon forecasting, as well as data centres for ENSO and interannual variability studies in the region. Congress urged CAS to provide the

necessary guidance and technical assistance to those Centres with their increased responsibilities.

3.3.4.3 Congress agreed with the recommendation of the Second International Workshop on Monsoon Studies (New Delhi, March 2001) that an ongoing Web-based training document should be developed in order to update forecasters on developments of direct relevance to monsoon forecasting.

3.3.4.4 Congress noted the increasing progress being made in the field of ensemble forecasting, and therefore encouraged further research in that field and its practical application through the implementation of limited-area modelling projects for tropical countries.

3.3.4.5 Congress recognized that great challenges existed for improving the prediction of landfalling tropical cyclones and welcomed the close collaboration between the WWRP and the Tropical Meteorology Research Programme in developing an International Tropical Cyclone Landfall Programme, which would contribute to improving further safety and to reducing the economic losses of tropical cyclone affected countries.

3.3.4.6 Congress welcomed the Canadian initiative supported by CAS to hold the second International Workshop on Extratropical Transition of Tropical Cyclones in Halifax, Canada in November 2003.

3.3.5 PROGRAMME ON PHYSICS AND CHEMISTRY OF CLOUDS AND WEATHER MODIFICATION RESEARCH (agenda item 3.3.5)

3.3.5.1 Congress noted the outcomes of the different meetings, workshops and conferences organized in the programme and expressed its overall satisfaction for the systematic effort made by the programme in support of the continuous interest of many WMO Members in the areas for hail suppression and precipitation enhancement, as well as for improved parameterization of cloud processes in weather forecasting models and for a better understanding of the behaviour of clouds in climate.

3.3.5.2 Congress was particularly pleased by the outcome of the eighth WMO Scientific Conference on Weather Modification organized in Casablanca in April 2003. The Conference demonstrated once again the very large interest in the subject, with more than 40 countries participating and reporting considerable achievements in weather modification. Congress was pleased to note the clear benefit of advanced technology and computers for those activities, thus allowing dramatic improvements in parameters in cloud observational capabilities and more complex modelling of clouds and mesoscale processes, leading to a sound scientific approach in planning of weather modification activities. The initiative led by Morocco for the launching of a Regional Precipitation Enhancement Project in the north-western part of Africa was endorsed and participating countries were encouraged to plan and execute according to the scientific requirements reflected in the WMO guidance.

3.3.5.3 Congress noted with appreciation that many WMO Members were conducting operational and research weather modification activities concerning precipitation enhancement and hail suppression. However, the need to conduct rigorous analyses of the results for international peer review was considered essential. Therefore, CAS was requested to review the criteria for assessing the success of weather modification experiments and, in collaboration with IAMAS, to redefine them based on recent advances in cloud microphysical measurements, on the application of statistics and on the scientific discussions which took place at the eighth WMO Scientific Conference on Weather Modification in Casablanca.

3.3.5.4 Congress noted with concern the new additional evidence, also presented at the eighth WMO Scientific Conference on Weather Modification, that was pointing to an apparent substantial reduction of the rainfall efficiency of clouds by plumes of smoke caused by biomass burning (agricultural practices, forest fires, cooking and heating) and industrial processes. Congress also noted the evidence that such non-raining clouds could regain their raining ability once they moved over oceans or large bodies of water (such as the Aral Sea) because sea-salt was then mixed into the clouds and overrode the detrimental effect of the smoke particles. Therefore, Congress recommended that CAS establish an ad hoc group on biomass burning and smoke plumes in general, and entrusted it to prepare a summary report for information to the Members addressing relevant issues such as (a) the climatology of smoke and weather active aerosol (cloud condensation nuclei) plumes; (b) the in situ and remote measurement of cloud condensation Nuclei and cloud droplet concentrations; (c) strategies to reduce biomass burning and hence the density of smoke plumes; and (d) the seeding procedures and evaluation methods to re-establish raining ability of clouds affected by smoke plumes. Congress requested CAS to report to Fifteenth Congress.

3.3.5.5 Congress noted with appreciation that in order to recognize, stimulate and award further scientific work, the Department of Water Resources Studies, Office of His Highness the President of the United Arab Emirates, had decided to provide the necessary funds for establishing a United Arab Emirates Prize for Excellence in Advancing the Science and Practice of Weather Modification in collaboration with WMO. That competitive Prize would be open for institutions, groups and/or individual scientists. It would be awarded in three categories, the First Prize would amount to US\$ 250 000, the Second Prize to US\$ 200 000 and the Third Prize to US\$ 150 000. At first, the Prize would be awarded at the end of 2004 and the Secretary-General was requested to arrange for the necessary collaboration.

3.3.5.6 Congress also noted with interest the outcome of the WMO International Workshop on Hygroscopic Seeding: Experimental Results, Physical Processes and Research Needs, jointly organized by WMO, the National Centre for Atmospheric Research and the Mexican State of Durango, in Mexico (December 1999). Congress agreed that the better scientific understanding of the results obtained through hygroscopic seeding was a key to future improved precipitation enhancement experiments. Congress furthermore requested CAS to pursue its strategy to elucidate further the scientific questions associated with those techniques.

3.3.5.7 Congress was also pleased by the Secretary-General's initiative to examine the possibilities of the European Union support to precipitation enhancement in the Mediterranean Basin, south-east Europe and the Middle East and recognized the potentially important contribution that any increase in precipitation could make to the region's water resources. It urged its Members and WMO to continue to play an active role in that long-term project. Congress urged NMHSs of the region to examine thoroughly the available climatological and microphysical information for establishing feasibility for precipitation enhancement in advance of attempting weather modification experiments.

3.3.5.8 Congress noted with satisfaction that both the WMO Statement on the status of weather modification and the Guidelines for advice and assistance related to the planning of weather modification activities were revised by CAS and that the new versions were endorsed by the fifty-third session of the Executive Council.

3.4 APPLICATIONS OF METEOROLOGY PROGRAMME (agenda item 3.4)

3.4.1 PUBLIC WEATHER SERVICES PROGRAMME (agenda item 3.4.1)

3.4.1.1 Congress noted with appreciation the progress and development of the PWS Programme and expressed satisfaction with the successful implementation of the Programme according to the direction provided by the 5LTP and the decisions of Thirteenth Congress.

3.4.1.2 Congress recalled that the main purposes of the PWS Programme were to assist Members to provide comprehensive public weather services to the community with particular emphasis on public safety and welfare, and to provide guidance on educating the public on how best to use those services. In that respect, Congress reiterated the role of the Programme in making contributions to certain key issues facing Members, particularly capacity building, enhancing credibility and visibility, building alliances with major partners especially the media, and natural disaster mitigation and reduction. Congress agreed that the Programme had made

considerable strides over the last four years. It noted, however, that Members, especially developing countries, still needed assistance to develop their capabilities to deliver effective public weather services in the face of ongoing changes on global and national levels, and to address issues ranging from dwindling Government support to the adverse effects of natural disasters on sustainable development and the visibility of NMSs. Congress strongly endorsed the need for the Programme to respond effectively to those issues and to continue to assist NMSs so that they could demonstrate the usefulness and indispensability of their services in fulfilling their role in national development.

3.4.1.3 Congress recalled that under the overall guidance of CBS, the OPAG on PWS had continued to provide the framework in which the Programme had been implemented. Congress expressed satisfaction that during the intersessional period, the Programme had focused on important issues by providing guidance on preparation and dissemination of effective forecasts and warnings, verification and service evaluation, coordination with emergency management and strengthening relationships with the media and had developed training material and conducting training events. It agreed that the provision of relevant and high quality PWS to their national communities constituted the most effective way for NMSs to enhance their visibility and credibility. Congress endorsed the strategy and direction developed by the OPAG on PWS in achieving its mandate and in addressing the needs and concerns of Members.

Capacity building and training

3.4.1.4 Congress recalled its request to the Secretary-General that the PWS Programme should give the highest priority to assisting Members in strengthening and improving their national PWS programmes, by placing emphasis on capacity building and transfer of technology. It expressed satisfaction with efforts in that regard especially since training events had been conducted on a stringent budget and in collaboration with other scientific and technical programmes of WMO so as to optimize the use of available resources. Twelve training events were conducted since Thirteenth Congress, covering all WMO Regions. Congress foresaw increasing future needs of Members, especially NMSs in developing countries, to enhance their capabilities to deliver high quality public weather services. It especially requested that more training efforts be directed to develop and strengthen the communication and presentation skills of the staff of NMSs. Congress requested the Secretary-General to increase efforts to assist Members in capacity building and training activities. It expressed appreciation to all Members who had provided hosting facilities and resources for those events.

3.4.1.5 Congress was pleased to note that feedback from Members had shown that due to training activities, national PWS programmes had

improved to a large extent. It stressed that the PWS Programme should continue to monitor and report on the effectiveness of training activities and on the national PWS improvements resulting from Programme initiatives.

Media relationships

3.4.1.6 Congress highlighted that a major requirement for NMSs, especially those in developing countries, was for competent handling of the media. It requested that training in media skills continue to be emphasized in the PWS training programme for NMSs staff and especially forecasters, to enable them to communicate skilfully. Congress noted the availability of a television studio in the Secretariat building and encouraged its use for future media training activities. In that connection, it pointed out the benefits of consolidating resources and budgets available within WMO in the direction of media training. Congress expressed appreciation to those Members in particular, the United Kingdom, who had generously provided equipment and requisite training to facilitate the preparation and delivery of PWS in a significant number of developing countries. It drew attention to the need for upgrading such systems in order to maintain the provision of high quality products vis-à-vis private media companies.

3.4.1.7 Congress was pleased to note the emphasis placed by the Programme on achieving the positive partnerships with the national and international media while focusing on promotion and preservation of the authority of NMSs as the single official voice for the issue of warnings and the official source of public forecasts. It stressed the importance of maintaining and enhancing the visibility of NMSs when the media delivered those services to the public through encouraging national and international media organizations to attribute the source of their information to the NMSs concerned.

3.4.1.8 Congress noted that the issue of reducing the role of NMSs in the direct provision of services had arisen in several countries and expressed the view that such a trend could lead to reduced visibility of NMSs. On a more positive note, Congress noted the positive outcome of dialogue with international broadcasters and the consequent beneficial engagement of IABM with the PWS Programme. It endorsed the continuation of such dialogue with international broadcasters to develop additional strategies for cooperation as well as the enhanced use of official and consistent information by the media. Congress welcomed the development of mechanisms under the aegis of WMO including utilizing the Internet to facilitate increased media access to NMSs' warnings and forecasts.

3.4.1.9 Congress welcomed the information about the first International Conference on Weather Broadcasting, to be organized by IABM in Barcelona, in June 2004 in partnership with WMO. It was especially pleased that a training workshop would take place in conjunction with the Conference and

looked forward to the active participation of the PWS Programme in that event.

3.4.1.10 Congress welcomed information on the participation of the PWS Programme at the thirteenth International Weather Festival in Zagreb in March 2003 where the work of the PWS Programme in assisting Members with their media training efforts and the importance of official authentic information, especially warnings prepared by NMSs, was especially highlighted. The participants at the Festival were particularly appreciative of the efforts to improve the relationships between the media and NMSs.

Relations with the private sector

3.4.1.11 Congress noted that a number of Members had mechanisms for dialogue with private sector meteorological service providers and that that was useful in promoting mutual understanding of respective roles. Congress felt that it would be useful if a mechanism similar to that of IABM could be found to enable and foster dialogue between WMO and the private sector meteorological service providers.

Pilot projects on the international exchange of public forecasts and warnings through the Internet

3.4.1.12 Congress noted with appreciation the establishment of two Web sites to develop a methodology for the international exchange of NMS forecasts and warnings. Both Web sites were developed and managed by Hong Kong, China with the first, by the Severe Weather Information Centre, designed to facilitate access by the international media to official NMS warnings. That Web site was launched as an operational trial in September 2001. The latest version provided advisories from 16 Members, including 12 from the ESCAP/WMO Typhoon Committee and four from the RA V Tropical Cyclone Committee. The latest participating region in the project was the Central Pacific, but the future plans included extension of the project to include other tropical cyclone basins. In welcoming the initiative of the Severe Weather Information Centre, Congress requested that the project be further developed to include other types of weather warnings.

3.4.1.13 Congress welcomed the progress on the second Web site project, the World Weather Information Service. It noted that the Web site was implemented on a phased basis, with climatological information for selected cities in Phase I and city forecasts in Phase II. The operational trial of Phase I was launched in December 2001 with climatological information to date for 879 cities from 152 Members. Phase II was launched in December 2002 currently with forecasts from 81 Members covering 777 cities worldwide. Congress appreciated the efforts by Oman and China to host the Arabic and Chinese, versions, respectively, and was pleased to note that the Arabic version of the site was launched during

Congress. It requested further development of the project and the promotion of awareness and use of the Web sites. In a different but related development, Congress welcomed the European Multi-services Meteorological Awareness Project of EUMETNET for improving methods for display and exchange of warnings. Congress commended Hong Kong, China for its lead role in the management and development of both projects and urged active participation by Members in the projects. Congress further welcomed the initiative of Hong Kong, China to organize a training course on the use of Internet technology and for offering fellowships to developing countries for attendance.

Support to natural disaster reduction

3.4.1.14 Congress emphasized that a strong linkage should be ensured between the PWS Programme and the new cross-cutting WMO Natural Disaster Prevention and Mitigation Programme in view of the fact that natural disaster mitigation and public response was a major concern to Members. In particular, it invited the PWS Programme to establish a project which aimed at enhancing public awareness as regarded tropical cyclones. Congress underlined the important role of the PWS Programme in assisting Members to develop strategies for effective warning services, dissemination and presentation of warning products and use and understanding of warnings by the public and appreciated the development of guidelines on the above issues.

3.4.1.15 In addition to the technological aspects, Congress reiterated that effective coordination with emergency management was essential for dissemination of timely, reliable, relevant and understandable warnings to trigger appropriate actions to mitigate loss of life and property. Congress noted that strengthened liaison between NMSs and emergency management organizations would lead not only to better coordination at national levels but also to improved recognition of NMSs. It therefore appreciated that guidelines had been prepared on improvement of relationships between NMSs and emergency management organizations.

3.4.1.16 Congress welcomed the ongoing cooperation that existed between the PWS Programme and the ISDR Secretariat and noted with interest that the second Conference on Natural Disaster Reduction would be held in Kobe, Japan in 2005. Congress encouraged collaboration and input from the PWS Programme in the Conference. It further encouraged NMSs to maintain contact with the ISDR Secretariat in order to be better informed about international aspects regarding natural (and other) disaster reduction activities.

Verification and service assessment

3.4.1.17 Congress was pleased to learn that according to its request, the Programme provided assistance to Members in conducting product verification and service evaluation. It commended

the publication of guidelines on the topic of verification and user-based assessment. Congress urged Members to use the feedback from users of PWS as input into the design and development of new public weather products and services. Furthermore, it noted that with the trend towards the development of quality management processes, those initial steps would go a long way towards enabling Members to monitor and improve continuously their PWS. Congress requested the Secretary-General to assist Members with their efforts regarding that important issue.

PWS and the Olympics

3.4.1.18 Congress noted with appreciation the successful PWS/WWRP weather and climate project at the 2000 Sydney Olympics. In addition, the PWS Web site had been linked to the Olympics Web site of the Bureau of Meteorology, thus allowing access to weather information during the Olympic games. It was informed that the PWS Programme had been requested to prepare generic guidelines on the requirements for weather support for the Olympics to be provided by the International Olympics Committee to prospective Olympics host countries for adoption to their own specific weather and climate conditions.

3.4.1.19 Congress welcomed the information concerning preparations for the Athens 2004 Olympics. The Web site dedicated to the Olympics would be linked to the WMO Web site for operation during the Games. The collaboration with the Australian Bureau of Meteorology during the 2000 Sydney Olympics had proved very fruitful to the meteorological support committee of the Hellenic NMS who had the opportunity to observe the preparations made by the Bureau as well as the methodology used for the meteorological support of the Games. Similar type of collaboration was planned for the Beijing 2008 Olympics whereby the China Meteorological Administration would share the experiences of their Hellenic counterparts in provision of support to the Olympics.

PWS and the tourism industry

3.4.1.20 Noting that the tourism industry was one of the target audiences of public weather services of growing importance, Congress was pleased that steps had been taken to strengthen collaboration with that sector. It noted with appreciation the participation of the PWS Programme at the first conference on Tourism and Climate Change in Tunisia in April 2003, where discussions were held with the Secretary-General of the World Tourism Organization regarding the future closer cooperation between the Organization and WMO's scientific and technical programmes, such as PWS.

Application of new technology

3.4.1.21 Congress stressed the extreme importance of keeping abreast of technological advancement for service provision and delivery and expressed

satisfaction with the emphasis on the application of new technology and research, including workstation systems, integration and packaging of weather information, communication and dissemination mechanisms and Internet communications, and their impacts on public weather services. It was pleased that guidelines had been prepared to inform NMSs of advances in such technology and research in the provision of public weather services. It strongly encouraged the strengthening of cooperation between developed and developing countries to enable the realization by developing countries of the benefit of the application of new technologies. In advising the Programme to continue monitoring emerging needs and opportunities for new and improved products and services, Congress requested that steps be taken to explore methods of incorporating air quality forecasts and bio-meteorology information into PWS delivery. It welcomed the designation by CBS of the RSMC Offenbach specifically for ultraviolet-B forecasts. In that regard, Congress encouraged efforts to develop standardized formats for exchange of warnings and forecasts with a view to facilitating such exchange.

Publications

3.4.1.22 Congress commended the Programme on the publication and distribution of several guidelines, especially targeting developing countries needing guidance in specialized areas. A wide range of topics were covered in those publications, including media issues, the application of new technologies and research to the design, the presentation and dissemination of PWS, service assessment, use of the Internet for PWS-related information exchange, the use of official, consistent information, improving public understanding and use of warnings, cross-border exchange of warnings and forecasts and related information.

PWS Programme and the WMO structure

3.4.1.23 Congress agreed that the PWS Programme was gaining increased importance among Members in view of the close relationship that existed between the performance of NMSs in delivering public weather services and how Governments view the value of their NMSs. That was particularly so in the case of Members with developing NMSs who needed assistance in delivering useful and understandable services to their communities. It therefore was of the view that the Programme needed to have more visibility within the WMO structure and noted the view expressed by several delegations concerning actions that should be taken to that effect. Congress suggested that that issue be kept in view when discussions on any changes to the present structure of WMO took place. Congress also considered that there could be merit in oversight at the Executive Council level of the PWS Programme in close coordination with the related new programme on natural disaster prevention and mitigation.

Trends and challenges

3.4.1.24 Congress acknowledged that the important socio-economic and technological changes which had taken place had presented both challenges and opportunities to NMSs, in particular regarding the provision of public weather services. Globalization and commercialization, competition and new product sources could result in a growing tendency to reduce public funding in NMSs, placing them under increasing pressure to review and optimize their activities and to highlight their role as providers of services such as severe weather warnings and forecasts, and other public weather services products.

3.4.1.25 Congress stressed that as part of responding to those challenges, NMSs must demonstrate to Governments and the users how weather, climate and environmental issues impacted sustainable development. NMSs should seek opportunities to emphasize the economic value of weather services and the public good by their wide availability and use, while at the same time promoting user awareness of the indispensable value of their products and services. In terms of advantages, Congress was of the view that the increased availability of data and technological advances coupled with advanced information technology, enabled provision of services to users at the local and regional levels in a more direct and user-oriented way.

Emerging and important issues facing PWS

3.4.1.26 Congress expressed appreciation that the Programme had considered the quality management issue with a view to ensuring adherence to the professional standards necessary for effective NMS operations and services. It noted that important work had been done in the development of guidelines on the roles and responsibilities of NMSs which could serve to guide the PWS Programme. It also noted that significant work on the specification of quality standards had been effectively achieved through the development of guidelines on different aspects of service delivery. Congress noted that that issue was also addressed under agenda item 7.2.

3.4.1.27 Congress acknowledged the growth in interest in information from probabilistic forecasting techniques and encouraged exploring the possible implications of those emerging techniques in the context of PWS. It agreed that appropriate training for forecasters was needed to allow them to develop skills in integrating and communicating that information into public weather products and services.

3.4.1.28 Congress supported the efforts of the Programme in addressing the issue of the economic aspects of PWS by putting emphasis on the articulation of economic benefits of the broad range of services to the community. It noted that there was a growing need for a more widely understood

economic framework to assess the benefits and costs of meteorological service provision.

3.4.1.29 Congress noted the views expressed on the desirability of NMSs exercising regulatory or licensing functions vis-à-vis operators of the private weather sector with a view to enhancing the position of NMSs as the single official voice especially for weather warnings. However, other views were expressed that such regulatory powers might not be within the responsibility of the individual Members. Nevertheless, Congress agreed on the need for strengthening the role of NMSs as the sole providers of severe weather warnings and as the source of official public weather forecasts.

Future directions

3.4.1.30 In view of challenges as well as opportunities facing Members, the cross-cutting nature of the PWS Programme and the contributions the Programme would make to the 6LTP, Congress requested the Secretary-General to give high priority to the following areas:

- I. Assisting Members:
 - (a) To improve national PWS by emphasizing capacity building and transfer of knowledge and technology, including training in media skills and collaboration with users especially emergency management, the media and government agencies;
 - (b) On the use of new techniques and results of scientific research to achieve widespread availability of information, through the application of technological advances in communication, dissemination systems and improved graphics display capability, to the delivery of more effective and high quality public weather services.
- II. Providing guidance to Members:
 - (a) To raise the level of visibility and public awareness of NMSs as the sole, official authority for issuing severe weather warnings, noting that some NMSs issue watches as part of their warning services. Also, to enhance further understanding of, and response to, warnings as part of natural disaster mitigation efforts;
 - (b) On effective formulation, content and presentation techniques, for use by mass media;
 - (c) On the economic valuation of public weather services.
- III. Providing advice to Members on:
 - (a) Regional and global exchange and coordination of routine weather information including warnings, and establishment of appropriate agreements and procedures for such exchanges;
 - (b) Methodologies for assessing the level of service provided, degree of user requirements and satisfaction, and quality control of defined services and products

including verification of warning and forecast products;

- (c) Quality management issues and practices to monitor the quality of the public weather services and products.

3.4.1.31 Congress also urged Members to give high priority to the following:

- (a) Incorporation of users in verification and assessment processes as well as in the development and dissemination of new weather products and services;
- (b) Increasing investment in public weather services with the objective of enhancing their visibility.

3.4.1.32 Congress noted that due to budgetary constraints it was difficult to allocate resources commensurate with the importance of the PWS Programme and, accordingly, requested the Secretary-General to give that issue special consideration in the allocation of budgetary resources and in seeking extrabudgetary funding.

3.4.1.33 Congress adopted Resolution 13 (Cg-XIV).

3.4.2 AGRICULTURAL METEOROLOGY PROGRAMME; THE REPORT OF THE PRESIDENT OF CAgM (agenda item 3.4.2)

3.4.2.1 Congress complimented the president and vice-president of CAgM for the significant accomplishments during its intersessional period, including the organization of a large number of training events and the publication of several proceedings and reports. It agreed that those publications would be a valuable source of information for staff of NMHSs, researchers and other end users.

3.4.2.2 Congress noted with appreciation the report of the thirteenth session of the Commission, which was held in Ljubljana, Slovenia, from 10 to 18 October 2002 at the kind invitation of the Government of Slovenia. Congress further noted the theme the Commission had adopted as the focus for its activities during the next intersessional period, namely "to promote operational applications of agrometeorology using innovative technologies for services to agriculture, silviculture and aquaculture".

3.4.2.3 Congress noted with appreciation the fact that the Commission had agreed and adopted a new structure based on the OPAG concept to allow for both flexibility and rigour in the delivery of its programmes. The Commission established three OPAGs that would focus activities in three key areas: agrometeorological services for agricultural production; support systems for agrometeorological services; and impacts of climate change/variability and natural disasters on agriculture. Congress noted that the chairpersons and co-chairpersons of each OPAG would represent both the scientific and regional aspects. That dynamic structure focused on both scientific and regional expertise to help produce the desired results for the user community. The Commission's new OPAG structure would not only

improve its functioning but would also enhance the responsiveness of the scientific and technical programme.

3.4.2.4 Congress supported the activities proposed by the Commission for implementation during the next intersessional period. Congress noted that three Implementation Coordination Teams based on regional representation were established to coordinate operational and implementation aspects for each of the three OPAGs and that nine Expert Teams mainly based on expertise for developing solutions to scientific/technical problems and for studying issues for which specific scientific expertise was needed were established by the Commission to carry out its activities. Congress noted further the emphasis that would be placed on the provision of improved weather and climate information to farmers and improved support systems for agrometeorological services. Congress also supported the proposal to review and summarize the impact of climate change, climate variability and natural disasters in agriculture. In that regard, Congress welcomed the proposed joint initiative between CAgM and JCOMM to contribute to natural disaster reduction in the coastal lowlands.

3.4.2.5 Congress further noted the main topics discussed at CAgM-XIII, among which were the applications of seasonal to interannual climate forecasts and the products and services that were becoming available based on those forecasts. Congress emphasized the importance of such forecasts as well as agrometeorological forecasts and that the maximum benefit from applications of those forecasts could be derived when there was coordinated and integrated action at all levels, i.e. the climate prediction community, agricultural research and extension personnel, policy makers and farmers. Congress noted that independent, isolated decisions at any given level often missed the synergies that could be derived from well-coordinated action at all levels. Congress was pleased to note the strong collaboration with the CLIPS Programme and it encouraged the Commission to strengthen further that collaboration.

3.4.2.6 Congress agreed with the observations of the Commission that in order to promote increased operational applications of proven agrometeorological techniques and for proper evaluation of their impacts, the NMHSs should establish and promote further effective collaborative links with appropriate research and development organizations in agriculture, forestry and fisheries. Congress urged the Members to take appropriate steps to promote such collaborative links at the national level, such as the establishment of joint committees with the Ministries of Agriculture and Fisheries for the effective delivery of information.

3.4.2.7 Congress concurred with the views of the Commission on the importance of determining the future needs for more efficient management of agrometeorological data to foster improved

agrometeorological applications. In that regard, Congress recognized a greater role for CAgM experts in continuing to identify trends in new technologies and their use in agrometeorological data management.

3.4.2.8 Congress expressed its appreciation to WMO and the co-sponsors of the International Workshop on Reducing Vulnerability of Agriculture and Forestry to Climate Variability and Climate Change, that was held prior to CAgM-XIII. Those co-sponsors included the Asia-Pacific Network for Global Change Research, the Canadian International Development Agency, the Technical Centre for Agricultural and Rural Cooperation, the Environmental Agency of the Republic of Slovenia, FAO, the Fondazione per la Meteorologia Applicata (Italy) and the Laboratory for Meteorology and Climatology, *Météo-France*, the Ministry of Agriculture, Forestry and Food of the Republic of Slovenia, the Ministry of Environment, Spatial Planning and Energy of Slovenia, START, UNEP, the United States Department of Agriculture and the Ufficio Centrale di Ecologia Agraria. Congress requested the Secretary-General to continue to seek co-sponsorship for the organization of such events in conjunction with future sessions of the Commission.

3.4.2.9 Congress noted that the International Workshop in Ljubljana addressed a range of important issues relating to climate variability, climate change, agriculture, and forestry including the state of agriculture and forestry related to current and future climate variability and climate change; the state of agroclimatological and agrometeorological information, including seasonal to interannual climate forecasts; and the potential adaptation strategies for agriculture and forestry to changing climate conditions and other pressures. Congress urged all Members to consider the recommendations of the Workshop that addressed management practices, mitigation measures and adaptation strategies to cope with the increasing vulnerability of agriculture to a rapidly changing climate. Considering the projected impacts of climate change in the arid and semi-arid regions, Congress pointed to the importance of strengthening studies on water saving techniques and technologies. Noting the observation of the Workshop that its recommendations could not be universally applied, Congress pointed out the need for Members to develop strategies that effectively focused on specific regional issues to promote sustainable development. Congress suggested that the Commission should pay special attention to the assessment of impacts of climate change on agriculture and forestry.

3.4.2.10 Congress noted with appreciation the efforts made by the Commission to encourage its members in taking advantage of the rapid advances that were being made in information technology, e.g. audio-video media, Internet etc., for the dissemination of agrometeorological information to users. In that regard, Congress congratulated the

Commission on establishing the World Agrometeorological Information Service, a dedicated Web server on which countries could place their agrometeorological bulletins and advisories and obtain training modules for improving and disseminating their agrometeorological bulletins and advisories. The global Web server was located in the United States, with backup mirror servers located in the Republic of Korea and Italy. Congress encouraged Members to post routinely their agrometeorological products on the Web server.

3.4.2.11 Congress noted that drought, desertification, desert locust invasion and other natural disasters continued to have adverse effects on agricultural and livestock production in many developing countries. Congress suggested that greater attention should be directed to reducing risks associated with the occurrence of droughts and other natural disasters through the introduction of planning to improve operational capabilities (i.e. climate and water supply monitoring and building institutional capacity) and mitigation measures aimed at reducing the impacts of droughts and other natural disasters. In that regard, Congress expressed its strong support for the implementation of activities in support of UNCCD.

3.4.2.12 Congress noted with appreciation the large number of training events conducted within the Agricultural Meteorology Programme, including 10 training seminars, three international workshops, one interregional workshop, four expert group meetings and one consultants meeting on a wide range of topics related to agricultural meteorology. Congress recorded its appreciation for the participation and collaboration of several international, regional and national organizations in WMO activities related to training in agricultural meteorology, in particular to the United States Department of Agriculture, the Institute of Agrometeorology and Environmental Analysis for Agriculture, START, FAO, UNDP/United Nations Sudano-Sahelian Office and UNEP. The Commission requested that the Secretary-General continue to seek co-sponsorship for the organization of such events. Congress, in particular, was pleased with the initiative taken for the publication and distribution of the proceedings of different workshops, and in one case along with a CD-ROM containing free software for data management.

3.4.2.13 Congress also expressed its strong support to continuing the roving seminars, workshops and other training events and missions to support the application of meteorological knowledge and information to agriculture in particular the use of new technologies such as remote sensing and geographical information system as well as dissemination technologies such as radio and Internet (RANET). In that context, Congress reiterated its view that education and training in agricultural meteorology, including technology transfer, training of trainers and users should

continue to receive high priority consideration. Congress indicated that there was a particular need for roving seminars on further development of operational agrometeorological services for farmers as decision makers in agricultural production. In that connection, Congress supported the request of the Commission to the Secretary-General to consider a significant increase in the existing WMO training fund allocation for training in agricultural meteorology.

3.4.2.14 Congress expressed its appreciation for the initiative taken by the Secretariat in establishing collaborative activities with a number of international organizations in implementing the Agricultural Meteorology Programme. Congress noted with appreciation the active collaboration that existed between WMO and FAO in the organization of the Roving Seminars on the Application of Climatic Data for Drought Preparedness and Management of Sustainable Agriculture and on Crop-Yield Weather Modelling. It requested closer cooperation with FAO on scientific and technical activities aimed at providing improved services to farmers and other end-users of agrometeorological information and products. Congress expressed its appreciation to ACMAD for co-sponsoring several training seminars organized by WMO. Recognizing the importance of agrometeorological applications to promote sustainable agricultural production in Africa, the Commission supported the continued participation of WMO in the Scientific Advisory Committee of ACMAD.

3.4.2.15 Congress was pleased to note the initiative taken by WMO to collaborate closely with IGBP's START, WCRP and the IHDP on Global Environmental Change in the CLIMAG project. Congress noted with appreciation that CLIMAG demonstration projects from existing pilot activities in Africa, Asia-Pacific and the Americas had already been implemented in Africa and South Asia. Noting that the partnership between START, WMO, the International Research Institute for Climate Prediction, the Asia-Pacific Network for Global Change Research, the Inter-American Institute for Global Change Research and other relevant organizations was an essential ingredient underpinning the effort of those multidisciplinary teams, Congress encouraged WMO's continued participation in the Task Force on CLIMAG.

3.4.2.16 Congress noted that the Commission convened an Expert Team to complete the revision of the *Guide to Agricultural Meteorological Practices* (WMO-No. 134). Congress reiterated the importance of the third edition to the *Guide*, which would reflect practical methods proven in the fields under a variety of soil and climate conditions and capture the outcome of the WMO/CAGM workshops held in Accra and Ljubljana. In line with the CAGM policies of the past decades, it would focus on services on use and validation of agrometeorological information requirements for the most important staple crops. Special attention should be paid to methods for

agroclimatic assessments in developing countries and to applied agrometeorology in developing countries in general. It should do so also by using new surfaces and new operational applications that evolved as well as by assessing the rapid advances in technology and new developments in agrometeorology. Congress endorsed the idea of the Commission to organize, mid-way through the rewriting exercise, a CAGM workshop on the contents of the revised *Guide*, in which operational use of those contents and quality concerns could be extensively dealt with. It urged that work on the *Guide* should be completed as soon as possible and distributed widely.

3.4.2.17 Congress adopted Resolution 14 (Cg-XIV) on the implementation of the Agricultural Meteorology Programme during the fourteenth financial period.

3.4.3 AERONAUTICAL METEOROLOGY PROGRAMME; THE REPORT OF THE PRESIDENT OF CAeM (agenda item 3.4.3)

3.4.3.1 Congress noted with appreciation the report of the president of CAeM on progress achieved in implementing AeMP since its last session in 1999. Congress expressed its gratitude to the Commission for the valuable contribution to those achievements and its satisfaction by the close and effective collaboration with ICAO and representatives of the aviation user community. Congress re-emphasized the importance it continued to attach to an expanded and vigorous aeronautical meteorology programme to meet the needs of the worldwide aviation community.

3.4.3.2 Congress noted with satisfaction that during the present intersessional period, excellent progress had been made in addressing topical issues highlighted in the AeMP part of the 5LTP. Those included, among other things, training, fostering closer contacts with the aviation community, implementing WAFS, quality management, improving meteorological observations, forecasts and warnings in the terminal area, updating regulatory and guidance material as well as increasing the availability of automated aircraft reports. Congress further noted, with satisfaction, actions taken by ICAO and WMO, at the request of Thirteenth Congress, to address the important issue of the potential impact of ICAO aeronautical meteorological data distribution policy on WMO activities, including the development, in coordination with WMO, of guidance and criteria for the accreditation/qualification of providers of aeronautical meteorological information via the Internet and guidelines for access to aeronautical meteorological information for air navigation support purposes only.

Training in aeronautical meteorology

3.4.3.3 In recalling that one of the highest priorities of the Commission had been training, Congress noted with appreciation that 13 training events had been conducted on topical aeronautical meteorology

issues and attended by a total of 430 participants from all WMO Regions. Congress thanked, in particular, Botswana, Cameroon, Colombia, Indonesia, Malaysia, Mexico, Niger, Senegal, the United Kingdom and the United States as well as ASECNA and ICAO for their valuable contributions to the success to those training events. In view of the imminent advent of the WAFS final phase, Congress urged Members to support ongoing training activities to enable forecasters to access, process and use the GRIB/BUFR-coded WAFS products to produce locally the WAFS charts needed for flight documentation. In that regard, the need for exchanging experiences in the use of relevant software was highlighted. Congress recognized the additional need for conducting seminars on ATS/MET/Pilots Coordination, as well as roving seminars on cost recovery which should involve aviation stakeholders as well as NMS representatives. Congress further recognized the information provided by ICAO that over the next few years there would be a requirement for training in at least five regions to cover workstation operation and the display of WAFS products, and on the highly important issues of recovery of meteorological costs and quality management.

3.4.3.4 Congress learnt that, in order to back up training activities, a large volume of didactic material had been posted under the WMO AeMP Web page and four TREND Newsletter issues that contained scientific and technical information on aeronautical meteorology had been published. Congress noted with satisfaction the introduction of training concepts and innovative means of delivering training as part of the strategy of the Commission for addressing the pressing needs for training in aeronautical meteorology.

3.4.3.5 Congress endorsed the view expressed by CAeM-XII that the support of Members for future training activities was essential since ongoing training activities would continue to be vital for ensuring the sustainability of aeronautical meteorological services, and welcomed information from delegates on their plans for support to training. Congress felt however that the provision of additional funding under the AeMP regular budget would be helpful for ensuring continued training activities in aeronautical meteorology. In that regard, Congress agreed with Recommendation 1 (CAeM-XII) — Training activities of the Aeronautical Meteorology Programme, by which the Commission had requested Congress to ensure provision of additional funding for training under AeMP and, in particular, for convening a technical conference.

Fostering closer contacts with the aviation community

3.4.3.6 Congress noted with satisfaction that the first-ever joint ICAO/WMO letter addressed to ICAO Contracting States and WMO Members in 2000 requested enhanced cooperation at the national level to ensure that the provision of aeronautical

meteorological service continued to contribute effectively towards the safety, regularity and efficiency of international air navigation. Congress was pleased to note that, in 2000, IATA and WMO had established focal points tasked with addressing relevant issues of concern to either party. Congress welcomed the active participation of ICAO and aviation user representatives at relevant WMO meetings and the similar involvement of WMO in a number of ICAO meetings. Furthermore, Congress welcomed the close and harmonious coordination that existed between ICAO and WMO, as well as among ASECNA, ICAO and WMO.

3.4.3.7 Congress noted with satisfaction that the conjoint CAeM Session/ICAO Meteorology Divisional Meeting, held in Montreal in September 2002, addressed a number of important issues of particular interest to WMO Members and made appropriate recommendations as mentioned below. Congress urged all aeronautical meteorological service stakeholders (including the aviation industry) at the national, regional and global levels to continue to foster closer contacts to address issues of interest such as cost recovery and the enhancement of aeronautical meteorological service to meet users' requirements.

Cost recovery

3.4.3.8 Congress noted with satisfaction that, due to appropriate efforts undertaken by WMO Members and the Secretariat at the ICAO Global Conference on the Economics of Airports and Air Navigation Services (Montreal, 2000), the Conference had agreed not to modify the current policies and guidance material on cost recovery from aviation. The modification proposed by IATA would have resulted in the exclusion of core meteorological services that served both aeronautical and non-aeronautical users from being eligible to be partially recovered from aviation. Congress endorsed the invitation to WMO by the conjoint Meeting to continue to arrange, in close coordination with ICAO, seminars on cost recovery for aeronautical meteorological service as a matter of priority. Furthermore, Congress welcomed the series of successful missions conducted jointly by ICAO and WMO to assist in reconciling differences related to the recovery of meteorological service costs in Member countries. Congress urged the two Organizations to provide similar assistance to Members when so requested in the future.

3.4.3.9 Congress urged Members to ensure close collaboration between experts from their countries and the WMO Representative on the reactivated ICAO Air Navigation Services Economics Panel tasked with extending the current guidance on meteorological cost recovery. It also emphasized the continuing, important role played by the Secretariat in representing all Members on matters relating to cost recovery from aviation.

3.4.3.10 Congress was informed that the European Union "Single European Sky" initiative had included

specific arrangements for the provision of air navigation services that could significantly impact the organization of aeronautical meteorological service provision in Europe. Congress noted that those arrangements included, among other things, the separation of the responsibility for service provider from that for the service regulator and a harmonized system of authorization for service provision that would enable a State to designate an exclusive provider of service and also an authorized service provider in one European Union member State to operate in another European Union member State. In view of possible wider implications of the "Single European Sky", Congress requested CAeM and the Secretary-General to monitor closely the situation and to report to the Executive Council.

3.4.3.11 Congress recalled that the designation of the Meteorological Authority was a sovereign decision of each Member. That Authority was responsible for the service provided, regardless of whether the Meteorological Authority provided the service itself or delegated the provision of the service to another entity. Congress noted the view expressed by the fifty-fourth session of the Executive Council, held in 2002, on the advantages for the NMS being designated as the Meteorological Authority, while recognizing that alternative arrangements existed in light of varying situations among countries. Congress noted that for the majority of Members, the Meteorological Authority was also the service provider, but that there was a trend toward a separation between the aeronautical meteorological service regulator and provider, which might possibly continue. In view of that, Congress requested the development of guidance, together with ICAO, concerning the role and responsibilities of the Meteorological Authority.

Quality management systems

3.4.3.12 Congress was informed that quality system provisions based on the ISO 9000 series had been included as recommended practices in Amendment 72 to Annex 3/Technical Regulation [C.3.1] that came in force in November 2001. Congress noted with satisfaction that CAeM-XII had recommended that those provisions should remain as recommended practices rather than being upgraded to standards. Furthermore, Congress welcomed the emphasis contained in the AeMP part of the 6LTP to assist Members in working towards the implementation of quality management systems, and suggested that a pilot project for developing countries be undertaken, while emphasizing that work carried out should be in accordance with overall Congress decisions on the matter of quality management (see general summary paragraphs 7.2.23 to 7.2.37). It also welcomed the planned development of joint guidance material by both ICAO and WMO to assist Members in the development of quality management systems.

Implementation of WAFS

3.4.3.13 Congress expressed its satisfaction about the imminent advent of the final phase of the WAFS, which had come about through the visionary work that commenced more than 20 years ago. Congress was pleased to note the completion of the handover of responsibilities of all Regional Area Forecast Centres to the London and Washington World Area Forecast Centres in early 2002. It noted with satisfaction the continued harmonization of WAFS products generated by the two World Area Forecast Centres as well as the enhanced back up procedures to ensure the continued operations of WAFS in case of system failure in one of the Centres. Congress highlighted the importance of the ongoing training on GRIB/BUFR-coded WAFS products to enable all service providers to produce locally the charts that would not be transmitted on WAFS satellite broadcasts after June 2005. Congress noted with interest the recommendation addressed to WMO by the conjoint Meeting to provide training assistance to States/Members on workstation operation and display of WAFS products using GRIB/BUFR code forms. Congress urged Members concerned to obtain or develop and install adequate software for the decoding and display of GRIB/BUFR-coded WAFS products prior to such training and in any case no later than 1 January 2004 when new workstations for receiving WAFS and OPMET data would need to have been installed under the footprint of the International Satellite Communication System.

3.4.3.14 Congress was pleased to note that the conjoint Meeting had emphasized the continued need for WWW Programme support for the availability of the required basic data on a global scale to support the operation of the WAFS. Conjoint Meeting recommendations related to WAFS included, among other things, amendment proposals to Annex 3/Technical Regulation [C.3.1] to meet the requirements for the WAFS final phase set for November 2004.

Observations in the terminal area

3.4.3.15 Congress noted with satisfaction the active participation of WMO at three meetings of the ICAO Aerodrome Meteorological Observing System Study Group, held since last Congress. It noted that, following a thorough review by the Study Group of Chapter 4 of Annex 3/Technical Regulation [C.3.1], the conjoint Meeting had recommended that WMO and ICAO take the lead, respectively, to investigate the feasibility of creating a standard algorithm for the processing of cloud base height and cloud amount (Recommendation 2/4) and to develop a manual on the use of automatic meteorological observing systems at aerodromes (Recommendation 2/2). Provisions enabling the use of fully automated observations during non-operational hours at aerodromes were among the amendment proposals to Annex 3/Technical

Regulation [C.3.1] recommended by the conjoint Meeting to be applicable in November 2004.

Forecasts and warnings in the terminal area

3.4.3.16 Congress recognized the importance of ensuring the accuracy and usefulness of forecasts and warnings for the terminal area, with a view to enhancing the safety of aviation operations and making significant benefits to the aviation industry. Congress noted with satisfaction that CAeM had implemented two pilot projects on TAF verification led by Australia and France. Congress was pleased to note that progress had been made in the development of methods for globally consistent and user-oriented verification of TAFs. Congress recognized that the purpose of such TAF verification was to provide aviation users with information on the expected reliability of aerodrome forecasts, and it was not intended for comparison between different airports or countries, given the wide variety of climate, topography and predictability. It noted with interest that the AeMP part of the 6LTP included work on TAF improvement as well as the development and implementation of a WMO approved set of methods for performance measurements of aviation forecasts and warnings with initial focus on the finalization and implementation of the work done on TAF verification.

3.4.3.17 With regard to aeronautical meteorological codes in alphanumeric code forms, Congress noted that the conjoint Meeting had recommended that WMO take the lead for the development of a detailed migration plan for the use of table-driven code forms (CREX and BUFR) for the dissemination of METAR/SPECI and TAF (Recommendation 2/5). Congress was aware that the migration plan for the aeronautical meteorological codes should be developed and coordinated with ICAO and noted that that plan provided for the start of experimental exchanges of data in BUFR and CREX after Amendment 74 to Annex 3/Technical Regulation [C.3.1] in 2007 in parallel with data in the current alphanumeric codes and for the full migration to the table-driven code forms around 2015.

Automated aircraft observations

3.4.3.18 Congress expressed its appreciation to AMDAR Panel members for their dedicated efforts in carrying out AMDAR activities and to WMO Members for their voluntary financial contributions to support AMDAR activities. It noted with great satisfaction that about 150 000 AMDAR observations per day were being exchanged on the GTS, representing nearly a three-fold increase in volume compared to 1998 when the AMDAR Panel was established. Congress stressed that AMDAR had proved to be a very cost-effective data source that responded to the needs of WMO Programmes and brought benefits to end users. Congress noted with appreciation the publication of the *AMDAR Reference Manual*, which comprised a

comprehensive technical description of AMDAR from sensor systems to the final AMDAR data output.

3.4.3.19 Congress recognized the low cost of AMDAR observations compared to radiosonde soundings, the potential of such systems to improve data coverage in data-sparse areas and the improvements to NWP attributed to the assimilation of such observations. It noted the achievements of the AMDAR Panel in helping to develop and coordinate AMDAR activities and to expand further the AMDAR programme, as well as the achievement of Members in implementing AMDAR. Congress urged Members to continue to contribute to the AMDAR Trust Fund on a voluntary basis and to make available to the Panel the services of experts to support AMDAR activities, in particular the implementation of the high priority AMDAR projects. In relation to ongoing support for AMDAR activities and their sustainability, Congress welcomed Recommendation 2 (CBS-Ext.(02)) — AMDAR activities, which called on CBS and CAeM to develop an appropriate mechanism to integrate more fully AMDAR activities into the WWW Programme (see also general summary paragraph 3.1.1.6).

Updating regulatory and guidance material

3.4.3.20 Congress noted with satisfaction that Technical Regulation [C.3.1] had been updated as a result of the introduction of Amendment 72 and that consequential changes had been introduced in Appendix 1 of Technical Regulation [C.3.3]. Those changes had subsequently been reflected in the *Manual on Codes* (WMO-No. 306), Volume I.1, Part A and in the publication *Aerodrome Reports and Forecasts* (WMO-No. 782). Congress noted that the conjoint Meeting had endorsed the restructuring of both Annex 3 and Technical Regulation [C.3.1] into two parts, namely Part I containing procedural provisions called "core SARPs" and Part II containing technical requirements and specifications. The new structure as well as the amendment proposals that would form part of Amendment 73 to Annex 3/Technical Regulation [C.3.1] were expected to be endorsed by relevant ICAO and WMO bodies during 2004 for applicability in November 2004.

3.4.3.21 Congress noted with satisfaction that guidance material published and distributed among Members since 1999 included, among other things, the *Guide on Aeronautical Meteorological Services Cost Recovery Principles and Guidance* (WMO-No 904), the updated *Methods of Interpreting Numerical Weather Prediction Output for Aeronautical Meteorology* (Technical Note No. 195, WMO-No. 770), and the *Compendium on Tropical Meteorology for Aviation Purposes* (WMO-No. 930). It also expressed appreciation for the document entitled "Framework for Implementing Cost Recovery for Aeronautical Meteorological Services", which had been distributed as guidance material to all directors of NMSs in April 2003.

Aviation and the environment

3.4.3.22 Congress noted with satisfaction that the preparation of the booklet *Aviation and the Global Atmospheric Environment*, based on the Special Report on Aviation and the Global Atmosphere published in 1999 by IPCC, had been completed. Congress expressed its appreciation to all those who had been involved in preparing that booklet. It welcomed the cooperation that existed between the CAeM TREND Working Group and the ICAO Committee on Aviation Environmental Protection.

Future activities of the Commission

3.4.3.23 Congress noted the very difficult economic circumstances currently facing the aviation industry. In that regard, to enhance understanding between providers and users of meteorological information regarding the recovery of meteorological costs from the aviation industry, Congress requested that available guidance material should be extended to include an analytical accounting model that would assist in clarifying such costs to the aviation industry.

3.4.3.24 Congress recognized that aeronautical meteorological services were at the threshold of major breakthroughs in enhancing safety and in providing benefit to aviation with particular emphasis on innovative meteorological service provision in the terminal area based on a combination of new observing systems and the application of nowcasting techniques. Congress therefore welcomed the evolution of the structure of CAeM that was intended to provide more flexibility and human resources to address specific AeMP activities including, among other things, improving and tailoring forecasts of terminal weather to benefit the safety and efficiency of aviation. It was pleased to learn that more than 150 experts had already offered to contribute their services to the work. Congress adopted Resolution 15 (Cg-XIV).

3.4.4 MARINE METEOROLOGY AND ASSOCIATED OCEANOGRAPHIC ACTIVITIES PROGRAMME; THE REPORT OF THE CO-PRESIDENT OF JCOMM (agenda item 3.4.4)

3.4.4.1 Congress noted with appreciation the report of the co-president of JCOMM, Mr J. Guddal, on the work accomplished by JCOMM during the past intersessional period. It congratulated Mr Guddal, his fellow co-president, Ms S. Narayanan, and the Commission, for the substantial progress made and new initiatives taken in many areas of major importance to Members. Congress recognized that the establishment of JCOMM, the first jointly-sponsored technical commission, had proven to be a great success, particularly in bringing about integration of operational marine activities. It offered a particularly warm welcome to Ms Narayanan, the oceanography co-president, on the occasion of her first participation in a session of Congress, and assured her of the ongoing support of WMO and its Member NMHSs for the important work of JCOMM.

3.4.4.2 Congress emphasized the importance of the Marine Meteorology and Oceanography Programme, including its traditional activities in areas such as maritime safety services, as well as the new priorities in operational oceanography and the implementation of an integrated ocean observing system for climate. Congress approved the Programme as an integrated whole and adopted Resolution 16 (Cg-XIV), agreeing that the substance of the Programme should be as given in the 6LTP.

3.4.4.3 Congress recognized that the marine programme and the work of JCOMM also provided substantial support, in particular in terms of operational marine data, to other WMO Programmes, notably WWW, climate monitoring, research and prediction, and GCOS and GOOS in general. It noted with satisfaction that JCOMM was now recognized as a primary implementation mechanism for GOOS, and for operational oceanography in general, for which it was expected to play a role equivalent to that of CBS with regard to WWW. At the same time, Congress agreed that that recognition implied a considerable responsibility on the part of JCOMM, NMSs and WMO in general, to play a major part in ensuring the full implementation of the JCOMM work programme. Congress, therefore, strongly urged Members to provide all the necessary resources for that implementation, so that WMO could fully undertake the role now expected of it in that rapidly developing field of environmental science and services.

Marine meteorological and oceanographic services

3.4.4.4 Congress agreed that the provision of marine meteorological and oceanographic services to meet the requirements of marine users continued to be of the highest priority, since they contributed substantially to national economies, as well as being essential for the safety of life at sea, as recognized in the International Convention for the Safety of Life at Sea. Congress therefore agreed that continuing priority should be given to assisting Members in the further implementation of such services.

3.4.4.5 Congress noted with satisfaction that the WMO marine broadcast system for the Global Maritime Distress and Safety System (forming a part of the International Convention for the Safety of Life at Sea) had continued to operate smoothly, with minimal changes to procedures and broadcast schedules. It offered its thanks to the International Maritime Organization, the International Hydrographic Organization, the International Chamber of Shipping, the International Mobile Satellite Organization and Inmarsat Ltd. for their cooperation and assistance in implementing and operating the system, as well as for many other valuable interactions.

3.4.4.6 Congress noted that trials for the Marine Pollution Emergency Response Support System were continuing, and that a second international seminar/workshop on the system was planned to be

held in 2004. It recognized the potential value to all coastal States of an internationally coordinated approach to the provision of meteorological and oceanographic data and services to support marine pollution emergency response operations. Congress encouraged all Members that had accepted responsibilities under the Marine Pollution Emergency Response Support System to continue their efforts to implement fully the system.

3.4.4.7 Congress noted with appreciation that the JCOMM Electronic Products Bulletin, through the use of the latest information technology, provided a mechanism for accessing and downloading data sets and tailored oceanic products produced by national agencies and scientific institutions. It requested JCOMM to continue to liaise with interested Members, with a view to ensuring the long-term maintenance of the Bulletin.

3.4.4.8 Congress recognized the ongoing importance of sea ice, ocean wave, storm surge, marine climatological and many other types of specialized marine data and services to a large number of different marine users. It expressed its appreciation to JCOMM for its work in developing and enhancing such services, and in providing appropriate information, guidance and assistance to Members in that regard.

Observing systems

3.4.4.9 Congress recalled that a key aspect of the overall JCOMM concept and process was integration both in marine observing systems and in marine data management. It noted with satisfaction that a first step in that integration had been taken with the formation of a Ship Observations Team, initially grouping the formerly independent panels dealing with the traditional VOS, SOOP and ASAP.

3.4.4.10 Congress welcomed the successful efforts to improve the quality of ships' meteorological and oceanographic reports and stressed the value of such data to operational meteorology, maritime safety, global climate studies and oceanographic research and operations. It expressed its appreciation to the voluntary shipboard observers and urged Members to make every effort to recruit more ships, to improve data quality and timeliness, to strengthen their Port Meteorological Officer networks, and to submit data and metadata from their VOS as quickly as possible to the Global Collecting Centres, according to the agreed procedures and formats. Congress recognized that there were ongoing problems for countries in some parts of the world, including the Gulf region and Africa, in obtaining ship meteorological reports via the GTS. It therefore urged all countries concerned to ensure that all such reports were inserted on the GTS in a correct and timely manner, and that correct procedures were followed for their distribution. It also requested JCOMM to look at possible alternative procedures for distributing such data in real time.

3.4.4.11 Congress noted with appreciation that a VOS Climate (VOSClim) project had been operationally implemented, to provide high quality marine meteorological data and associated metadata, to serve as a reference data set to support global climate studies, CLIVAR and GCOS. It further noted that a worldwide recurring ASAP Project had been initiated to provide much needed upper-air sounding data from the Southern Ocean in particular. Congress further welcomed the implementation by EUCOS, within the framework of EUMETNET, of the E-ASAP Project. Two new lines were already operational under that project, and further such lines were planned during the period to 2006. The two-to-four soundings per day carried out by those ships would contribute to the objectives of enhancing the present observing system and of providing data for field studies.

3.4.4.12 Congress expressed its appreciation for the excellent ongoing work being undertaken by the DBCP and its action groups, in continuing to enhance both the quantity and quality of buoy data being distributed on the GTS. It noted with pleasure that buoy data would shortly be made available on the GTS in BUFR code, and that a new DBCP action group had been established in the North Pacific Ocean, jointly with the North Pacific Marine Science Organization. Congress recognized the potential value, in particular to countries in north-western Africa, of the proposed north-east extension to the existing PIRATA array of moored buoys in the tropical Atlantic Ocean. It therefore urged Members to support its implementation wherever possible.

3.4.4.13 Congress noted with appreciation that the new Argo project was now well into the implementation phase, and would eventually form part of the integrated operational ocean observing system coordinated and regulated through JCOMM. Float deployments across the globe were being planned and implemented on a regional basis. Congress recognized that Argo would provide a vital data source for operational oceanography and climate studies, and that it was vital that the project would be eventually transformed from a research project to an operational programme, with long-term funding. It therefore stressed the importance of clearly demonstrating the value of Argo data in the preparation of operational ocean and climate products. Both GODAE and the forthcoming First Argo Science Workshop (Tokyo, November 2003) were recognized as contributors to that process, and JCOMM was urged to also take steps to assist in demonstrating the value of Argo. At the same time, Congress urged Members to participate in, contribute to, and support, the implementation of Argo wherever possible.

3.4.4.14 Congress noted with satisfaction that JCOMMOPS had been established based on the existing DBCP/SOOP and Argo coordination mechanisms. Congress agreed on the value of such a technical support centre and its technical

coordinator for coordinating and integrating operational ocean observing networks. It urged Members to provide the support and resources necessary to operate and, if possible, strengthen JCOMMOPS, recognizing that the Centre might in the future become a Web portal also for service delivery.

3.4.4.15 Congress agreed that ocean remote sensing, including both satellites and ground-based systems, was an essential component of the future GOOS and JCOMM. It noted that validated altimeter and scatterometer data were of prime interest to JCOMM and urged satellite operators to facilitate and expand access of such data by all Members, and to ensure the long-term continuity of the satellite missions providing those data. It requested JCOMM to collaborate with CBS in developing and maintaining a comprehensive list of requirements for remotely-sensed marine data for different applications, in particular marine services; to regularly assess how well the observing systems met those requirements; and to maintain liaison with ocean satellite operators on those and related issues.

3.4.4.16 Congress noted with appreciation the substantial progress that had been made during the intersessional period in the development and design of the GOOS, including its regional components, as well as the implementation steps now being taken through JCOMM. Congress recognized the major role to be played by NMSs in GOOS implementation, in view of their existing operational experience and facilities.

Data management

3.4.4.17 Congress noted with satisfaction that JCOMM had made significant progress in developing JCOMM data management activities and in integrating those with the data management activities of other international bodies, in particular the IOC Committee on IODE. Two important steps in that integration had been taken through the merger of the JCOMM Expert Team on Data Management Practices with the IODE Group of Experts on Technical Aspects of Data Exchange, and the support being provided by the IODE Secretariat for JCOMM data management. It further noted with interest that JCOMM was utilizing the synergy from those collaborations to implement several key pilot programmes including an ocean information technology project, to review and assess the overall JCOMM requirements for end-to-end data management, and to develop a data management strategy.

3.4.4.18 Congress noted with appreciation that the MCSS, GDSIDB, and GTSP were all fully operational. It expressed its appreciation to all the countries, agencies and institutions involved in the operation of those major marine data management programmes, including in particular Germany and the United Kingdom, the Global Collecting Centres for the MCSS; the Russian Federation and the United States for maintaining the GDSIDB; and

Canada for coordinating the GTSP. Congress expressed its appreciation to Germany and Japan for their work in digitizing, and for making available to Members, historical marine data.

3.4.4.19 Congress noted with interest that a successful Workshop on Advances in Marine Climatology (CLIMAR99) had been held in Vancouver, Canada in September 1999. It further noted that a second such workshop (CLIMAR-II) was being planned to take place in November 2003. Congress recalled that the year 2003 marked the 150th anniversary of the landmark conference convened in Brussels in 1853 and that a celebration would take place in Brussels, hosted by Belgium, in November 2003, in conjunction with CLIMAR-II. Congress urged Members to participate in, and support, that commemorative event.

Capacity building

3.4.4.20 Congress noted that the future success of JCOMM and the marine programme would depend on the full involvement of all maritime countries. It agreed that the JCOMM capacity building programme was of great importance. Congress welcomed the preparation and publication of the JCOMM Capacity Building Strategy, which, it agreed, provided a very valuable framework for all capacity building activities under the Commission. Congress further welcomed the developing synergy between the JCOMM and GOOS capacity building programmes, manifested through the planned merger of the JCOMM Capacity Building Coordination Group with the GOOS Capacity Building Panel.

3.4.4.21 Congress recognized the considerable importance of the oceans to developing maritime countries, in terms of both food security and natural disaster preparedness and prevention. At the same time, such countries required assistance in terms of observing networks, trained personnel, and access to global products. It therefore urged JCOMM to strengthen its efforts in specialized marine training, as well as Members with developed marine services to assist other Members in implementing marine observing networks and services.

3.4.4.22 Congress noted with satisfaction that more than 20 JCOMM Technical Reports and related publications had been issued during the intersessional period. Those were increasingly being distributed on CD-ROM, and also made available via the JCOMM Web site. It agreed that such publications constituted an essential component of the marine programme, and were particularly important to developing countries in supporting their efforts to implement marine observing systems, including VOS and coastal stations, and services for users.

3.4.4.23 Congress noted with appreciation that the project document for the Western Indian Ocean Marine Applications Project had been prepared and finalized. It also noted that a finalized project document for the South-East Asian Centre for Atmospheric and Marine Prediction Project had been

prepared, and adopted by the ASEAN Sub-Committee on Meteorology and Geophysics. It strongly endorsed those Projects. Congress also recognized the value of training workshops on specific topics, and expressed its appreciation to Canada, Malaysia and Viet Nam for hosting such workshops on wind wave and storm surge analysis and forecasting.

Cooperative programmes/projects with IOC and other international cooperation within and outside the United Nations system

3.4.4.24 Congress noted with satisfaction that WMO's participation in cooperative programmes and projects with IOC had continued to increase during the past intersessional period. Congress further noted with satisfaction that WMO continued to collaborate closely with other international organizations concerned with international marine activities, including in particular the United Nations, UNESCO, IOC, FAO, IAEA, UNEP, the International Hydrographic Organization, the Permanent Commission for the South Pacific and the International Maritime Organization. Congress agreed that an ongoing inter-agency coordination mechanism on oceans and coastal areas was important, and that WMO should participate actively in such a mechanism. Congress noted with interest the establishment of the United Nations informal consultative process related to the United Nations Convention on the Law of the Sea, dealing with an integrated strategic approach to marine environmental and resource management issues. It urged enhancement of interactions with that process, at both the programme and operational levels, through JCOMM.

3.4.4.25 Congress noted that WMO had continued to second a Scientific Officer to the IOC Secretariat during the past intersessional period, and that that Officer had worked in particular on major joint WMO/IOC activities such as JCOMM and GOOS. Congress decided to continue such a secondment during the coming financial period (2004-2007) and to contribute half the cost of employing a Secretary for that Officer, recognizing the importance of that secondment to both WMO and IOC.

3.4.4.26 Congress noted with appreciation that WMO had participated actively in the development of the United Nations Atlas of the Ocean, and in other aspects of interagency cooperation in the implementation of UNCED and Agenda 21. Congress agreed on the value of WMO's involvement in that work, and therefore that it should continue to be supported.

3.4.4.27 Congress noted with interest and appreciation a statement made by the representative of IOC. He reported that IOC was pleased with the progress being made in implementing JCOMM. The new structure was working well, and having the Chairperson of the GOOS Steering Committee and senior representatives of the IOC's IODE directly involved in the deliberations of the JCOMM

Management Committee helped to ensure that those various programmes mutually reinforced one another, thus avoiding duplication. Good progress was being made in implementing measurements from ships and buoys, and in integrating previously separate activities such as VOS and SOOP. Good progress was also expected in the future in data and information management. He stressed that operational oceanography demanded the integration of in situ and remotely-sensed data from satellites, and therefore JCOMM must pay more attention in the future to the use of such data in the provision of ocean services for weather, climate and other purposes. Those services would depend, among other things, on the continuation of a high-resolution ocean altimetry programme, which was why it was essential that full support should be given to the launch of JASON-2. In the near future, JCOMM would also have to take responsibility for the Argo profiling float project. The representative of IOC urged WMO Members to ensure that national Argo float programmes, where possible, included deployments in the main data gaps — the Southern Ocean, Indian Ocean, South Atlantic and South Pacific. He concluded by noting that IOC was increasing its staff support for JCOMM, and at the same time would appreciate that WMO continue seconding a staff member to the IOC, and associated secretarial support, for the management of JCOMM.

3.4.4.28 Congress expressed its considerable appreciation to IOC for the high level of cooperation which now existed between the two Organizations, not just through JCOMM, but in many other areas of mutual concern. It assured IOC of its ongoing support.

Memorandum of Understanding between WMO and IOC on JCOMM rules and procedures

3.4.4.29 Congress noted with appreciation that, as requested by Thirteenth Congress, when establishing JCOMM, the Secretary-General had, in 2002, signed a Memorandum of Understanding with the Executive Secretary IOC establishing an agreement on financing and Secretariat support for JCOMM.

3.4.4.30 Congress noted that the fifty-second session of the Executive Council had reviewed a comparative study, prepared by the Secretary-General, on the differences in the regulations of WMO and IOC relating to the functioning of WMO technical commissions and equivalent bodies of IOC. The Council had requested the Secretary-General to prepare, in consultation with the Executive Secretary IOC, a suitable set of common rules of procedure for the functioning of JCOMM in order to meet the basic objectives of the relevant regulations of WMO and IOC, within the context of General Regulation 180. Subsequently, the fifty-third session of the Executive Council had noted with appreciation that such common rules could be adopted through a Memorandum of Understanding between WMO and IOC, without the need for modification to the existing

regulations of either Organization. It had requested the Secretary-General to proceed with the preparation of a draft memorandum to that effect.

3.4.4.31 Congress noted that a first draft of the Memorandum of Understanding had been reviewed by the Executive Councils of both WMO and IOC at their sessions in 2002. Some modifications were suggested, both during the sessions and subsequently, and the Secretary-General and Executive Secretary IOC had been requested to prepare a revised version of the Memorandum, for consideration and approval by Congress and the IOC Assembly in 2003. Congress reviewed and approved the Memorandum of Understanding on JCOMM rules and procedures, which is given in Annex III to this report. Subject to a similar approval by the IOC Assembly, Congress authorized the Secretary-General to proceed with its signature, with the Executive Secretary IOC. Recognizing that, as a new concept, JCOMM was likely to evolve with time in both formal and operational senses, Congress requested the Secretary-General to ensure that the text and implementation of the Memorandum were reviewed and updated, as necessary, at regular intervals.

3.4.4.32 Finally, Congress noted and agreed with the interpretation by the fifty-second session of the Executive Council of the decision of Thirteenth Congress regarding the co-presidents of JCOMM, that for JCOMM as a technical commission sponsored jointly by another international organization, the co-presidents were the equivalent of the normal president and vice-president as officers of a technical commission.

3.5 HYDROLOGY AND WATER RESOURCES PROGRAMME (agenda item 3.5)

3.5.0 HYDROLOGY AND WATER RESOURCES PROGRAMME; THE REPORT OF THE PRESIDENT OF CHy (agenda item 3.5.0)

3.5.0.1 Congress reviewed the HWRP on the basis of the report presented jointly by the president of CHy and the Secretary-General, which recorded, among other things, the action taken by CHy and the Secretariat in response to Resolutions 16 (Cg-XIII) — Hydrology and Water Resources Programme, 19 (Cg-XII) — Strategy and action plan for monitoring and assessing water resources in Africa, 20 (Cg-XII) — World Hydrological Observing System (WHYCOS), 21 (Cg-XII) — Global Runoff Data Centre (GRDC), and 25 (Cg-XIII) — Exchange of Hydrological Data and Products.

3.5.0.2 Congress considered the progress with the HWRP over the previous intersessional period in general and expressed its satisfaction with what had been achieved, particularly in the light of the limited resources available to the Programme.

Activities of the Commission for Hydrology

3.5.0.3 Congress noted with appreciation the report of the president of CHy on the activities of the

Commission since Thirteenth Congress. It welcomed the role the Commission had played in advising Congress and the Executive Council on all matters relating to hydrology and water resources. Congress noted that the main focus of CHy had been on finalization of the tasks set by the tenth session of CHy (1996) and the implementation of the programme established by the eleventh session of CHy (2000).

3.5.0.4 The president of CHy reported on the eleventh session of CHy that had been held in Abuja, Nigeria from 6 to 16 November 2000, at the kind invitation of the Federal Government of Nigeria. The session had been attended by 93 participants representing 50 Members and nine international organizations. Congress shared the concern of the president at the comparatively small number of developing countries represented therein, as had been the case in previous sessions of the Commission.

3.5.0.5 Congress noted that the eleventh session of CHy had established an Advisory Working Group, being also the Steering Committee for HOMs, and two subject-oriented working groups, one on water resources, and the other on hydrological forecasting and prediction. Each member of those groups had been assigned a specific area of responsibility, the definition of their work plans being established subsequently in consultation with the Advisory Working Group.

3.5.0.6 Congress was informed that, in determining the areas on which the Commission would focus during its intersessional period, it had decided that priority should be given to the topics of flood forecasting (short-, medium- and long-term), data management (especially metadata) and risk management. The Commission had also decided that, within the subject-oriented working groups, activities would be carried out in the form of specific projects involving a number of Experts and, where required, Associate Experts. In the light of the above decision, five project plans were developed at the meeting of the subject-oriented working groups and were approved during the first AWG session. The projects were on risk management, automated real-time stage-discharge, analysis of hydroclimatological variability and trends, metadata and global/regional short-term hydrological forecasting systems.

3.5.0.7 Congress noted that the eleventh session of CHy had decided to retain in force a recommendation on hydrological networks, which recommended that Members cooperate in facilitating the collection and exchange of hydrological data, and a further recommendation which called for increased participation of women in the work of NHSs and of the Commission. Both recommendations had been approved by Resolution 9 (EC-XLIX) — Report of the tenth session of the Commission for Hydrology.

3.5.0.8 The president of CHy advised Congress of progress with the work of the Commission, including

meetings of its three working groups. Congress noted that the two subject-oriented working groups had met in September 2001 in joint and parallel sessions which had allowed for an exchange of views and the identification of areas of collaboration. It was further noted that the CHy Advisory Working Group had held two sessions in September 2001 and December 2002, respectively. Congress encouraged the Commission to maintain its pragmatic approach of focusing on specific activities and of aiming to obtain concrete deliverables, and to seek to complete its work programme by its twelfth session, scheduled for the latter part of 2004. The Secretary-General was requested to assist the Commission in meeting that goal with the resources at his disposal.

3.5.0.9 Congress welcomed the continued efforts of the Commission to involve as many of its members as possible in its work. At the eleventh session of CHy that had involved establishing four working parties for in-depth review and recommendations on specific aspects of the HWRP. Subsequent to that session, 128 Associate Experts who had volunteered to assist the formally designated CHy experts in their work had been nominated.

SIXTH WMO LONG-TERM PLAN

3.5.0.10 Congress noted that CHy had played a substantial role in the preparation of the hydrological components of the 6LTP. It further noted that the HWRP maintained its five components, namely:

- (a) Programme on Basic Systems in Hydrology;
- (b) Programme on Forecasting and Applications in Hydrology;
- (c) Programme on Sustainable Development of Water Resources;
- (d) Programme on Capacity Building in Hydrology and Water Resources;
- (e) Programme on Water-related Issues.

3.5.0.11 The views of Congress on those topics were recorded below under the respective headings. The decisions of Congress on the 6LTP in general were recorded under agenda item 6.2 and, as regarded HWRP in particular, Congress adopted Resolution 17 (Cg-XIV).

Exchange of hydrological data

3.5.0.12 Congress was informed that, in response to an invitation to CHy contained in Resolution 25 (Cg-XIII) to provide advice and assistance on technical aspects of the implementation of the practice on the international exchange of hydrological data and products, the CHy Advisory Working Group had prepared a brochure on the resolution and a technical report on the types of data to be exchanged.

3.5.0.13 Congress was pleased to learn that the brochure on Resolution 25 (Cg-XIII) had been published in four languages and had been widely circulated to Members, other organizations and international conferences. It was informed that

consideration was being given to sending copies directly to the Executive Heads of other United Nations agencies with an appeal for the establishment of a coordinated approach to the principle of free and unrestricted international exchange of hydrological data and products.

3.5.0.14 Congress also noted that the technical report on the exchange of hydrological data and products had been revised on the advice of the Executive Council Advisory Group on the International Exchange of Data and Products and subsequently reviewed by the Regional Hydrological Advisers in 2001. At the request of the fifty-fourth session of the Executive Council, Executive Council members were asked to comment on the contents of the technical report. Having reviewed the replies received from Executive Council members, the CHy AWG recommended publishing the report with an errata to correct the errors in some references of the report. It also advised the Secretariat to consider any other comments in future editions of the report.

3.5.0.15 Congress noted that in response to the request made to the Executive Council to keep under review the implementation of Resolution 25 (Cg-XIII), a questionnaire on the exchange of hydrological data and products had been circulated to all WMO Members. It noted with interest the analysis of responses undertaken by the CHy AWG and asked the WMO Secretariat to follow the recommendation contained therein.

Subtitle of the Organization

3.5.0.16 Congress recalled that at its last session, while it had noted the increased involvement of WMO in the resolution of global water issues, it had felt that there was still a need to enhance further the role and visibility of the Organization in hydrology and water resources. In that connection, Congress had seen merit in reflecting hydrology in a subtitle of the Organization and had requested the Executive Council to study further that matter and to report back to Fourteenth Congress. Accordingly, the fifty-third session of the Executive Council had requested the president of CHy to bring to the fifty-fourth session of the Executive Council a specific proposal for a subtitle of WMO which would reflect adequately the Organization's responsibilities in hydrology and water resources.

3.5.0.17 The president of CHy reported to Congress that he had submitted to the fifty-fourth session of the Executive Council three alternatives for the wording of the subtitle for WMO, that were proposed by the CHy Advisory Working Group. The Council had agreed that the words "weather, climate and water" would best reflect the main areas of work of the Organization. Accordingly, the fifty-fourth session of the Executive Council had recommended to Fourteenth Congress that the subtitle be "weather, climate and water". The CHy AWG, at its last session, fully supported the recommendation made by the fifty-fourth session of the Executive Council. Furthermore, the Council had requested the

Secretary-General to provide guidance to Fourteenth Congress on how the status of the subtitle and on how and when it could be used, and also on how well the subtitle translated into other languages. The resulting documents were considered under agenda item 5.

An intergovernmental review and action mechanism on fresh water

3.5.0.18 Congress was informed of a concept for an intergovernmental review and action mechanism on water that had been prepared as a collaborative effort by the president of CHy and the WMO Secretariat. It was based on clear and convincing evidence that, in light of increasing pressure on finite supplies of fresh water and degradation of those supplies, the current patterns of water use could not be sustained in many regions of the world. Congress was informed that the concept, which had been endorsed by the CHy AWG and presented by the president of CHy to the Executive Council at its fifty-fourth session, was seen as being of considerable interest and of potential value. The Council had requested the president of CHy and the Secretary-General to develop the concept further in consultation with other United Nations agencies and to present it for the consideration of Fourteenth Congress.

3.5.0.19 While noting that an intergovernmental mechanism would have helped to bring the water scarcity and quality situation to the attention of Member States within the broader context of the need for international action on water matters, Congress, after detailed discussions, decided to request the Secretary-General to develop a proposal for the establishment of a Panel of Experts on Fresh Water and adopted Resolution 18 (Cg-XIV).

Institutional cooperation between NHSs and between Hydrological and Meteorological Services

3.5.0.20 Congress highlighted the ever-increasing need for adequate institutional cooperation between Hydrological, Hydrometeorological and Meteorological Services, especially in view of the relevance that the water issue had achieved at the international level. In that context, it reviewed the arrangements made for the participation of NHSs in the work of WMO and noted that 134 Members had appointed Hydrological Advisers. Furthermore some of the 24 Members who had combined Hydrological and Meteorological Services had also appointed hydrological advisers. One hundred and forty-six Members were represented by a total of 296 experts on CHy.

3.5.0.21 In the same spirit, Congress had encouraged Permanent Representatives to designate HOMS National Reference Centres and to nominate experts to serve on regional association WGHs, recognizing that only in that way could WMO keep in touch with the hydrological community and thus have the capacity to learn of the needs of Members in that sector and thus respond to those needs.

3.5.0.22 Congress also noted the important role played by the Regional Hydrological Advisers, who provided an important link, not only with the NHSs in the Regions but, together with the president of CHy, represented the global hydrological community at sessions of the Executive Council. It further noted that hydrologists brought a broader perspective to the discussions and provided valuable input and insights on a wide range of scientific and organizational matters of importance to NMHSs.

3.5.0.23 In view of the above, Congress requested CHy and the Executive Council to continue exploring innovative proposals to increase the role and visibility of WMO in water matters.

Regional activities in relation to HWRP

3.5.0.24 Congress was informed of the extensive technical and administrative support that had been provided by the Secretariat to the six WGHs of the regional associations in the implementation of activities and in the organization of WGHs sessions. It was pleased to note that the Working Groups served as a forum for sharing experiences, establishing a coordinated approach to common water-related problems, providing links to regional frameworks, such as NEPAD and the European Union Water Framework Directive 2000/60/EC, and developing proposals for regional projects. Particular note was taken of the series of pilot projects currently being implemented in RA I to rescue hydrological data. Their success was welcomed and their continuation and extension to other countries encouraged. Congress also noted the development of four project proposals by the RA III WGH, which had been favourably considered by RA III-XII and RA III-XIII. Congress recognized the need for increased support by WMO to enable the development of regional projects, including the necessary budgetary allocations.

3.5.0.25 Congress noted with satisfaction that CHy had emphasized cooperation with regional associations, and that the president and vice-president, participated in some of the regional associations sessions and those of their WGHs. Congress also noted that all regional associations had re-established their WGHs to carry out activities during the intersessional period.

3.5.0.26 Congress was pleased to note the activities undertaken by the WGHs in addition to their regular sessions. Those activities consisted of a Regional Seminar on Water Resources in RA I, an Expert Meeting on Floodplain Management in RA II, a Workshop on Flood Forecasting and Hydrological Warning Systems organized in RAs III and IV, a HOMS Workshop on Flood Forecasting and Warning in RA V, and a Workshop on Flood Forecasting and Warning in RA VI.

Publications

3.5.0.27 Congress noted that during the period under consideration one publication had been issued

in the Operational Hydrology Report series and four as Technical Reports in Hydrology and Water Resources. Congress also noted that the Third World Network of Scientific Organizations, in collaboration with WMO, published case studies from the third world in the Sharing Innovative Experiences series on water resources management. It also noted that several publicity material was printed and distributed.

Technical cooperation and the VCP

3.5.0.28 Congress was informed of requests for technical assistance by Members under the VCP in hydrology and water resources. Those had been circulated to national agencies responsible for technical assistance, but had received little support. It was recognized that support to developing countries in their efforts to improve the capacity and work of their NHSs was an important responsibility of the WMO Secretariat. In that regard, Congress noted with satisfaction the implementation of pilot projects on hydrological data rescue involving several countries of RA I using VCP funds and considered that action as a positive step. Congress requested the Secretary-General to support further extension of the data rescue pilot projects to other countries in RA I and other regions.

Resource and visibility strategies

3.5.0.29 Congress recognized that the demands on the HWRP had continued to increase in the last intersessional period. The reasons included the growing interest in water affairs at the international level, such as the concern for both the limited availability of freshwater and the impact of destructive flooding in many countries. In that context, Congress expressed its appreciation to France, Germany and Japan for seconding experts to assist the Secretariat in its activities and to those many other countries, which, by co-sponsoring meetings, making available the services of national experts and in many other ways, so efficiently supported the HWRP. Congress regretted, however, that not many contributions had been made to the Hydrology and Water Resources Trust Fund.

3.5.0.30 Congress noted that since Thirteenth Congress much effort had been devoted to the preparation of various brochures and other material for use in publicizing water related issues, in particular WMO's response to the world's water challenges.

3.5.1 PROGRAMME ON BASIC SYSTEMS IN HYDROLOGY (agenda item 3.5.1)

Water resources assessment

3.5.1.1 Congress noted with appreciation the Secretariat's efforts in promoting the use of the WMO/UNESCO *Water Resources Assessment — Handbook for the Review of National Capabilities*. In that connection, Congress was pleased to learn of

the organization of a series of subregional training workshops to promote the application of the methodology described in the *Handbook* in different regions. It was also pleased to note that the *Handbook* was now available in English, French, Russian and Spanish, in printed and pdf format freely downloadable from the WMO or UNESCO Web sites.

3.5.1.2 Congress was informed that CHy was considering the preparation of a user-friendly manual to assist countries in assessing their water resources. It supported the idea and encouraged CHy and the Secretariat to pursue that matter further.

3.5.1.3 Congress noted with interest the efforts being undertaken by the Secretariat and CHy stemming from the decision of the eleventh session of CHy to focus attention on obtaining concrete deliverables through projects, two of which were associated with advanced basic systems. The first was directed to increasing the ability of Members to acquire real-time quality-controlled estimates of water levels and discharges using advanced technologies, while the second was directed to the identification of metadata for hydrological data, including mechanisms for the provision, display and access to the metadata.

Guidance and regulatory material

3.5.1.4 Congress was informed that the fifth edition of the *Guide to Hydrological Practices* (WMO-No. 168) had been translated or was in the process of being translated into national languages by some Members, notably Germany, Hungary, Italy and Turkey. It also noted with appreciation that China had offered to assist the WMO Secretariat in translating the *Guide* into Chinese. Congress was also pleased to note that a CD-ROM containing the English and French versions had been issued in September 2001 and that the preparation of the Russian and Spanish version in electronic format was under way.

3.5.1.5 Congress noted that the eleventh session of CHy had agreed on the preparation of a sixth edition of the *Guide* and had recommended that it should be given highest priority. Congress strongly recommended that the sixth and future editions of the *Guide* should be made available both for free downloading from the Internet and on CD-ROM to be distributed free of charge to Members.

3.5.1.6 Congress noted that at the request of the eleventh session of CHy, the AWG was undertaking the review of the WMO *Technical Regulations* (WMO-No. 49), Volume III — Hydrology and their annexes. It recognized the need for a better balance between regulations addressing water quantity and those addressing water quality also in view of improving the compatibility between the *Guide* and the *Technical Regulations*.

3.5.1.7 Congress noted the results of a survey that had been carried out by the Secretariat to assess the

use and benefits of the *Technical Regulations* to the NMHSs.

Hydrological Information Referral Service

3.5.1.8 Congress was informed that CHy was undertaking a review and revision of the contents and scope of INFOHYDRO, with the objective of retaining most of the valuable information contained in previous editions, while at the same time making it easier for Members and the Secretariat to update the information using metadatabase standards and recommended structures to enable consistent reporting of information. Congress noted that a draft revised version of INFOHYDRO had been prepared and was currently being tested by the vice-president of CHy in RA V and that it would be available for the twelfth session of CHy in 2004.

Hydrological Operational Multipurpose System

3.5.1.9 Congress noted the satisfactory advance in the implementation of the Plan for HOMS in the twenty-first century, the main objective of which had been to revitalize that valuable vehicle for the transfer of hydrological technology by clearly setting the guidelines for the further development and update HOMS. It was pleased to learn that 122 HOMS National Reference Centres and eight Regional HOMS Reference Centres were currently active.

3.5.1.10 Congress also noted that since 2000 the HOMS *Reference Manual* was available online, and that in 2001 a CD-ROM version of it, together with promotional material on HOMS were distributed to all the HOMS National Reference Centres. The online version of the *Manual* was updated regularly, and appeared to be consulted and utilized with ever-increasing frequency by hydrologists worldwide, especially since the components descriptions had become available in English, Spanish, French and Russian.

3.5.1.11 Congress learned with interest of several training activities related to HOMS initiated in 2002 and recommended that greater emphasis be placed in the next financial period in that aspect of technology transfer. The concept of roving seminars on HOMS components of relevance to different regions was found of particular use, in view of their cost-effectiveness and multiplier effects. Congress expressed its appreciation for Canada's support to the training of instructors from RA I on Canadian HOMS components and invited other Members to provide similar support for such activities.

World Hydrological Cycle Observing System

3.5.1.12 Congress was pleased to note that WMO had continued its efforts in promoting the development and implementation of the WHYCOS programme in all WMO's Regions. It was informed that WHYCOS continued to generate interest in hydrological communities around the world. It noted that WHYCOS had been especially active on the

African continent, where MED-HYCOS, SADC-HYCOS phase I and a Pilot Phase for Western and Central Africa (AOC-HYCOS) had actually been implemented, while the preparation of detailed implementation of IGAD-HYCOS was taking place. Keeping in view the past and future developments in WHYCOS projects, Congress recommended to keep in force Resolution 20 (Cg-XII) on WHYCOS.

3.5.1.13 Congress was pleased to note that in March 2003, the Third World Water Forum in Kyoto, Japan recommended strengthening the capacity of small island countries to conduct water resource assessment and monitoring, inter alia, using the model outlined in the Pacific and Caribbean HYCOS proposals.

3.5.1.14 Congress was pleased to also note that several HYCOS projects had reached advanced stages of development, including the preparation of detailed project documents and/or the development of official project contacts and meetings with major stakeholders of the projects. Such was the case in the Caribbean Islands (CARIB-HYCOS), the South-West Pacific region (Pacific-HYCOS), the Hindu Kush Himalayan Region (HKH-HYCOS), the riparian countries of the Baltic Sea (Baltic-HYCOS), Aral Sea (Aral-HYCOS) and of the MEKONG-HYCOS. Other proposals under consideration addressed the basins of Amazon, Congo, Danube and La Plata rivers as well as the Black Sea.

3.5.1.15 Congress expressed its appreciation for the financial support provided to different HYCOS projects by international and bilateral donors (the World Bank, the European Commission, the Government of France, the Government of The Netherlands, among others). It also noted that most HYCOS components had been implemented in developing countries, contributing substantially to the support of data collection, data exchange and capacity-building activities of the participating NHTs.

3.5.1.16 Congress was informed that so far there were no donors for funding a full-scale HYCOS component for Western and Central Africa. WMO planned to implement WHYCOS in the region through a number of large transboundary river basin components, in association with the existing intergovernmental river basins authorities. At the request of the relevant river basin authorities and Members, WMO had prepared project documents for NIGER-HYCOS (Niger River Basin) and Volta-HYCOS (Volta River basin). Congress asked the Secretary-General to ensure that additional proposals for the Lake-Chad basin and the Senegal River basin be developed in the near future.

3.5.1.17 Congress realized that efforts should be made to secure extrabudgetary sources of funding for HYCOS projects. It stressed the need to ensure the continuity of the programme when external assistance would cease. Congress recognized also the need for close coordination among the individual HYCOS components. In that regard, it noted with satisfaction the role of the coordination mechanism

for WHYCOS within the WMO Secretariat and of the WHYCOS International Advisory Group in guiding the development of the overall programme. The WHYCOS International Advisory Group had met regularly once a year, its fifth meeting having been held in January 2003. Congress noted with particular interest that preparation of guidelines on WHYCOS was advancing well under the coordination of the WHYCOS International Advisory Group.

3.5.1.18 In accordance with the development objectives set by the WSSD and the high priority of the water agenda for the coming decades, Congress urged donors and other funding agencies to coordinate and increase their efforts in supporting the implementation of regional water resources information systems, which was the overall objective of the HYCOS projects.

3.5.1.19 Congress noted that data exchange at the regional level, and more specifically within the limits of large transboundary river basins or aquifers, was not only a crucial prerequisite for a sound development — allowing the equitable and reasonable share of the water resources and the protection of the environment — but also an important process preventing disputes between riparian countries sharing those resources. Congress strongly recommended the exchange of hydrological data and products in the framework of existing and future HYCOS projects, in accordance with WMO Resolutions 20 (Cg-XII) and 25 (Cg-XIII). The hydrological data and products generated by HYCOS projects should not only be available to the participating NHSs, but should benefit all economic and social stakeholders concerned with water-related issues, including the general public.

3.5.1.20 Congress expressed its appreciation for the development of WHYCOS through the various HYCOS components and recommended that efforts be substantially intensified so as to ensure a rapid and successful implementation of such projects. Congress requested the Secretary-General to prepare a comprehensive report on the status of HYCOS projects under way and to assess their state of implementation and sustainability.

3.5.2 PROGRAMME ON FORECASTING AND APPLICATIONS IN HYDROLOGY (agenda item 3.5.2)

Hydrological aspects of disasters

3.5.2.1 Congress recalled the recommendations made in the WSSD Plan of Implementation with regard to an integrated approach to disaster reduction and requested that programme activities should contribute to the objectives of the Johannesburg Plan of Implementation.

3.5.2.2 Congress noted with interest the workshops that had been carried out, such as the Workshop on Hydrological Forecasting and Warning Systems (Bogotá, Colombia, December 2001) with participation from RAs III and IV, the Expert Meeting on Flood Plain Management (Kathmandu, Nepal,

November 2001), with participation from countries of RA II and the Workshop on Flood Forecasting and Warning (Budapest, Hungary, October 2000).

3.5.2.3 Congress noted with interest the ongoing activities in two projects conducted by CHy, namely a project on global/regional short-term hydrological forecasting and a project on risk management and called for active support by all parties involved in the planning and implementation of those projects.

3.5.2.4 Congress noted that in conjunction with the Global Water Partnership, an Associated Programme on Flood Management (APFM) had been launched in August 2001 with the support of Japan. The Netherlands was now also supporting the APFM. The project viewed floods as an important element to be considered within the framework of an overall Integrated Water Resources Management. The APFM conducted a session on Integrated Flood Management at the Third World Water Forum in Kyoto in March 2003.

3.5.2.5 Congress noted that a WMO proposal to develop a programme on drought management similar to the APFM was currently under consideration by the Global Water Partnership.

Hydrology in the context of global environmental issues

3.5.2.6 Congress was advised of the continuing close links between the activities of the HWRP and those of the WCP and GCOS, especially as regarded the very special role played by water as an element within the climate system and the fact that any variability and change in climate had a major impact on the hydrological cycle.

3.5.2.7 Congress noted that following the recommendation of a Review Panel, established during the Second International Conference on Climate and Water which had been held in Espoo, Finland, in August 1998, a Steering Committee had been established in 2000 to oversee the activities of WCP-Water. The Steering Committee included representatives of CHy and the International Hydrological Programme of UNESCO.

3.5.2.8 Congress further noted that WCP-Water, in its re-structured form, had brought together water-related activities under the WCP with the goal of promoting hydrological activities in the WCP and related conventions, and of providing the water community with current data and information on hydrological and water resources conditions, variations and uncertainties, in a climatic context, over a wide range of time and space scales. Congress concurred with the view of CHy-XI that WCP-Water had the potential to serve as an important link between climatological and hydrological programmes and projects.

3.5.2.9 Congress was pleased to note the progress of the re-structured WCP-Water and its efforts to analyse long time series of hydrological data and indices with respect to climate variability and change. In that regard, Congress encouraged

the close collaboration between WCP-Water and CHy in support of their mutual activities.

3.5.2.10 Congress noted that a series of three Steering Committee meetings on WCP-Water had been held since 2000, the most recent being hosted by the Centre for Ecology and Hydrology in Wallingford, United Kingdom in October 2002.

3.5.2.11 Congress noted with satisfaction that WMO, together with WCP-Water, had taken the lead in proposing the preparation of a Special Report on Water and Climate to the nineteenth session of IPCC in April 2002. A special IPCC technical meeting was convened in the WMO Secretariat to consider the issue and to advise the Panel on the action which was most suitable for enhancing the role of water in climate change issues. The IPCC Bureau, during its following meeting (November 2002), concluded that the best option was to consider water as a cross-cutting issue in the overall process of the Fourth Assessment Report and to give more importance to the theme of water than in the past three Assessments.

3.5.2.12 Congress recognized the importance of linking water and climate-related issues and encouraged WCP-Water to continue its fruitful relationship with the IPCC and to maintain a high profile in programmes and projects related to water and climate of other international organizations.

3.5.2.13 Congress recognized that WCP-Water activities were supported only in part by the regular budget and relied heavily on contributions from the other participating agencies and possible third-party funding. Congress recommended that collaborative agreements with Centres of Excellence be expanded with a view to implementing joint projects and activities to achieve the objectives of the Programme.

3.5.2.14 Congress was advised on the establishment of GTN-H in 2001 as a response to the need for improved global hydrological data, information and products to research and assess environmental change, identify significant trends and develop adequate response strategies.

3.5.2.15 Congress was informed of the implementation plan developed for GTN-H. The plan outlined common practices among the participating programmes and centres, the procedures for harmonizing the products among the participants and the processes to be used for data dissemination. An integrated data management strategy (data collection, archiving, dissemination through the GTN-H network) was also considered together with the core functions of GTN-H.

3.5.2.16 Congress noted with interest that GTN-H was formally established creating a "network of networks" of global data centres and information providers for hydrological and relevant meteorological data and information. Congress further noted the efforts through GTN-H to establish a reference hydrometric network that would serve to understand better climate change impacts on

hydrological regimes. Congress noted with satisfaction that GTN-H encouraged the free exchange of data within existing policy frameworks, including Resolutions 40 (Cg-XII) and 25 (Cg-XIII).

3.5.2.17 Congress noted with appreciation that the first meeting of the coordination group for GTN-H had been held in Toronto from 21 to 22 November 2002 following an expert meeting on Hydrological Data for Global Studies held at the same location from 18 to 20 November 2002. Both meetings were organized by WMO in collaboration with GCOS and were hosted by the Meteorological Service of Canada.

3.5.2.18 Congress was advised that the expert meeting had provided comprehensive information on current and emerging observational requirements and the availability of hydrological data for global studies including issues related to data standardization, data management and the multi-dimensional integration of databases.

3.5.2.19 Congress expressed its gratitude to the Meteorological Service of Canada for providing secretarial and coordination services for GTN-H and called for active support of collaborating centers in the generation of products through GTN-H.

Global Runoff Data Centre

3.5.2.20 Congress noted with appreciation that the GRDC had continued to be recognized as an important source of data on river flow. Congress recalled that the need for data and information on the availability and use of fresh water was identified by the United Nations General Assembly at its special session in June 1997 and discussions on the role of GRDC saw that as an important pointer to the future.

3.5.2.21 Congress noted with the interest the ongoing activities by GRDC and collaborating partners to identify a network of hydrological stations worldwide from which data could be accessed in near real-time and regularly through the Internet and encouraged GRDC to strive to release a prototype version as early as possible.

3.5.2.22 Congress urged GRDC to continue production of scientific reports on global hydrological issues and to strengthen its efforts to obtain data from Members more timely.

3.5.2.23 Congress noted with concern that, in many cases, the transfer of hydrological data from Members to the GRDC had taken several years and urged Members to make discharge data available to GRDC in an institutionalized and timely manner.

3.5.2.24 Recognizing the importance of the services provided by GRDC, Congress decided to keep in force Resolution 21 (Cg-XII).

3.5.3 PROGRAMME ON SUSTAINABLE DEVELOPMENT OF WATER RESOURCES (agenda item 3.5.3)

3.5.3.1 Congress noted that budget provisions to implement activities under the Programme on Sustainable Development of Water Resources had been very limited in the thirteenth financial period

(2000-2003). Accordingly, while appreciating the advances made with such limited resources, it was pleased to note that in the Secretary-General's programme and budget proposal for the fourteenth financial period (2004-2007), the budget provisions to implement that important Programme had been augmented.

3.5.3.2 Congress noted that WMO had co-sponsored the International Conference on Urban Hydrology for the Twenty-first Century, held in Kuala Lumpur, Malaysia from 14 to 16 October 2002 and was pleased to learn that guideline material on urban hydrology was under preparation.

3.5.3.3 Congress was pleased to note that, with a view to addressing the specific hydrological needs of the small island countries of the South-West Pacific, a meeting had been held in Nadi, Fiji in October 1999. It also welcomed the development of the HYCOS projects in the Caribbean and the Pacific regions, which addressed problems faced by small island and coastal areas.

3.5.4 PROGRAMME ON CAPACITY BUILDING IN HYDROLOGY AND WATER RESOURCES (agenda item 3.5.4)

3.5.4.1 Congress was informed about several missions of Secretariat staff undertaken as responses to requests of technical assistance from NHSs in the fields of network design, procurement of modern technologies, review of legal and institutional framework and establishment of flood forecasting systems. Congress welcomed those activities as an effective means to assist directly NHSs and encouraged HWRP to continue to respond to requests of NHSs as much as possible.

3.5.4.2 Congress noted that, based on a recommendation of the fifty-second session of the Executive Council, the preparation of a set of guidelines on the role and operation of NHSs had been undertaken, using as an initial basis the elements identified in the corresponding work for NMSs. An expert meeting held in Centurion, South Africa, as part of the activities linked with WSSD, had developed material which had been used in preparing a first draft that had been circulated to Regional Hydrological Advisers and to Members of the AWG of CHy for comments.

3.5.4.3 Congress was informed of the courses and workshops in hydrology and water resources that WMO had organized during the last intersessional period, such as those related to urban flooding in several countries of RAs III and IV, and the courses on Water Resources Assessment for Regions I, II and V. Some UNESCO-sponsored courses were also supported by WMO, such as the Course on Hydrological Data for Water Resources Planning in the Czech Republic and the International Post-Graduate Course on Hydrology in Hungary.

3.5.4.4 Congress noted with satisfaction the continued support of the Organization to the Course on Applied Hydrology and Information Systems for Water Management in Nairobi, which was held every

year. Congress was informed that collaboration had continued with the National Weather Service of the United States in the organization of the NOAA/WMO Course in Hydrological Forecasting. With respect to the Course on Hydrology, held in Caracas, Venezuela, Congress was informed that in 2003 the course was being organized as a distance learning course. Congress however noted the lack of activity and opportunities for training of hydrological technicians and desired that training at technicians level be given importance. Congress invited donor agencies to provide fellowships for training of hydrological technicians when those courses were offered.

3.5.4.5 Congress noted that the *Guidelines for the Education of Personnel in Meteorology and Operational Hydrology* (WMO-No. 258) included a Volume II on Hydrology, which covered the field of integrated water resources management. The third and last session of the Editorial Task Force, which was charged with the preparation of that volume, was held in Geneva from 11 to 15 February 2002. A few months later, the first draft was finalized and submitted to CHy experts and to UNESCO and was presented to the Executive Council Panel on Education and Training. The recommendations received from CHy and UNESCO were incorporated into a second draft, which was sent to two external reviewers, one of whom was a CHy Associate Expert.

3.5.5 PROGRAMME ON WATER-RELATED ISSUES (agenda item 3.5.5)

3.5.5.1 Congress was informed of the extensive cooperation that existed between WMO and other international organizations and programmes in the fields of hydrology and water resources. That cooperation was seen as fundamental to enhance further the role and visibility of the Organization in that area.

Coordination with other United Nations agencies

3.5.5.2 Congress was informed that, thanks to the direct involvement of WMO, the coordinating mechanism among United Nations agencies dealing with water resources was back in place under the title of UN-Water. That mechanism was of vital importance to WMO in its effort to collaborate with various other organizations within the United Nations system and to seek a clear intergovernmental position within the ever-changing international world of fresh water. Congress noted with satisfaction the participation of WMO in the establishment of the World Water Assessment Programme and the recent issuing of its first product: the first World Water Development Report.

3.5.5.3 Congress recognized once again the importance being accorded at the international and national levels to the celebrations of the World Water Day on 22 March each year. It noted with interest that WMO, jointly with ISDR, would take the lead in planning the celebrations for 2004 on the theme

"water and disasters". Congress requested the Secretary-General to continue the practice of providing Members with statements and factual material for their use in planning that annual event. Congress also noted the important role of non-governmental organizations contributing to the World Water Day celebration in many countries.

3.5.5.4 Congress was informed of WMO's participation at the International Conference on Freshwater in Bonn, Germany in December 2001 as a preparatory step for freshwater issues at WSSD in Johannesburg, in August 2002. The Conference developed recommendations for WSSD on water and sustainable development.

3.5.5.5 Congress noted with appreciation the active participation of WMO in water-related activities at WSSD. It was recognized that WMO's participation in the Water Dome had offered an excellent opportunity to enhance WMO's visibility in the fields of hydrology and water resources. Congress noted the main outcomes of the Summit in relation to water and was informed that CHy was reviewing the recommendations of WSSD in relation to CHy activities.

3.5.5.6 Congress noted that the African Ministerial Council on Water was initiated in Bonn during a meeting of the African ministers responsible for water who participated in the Conference. It was pleased to learn that WMO provided support for the establishment of the Ministerial Council and participated in the inauguration ceremony in Abuja, Nigeria in April 2002. Congress asked the Secretary-General to maintain WMO's support for the Ministerial Council to ensure its success.

3.5.5.7 Congress noted with satisfaction that WMO had participated actively in the activities of the Water Cluster of the United Nations System-wide Special Initiative for Africa and recently had become a member of the African Water Task Force. It also noted that the Interagency Group for Water in Africa was now named UN-Water — Africa. Congress asked the Secretary-General to facilitate WMO's participation in those and related initiatives to ensure the successful implementation of NEPAD water-related activities.

3.5.5.8 Particular mention was made by Congress of the long-standing close links with UNESCO in the field of hydrology. As in the past, those had concentrated on joint activities in water resource assessment, on WCP-Water and on the preparation of a third edition of the *International Glossary of Hydrology*. Within the period from 2000 to 2003, close cooperation had been established in the emerging GTN-H the establishment of an International Ground Water Resources Assessment Centre and the Hydrology for Environment, Life and Policy Programme, which was led by UNESCO in collaboration with WMO. As an outcome of the fifteenth session of the Intergovernmental Council of the International Hydrological Programme in June 2002, the Council requested the establishment of a

joint WMO/UNESCO Committee on Floods. Congress welcomed the proposal and encouraged the Secretariat to liaise with the UNESCO Secretariat.

3.5.5.9 Congress noted the establishment of an International Groundwater Resources Assessment Centre that had been pursued by WMO and UNESCO as a follow-up to recommendations made during the joint WMO/UNESCO International Conference on Hydrology (Geneva, February 1999).

3.5.5.10 Congress was advised of the efforts made by the joint UNESCO/WMO Standing Committee on Terminology with the objective of preparing the third edition of the *International Glossary of Hydrology*. It noted that while the title of the new edition would remain the same as that of the first and second editions published in 1974 and 1992, respectively, the contents of the new edition had been changed to a certain extent to take into account the new technological and scientific developments. Congress welcomed the inclusion in the new edition of Arabic as the fifth language. The new edition was now nearing its completion. It would contain some 2100 equivalent terms in English, French, Russian, Spanish and Arabic with definitions in each of those five languages. They were distributed on the topics of surface water, groundwater, water quality, water resources, sub-surface water, hydrological models, hydrometry and snow and ice. The apparently small increase in the number of terms from the second edition was in fact the result of the addition of 700 new terms and the deletion of 400 obsolete ones.

3.5.5.11 Congress encouraged the Secretariat to intensify further collaborative efforts to make full use of synergies in water-related activities of both Organizations. Congress recognized that much of the success of that cooperation was due to the close inter-Secretariat links, in particular through the Joint UNESCO/WMO Liaison Committee for Hydrological Activities, convened annually, and the Joint UNESCO/WMO International Conferences on Hydrology organized every sixth year. The sixth such conference was planned to be held in 2005 in Paris. Congress also encouraged the NMHSs to enhance cooperation with the UNESCO-International Hydrological Programme.

3.5.5.12 Congress was advised of the continuing close collaboration of WMO with other agencies of the United Nations system on specific topics: with UNEP on water quality, FAO on land management and water use, IAEA on isotope hydrology, particularly through the revitalization of the Global Network of Isotopes in Precipitation, ISDR on natural disasters and the United Nations Economic Commissions within their respective regions. Congress noted the evident advantages of working together with other organizations in achieving common aims and optimizing resources.

3.5.5.13 Congress noted that the United Nations General Assembly in Resolution 55/196 proclaimed the year 2003 as the International Year of Freshwater. The International Year of Freshwater provided the

opportunity to raise awareness, promote good practice, motivate people and mobilize resources in order to meet basic human needs and manage water in a sustainable way. The International Year of Freshwater was launched on 12 December 2002 in New York. Congress noted with appreciation the activities pursued by WMO in support of the International Year.

Cooperation with other IGOs and NGOs

3.5.5.14 Congress noted that HWRP continued to maintain contact not only with other agencies of the United Nations system, but also with international organizations and groups outside the system which shared WMO's interests and with which cooperation proved to be of mutual benefit.

3.5.5.15 Congress was pleased to note that WMO had maintained its long-standing links with bodies such as IAHS and ISO. Congress was informed of the decadal programme of IAHS Prediction in Ungauged Basins which had been endorsed by the fifteenth session of the Intergovernmental Council of the International Hydrological Programme in Paris, in June 2002. Congress encouraged the support of WMO to that programme that complemented WMO's activities to improve hydrological information in many parts of the world where observational networks were insufficient or had been declining in past years.

3.5.5.16 Congress noted the activities of the IAHS/WMO Working Group on GEWEX, which continued to serve as an important linkage between those two major science communities by providing an efficient transfer mechanism of science in hydrology into the GEWEX community.

3.5.5.17 Congress noted with interest that WMO's membership in the Global Water Partnership had led to the Organization taking the lead in establishing the global coordination of the Associated Programme on Flood Management. The Programme had been launched in August 2001 with the support of Japan and The Netherlands. Congress noted that WMO had been invited to become a sponsoring partner of the Global Water Partnership Organization, the Secretariat of the Global Water Partnership. Congress further noted that in May 2002 the Swedish Parliament had approved the establishment of the Global Water Partnership Organization as an intergovernmental organization, located in Stockholm. Congress was advised that with the agreement of the fifty-fourth session of the Executive Council, WMO had accepted the invitation on the provision that that placed no financial obligations on the Organization.

3.5.5.18 Congress noted that WMO's membership of the World Water Council and its Board of Governors had led to the Organization's direct involvement in the second and third World Water Forum, held in The Hague, The Netherlands from 17 to 22 March 2000 and in Kyoto, Shiga and Osaka from 16 to 23 March 2003, respectively. WMO convened three sessions at the third World Water

Forum: one on integrated flood management, one on impacts of climate variability and change on water resources in Africa, and one on water resources information — the user needs. The Secretary-General delivered addresses at the plenary sessions of the Themes on Floods, Water and Climate and of the Day of Africa. He also participated actively in the Ministerial Conferences at the second World Water Forum.

3.5.5.19 Concerning collaboration with entities such as the Global Water Partnership and the World Water Council, Congress noted that those activities enhanced the visibility of WMO in the water resources community, were valuable in keeping the Organization in the mainstream of water activities and could provide the contacts that led donors to fund WMO's own activities.

3.5.5.20 Congress was informed of ongoing efforts to develop a Water Poverty Index by the World Water Council and the Centre for Ecology and Hydrology of the United Kingdom.

Agreements with River Basin Authorities

3.5.5.21 Congress was informed of a Memorandum of Understanding signed between WMO and the Intergovernmental Coordinating Committee (CIC) of the La Plata River Basin Countries in December 2000. That Memorandum of Understanding was prepared at the request of the Secretary-General of CIC to facilitate cooperation between WMO and CIC. In 2002, CIC established its Plan of Action, in which WMO was mentioned as a partner in the development of projects in the field of hydrological warnings, water quality and in the development of a La Plata-HYCOS.

3.5.5.22 Congress was advised of the Memorandum of Understanding between WMO and the Mekong River Commission (MRC), signed in 2002, with the aim of assisting the MRC in the implementation of its flood management strategy through the establishment of a flood information system and to improve flood-forecasting capacity of NHMSs in the Mekong River basin in the framework of a Mekong-HYCOS project.

3.5.5.23 Congress was also informed of the Memorandum of Understanding between WMO and the International Centre for Integrated Mountain Development (ICIMOD), signed in 2002, with the principal aim to establish a flood information system and to improve flood-forecasting capacity of NHMSs in the Ganges-Brahmaputra-Meghna basin in the Hindu-Kush Himalaya in the framework of a HKH-HYCOS project.

3.5.5.24 Congress appreciated those efforts as effective means to foster regional cooperation through well-known regional organizations and to promote improved flood forecasting and water resources management in river basins.

3.5.5.25 Congress requested the Secretary-General to develop further collaborative agreements on regional and subregional levels, preferably with river basin authorities.

3.6 EDUCATION AND TRAINING PROGRAMME (agenda item 3.6)

3.6.0.1 Congress reviewed the activities of the Organization in the field of education and training during the thirteenth financial period, and appreciated the progress achieved and assistance provided to Members in developing their human resources to meet Members' responsibilities for providing meteorological and hydrological information and services. It agreed that ETRP should continue to be given high priority by the Organization and that, during the fourteenth financial period, the Organization should continue to assist NMHSs in ensuring that they had the required educated and well-trained personnel.

3.6.0.2 Congress also reviewed the contributions of ETRP to various other WMO Programmes, which had important training components as well as assistance provided to regional associations and national training institutions for the implementation of regional and national aspects of ETRP. It was recognized that those other programmes contributed, in turn, to ETRP. Congress also considered and commended the collaboration with education-related programmes of other international organizations, in particular those of UNDP, UNESCO, UNEP, ICAO and FAO, and the high level of cooperation with EUMETSAT, COMET, ESCAP, UCAR, EMEP, NOAA, CTBTO, CLIVAR, CGMS, ACMAD, SPREP, CEOS, ECMWF, TCS, APFM-SAMTAC, CGC, ASECNA, ICTP and ISESCO. Congress recommended that such cooperation and collaboration with other organizations and agencies should be continued and expanded, within the available resources.

Institutional support to the Education and Training Programme

3.6.0.3 Congress expressed appreciation for the assistance given to the Programme in general, and to Members in particular, under UNDP, VCP, Trust Funds and other multilateral and bilateral schemes. It was expected that such assistance would not only continue to be provided to the Organization's education and training activities but that its level would be increased.

3.6.0.4 Congress noted with appreciation the work carried out by the Executive Council Panel of Experts on Education and Training, which served as an advisory body on various aspects of technical and scientific education and training in meteorology and operational hydrology. Congress considered the continuation of the Panel during the fourteenth financial period, with an appropriate core membership and terms of reference, to be of great importance. It noted the report of the twentieth session of the Panel, held in Quezon City, Philippines, from 15 to 19 April 2002 and commended the work carried out by the Group. It expressed its appreciation to the experts in meteorological and hydrological education and

training who had served on the Panel for their valuable contribution to ETRP and to the future development of NMHSs in both the developing and the developed countries. Congress noted with appreciation the offer made by Turkey to host the next session of the Executive Council Panel of Experts on Education and Training in 2004.

3.6.0.5 Congress was informed of the successful outcome of the fifth International Conference on Computer-aided Learning and Distance Learning in Meteorology, held in Recife, Brazil, from 9 to 13 July 2001, organized by the SCHOTI Working Group on CAL and co-sponsored by WMO. It noted with appreciation that the SCHOTI fifth meeting had endorsed the creation of a new working group to assist and promote the initiation of a Web-based network that would link the WMO RMTCs and other training institutions. Congress recognized the involvement of SCHOTI in WMO's education and training activities and appreciated its role in the effective use of distance learning technologies with emphasis on CAL techniques, particularly in WMO RMTCs and developing countries. Congress requested the Secretary-General to continue to promote and assist, to the extent possible, SCHOTI initiatives and recommended that Members should seek ways of enhancing cooperation between their training institutions for the benefit of all concerned.

3.6.0.6 Congress adopted Resolution 19 (Cg-XIV).

3.6.1 HUMAN RESOURCES DEVELOPMENT (agenda item 3.6.1)

3.6.1.1 Congress agreed that the human resources development subprogramme enabled the overall ETRP to respond effectively to the needs of Members and to guide the other component programmes in the planning of their activities. Congress reaffirmed the fundamental importance of the human resources development subprogramme in assisting NMHSs in having the required well-trained personnel as a result of many factors, especially the impact of technological development of their various functions and operations.

3.6.1.2 Congress noted the outcome of the worldwide survey of Members' training requirements undertaken by the Secretariat in 2002. Congress also noted that the value of information resulting from such a survey depended, to a large extent, on the number of responses received from Members. Congress felt that the results of the survey would constitute a useful source of information for a number of users and would be a basis for modifications and improvements in the ETRP. It accordingly requested the Secretary-General to provide the results of the survey to relevant WMO bodies and WMO Member countries. Congress agreed that it would be necessary to attract more financial, human, and other resources to enable the various identified training requirements to be met. Congress requested that another survey should be conducted during the fourteenth financial period and

strongly urged Members to respond fully to the relating questionnaire.

3.6.1.3 Congress noted the planned increase of trained personnel of various categories by many Members during the fourteenth financial period, as well as an indication of regional training requirements and capabilities in various fields of meteorology and operational hydrology. In that connection, Congress felt that there was a need for cooperation and coordination of education and training activities in various Regions to be intensified to meet better the expressed requirements and to use available capabilities effectively and efficiently.

3.6.1.4 Aware of the importance of maintaining required standards on education and training, Congress noted the need to explore the possibility of having accreditation and certification in the fields of education and training in meteorology and hydrology.

New classification of personnel in meteorology and operational hydrology

3.6.1.5 In relation to the new WMO classification of personnel in meteorology and operational hydrology, Congress noted that a new edition of the *Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology* (WMO-No. 258), Volume I — Meteorology, was prepared and distributed to all Members, in line with the directives of Thirteenth Congress and the fiftieth session of the Executive Council, for gradual implementation of the new classification. It also appreciated that a supplement to that publication had been distributed to all Members for their information and application, as appropriate.

3.6.1.6 Congress noted that the translation of Volume I of the *Guidelines* into French, Russian and Spanish was well under way and that Volume II was planned to be issued and distributed during 2003.

3.6.1.7 Congress encouraged WMO Members and RMTCs to initiate coordinated actions oriented towards reviewing and updating the related curricula, taking into account the new WMO classification of personnel in meteorology and operational hydrology. Furthermore, Congress requested the Secretary-General to assist Members, RMTCs and national training institutions in the implementation of the new classification, which was scheduled to take effect in 2004.

3.6.2 TRAINING ACTIVITIES (agenda item 3.6.2)

3.6.2.1 Congress appreciated the work and contribution of Members, regional associations and technical commissions on various aspects under the training activities subprogramme as well as that of the Secretariat for the provision of human, financial and material resources to the education and training process, instructor and management training. Congress encouraged the continuation of those efforts and stressed the need for training on interdisciplinary topics such as climate change, which involved not only scientific but also economic,

social and legal issues. Furthermore, Congress recognized that training should not be restricted to technical competencies and matters related to communication and the basic economic framework for the provision of meteorological and hydrological services should also be considered as a major training priority for the coming years.

WMO Regional Meteorological Training Centres

3.6.2.2 Congress noted that a large majority of the 23 Centres in the network of RMTCs continued to carry out satisfactorily their routine training programmes and to organize specialized courses in response to the needs of Members in the Regions. It also noted the assistance provided by the Secretariat and requested developed Member countries to continue to offer expert and hardware assistance to the Centres to help them cope with technological advances in the training process.

3.6.2.3 Congress confirmed its earlier view that the network of WMO RMTCs was an important component of the ETRP and tended to be cost-effective to the Organization and urged the Secretary-General and host Members to ensure that recognized RMTCs were functioning at the required level of efficiency and effectiveness. Congress noted that nine RMTCs were externally assessed since the last session.

3.6.2.4 Congress noted that in some Regions, RMTCs were still the only basic training institutions in the field of meteorology and operational hydrology and requested the Secretary-General to continue support for strengthening them. Congress called for a further collaboration between RMTCs and their university components, as well as other local universities to provide long-term basic training in meteorology and hydrology. Congress also expressed the view that developed Member countries should expand their assistance to RMTCs by providing scientists and researchers to enable centres to cope with up-to-date technological advances to ensure that a high standard of performance was maintained and that the training needs of the respective Regions were met.

3.6.2.5 Congress also noted the important role played by national meteorological training centres in the development of human resources and requested the Secretary-General to continue in assisting such centres, in particular in the training of trainers.

3.6.2.6 Congress welcomed the initiative supported by COMET and UCAR (United States) to launch a "MeteoForum" pilot project aimed at developing a virtual centre through which WMO RMTCs in RAs III and IV could access data and training provided by UNIDATA, COMET, WMO and universities and share resources with each other. It encouraged the Secretary-General and Members to explore the possibility of launching similar initiatives in other WMO Regions and to develop projects in order to promote Internet access and the use of new IT training facilities for RMTCs and national training institutions.

3.6.2.7 Congress noted the proposed *ETR Guidelines on the Practical Application of the Executive Council Criteria for the Recognition of WMO Regional Meteorological Training Centres*, and the Concept Paper on the Future Role and Operation of RMTCs, which were reviewed and considered both by the Executive Council Panel of Experts at its last session and by the fifty-fourth session of the Executive Council. It agreed that the guidelines might help concerned bodies, such as regional associations, the Secretariat, individual Members, as well as RMTCs themselves, in order to apply more rigorously existing regulations and mechanisms for establishing new, or for reviewing the existing RMTCs. Congress also noted that the Concept Paper identified a number of strategic questions involving RMTCs and stakeholders such as host NMHS and Governments, Members potentially to be served, regional associations as a whole, the Executive Council, the Executive Council Panel of Experts and the Secretariat. It noted that a draft work plan along with the main lines of actions was recently discussed with Directors/Principals of RMTCs.

Preparation of training publications

3.6.2.8 Congress noted with appreciation the number of training publications prepared and translated by the Organization, as well as those currently under preparation, and agreed on the value and suitability to WMO Members and RMTCs of the Blue Series and the new series on Continuing Education and Training. Titles currently under consideration for publication in the new Series on Continuing Education and Training — Meteorology and Hydrology included urban meteorology, aeronautical meteorology and meteorological economics framework. It confirmed the importance of the availability of training materials to students, particularly in developing countries.

3.6.2.9 Congress agreed that the preparation, translation, publication and distribution of training materials should be continued during the fourteenth financial period. At the same time, taking into account the high costs of preparing and translating good quality training materials, Congress expressed its appreciation to Members who contributed and requested all Members to assist in those activities in order to complement substantially the budgetary allocations for the purpose.

3.6.2.10 Congress noted the new technological advances in the area of publishing and dissemination of training materials. It requested the Secretary-General to explore ways and means for digitizing training materials to make them available to Members in electronic format. That process would reduce the high cost that resulted from printing and posting of training publications and would make available all training publications, including those out of print issues, to all WMO Member countries.

3.6.2.11 Congress noted that the mandatory publication entitled *Compendium of Education and Training Facilities for Meteorology and Operational*

Hydrology (WMO-No. 240) had been periodically updated and would soon migrate from the current hard-copy, loose-leaf presentation to a soft-copy, Web presentation. It agreed that during the transition period, a simplified version of the Web version would be forwarded as hard-copy to Members upon request only. Congress urged Members and presidents of technical commissions to participate actively in the updating process of that publication.

WMO Training Library

3.6.2.12 Congress noted with appreciation the use made by Members of the services provided by the Training Library and the efforts being made to review and update the Virtual Training Library as a Web-based training resources in meteorology and hydrology. Congress also noted the volume of training aids, including video cassettes, slides and CAL modules distributed to WMO Members, RMTCs and other users during the thirteenth financial period and agreed to the continued strengthening of the Library through the expansion of its holdings and the updating of its equipment to sustain its involvement in new training activities.

3.6.2.13 Congress noted with appreciation the support given by Members to the Training Library by making available training materials such as CAL modules and video cassettes and urged Members to continue their support to the training efforts of RMTCs and national training centres. Congress recognized the importance of distance learning as a cost-effective training method and urged the promotion and use of the Internet Web sites on education and training as a potential learning tool.

3.6.2.14 Congress recognized that medium-term developments towards a Web training portal to coordinate distance learning would require dedicated in-house staff-time and/or outsourcing to create and regularly maintain the site. Congress further encouraged Members to improve their local capabilities in order to access and to benefit from such Web sites. Congress noted with appreciation the offers made by some Members to make available their e-learning materials to other Members. It invited all Members who had such materials to exchange them with others and requested the Secretary-General to take measures to facilitate the exchange of those materials.

Training in special subject areas

3.6.2.15 Congress noted that there was a continued need for training in some special subject areas, which were not included in the training component of any of the scientific and technical programmes of WMO. Congress consequently agreed that such training should be continued during the coming financial period. Particular attention should be given to the training of instructors, the management of training institutions and specialized training for personnel dealing with users of meteorological and hydrological data and products, including business management, media training, school and popular

meteorological and hydrological education, resource mobilization and human resources development planning. Congress also agreed that another Symposium on Education and Training should be organized during the fourteenth financial period.

3.6.3 EDUCATION AND TRAINING FELLOWSHIPS (agenda item 3.6.3)

3.6.3.1 Congress noted that during the four-year period from 1999 to 2002, 1 393 fellowships for a total of about 9 500 man/months were awarded under the various WMO technical cooperation programmes, mainly the VCP (52 per cent of fellowships), the regular budget (33 per cent), Trust Funds (11 per cent) and UNDP (4 per cent). 1 167 of those fellowships were granted for short-term courses (less than one year), and 226 for long-term studies (more than one year). Congress also noted that about 75 valid requests for fellowships remained unsatisfied per year over the past four-year period, meaning that about 20 per cent of the valid fellowship applications received in any one year could not be satisfied, mainly due to lack of funds. Congress further noted with satisfaction that all the fellowships from the regular budget were awarded in line with the criteria established in May 2000 by the Executive Council. Congress considered that the availability and award of fellowships under the various technical cooperation programmes had been very effective in assisting Member countries in the fields of capacity building, in particular human resources development in meteorology and operational hydrology and agreed that the fellowships programme should be continued and further enhanced during the fourteenth financial period.

3.6.3.2 Congress noted with appreciation that many VCP donor Members continued to provide VCP fellowships to the satisfaction of all concerned. Noting the gap between training needs and the limited funding opportunities within the VCP, particularly with regard to long-term fellowships, Congress expressed the wish that more donor Members would contribute to the VCP fellowship programme. In order to make maximum use of the limited VCP financial resources, Congress urged beneficiary Members to arrange for basic training in the requesting Member country itself or in countries with most cost-effective offers. Requesting Members should clearly define the objectives of the training and, once the training had been completed, ensure that the knowledge acquired had been utilized and the Secretary-General was informed of the effectiveness of the training provided.

3.6.3.3 Congress noted with appreciation that the Secretary-General had continued, with success, the implementation of cost-sharing tripartite fellowship arrangements, in particular in the RMTCs for optimizing the use of limited VCP and regular budget fellowship resources. Noting that those arrangements were found most cost-effective and were working to a great advantage, Congress

requested the Secretary-General to continue and further promote and expand such arrangements for the benefit of all concerned.

3.6.3.4 Congress noted with satisfaction that the Secretary-General had approached several new potential donors and international development funding agencies and banks soliciting voluntary contributions for the fellowships programme and requested the Secretary-General to continue his efforts to increase the traditional fellowships financial resources, including by tapping additional extra-budgetary resources and exploring new potential sources of funding for the fellowships programme. In particular, Congress recognized the need to increase the allocation for long-term fellowships.

3.6.3.5 Congress noted the emerging new needs for education and training in the field of satellite meteorology, numerical weather prediction, information technology, new telecommunication systems, computer technology, modern data-processing systems, climate change and the atmospheric environment, in particular for personnel from developing countries and countries with economies in transition. It urged donor Members to arrange for relevant training at all levels to enable such personnel to utilize more effectively the new technologies in those specialized fields and to participate more actively and contribute more to the collective international human endeavours in those disciplines.

3.6.3.6 Congress noted the various means through which monitoring and evaluation of fellowship activities were carried out during the thirteenth financial period and agreed for the continuation of that scheme in the fourteenth financial period through such means as the Executive Council Panel of Experts on Education and Training, reports of WMO fellows on their completed study programmes, reports of past WMO fellows after their return to their respective home countries and through coordination on fellowship matters with the relevant United Nations agencies, in particular the United Nations JIU.

3.6.3.7 In view of the growing need for fellowships for capacity building and human resources development in the fields of meteorology and operational hydrology, the rising costs of such fellowships, the diminishing traditional fellowship financial resources and the increasing requirements for fellowships in particular in new and specialized fields, Congress decided to continue the allocation of funds from the regular budget for the fellowship programme during the fourteenth financial period, including a separate allocation of fellowships for refugees.

3.6.4 SUPPORT TO TRAINING EVENTS UNDER OTHER WMO MAJOR PROGRAMMES (agenda item 3.6.4)

3.6.4.1 Congress noted that during the thirteenth financial period from 2000-2002, 60 training events

had been organized in all Regions covering many specific subject areas under the operational programmes of WMO. It considered such training events, including those on PWS, to be essential for the transfer of knowledge and proven technologies among Member countries. The continued implementation of training events in specialized subjects selected on the basis of surveys of Members training requirements would be crucial for bridging the gap in scientific and technological know-how between developing and developed countries.

3.6.4.2 Congress noted with appreciation the organization and support of training events by Members and considered that to be of extreme value to the meteorological and hydrological communities. Congress urged Members to continue to develop further their national training activities and to continue their support to WMO organized events, in particular through the hosting of events and the meeting of appropriate expenses for lecturers and participants.

3.7 TECHNICAL COOPERATION PROGRAMME (agenda item 3.7)

3.7.1 GENERAL REVIEW OF THE TECHNICAL COOPERATION PROGRAMME (agenda item 3.7.1)

3.7.1.1 Congress reviewed the progress made in the implementation of the Technical Cooperation Programme during the thirteenth financial period, as well as the actions taken by the Secretary-General as follow-up to its decisions and those of the Executive Council and regional associations related to the Programme.

3.7.1.2 Congress reiterated that the Technical Cooperation Programme was an integral part of the mandate of the Organization and was of great importance for the full implementation of the scientific and technical programmes of the Organization. In that connection, Congress noted that several Members had benefited from the activities carried out under that Programme for, among other things, the assessment and evaluation of the status of the NMHSs, the identification of requirements, the preparation of national meteorological development plans, the formulation of project and programme proposals, as well as the mobilization of the related resources. Support was also provided, in close cooperation with the Regional and Subregional Offices, to intergovernmental organizations in developing and implementing regional meteorological and/or hydrological programmes.

3.7.1.3 Congress noted that the implementation of the technical cooperation activities continued to be carried out within the framework of the WMO VCP, the regular budget cooperation activities, and other components of the Programme, such as Trust Funds, the UNDP, the GEF, the World Bank, regional development banks and others. It noted with satisfaction that special efforts had been made to explore new sources of funding and to establish new

linkages with various agencies and organizations as well as the private sector.

WMO Voluntary Cooperation Programme

3.7.1.4 Congress noted with satisfaction the progress achieved through the VCP and was pleased to note that in each of the past four years, contributions to the fund, VCP(F), and contributions received in equipment and services including fellowships, (VCP(ES)), averaged, per year, US\$ 320 000 and US\$ 7.5 million, respectively. Congress also noted with appreciation the contributions received from those Members with relatively limited resources as well as the support from the private sector.

3.7.1.5 Congress noted that a total of 408 requests from 123 Members were approved for circulation, 245 projects for 117 Members were supported by donors and 220 projects were completed during the period 1999-2002. As at 31 December 2002, approximately 240 valid projects were still without any support. In addition, 600 projects for fellowships (521 for short-term fellowships and 79 for long-term fellowships) were completed during the period 1999-2002 under the VCP Fellowship Programme. Some 510 fellowship requests remained unsupported. Noting with appreciation that donor Members continued, or enhanced, support to the VCP and that the number of participating Members had increased, Congress encouraged Members to contribute further to, and participate in, the Programme.

3.7.1.6 Congress expressed its appreciation for the VCP activities which had been carried out during the thirteenth financial period and noted that the VCP had played a major role in the Technical Cooperation Programme for the implementation of the WWW Programme as well as other scientific and technical programmes of WMO and in the training of personnel through the provision of fellowships. Congress was pleased to note that the VCP and TCO Web pages were regularly updated and substantially enhanced for publicity and resource mobilization, and for the speedy distribution of the relevant information to Members. Congress welcomed, with appreciation for Australia and the United Kingdom's support, the publication of the VCP brochure entitled *Towards Sustainable Development: Working Together in Weather, Climate and Water* (WMO-No. 937), aimed at highlighting the success of the Programme and the advantages of participating in the VCP Programme, which was distributed during WSSD and to WMO Members and potential partners. In that regard, Congress encouraged Members to carry out resource mobilization activities in their countries with the on-line information and material available.

3.7.1.7 Congress noted with satisfaction that from the evaluations of the projects carried out in 2000 and 2002, successful results of the VCP Programme had been achieved with improvement in the availability of services. Noting the rather low response rate to the evaluation reports, Congress

encouraged Members to continue to participate more actively in that valuable activity to improve the effectiveness of the VCP. Congress was pleased to note that the 2002 Informal Planning Meeting on the VCP and related technical cooperation programmes reviewed the role and clarified the terms of reference of the Informal Planning Meeting. The 2003 Informal Planning Meeting, among other things, further discussed the improvement of current procedures for the formulation and evaluation of VCP projects, considered action to replace the STAR4 workstation and VSAT equipment for the International Satellite Communication System, made new initiatives on resource mobilization, and proposed WMO fact-funding missions to countries affected by war including the Democratic Republic of East Timor to help develop their meteorological infrastructure. Congress further noted that the Informal Planning Meeting introduced the VCP theme of the year, "Observing systems for climate" in 2003 and "Technical cooperation in weather, water and climate — bridging the gap in the information age" in 2004, on which VCP participating Members' consideration of support would be concentrated.

3.7.1.8 Congress expressed its appreciation for the contributions made to the VCP(F). The VCP(F) was used for providing short-term fellowships and expert services, purchasing spare parts and consumables, shipping of equipment, and financing high-priority programmes, in particular support for upper-air and surface observing stations, the GTS, hydrological data rescue, activities of technical cooperation among developing countries and mitigation of natural disaster activities, in accordance with the guidelines for the utilization of VCP(F) approved by the forty-eighth session of the Executive Council.

3.7.1.9 Congress also noted that since its establishment in 1985, the WWW Implementation Support Revolving Fund of the VCP had permitted the provision of urgent temporary assistance to 21 Members of WMO for the operation and the maintenance of WWW facilities through loans for the purchase of spare parts and consumables for a total amount not exceeding US\$ 10 000 per loan, and encouraged Members to make use of the Fund. Congress further noted with pleasure that, through the utilization of the diplomatic channels and with the assistance of the Regional and Subregional Offices, several countries took action for reimbursement of their loans. Noting with concern that five Members had not yet reimbursed their loans at the end of the 24-month repayment period, Congress urged Members concerned to take the necessary measures to ensure timely reimbursement.

3.7.1.10 Congress decided that the programme of assistance under the VCP should be continued during the fourteenth financial period and noted that the detailed rules and procedures for the operation of the VCP established during the thirteenth financial period were still relevant and valid. It reaffirmed that

the VCP was an appropriate mechanism for the promotion and support of technical cooperation among developing countries and encouraged Members to strengthen and participate in that activity. Congress adopted Resolution 20 (Cg-XIV).

Emergency disaster assistance for Meteorological and Hydrological Services

3.7.1.11 Congress noted that since the establishment of a WMO Emergency Assistance Fund within the framework of the WMO Technical Cooperation Programme in 1991, several Member countries received assistance within the framework of that Fund with support by Members and private companies. During the period 1999-2002, assistance was provided to the Democratic People's Republic of Korea, Mozambique, Solomon Islands, Sudan, Viet Nam and Yugoslavia as well as countries in Central America and the Caribbean, through donations of Member countries for rehabilitating networks of stations and associated facilities destroyed by disasters. Congress expressed its appreciation to donors who contributed for the most urgent requirements of NMHSs in those countries. Congress expressed its appreciation to donors for their cash and in kind contributions, including emergency forecasting and warning services to countries suffering from disasters.

3.7.1.12 Congress noted the development of the Secretariat response strategy to the emergency and disaster situations, which included the establishment of an EDRG in the WMO Secretariat and the mission and implementation procedures of an EART for timely and coordinated assistance to NMHSs affected by disasters. Congress also noted with appreciation that, in addition to the approved allocation of US\$ 80 000 from the VCP(F) in 1999-2002, several Members made cash contributions for emergency assistance activities. In view of the increased and regular needs of emergency assistance activities, Congress agreed that a modest allocation for emergency assistance could be made from the WMO regular budget for the fourteenth financial period. In that regard, Congress urged Members and the Secretariat to implement the agreed mechanism for emergency assistance activities, with the advice of the EDRG and in line with the established implementation procedures of the EART. Congress requested the Executive Council to keep under review the implementation procedures based on the experience.

United Nations Development Programme

3.7.1.13 Congress noted that several national projects and regional programmes had been implemented with UNDP funding during the period, despite the reduced level of contribution. Those projects had contributed through the provision of expert/consultant services, equipment and human resources development, rehabilitation and enhancement of NMHSs. A number of the completed

and ongoing projects had been implemented under the UNDP/Government cost-sharing scheme. UNDP-funded projects were implemented in the Democratic Republic of the Congo, Kenya, Libya Arab Jamahiriya, Mali, the United Arab Emirates and Zambia. A regional project was also implemented in support of the Drought Monitoring Centre in Nairobi, Kenya. During the period, the volume of UNDP funding had increased with a total delivery of US\$ 15 million.

3.7.1.14 Congress emphasized the importance of the role of the Permanent Representatives of countries in mobilizing resources from UNDP and requested the Secretary-General to continue to collaborate with UNDP to enhance its funding for Meteorological and Hydrological Services and regional programmes.

Global Environment Facility

3.7.1.15 Congress noted the satisfactory implementation by WMO of GEF-financed projects, including the GAW Global project within the framework of which six GAW stations were established in Algeria, Argentina, Brazil, China, Indonesia and Kenya. The implementation of the project on Regional Cooperative Activities in Support of Climate Change Research in the Inter-American Institute Countries was completed. The project GLO/02/G31 — Capacity Building for Observation Systems for Climate Change was approved in 2002 to support the organization of eight regional workshops and the development of the related Action Plans. The regions concerned included the Caribbean and Central America, South Asia-Indian Ocean, South-East Asia, Eastern and Central Europe, Eastern and Southern Africa, West and Central Africa, the Mediterranean basin, South America and Central and East Asia. Congress encouraged Members to continue their efforts in seeking support from the GEF and requested the Secretary-General to assist Members, as required, in the preparation and submission of relevant national and regional project proposals and to pursue active collaboration with UNDP for that purpose.

Trust Fund projects

3.7.1.16 Congress noted that during the period under review, several Trust Fund projects covering a wide range of activities were implemented and several others were under implementation with a total delivery of approximately US\$ 34 million for the period, representing a 33 per cent increase. The objectives of those projects were to enhance the operational capabilities of the NMHSs through capacity building and human resources development, strengthening and maintenance of the basic meteorological infrastructure, as well as supporting priority areas such as natural disaster mitigation and prevention, food security, climate monitoring and prediction, flood forecasting as well as water resources assessment and management.

3.7.1.17 Congress noted in particular that with financial support provided by the Governments of Belgium and the United States, respectively, the Harare and Nairobi Drought Monitoring Centres continued to provide weather/climate information and products as well as early warning advisories on the occurrence of extreme climate events in Eastern and Southern Africa. Capacity building workshops were also organized in seasonal forecasting. In West Africa, the Italian Government continued to provide support to the CILSS countries with a view to enhancing early warning and agricultural yield forecasting activities. In Chad and Mali, the Swiss Development Cooperation Department contributed towards strengthening the application of agrometeorological information and advice by farmers.

3.7.1.18 Congress also noted that several Trust Fund projects were being implemented in the Islamic Republic of Iran for the establishment of a radar network, in Oman for training and equipment procurement, and in Saudi Arabia for rain enhancement. A joint WMO/ESCAP project to support the implementation of the regional haze Action Plan of the ASEAN countries was also under implementation. In South America, a special Trust Fund Agreement was signed between the Government of Ecuador and WMO to develop and implement activities at the International Research Centre on *El Niño*, which was inaugurated in January 2003 in Guayaquil, Ecuador. WMO and the Government of Brazil signed several agreements for the implementation of various projects, including for the National Agency for Electric Energy (ANEEL) to build up a database regarding the hydroelectric power sector in Brazil, the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), the Brazilian National Water Agency (ANA), and the National Meteorological Institute (INMET).

3.7.1.19 Congress further noted that WMO had concluded an Agreement with the Government of Finland for the implementation of the project Preparedness to Climate Variability and Global change in Small Island Developing States (SIDS-CARIBBEAN), to provide tools for better planning for sustainable development in the Caribbean region, by strengthening the National Meteorological Services through improvement to telecommunication systems, rehabilitation and upgrading of the observing networks, renovation of the regional technical laboratory for the calibration and maintenance of instruments, upgrading of the database management systems, the implementation of data rescue programmes, and training and awareness building.

3.7.1.20 Congress further noted that through Trust Fund arrangements, the Czech Republic was financing annually a project for assistance in meteorology, hydrology and air pollution for countries with economies in transition, CIS and African countries. WMO, with support from the Swiss Agency for Development and Cooperation, implemented a

project for the provision of low cost, low resolution satellite data receivers to several countries with economies in transition.

3.7.1.21 Congress encouraged Members to continue making use of the Trust Fund scheme when providing support to NMHSs, and recognized the key role played by the WMO Secretariat in ensuring coordination in development and implementation of such activities.

World Bank, Regional Development Banks and the European Union

3.7.1.22 Congress noted that the World Bank and regional development banks had recognized further the importance of meteorological and hydrological information and products for major socio-economic development programmes as well as for national disaster preparedness and mitigation activities. Congress noted with satisfaction that WMO had concluded Memoranda of Understanding with the World Bank and the Inter-American Development Bank in 1999 and 2000, respectively, for cooperation in areas of mutual interest that included climate change, national disaster prevention and mitigation, the *El Niño* phenomenon and integrated water resources management. Congress also noted that negotiations continued with the African Development Bank and the Asia Development Bank to foster stronger cooperation and implementation of projects/programmes of common interest to WMO and to the Banks. Congress requested the Secretary-General to continue his efforts to strengthen cooperation with those institutions.

3.7.1.23 Congress noted that the World Bank continued to support the implementation of the Water Resources Management Project in Mexico, the purpose of which was the establishment and strengthening of the technical bases required for the sustainable development of water resources. The World Bank had provided, through the Government of Mexico, US\$ 7.4 million for technical assistance services, technology transfer and training. During the period, some 161 international and 52 national consultants were engaged to cover the areas of meteorology, operational hydrology, telecommunications, groundwater, water quality, water resources planning and administration and river basins councils. Training of personnel through international fellowships, local training courses and on-the-job training were also completed. Congress also expressed satisfaction with the support provided by the World Bank for the rehabilitation and recovery of the meteorological infrastructure damaged in the Dominican Republic as a result of the impacts caused by *Hurricane Georges* in 1998. Congress encouraged NMHSs to ensure that appropriate allocations were made to them in grants/loans from Banks and funding institutions.

3.7.1.24 Congress noted that the Inter-American Development Bank provided funds for the study on the prediction and amelioration of socio-economic impacts of ENSO in Latin America and the

Caribbean, which was completed in early 2003. Project proposals were prepared for Colombia, Central America and Mexico. Those proposals were presented and discussed with representatives of relevant institutions, organizations which included NMHSs, Ministries of Agriculture, civil defense, universities, water resources agencies, and subregional organizations such as the Central American Integration System, the Regional Committee for Water Resources and the Coordination Centre for the Prevention of Natural Disasters in Central America. Final project documents were delivered by WMO to those countries and to the Inter-American Development Bank. Congress requested WMO to assist the NMHS involved in the promotion and funding of those projects.

3.7.1.25 Congress further noted that WMO had been working closely with the European Commission on the development of projects, especially those related to water resources. The Commission had funded the development of several HYCOS components, specifically for SADC, the West and Central Africa, the Congo Basin, and the IGAD countries. Congress noted with satisfaction that the Secretary-General had had high-level meetings with the President of the Commission and had initiated negotiations with the Commission for the conclusion of a Memorandum of Understanding. Congress requested the Secretary-General to continue to work with the European Commission and to strengthen its support to NMHSs through the development of joint initiatives.

Bilateral assistance

3.7.1.26 Congress reaffirmed the important role of bilateral and multilateral assistance in strengthening and developing the NMHSs. Noting various bilateral technical cooperation activities implemented by donor Members, Congress requested Members to provide regularly the Secretary-General with information on the bilateral assistance provided and encouraged exchange of the relevant information. In that regard, Congress requested the Secretary-General to continue to facilitate the provision of the information to Members and the coordination of bilateral cooperation activities.

Procurement activities

3.7.1.27 Congress noted that during the period 1999-2002, equipment and services were procured for field projects and Regional and Subregional Offices for a total amount of US\$ 21.51 million. Noting the high cost of upper-air consumables when purchased by individual Members, Congress urged the Secretary-General to consider the possibility of establishing an appropriate mechanism for bulk procurement of consumables for NMHSs.

Programme development and resource mobilization activities

3.7.1.28 Congress noted with satisfaction that particular efforts were made by the

Secretary-General during the period to enhance resources for technical cooperation activities and to develop appropriate strategies to reach new sources of funding. Congress expressed its appreciation to the Secretary-General for the continued efforts to strengthen the relationships with the World Bank, the Inter-American Development Bank, the African Development Bank, and bilateral and multilateral funding agencies. The Secretary-General and other senior officials of the Organization carried out several missions in Member countries, which enhanced the image of NMHSs and ensured that adequate resources were made available to allow them to play their role in socio-economic development activities. Congress also expressed its appreciation for the efforts made to establish stronger links between WMO and funding agencies including the private sector, as well as to establish partnerships with other United Nations programmes and specialized agencies such as UNEP, UNESCO, FAO and ISDR and technical cooperation organizations to lead to the development and implementation of projects and programmes of common interest. In that connection, Congress noted the offer of Spain to continue supporting countries interested in the implementation of the Ibero-American Climate project.

3.7.1.29 Congress noted that WMO had continued to collaborate actively with regional economic groupings such as the Economic and Monetary Community of Central Africa, the Economic Community of West African States, the League of Arab States, the Indian Ocean Commission, ASEAN, IGAD, SADC, SPREP, etc. That collaboration had allowed the formulation and development of programmes and projects in support of NMHSs and related institutions. Congress requested the Secretary-General to continue his efforts in that regard.

3.7.1.30 Congress recognized that several Members continued to rely on the WMO Secretariat for assistance and advice in the formulation and development of project and programme proposals, as well as in mobilizing resources for their activities. It noted that with the limited resources available, it had become more and more difficult to meet all the requests of Members. In that connection, Congress encouraged Members to contribute to the WMO Trust Fund for programme development activities.

3.7.1.31 Congress noted the need to enhance WMO's resource mobilization activities through the provision of adequate human and financial resources to carry out such activities. Congress was informed of a series of relevant recommendations contained in paragraphs 5.3 and 5.4 of the report of the 2003 Informal Planning Meeting on the VCP and related technical cooperation programmes. Congress requested the Executive Council to study those recommendations with a view to their integration in the work of the Technical Cooperation Programme. In that regard, Congress requested the

Secretary-General to use available means to develop further those activities.

WMO programme for the Least Developed Countries

3.7.1.32 Congress noted that the third United Nations Conference on the LDCs was held in Brussels in May 2001 with the main objective of reviewing the implementation of the Programme of Action for the LDCs approved in 1991. The Conference recognized the limited results achieved by the international community in supporting the LDCs during the past decade and agreed that new approaches were required to assist LDCs in their efforts to improve their economies and the plight of their populations. In that connection, the Conference adopted a Programme of Action for the LDCs for the decade 2001-2010 which aimed at improving the human conditions of more than 600 million people in the 49 countries concerned, through accelerated sustained economic growth. In order to fulfill the commitments contained therein, the United Nations system, including WMO, was requested to play a key role in the implementation of the Programme of Action.

3.7.1.33 Congress noted that the WMO Executive Council, during its fifty-third session, had requested the Secretary-General to prepare appropriate proposals concerning WMO's support to the implementation of the Programme of Action for the LDCs for the decade 2001-2010 and had agreed on the need to develop a WMO programme for the LDCs to contribute to the overall Programme of Action. Congress also noted that several organizations had already drawn up special programmes for LDCs in their areas of competence. Those included ITU, the International Maritime Organization, UNCTAD and ILO. In that connection, Congress decided to establish a WMO programme for the LDCs whose long-term objective would be to contribute efficiently and in a timely manner to the social and economic development efforts of those countries through the enhancement of the capacities and capabilities of their NMHSs. Congress agreed that the WMO programme for the LDCs should be based on the initiatives already developed in the WMO Regions. Those included the Strategy for the Enhancement and Improvement of WWW Basic Systems in RA I, the Strategic Plan for the Enhancement of NMSs in RA II and the Strategic Action Plan for the Development of Meteorology in the Pacific Region. Other initiatives included NEPAD, the GCOS Regional Action Plans as well as the action plans developed by several LDCs within the framework of regional economic groupings in Africa and Asia. The programme would encompass capacity building and human resources development, strengthening and maintenance of the basic meteorological infrastructure as well as support to priority areas such as natural disaster mitigation and prevention, climate monitoring and prediction and

flood forecasting and water resources assessment and management. The purpose and scope, objectives and planned activities of the programme are given in the Annex IV to this report and should be included in the appropriate section under the Technical Cooperation Programme in the 6LTP.

3.7.1.34 In that connection, Congress adopted Resolution 21 (Cg-XVI).

3.7.1.35 For the implementation of the programme, Congress agreed that specific projects should be developed to address the requirements of the most critical NMHSs of the LDCs. The main strategy would be to keep under review the needs of NMHSs of the LDCs and to concentrate efforts in securing funding for a number of countries at a time in order to produce tangible and lasting results. To mobilize additional resources apart from resources from existing sources, such as the WMO VCP and Trust Funds, Congress requested the Secretary-General to establish a special WMO Trust Fund for the LDCs. The Fund would receive voluntary cash contributions from Members, bilateral and multilateral funding agencies, including the World Bank, regional development banks, and from NGOs and the private sector. The terms of reference of the Fund are given in Annex V to this report. In order to launch the above Trust Fund, Congress agreed that a modest contribution be made available from the VCP(F). Congress requested the Secretary-General to find a suitable mechanism for mobilizing resources for the programme, taking into account existing trust funds and other funding sources.

3.7.1.36 In order to ensure the successful implementation of the programme, Congress appealed to all Members to participate in, and contribute to, the programme. Congress requested the Executive Council to monitor the progress made and to provide appropriate advice on the mobilization of resources and implementation of the programme.

3.7.1.37 In view of the fact that several non-LDC countries needed support for the rehabilitation of their NMHSs, Congress requested the Secretary-General to continue providing assistance to those countries.

3.7.2 ORGANIZATION AND FUNDING OF THE TECHNICAL COOPERATION PROGRAMME (agenda item 3.7.2)

3.7.2.1 Congress noted that during the thirteenth financial period, the core activities of the Technical Cooperation Programme, especially resource mobilization and programme coordination, had been carried out satisfactorily with the resources allocated under the regular budget for core posts and support activities. Congress also noted that the Subregional Offices for Western Africa, for Northern America, Central America and the Caribbean, for Eastern and Southern Africa and for the South-West Pacific and the Regional Offices had worked closely with the Technical Cooperation Department to contribute towards ensuring adequate delivery of the Programme to Members. In that regard, Congress

reviewed the relevant activities of Subregional Offices and its decisions thereon were reflected under agenda item 3.8.

Budget for secretariat support to the Technical Cooperation Programme

3.7.2.2 Congress noted that during the thirteenth financial period, the Executive Council had approved the budgets for secretariat support to the Technical Cooperation Programme for the periods 2000-2001 and 2002-2003 which were funded from the revenues generated through the implementation of projects and credited to the WMO Technical Cooperation Fund. Congress was informed that the Secretary-General had taken adequate measures during the period to ensure that the approved budgets would be balanced between revenues and expenditures. In that connection, Congress noted that the JIU report on support costs related to extrabudgetary activities in organizations of the United Nations system (JIU/REP/2002/3) had been reviewed by WMO and other organizations during inter-agency consultations in December 2002. Congress noted that the standard rate of most agencies varied between 10 and 13 per cent depending on the source of funds. That percentage was composed commonly of 4-5 per cent of administrative costs, plus 6-8 per cent for project implementation. Congress also noted, that support cost rates for sources outside the United Nations system could be negotiated on a case by case basis depending on the nature of the project, the administrative and technical work needed and other factors. Congress requested the Secretary-General to continue the present practice in that area for technical cooperation activities and to define an appropriate approach for other extrabudgetary resources made available to the Organization for other programme activities (see agenda item 8).

3.7.2.3 With regard to the programme and budget proposals for the fourteenth financial period, Congress agreed that funding from the regular budget should continue to be provided to cover the costs of the three core posts, including the post for resource mobilization, in the Technical Cooperation Department, as during the thirteenth financial period. In addition, Congress agreed that allocations should be made to meet the operating and travel costs for the core activities of the Technical Cooperation Programme. The related decisions of Congress were reflected under agenda item 8. Congress requested the Secretary-General to continue his efforts to find ways and means for enhancing resources for technical cooperation activities and encouraged Members to cooperate with the Secretariat in that endeavour.

Mechanism for reviewing the WMO technical cooperation activities

3.7.2.4 Congress noted with satisfaction that, as requested, the Executive Council had established through its Resolution 1 (EC-LI) an Advisory Group

of Experts on Technical Cooperation and that the Group had held two meetings during the period to provide guidance and advice to the Council on relevant aspects of the Technical Cooperation Programme. Congress expressed its appreciation to the members of the Group and especially to the two chairpersons, Messrs R.A. Sonzini and Y. Salahu, successive Third Vice-Presidents of WMO. It also invited experts to participate in the group. Congress requested the Council to re-establish such a Group for the next financial period, with appropriate terms of reference and composition to address better the future challenges in technical cooperation activities, especially those in support of the newly established WMO programme for LDCs. In that respect, Congress agreed that the Group should include experts on technical cooperation from each region and that the Chairperson of the Informal Planning Meeting on the VCP and related technical cooperation programmes should be invited to participate in the work of the Group.

3.8 REGIONAL PROGRAMME (agenda item 3.8)

3.8.1 REPORTS OF THE PRESIDENTS OF REGIONAL ASSOCIATIONS (agenda item 3.8.1)

3.8.1.1 Congress noted with appreciation the reports of the presidents of regional associations and expressed its satisfaction that the activities of the associations were being undertaken in an effective manner, in spite of the various constraints experienced by many Members of the associations. The reports provided an overall view and assessment of the major activities of the regional associations since Thirteenth Congress.

3.8.1.2 Congress welcomed Bhutan and Kiribati, who became Members of RAs II and V, respectively. It accorded great attention to the pressing needs, in particular, of Bhutan and of Kiribati to meet new challenges in the maintenance and modernization of their Meteorological Services. Congress appreciated the financial and technological support provided by donors to those countries.

3.8.1.3 Congress expressed its gratitude to the presidents of regional associations for serving efficiently their Members, particularly for representing their respective associations effectively during sessions of the Executive Council. Congress stressed the fundamental role that the presidents of regional associations played in enhancing cooperation and coordination to facilitate the implementation of the regional components of the WMO Programmes and the work of NMHSs. In that context, special reference was made to the important role played by the presidents at the regional level during their missions to Member countries of their respective Regions, particularly by emphasizing to the planners and decision makers in the countries visited the importance of the contribution of meteorology and operational hydrology to their national social and economic development.

3.8.1.4 Congress noted the progress made in the implementation of the regional components of the various WMO technical and scientific programmes as well as in the strengthening and development of NMHSs in the various Regions. It also noted the concerns reported by the presidents of regional associations, which among others were the following:

- (a) Difficulties faced by several Members in maintaining and in developing further their basic meteorological and hydrological observing networks, telecommunication facilities and data-processing systems;
- (b) Weak forecasting and warning systems in many countries to analyse, interpret, predict, and disseminate timely and accurate warnings on natural disaster, such as tropical cyclones, floods, sand/dust storms, drought, monsoon depressions, forest fires/haze, and other extreme weather events;
- (c) The need to develop and improve seasonal and inter-annual climate prediction capacities in various less developed NMHSs and building capabilities in Member countries for better understanding and assessment of the nature and extent of potential threats from climate change and variability, especially the impacts of sea-level rise on low lying islands and countries with extensive coastlines;
- (d) The need to give further attention to the enhancement of human resources development of Members through education and training, particularly through the provision of long-term fellowships as well as through the use of new technology including distance learning;
- (e) Increasing trend of scarcity of fresh water and high incidents of water pollution in many countries and regions and, therefore, the need to give high priority to accelerate the development and implementation of HYCOS projects in all Regions, in particular in RAs II and V, to contribute to the efforts of Members to address the critical issue of availability of fresh water;
- (f) The issue of commercialization/cost recovery of meteorological and hydrological services and the international exchange of meteorological and hydrological data and products and new challenges and opportunities faced by NMHSs in those areas;
- (g) The need to enhance collaboration further with relevant regional and subregional organizations, institutions and development partners in all Regions.

3.8.1.5 Congress agreed that the concerns mentioned above could be effectively addressed through the implementation of the strategies developed in the various Regions to strengthen and improve their basic meteorological and hydrological facilities and services. In that regard, it gave its full support for the implementation of the World Weather

Watch Strategic Plan on the Implementation and Improvement of the Basic Systems in RA I (Africa), in collaboration with NEPAD. Congress also agreed to the request to update the Strategic Plan for the Enhancement of NMSs in Asia. It also encouraged other regions to develop and implement similar strategies. In that regard, it noted that one good example of joining forces to solve problems on the regional level was the collaboration among CIS Member States in the framework of the Inter-governmental Council on Hydrometeorology of the Countries of the Commonwealth of Independent States. It further noted that the concept of the hydrometeorological safety of CIS Member States which would be adopted in the near future was to define the national security system of CIS Member States, thus ensuring the safety of the lives and property of the population and of the economy of the countries relative to hydrometeorological events. Congress encouraged CIS Member States to continue their efforts in the realization of that concept. Congress requested partners and VCP donors to provide assistance for the implementation of the various regional strategies.

3.8.1.6 Congress agreed to strengthen the various regional specialized centres including ACMAD, the ASEAN Specialized Meteorological Centre, the International Research Centre on *El Niño*, Drought Monitoring Centres and others to assist Members in their efforts to improve their climate prediction and early warning capabilities of extreme events as well as to help them address issues of climate change, related environmental issues and sustainable development. In that context, Congress noted the offer of Romania to make available the facilities of its National Meteorological Centre to provide data and products as well as provision of practical training to the countries in the south-eastern part of Europe, with a view to improve short-term forecast and the provision of early warning information on extreme weather events.

3.8.1.7 Congress gave its full support to the priorities of regional associations as given in the 6LTP as well as to their work programme during the fourteenth financial period, as highlighted in the reports of presidents of regional associations. It also agreed that the regional associations should give special attention to the improvement of the capacities of NMHSs in seasonal and interannual climate prediction through the enhancement of technical cooperation activities between WMO and regional organizations and institutions in various Regions.

3.8.2 REGIONAL ACTIVITIES (agenda item 3.8.2)

3.8.2.1 Congress noted with appreciation that several seminars and workshops were organized during the thirteenth financial period in various specific areas in order to strengthen the capabilities of NMHSs. Regional technical conferences were convened in all Regions in order to exchange views

and share experiences among NMHSs on management techniques given the rapidly evolving technology. Technical and expert advice were provided to a number of NMHSs in all regions which resulted in the strengthening and further development of their Services. Congress agreed that similar events should be carried out during the fourteenth financial period.

3.8.2.2 Congress expressed its satisfaction at the increasing role of the Regional Offices in assisting the Members of their respective Regions in implementing the WMO technical and scientific programmes and other activities that had regional focus. It emphasized, in particular, the efforts of the Offices to contribute to the high priority areas including their increasing role as information centres for activities in their respective Regions. Congress emphasized that those Offices should respond rapidly to the needs of NMHSs and help in resource mobilization.

3.8.2.3 Congress noted with satisfaction the commendable efforts of the Regional Offices in establishing close working relationships with other regional and subregional groupings and organizations in the fields of meteorology and operational hydrology as well as in related environment fields. Congress emphasized that those activities contributed to the development of NMHSs and should be further reinforced and improved.

3.8.2.4 Congress examined the question of the location of the Regional Offices during the fourteenth financial period and noted that the international staff of the Regional Office for Africa were performing their functions temporarily from the WMO Headquarters and that as from April 2003 were transferred to Lagos/Abuja, Nigeria. It agreed that further discussion on the location of the Regional Office for Africa should take place at appropriate regional forums and requested the Secretary-General to take action on that matter, as appropriate, in consultation with RA I.

3.8.2.5 Congress considered the recommendations of the twelfth session of RA II and the thirteenth session of RA V and decided that the Regional Office for Asia and the South-West Pacific should continue to be located at WMO Headquarters in Geneva until that issue was addressed by the next sessions of RA II and RA V and after the location of the Subregional Office for Asia was determined.

3.8.2.6 With respect to the Regional Office for the Americas, Congress noted with appreciation the wish expressed by the Government of Paraguay to continue hosting the Regional Office in Asuncion. It, therefore, decided that the Regional Office for the Americas should continue to be located in Asuncion, Paraguay, during the fourteenth financial period.

3.8.2.7 Congress reviewed the measures taken to harmonize the activities of the Regional/Subregional Offices and those of the Technical Cooperation Department and expressed its appreciation to the Secretary-General for the prompt action taken in that

regard. Congress further welcomed the coordination mechanism put in place to ensure the success of the harmonization process.

3.8.2.8 Congress noted that the established Subregional Offices had played a proactive role in support of Members. In particular, the Offices had established contacts and had developed working relationships with national and regional representatives of bilateral and multilateral partners and organizations in order to sensitize them to support national and regional meteorological and hydrological projects. Congress also noted the timely response by those Offices during the time of natural disasters that affected several countries in various regions. Those Offices also undertook a number of missions to NMHSs with a view to assist in developing project proposals and resource mobilization. It noted that recent sessions of the respective regional associations had expressed satisfaction with the activities of the Subregional Offices.

3.8.2.9 Congress reviewed the activities carried out by the Subregional Offices in San José (Costa Rica), Nairobi (Kenya), Lagos (Nigeria) and Apia (Samoa) since its thirteenth session. Congress agreed that those Offices should be involved in the implementation of projects in their respective regions and should strengthen their resource mobilization responsibilities. Congress requested the Secretary-General to develop further the responsibilities of those Offices and strengthen the facilities provided to them within available resources, in order to fulfil adequately their responsibilities.

3.8.2.10 Congress expressed its deep appreciation to the Governments of Costa Rica, Kenya, Nigeria and Samoa for hosting the respective Subregional Offices in their countries.

3.8.2.11 Congress noted with appreciation the action taken by the Secretary-General to establish Subregional Offices for Asia, Europe and South America. It noted that the Subregional Offices for Europe and South America were located in Geneva and Brasilia, respectively. It requested the Secretary-General to determine the location of the Subregional Office for Asia in due course.

3.8.2.12 Congress noted the document presented by the president of RA IV which contained a review and a proposal of the role and responsibilities of WMO's Regional and Subregional Offices since last Congress, aimed at strengthening them to provide Members with a better and more effective coordination of activities, to serve as an extension of Headquarters and to respond to Members' needs on a more regional and localized basis. Congress considered the new duties, responsibilities and resources for those Offices as proposed in the document. In that regard, Congress agreed that the proposal merited further consideration with regard to the various implications, such as how restructuring might affect the functioning and resources of the Organization. It therefore requested

the Secretary-General to study the matter, in close consultation and collaboration with the Executive Council, and take appropriate action in due course.

3.8.2.13 Congress considered the programme and budget for the fourteenth financial period in respect to the Regional Programme and recorded its views under agenda item 8.

4. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS (agenda item 4)

4.1 CONFERENCES (agenda item 4.1)

4.1.1 Congress examined the information submitted by the Secretary-General on the invitations extended for hosting sessions of constituent bodies during the fourteenth financial period (2004-2007). Additional information provided by delegations at Fourteenth Congress permitted the establishment of a provisional programme of sessions of those bodies (see Annex VI to this report). The Secretary-General was requested to continue further negotiations to find host countries for those regional associations/technical commissions that had no invitation at the time, in order to ensure that as many sessions as possible would be held outside Geneva. That decision was in line with the policy laid down by previous Congresses. Congress noted that, in accordance with General Regulation 17, if no invitation was received 300 days before the scheduled opening of the session concerned, it would be held at WMO Headquarters.

4.1.2 Congress requested the Executive Council to ensure that, as far as possible, sessions of constituent bodies were arranged so that the workload of Members and the Secretariat could be distributed evenly during the fourteenth financial period.

4.1.3 Congress also confirmed the policy established by previous Congresses with regard to the assistance provided by the Organization to host sessions of constituent bodies away from Geneva.

4.1.4 The budgetary implications with regard to the programme of sessions of constituent bodies during the fourteenth financial period were discussed under agenda item 8.

4.2 LANGUAGES (agenda item 4.2)

4.2.1 Thirteenth Congress had requested the Secretary-General to conduct a study of the WMO language services system, which was reported to the fifty-fourth session of the Executive Council.

4.2.2 Following the recommendations of the consultants for the Secretariat Review conducted in 1999, the activities related to conferences, languages and document production, as well as publications, printing, and publication sales and distribution were re-organized in 2000 to improve operational efficiency. That restructuring had improved the cost-efficiency of text-processing as compared to previous years. That contributed to cover the expenses related to the new language services requested by Thirteenth Congress. However, with the resources stretched to the

maximum, problems were encountered throughout the financial period and occasional delays were inevitable. Since the delay between the issue of documents in the original language and in translation was still sometimes too long, Congress requested the Secretariat to continue its efforts to ensure the timely production of documents in all languages. Having noticed that translation services were provided by a group of 10 permanent staff translators covering 5 languages, i.e. all except Chinese, Congress requested the Secretariat to take concrete measures to ensure the equitable treatment of all official and working languages of the Organization. Arabic-speaking Members expressed their thanks to the Secretary-General for the Arabic language services which were to be praised for their high quality. That greatly facilitated the participation of Arabic-speaking Members in the work of constituent body sessions. They urged the Secretary-General to continue his support for the Arabic language services. They requested that the budget to be presented to Fourteenth Congress include allocations required to provide full Arabic services starting from the fourteenth financial period and provision of further posts for Arabic services, in accordance with the previous decision of Thirteenth Congress, to realize a full Arabic language service.

4.2.3 Congress expressed its satisfaction to the Secretary-General for the significant cost-efficiency improvements achieved in the language services and encouraged him to continue the process under way and to monitor progress achieved.

4.2.4 Congress noted the wish of Portuguese-speaking countries to use Portuguese as an official and working language of the Organization. That issue, which had been addressed in Thirteenth Congress (see Resolution 20 (Cg-XIII) — Use of Portuguese, was considered under agenda item 11.3.

4.3 PUBLICATIONS (agenda item 4.3)

4.3.1 Congress thanked the Secretary-General for the work carried out under the Publications Programme during the thirteenth financial period. It welcomed the important new editions of mandatory publications and asked the Secretary-General to continue efforts to treat all languages equitably and to publish all official records in all specified languages before the end of the corresponding financial period. Arabic-speaking Members emphasized the decision of Thirteenth Congress to treat all languages equitably and to publish all official records in all languages before the of the corresponding financial period, and to promptly issue the *Technical Regulations* (WMO-No. 49) and the *Guide to Climatological Practices* (WMO-No. 100), as well as the *Reference Guide for Permanent Representatives of Members with WMO on Relevant Procedures and Practices of the Organization* (WMO-No. 939). In addition, they emphasized that *Guides, Manuals and Handbooks* should also be produced in Arabic in

order to satisfy the need for a provision of a full service. The Chinese delegation stressed the need to have more publications (the *Guide to Meteorological Instruments and Methods of Observation* (WMO-No. 8), the *Guide to Climatological Practices* (WMO-No. 100) and the *Guide on the Global Observing System* (WMO-No. 488)) available in Chinese. Congress commended the Secretary-General for the continuing measures taken to promote the Programme and for the continued use made by the Secretariat of new technology and working methods to reduce the bulk and cost of publications, while consistently improving their appearance and utility, and thereby enhancing WMO's image. The extended range and quality of information material produced in a most cost-effective way during the last four years was also much appreciated. Congress extended thanks to Members which had actively contributed to the Programme by translating and preparing publications.

4.3.2 Reiterating the importance of the WMO Publications Programme, Congress requested the Executive Council to continue to review regularly the progress of the Programme and to provide detailed guidance during the fourteenth financial period on the overall programme of publications. That should include planning, production and distribution, taking into account Members' requirements and the facilities available to them, and the funds available within the Linguistic Services and Publications Programme budget, including the Publications Fund.

4.3.3 Congress re-affirmed that the prime function of the Organization's Publications Programme was the widest possible distribution to NMHSs of information needed to attain its objectives. Congress also affirmed that reproduction by NMHSs of information contained in WMO publications was not subject to any restrictions except acknowledgement of the source. It approved the Council's recommendation that publications, such as the abridged reports of constituent bodies, which had little sales potential, should be distributed by the most economical means available.

4.3.4 Congress noted that the Secretary-General had already increased the distribution of electronic publications, in particular CD-ROMs and via Web-posting, and requested the Secretary-General to continue efforts to expand electronic publishing to further the objectives of the Organization and its Members. It requested further expansion of publications by electronic means (e.g. *Composition of the WMO* (WMO-No. 5)) during the fourteenth financial period. While acknowledging that paper publications would be required by some users in parallel with electronic versions and also that the cost of printing smaller quantities than hitherto would result in higher unit costs, Congress considered that it would be important to reduce requirements for printed publications to a minimum as satisfactory electronic alternatives were put into place.

4.3.5 Congress noted that, while the quantity of material included in mandatory publications and the number of languages required was continually increasing, the resources available to the Programme had been subject to the same budgetary pressures as had other programmes. Recognizing those pressures, Congress approved the slightly modified list of mandatory publications and languages in which they would be produced, as appeared in the annex to Resolution 22 (Cg-XIV). It requested that the available resources be allocated on an equitable basis to the approved list of mandatory publications and that, under the cost recovery system, programmes would be responsible for the costs of publications exceeding such allocation. Congress understood that further lack of necessary resources could restrict or delay the publication of mandatory publications in some languages and encouraged the Secretary-General to find the resources, where possible, to improve the situation and to seek ways to translate more programme-supporting publications. It requested the Secretary-General to take any administrative steps he might identify to maximize the use of existing resources to accommodate new requirements within those resources, while preserving the standards of excellence of publications.

4.3.6 In order to speed up the production of final reports of constituent body meetings, Congress accepted that the texts adopted by plenary could, in some cases, be turned directly into reports without a full editorial process. Congress also accepted that further such cost-efficiency measures might be considered, if they proved successful.

4.3.7 Congress adopted Resolution 22 (Cg-XIV) defining the broad policies in connection with the WMO Publications Programme during the fourteenth financial period. The annex to that resolution contained the list of WMO mandatory publications and languages in which they should be issued during the fourteenth financial period.

4.3.8 Some Members noted that, while stringent economy measures had already been implemented, they had deep concerns regarding any further reduction in funding to meet existing requirements for language services and publications, including printing and electronic publishing. Congress requested the Secretary-General to take measures to ensure that requirements for those services were met.

4.4 OFFICE AUTOMATION AND INFORMATION TECHNOLOGY SUPPORT (agenda item 4.4)

4.4.1 Congress noted with appreciation that major improvements were achieved in the area of office automation and information technology in the Secretariat since Thirteenth Congress. It noted that the PC-user environment had migrated from Windows 95 to Windows 2000 and that those improvements enabled the Secretariat to make good

use of modern electronic tools for the enhancement of office productivity.

4.4.2 Congress also noted that 100 Members' Web sites were linked to the WMO Web site. It also noted that Members could send files to, and download the files from, the FTP server. The FTP server held an average of 21 000 documents which were accessible by Members, and the WMO Web server held about 9 500 Web pages.

4.4.3 Congress recognized that the e-mail facility had been enhanced, thus providing faster, easier and reliable messaging and information exchange. Additional facility to access the WMO mail system had been implemented using Internet technology; therefore, staff members could read and send messages and documents from any remote location as long as there was access to an Internet connection. It noted that the WMO address book, containing an updated staff e-mailing list, had been made available on the WMO Homepage.

4.4.4 Congress noted with appreciation that Intranet, a new communication service within the Secretariat, had been implemented and, as a result, the exchange of information between the staff had been enhanced. Furthermore, Congress noted that an in-house Video system was in place to enable authorized persons to follow meetings held in the Secretariat's main meeting room (Salle A).

4.4.5 Congress noted that improvements, including hardware replacements and software upgrades of the information systems' infrastructure, had systematically been implemented in the Secretariat. Strategically, a proactive approach of WMO staff in the Information Systems Division to develop information technology/information system projects and to manage old system solutions in the Secretariat had helped to avoid duplications and optimize the limited resources.

4.4.6 Congress recognized the importance of support activities provided through ICT for enhanced WMO programme activities, and that procurement and further development of information and communications systems would require a large amount of resources, including software, hardware and qualified human resources with specific expertise. Taking into account the budgetary constraints that WMO had been facing for over 20 years and the limited resources foreseen in the programme and budget proposals for the fourteenth financial period (2004-2007), Congress endorsed the establishment of a Trust Fund according to the terms of reference and rules given in Annex VII to this report. That was endorsed with a view to financing unfunded ICT requirements through voluntary contributions, as well as from other sources of funding. The Trust Fund resources would be used to upgrade the current Oracle Financial system which had been highlighted as a cause for concern in the External Audit report for the 2000-2001 accounts, and to develop other ICT management tools in the

area of financial and human resources management, payroll, results-based performance management, Web development, electronic document management system and other ICT-related support functions. Those would include the need to communicate actively with Members and to meet the requirements for all working languages of the Organization, as appropriate. Congress welcomed anticipated developments, aimed at producing efficiency gains and at enhancing the quality of services that the Secretariat would provide to WMO Programmes.

4.4.7 Congress invited WMO Members to make voluntary contributions to the Trust Fund in order to enable WMO to implement ICT projects aimed at improving further ICT support functions, but noted the desirability of adequate regular budget funding for an activity fundamental to the operations of the Secretariat. It also expected that such enhanced IT systems would procure efficiency gains and enhance the quality of services that the Secretariat would provide to WMO Members, and that the Secretariat would undertake periodic reviews of business improvements, as well as staff efficiencies. Reports on progress in that regard should be provided to the Executive Council.

5. INFORMATION AND PUBLIC AFFAIRS PROGRAMME (agenda item 5)

Global communication strategy and activities

5.1 Congress reviewed the actions taken during the thirteenth financial period to enhance the WMO IPA Programme and its increasing promotional and constituency-building activities in support of the scientific and technical programmes for the benefit of NMHSs. A more focused outreach policy, closer interaction among the WMO Secretariat, NMHSs and the United Nations system had increased public awareness of the importance of working together in weather, water and climate.

5.2 Congress expressed its appreciation for the wide range of public information tools and events that had marked the fiftieth anniversary of WMO. Anniversary information products included a fiftieth anniversary Web site, a video, a booklet on WMO achievements, a series of television documentaries related to twentieth century climate, a video news release, a radio programme, a thematic media brief and an information kit and a poster series; all were widely disseminated with the help of NMHSs. The events included open days for general public visits; a school visits programme; a WMO-sponsored Scientific Media Conference jointly organized with IABM; a press conference jointly organized with the International Weather Festival; a roundtable discussion co-sponsored by the International Weather Festival, the European Meteorological Society and WMO; a special event at the Hannover Expo 2000 in cooperation with the *Deutscher Wetterdienst* (Germany); a one-month exhibition at the United Nations Headquarters in New York with the

participation of NOAA and the Weather Channel television.

5.3 Congress reiterated its support for the capacity building of NMHSs, particularly in improving their presentation and communication skills and in enhancing their visibility through training workshops and closer collaboration with the print and broadcast media. It expressed appreciation for the successful training workshops held in Buenos Aires (2000) and Bahrain (2002). Those workshops enhanced the participants' skills in communication and effective presentation of weather information on television and radio networks. Congress requested the Secretary-General to continue to organize, in cooperation with the PWS Programme, as well as other WMO Programmes and interested partners, further media training workshops for presenters of weather forecasts on television, radio, the press and Web site networks as well as for public information officers of NMHSs with a view to improving their presentation and dissemination skills in support of WMO Programmes, and for greater visibility and recognition of the role of NMHSs and WMO.

5.4 Congress took note of the successful results achieved through a series of international press conferences and media campaigns organized on several major themes, such as in relation to *El Niño* occurrences, ozone layer depletion or the annual launch of the Statement of the status of the global climate, as well as in conjunction with regional and international events. Those included, inter alia, the annual International Day for Disaster Reduction, the World Clean Energy Conference, and the third World Water Forum in Kyoto. Congress underlined the importance of the timely transmission of WMO information material to NMHSs, if needed under embargo, in order to allow for timely outreach to the public. Whenever possible, such material should be transmitted in appropriate electronic format as soon as it was available. Congress urged the Secretary-General to continue the emphasis on media relations and campaigns, taking advantage of scientific developments and international events.

5.5 Congress emphasized the need for the NMHSs of all Members to identify themselves as an integral part of the WMO system in order to foster greater public awareness of the valuable contributions of meteorology, operational hydrology and related environmental disciplines to sustainable development and to rally support for WMO and the NMHSs. In order to enhance outreach and visibility of WMO and NMHSs at national and international levels, the IPA Programme should serve as a depository and a clearinghouse for public information material developed by NMHSs and the Secretariat.

5.6 Congress welcomed the Global Communication Strategy aimed at promoting the role and visibility of WMO and the NMHSs, as well as developing synergy among them, in support of the well-being of all individuals, communities and nations. Congress urged the development and

implementation of the new Strategy, with the following objectives: projecting a unified and consolidated image of WMO and NMHSs; strengthening constituencies both at the national and regional levels; spreading key messages giving a local voice to a global undertaking and vision; fostering strategic alliances with the media; and promoting a communication culture throughout WMO. The strategy would position WMO and its Members in a manner which played to its unique strengths and raise the Organization's visibility as a key player in international cooperation and in contributing to sustainable development. Congress urged the Secretary-General to review, develop further and apply an editorial policy, and emphasized the need for a "branding" for the Organization. It also called for the modernization of WMO publications.

5.7 Congress encouraged the entering into partnerships with the civil society including the private sector aimed at raising the visibility of WMO's activities, in accordance with WMO's policies, principles and guidelines and with relevant practices of the United Nations system. It also called for activities undertaken jointly with scientific institutions.

5.8 Congress welcomed the development of databases of media and other IPA contacts for wider and targeted dissemination of press releases and other public information material.

5.9 Congress requested the Secretary-General to continue to explore ways and means of nurturing public support for its activities. It further urged the Secretary-General to enhance IPA's capability to take advantage of available technologies through modernization and skilful management of IPA's photo library, video archives, editing facilities and to develop state-of-the-art educational products for the general public. In particular, Congress called for the preparation and distribution of public information materials for children and the youth. It urged further improvement in the WMO Website, and the availability electronically of high resolution, photo and of other public information material produced under the IPA Programme for reproduction and use by NMHSs. Congress called on all Members to establish a link to the WMO Web site.

5.10 Congress also requested Members to enhance their own IPA activities taking into account the Global Communication Strategy and to provide support to the IPA Programme. Congress encouraged Members to support close interaction among national IPA focal points and the Secretariat. It invited the Secretary-General to arrange for Regional and Subregional Offices to play a more active role regarding public information activities in their respective region in order to enhance coordination and add value to public outreach activities of NMHSs sharing similar concerns and of WMO.

5.11 Congress called for a greater involvement of NMHSs in developing strategic alliances with the

national media for the purpose of disseminating key messages and for providing greater visibility for all activities of the NMHSs. It further called on NMHSs for a closer interaction with United Nations offices in the field. It also called for closer collaboration in developing joint public awareness initiatives, particularly on the occasion of World Meteorological Day and World Water Day, which were largely celebrated under a different theme each year. Congress invited the Secretary-General to pursue his efforts in producing the series of posters, brochures, thematic video films, radio programmes and information kits which were specifically produced and widely distributed on each occasion. Congress noted that promoting public awareness of the outcomes of major initiatives, such as IPCC, would promote the visibility and recognition for the role and contributions of WMO including NMHSs. Congress called on Members to celebrate World Meteorological Day and such events nationally and to collaborate with IPA in developing additional information material.

5.12 Congress welcomed WMO's efforts to maintain a close working relationship with the broadcast media. It took note also of the active involvement of WMO in the annual International Weather Festival, and the ongoing preparations for WMO involvement in the First World Conference on Broadcast Meteorology, to be held in Barcelona in June 2004 at the initiative of IABM.

5.13 Congress expressed its appreciation for the successful WMO participation in international events, notably in WSSD, held in Johannesburg in August/September 2002. Information related to WMO's role in sustainable development issues was widely disseminated at various locations for delegates, journalists, NGOs and major groups who staged a large number of side events. WMO publications and new information products, including a video, a calendar and postcards with a focus on sustainable development, had given significant visibility to WMO and the NMHSs at the Summit. The role of WMO and its Members featured prominently in the United Nations system exhibit at the Convention Centre. In collaboration with the South African Weather Service, an exhibition stand on WMO activities was set up at Ubuntu Village, the main exhibition site. The activities of the Organization in the field of hydrology and water resources were largely publicized at the Water Dome where various information materials were displayed at the WMO stands. Congress took note of the fact that further information about public information activities undertaken in the context of WSSD was reflected under item 9.2.

5.14 Congress urged the Secretary-General to continue to take advantage of international fairs and exhibitions to promote the image of WMO and NMHSs and to enhance cooperation with other United Nations agencies, in particular within the framework of the United Nations Communications

Group. Congress also urged Members to highlight the role of WMO and NMHSs at regional and global conferences on themes that related to the mandate of WMO.

5.15 Congress further noted with satisfaction the media outreach activities undertaken in support of the Second WMO Conference on Women in Meteorology and Hydrology, held in Geneva in March 2003.

5.16 Congress invited the President and Officers of the Organization, in collaboration with the Secretary-General and the NMHSs, to contribute further to the promotion of the role and activities of WMO and NMHSs in the various global and regional forums to which they had access. It encouraged the Officers of the constituent bodies and all its individual Members to contribute, within their various capacities, to the total effort of promoting WMO and its key roles in weather, climate and water.

5.17 Congress adopted Resolution 23 (Cg-XIV).

A subtitle for WMO

5.18 Congress recalled that Thirteenth Congress had considered the question as to whether it would be appropriate that the name of the Organization be amended to reflect better its responsibilities in the field of hydrology, and that while not favouring a change of name, saw merit in reflecting hydrology in a subtitle. Consequently, it requested the Executive Council to study further that matter and to report back to Fourteenth Congress.

5.19 Congress noted that the Executive Council, at its fifty-fourth session, after reviewing several proposals submitted by the president of CHy, recommended that the subtitle be "weather, climate and water".

5.20 Congress was informed that there were no major inconveniences in translating the proposed subtitle in the different WMO official languages. As regard the status of the subtitle and how and when it could be used, Congress agreed that it could be used as a "motto" on all official documentation, correspondence and publications.

5.21 In view of the above, Congress adopted Resolution 24 (Cg-XIV).

6. LONG-TERM PLANNING (agenda item 6)

6.1 REPORT ON THE MONITORING OF THE IMPLEMENTATION OF THE FIFTH WMO LONG-TERM PLAN (agenda item 6.1)

6.1.1 Congress noted with appreciation the report on the assessment of progress made towards achieving the established targets and main long-term objectives of WMO Programmes over the period 2000-2003 as set down in the 5LTP. It was noted that the report was based on the programme monitoring and evaluation scheme developed by the Executive Council at the request of Congress.

6.1.2 Congress noted that the Executive Council, with the help of its Working Group on Long-term Planning, had prepared a consolidated overall

assessment of WMO Programmes and progress in the implementation of individual scientific and technical programmes covering the period 2000-2001. That was circulated to Members by the Secretary-General and was based on independent submissions made by the presidents of regional associations and technical commissions as well as by the Secretary-General. Using a similar approach, an update of the assessment to cover the remaining period before Congress (2002 to early 2003) was also provided.

6.1.3 Congress further noted that the implementation of the WMO Programmes had been assessed using as a guide the programme objectives given in the 5LTP. The implementation had been generally successful and had contributed to the realization of the WMO strategic goals as well as to assisting Members, particularly their NMHSs, in providing the services required.

6.1.4 During its review, the Executive Council concluded that progress had been achieved, in particular in the following areas:

- (a) Assistance to Members in their efforts to improve the NMHSs to enable them to deliver better services to society;
- (b) Improvement of warnings of severe weather, hydrological and other relevant environmental events;
- (c) Improvement of WWW telecommunication systems over many areas of the globe and the decision to expand the space-based component of GOS to include appropriate R&D environmental satellite missions;
- (d) Understanding climate and its variability and provision of further scientific basis to detect climate change; and
- (e) Enhanced support to national sustainable development efforts and to related international initiatives, such as UNFCCC and UNCCD.

6.1.5 It was noted that WMO continued to place emphasis on addressing major issues of interest to its Members, such as the international exchange of meteorological, hydrological and related data and products; the role and operation of NMHS; alternative approaches to meteorological services delivery; and the role of WMO and its relationship with the United Nations system in the future. Considerations of those issues assisted WMO in defining its vision, desired outcomes and strategic goals (which were reflected in the 6LTP), taking into account major global trends and developments affecting WMO scientific and technical programmes. Those included the challenges and opportunities provided by the Internet and satellite-related systems, as well as the issue of globalization.

6.1.6 Congress also recognized that while progress had been achieved, WMO and its Members, particularly their NMHSs, had been facing increasing changes and challenges. Continuing financial difficulties were encountered in most Programmes, together with curtailment of Members'

activities in support of WMO objectives. Several serious problems continued with many NMHSs suffering budgetary-induced cutbacks in core operations, thus leading to restrictions in data availability and curtailment or degradation of services. Elements of the WWW basic systems were particularly severely affected, especially in RA I. The Executive Council was requested to bear that aspect in mind in connection with the long-term planning process, with a view to finding ways and means of overcoming financial difficulties both for the Organization as a whole as well as for the Members, especially their NMHSs.

6.1.7 Congress noted that the assessment report examined by the Executive Council identified achievements, issues and challenges associated with the various Programmes. Congress agreed that those should continue to be identified in future monitoring and evaluation of WMO Programmes. Congress further agreed that the future monitoring and assessment should lead to recommendations, based on lessons learnt, in improving the long-term planning process, in enhancing the WMO Programmes and their implementation as well as bridging the gap between the level of services provided by NMHSs of developed and developing/transition countries.

6.1.8 Congress further noted that the results of the monitoring proved to be useful and agreed that a similar review on the implementation of the 6LTP should be made in the future, as appropriate.

6.1.9 Congress agreed that a review of the monitoring process in the future should be made. It also requested both the Executive Council to undertake that review and the Secretary-General to assist the work of the Council in that respect.

6.2 SIXTH WMO LONG-TERM PLAN (agenda item 6.2)

6.2.1 Congress agreed that the WMO Long-term Plan should be a document which outlined what the Organization was trying to achieve as a whole, with three main purposes:

- (a) Serve as a basis for guiding the constituent bodies and the Secretariat on the preparation of their programme plans and the monitoring of progress;
- (b) For use by Members as a reference point to help guide planning at the national level;
- (c) Provide a basis for briefing and informing other organizations/entities which potentially contributed to, and benefited from, the work of WMO and its Members.

6.2.2 Congress noted that in the preparation of the draft 6LTP, consideration was given to the following:

- (a) The trends and/or developments which would significantly influence the way WMO and NMHSs would function in the future;

- (b) The evolving needs of Members, NMHSs or the society that needed to be met, or issues that needed to be addressed, which WMO and its Members should consider when setting the objectives of the Organization;

- (c) The WMO vision;

- (d) Desired outcomes;

- (e) Strategy.

6.2.3 Congress was pleased to note that the interactive and iterative long-term planning process involved contributions from Members, as well as from regional associations and technical commissions, particularly from their presidents.

6.2.4 Congress recognized that WMO and its Members, especially their NMHSs, would increasingly face challenges and/or opportunities which included matters related to the globalization of the economy, the evolution of the role and operation of NMHSs, alternative service delivery, international data exchange and enhancement of the coordination in the geosciences, particularly in the United Nations system.

6.2.5 Congress reviewed and assessed the existing WMO programme structure which consisted of the eight major Programmes and agreed that the present programme structure could readily lend itself to the realization of particular strategies/associated goals.

6.2.6 Congress agreed that there was a need for a statement on the vision of WMO — a statement which captured in a clear, succinct and balanced manner the essence of the Organization, its purposes and aspirations. Congress adopted the following, as statement of the WMO vision:

To provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources, and related environmental issues, and thereby to contribute to the safety and well being of people throughout the world and to the economic benefit of all nations.

6.2.7 Congress recognized that the vision statement conveyed the idea regarding what WMO was, did and should do, and the reason why WMO did it, as well as what it wishes to become. The vision also provided a basis for formulating desired outcomes and strategies and associated goals. Those, in turn, provided the framework for the formulation and development of the 6LTP.

6.2.8 Congress agreed that the period of coverage of the 6LTP should be eight years (2004-2011), aligned with the four-yearly Congress sessions, with the start corresponding to the beginning of a programme and budget cycle (i.e. the financial period 2004-2007). Furthermore, it agreed that the Plan should be a clear detailed plan for the first four years, with the second four years being less detailed but giving guidance, focus and direction, and describing prospects for the future. When preparing a new detailed first four-year Plan, the second four years of the previous Plan should be

used as the basis, while also taking into account any new developments.

6.2.9 Congress examined in detail the draft 6LTP and agreed upon a number of specific revisions and amendments to be included in the Plan prior to its publication. With those modifications, Congress adopted the 6LTP.

6.2.10 Congress requested the Secretary-General to arrange for the publication of the 6LTP and a separate Executive Summary for Decision Makers, and for their distribution, including in electronic format to all Members and constituent bodies of WMO, as well as to other international forums and organizations, including funding institutions, as appropriate. Congress felt that the Summary should identify the results expected and how those would be realized. That would help Governments understand better the way in which WMO and Members' NMHSs worked and their contributions, thus enabling them to obtain enhanced financial and other support. It requested the Secretary-General to ensure an early publication and distribution of the 6LTP and the summary.

6.2.11 Congress was informed that the preparation of the Secretary-General's proposed consolidated programme and budget for 2004-2007 was coordinated and linked with the preparation of the 6LTP, recognizing that the Long-term Plan had a scope broader than that covered by the programme and budget document. The key performance indicators in the proposed programme and budget for the fourteenth financial period were presented in relation to the nine strategies of the 6LTP. The description of the WMO Programmes in the programme and budget document were based on those given in the 6LTP. In that connection, Congress noted the recommendation that due consideration should be given to the provision of adequate funds in the WMO regular budget for the implementation of the scientific and technical programmes of the Organization.

6.2.12 Congress requested the Executive Council to use the 6LTP as a benchmark for monitoring progress in the implementation of WMO Programmes and activities during the fourteenth financial period and to submit its report to Fifteenth Congress. The monitoring and assessment of the implementation of the 6LTP would help the Organization and its Members in evaluating their performance in relevant areas.

6.2.13 In that connection, Congress adopted Resolution 25 (Cg-XIV).

6.3 PREPARATION OF THE SEVENTH WMO LONG-TERM PLAN (agenda item 6.3)

6.3.1 Congress reaffirmed the view that long-term planning in WMO should contribute to the smooth and effective operation of the programmes and activities of the Organization by providing an effective mechanism through which Members might work together to identify their common objectives

and develop coordinated plans for achieving them. The Plans should build on the WMO vision, the desired outcomes as well as on strategies and associated goals, to be realized through the major WMO Programmes, bearing in mind the purposes of WMO, which were reflected in the WMO Convention and the evolving role of the Organization. At the same time, the planning process should be simple and flexible to ensure a response to any new challenges and needs that might arise in the rapidly changing world. Congress agreed that the 7LTP should be prepared.

6.3.2 In that context, Congress considered the various views, including those of the Executive Council, on the usefulness of adopting a new approach for the preparation of the 6LTP and agreed that that approach should be taken into account when preparing the 7LTP. It was felt that further improvements to the Plan should be considered in the light of the experience gained during the preparation of the 6LTP. Congress therefore requested the Executive Council to ensure that such improvements would be taken into consideration.

6.3.3 Congress noted the specific recommendations adopted by the Executive Council relating to the preparation of the 7LTP, including:

- (a) The period of coverage of the Plan should be eight years, aligned with the four-yearly Congress sessions, with the start corresponding to the beginning of a programme and budget cycle (i.e. the financial period);
- (b) The plan should be a clear detailed plan for the first four years, with the second four years being less detailed but giving guidance, focus and direction, and describing prospects for the future;
- (c) The programme and budget should be guided by, and closely linked with, the first four years of the plan, recognizing that the plan had a broader scope than that covered by the programme and budget;
- (d) The plan should be updated or reviewed at every Congress, such that each congress would agree on plans for eight years ahead and a programme and budget for four years ahead;
- (e) When preparing a new detailed first four-year Plan, the second four years of the previous Plan should be used as the basis, while also taking into account any new developments.

6.3.4 Congress further agreed that consideration should also be given as to how best to incorporate WMO support programmes, address cross-cutting issues such as the role and operation of NMHSs, further develop cross-cutting programmes like the Regional Programme and Natural Disaster Prevention and Mitigation Programme and move forward strategic initiatives, particularly on an integrated global observation and data management strategies.

6.3.5 In endorsing the process which proved to be useful during the preparation of the previous

Plans, Congress requested the Executive Council to review WMO policies, strategies, and priorities for the period of the 7LTP, and to make its proposals regarding the programme structure and layout for the Plan. In that connection, the Council should take into account the evolving role of WMO and the needs of its Members, as well as related developments such as those in connection with the review of the WMO structure and questions concerning the WMO Convention. The 7LTP process should also facilitate the identification of major areas of priority.

6.3.6 Congress stressed that the preparation of the 7LTP should be interactive and synergistic. There should be maximum opportunity for input from Members in order to ensure that WMO Programmes and activities were developed in response to the wishes and aspirations of Members. Members could also be surveyed regarding their use and implementation of the WMO Long-term Plans. The regional associations should be instrumental in providing an integrated view of their respective activities and priorities in the context of the 6LTP and in providing regional analyses and assessments in addition to regional priorities. The active participation of the technical commissions, particularly in connection with the scientific and technical programmes, should be ensured.

6.3.7 Consideration should also be given in the 7LTP to identifying more clearly the role of activities undertaken by individual Members as distinct from activities funded through the WMO regular budget.

6.3.8 Congress recognized that the Long-Term Plan was the Plan for the whole Organization and should provide an effective basis for the development of the plans of individual Members. Accordingly, consideration should be given to ensuring that the plans for each WMO Programme were spelled out in sufficient detail to provide useful guidance to Members and constituent bodies. In addition, consideration should also be given to ensuring that WMO Programmes and the performance results expected of them during the planning period be clearly linked to facilitate performance monitoring and assessment; that should take into account the RBB approach used in the preparation of the programme and budget for the financial period, with its accompanying key performance indicators.

6.3.9 In that connection, Congress reaffirmed that the programme and budget should be guided by, and closely linked with, the first four years of the Plan. It was recognized that the Long-term Plan had a scope broader than that covered by the programme and budget, as the Plan contained objectives and activities whose realization would depend upon action by Members and resources outside the WMO regular budget.

6.3.10 Congress agreed that the framework of the 7LTP would serve as a clear basis for the programme and budget. In turn, the achievement of expected results defined in the programme and

budget would contribute to the implementation of the 7LTP. Those established the meaningful link and "seamlessness" between the 7LTP and the programme and budget.

6.3.11 In light of the above, Congress adopted Resolution 26 (Cg-XIV).

6.4 WMO STRUCTURE (agenda item 6.4)

General considerations

6.4.1 It was recalled that Thirteenth Congress had decided to continue the overall review of the WMO structure and operating mode and to develop, through a new review conducted by the Executive Council, recommendations on the WMO structure and operating mode with the specific objective "to enable the Organization to respond more effectively to the evolving needs of Members and of society as a whole". Thirteenth Congress was of the view that the continuing process of reviewing the WMO structure and operating mode should be closely linked with the long-term planning process to ensure compatibility of the two, and that any future structure and operating mode should support the means of achieving the objectives of the Long-term Plan, together with its vision, desired outcomes, strategies and associated goals and the related WMO Programmes. There should be greater creativity and innovativeness, while maintaining the good features of existing arrangements. Congress reaffirmed those considerations.

6.4.2 Congress agreed with the Council that a major challenge facing WMO in the development of its structure would be to ensure that the Organization was more responsive to evolving societal demands. In addition, the Organization should also be able to initiate and promote ideas and concepts that were beneficial to the sustainable development of its Members. It further agreed that another key element of the WMO structure should be the concept of delegation of responsibility, including that from the governing bodies to other constituent bodies, such as technical commissions and regional associations.

6.4.3 Congress concurred with the Council that the basic structure of the WMO constituent bodies, involving the Executive Council, technical commissions and regional associations, should be supported and, in general, maintained at the present time. It was emphasized that the structure should adequately support the implementation of strategies identified in the 6LTP and that joint activities of various bodies to deal with cross-cutting issues should be further encouraged. Congress also noted that, given limited resources, the Organization should work in a more efficient way, avoiding overlapping and duplication of effort, while ensuring the implementation of the high priority programme activities of WMO.

Executive Council

6.4.4 As regarded the Executive Council's role, Congress agreed with the recommendations of the

Council that the Executive Council should function in a more streamlined and strategic way. It should assume responsibility for "corporate governance" of the Organization. The Council should manage performance proactively by introducing measures of performance, by optimizing available resources and by giving guidance on significant adjustments of the activities to ensure delivery of the results expected in the Long-term Plan. Congress agreed that the agenda of Executive Council sessions and the allocation of the time available should concentrate on, and give priority to, emerging major issues, and deal with them through real and thorough discussions, as appropriate. Congress requested the Executive Council to consider a specific time frame for addressing priority issues in the early part of its session; the resulting time plan for Executive Council sessions needed to be more strictly followed to ensure the most effective use of its time for discussion of major issues and that of the participation of experts invited.

6.4.5 Congress also agreed that the Council should continue to execute the general policies expressed by Congress and to meet every year; the duration of its session should be as it was now, given that the current duration already led to a very tight schedule and that the conduct of meetings could be further streamlined, including through their better guidance.

6.4.6 Congress further agreed that better use should be made of the technical commissions by delegating to them certain tasks for the implementation and monitoring of the WMO scientific and technical programmes, rather than undertaking detailed review of their programmes at the Council's sessions. Congress agreed that that necessitated further consideration, together with a further review of the EC subsidiary bodies.

6.4.7 Congress noted a range of views expressed concerning the WMO Bureau. Those included the following:

- (a) The Bureau consisted of the President, the three Vice-Presidents and the Secretary-General. Invited to the sessions of the Bureau were representatives of the World Meteorological Centres of the WMO;
- (b) The Bureau should function in a highly transparent manner; Executive Council members should be informed about the plan of work of the Bureau, the agenda for its sessions (before the session) to enable feedback from Executive Council members, as well as the deliberation and results of sessions of the Bureau;
- (c) Its primary role should relate to planning the conduct and content of the Executive Council and Congress. Nonetheless, the possible need for consultation on a broader range of topics, including cross-cutting issues, and for those in WMO leadership to have flexibility with respect to consultations that might be required were also recognized;

- (d) In connection with (c) above, the President, in consultation with the Secretary-General, should have flexibility in considering who might also participate in the sessions of the Bureau, in addition to its members, taking into account relevant needs and recent developments, as well as the evolving role of WMO;
- (e) It would be beneficial to clarify the role and function of the Vice-Presidents, including the possibility of their being responsible for specific WMO areas of concern being addressed by the Executive Council; and
- (f) The linkage of the Bureau to other constituent bodies, particularly the technical commissions and regional associations, needed to be further studied also.

6.4.8 In the light of the above range of views and given the limited time available for detailed analysis of the issues involved, Congress authorized the President of the Organization, in consultation with the Secretary-General, to make use of the Bureau during the fourteenth financial period in line with the decisions of Ninth Congress. It also requested the Executive Council to take account of the various views on the role, composition and operation of the Bureau in its proposed comprehensive review of the structure and operation of the Organization.

6.4.9 In connection with the membership of the Council, Congress recognized the concern expressed regarding representation of various disciplines, including hydrology, in the Council. While it was agreed that every effort should be made to ensure an equitable representation of various WMO-related disciplines in the Council, it was considered that the present process of electing members of the Council together with the practice of inviting to the Council's sessions experts in the related fields, including hydrological advisers, was sufficient to respond to the above concern. Concerning the increased role of women in the Council, that issue was discussed by Congress under agenda item 9.1.

6.4.10 Congress also considered a matter that related to the process of electing members of the Council, in particular increasing the number of Executive Council members by one and having four as a minimum number of Executive Council seats for any Region. Congress recorded its relevant decisions under agenda item 11.

Technical commissions and regional associations

6.4.11 Congress noted a number of recommendations concerning technical commissions and regional associations. It recognized that the structural changes adopted by a number of commissions enabled a more flexible way of operation and improved interactions among commissions. Interactions between commissions and regional associations could also be improved. The new structure made it easier to assign responsibilities for specific tasks and to manage

them better. At the same time, Congress recognized that each technical commission should establish its structure in accordance with its concept of developing activities within the related field of competence and that there was no need to recommend a single structural design. Congress also considered that there was merit in a review of the voting process between sessions of technical commissions, in light of recent experience.

6.4.12 With respect to lead responsibilities assigned to technical commissions, Congress noted that the Council recognized the need for technical commissions to have greater involvement relating to resources associated with their programmes of responsibility. That would facilitate their making recommendations on necessary programme and/or resource allocation adjustments. The commissions should be able to report to the Executive Council on the achievement of objectives of the programmes under their responsibilities, including reporting on measures for assessing implementation.

6.4.13 Congress agreed that further consideration was needed regarding the merits of establishing an Applications Commission in view of greater emphasis on user interaction. It recognized that that might lead to a reduction in the number of commissions. It was noted that such changes would need to take into consideration established links and cooperation of WMO with other organizations such as IOC of UNESCO and ICAO. Moreover, Congress noted that the Council requested the president of CBS to consider a proposal to rename CBS to reflect more clearly the services aspect of the work of CBS, particularly in connection with its responsibility for the Public Weather Service Programme (see agenda item 3.1.0).

6.4.14 Congress agreed with the Council that the present arrangement of ensuring intercommission coordination through annual meetings of the presidents of technical commissions appeared suitable and should continue. Cooperation among constituent bodies should be encouraged and any possible impediments to cooperation should be addressed. The intercommission collaboration in natural disaster prevention and mitigation was of particular importance.

6.4.15 Congress reiterated the need for strengthening collaboration between technical commissions and regional associations and encouraged arranging for the involvement of experts from Regions in the activities of the subsidiary bodies of technical commissions. Congress also noted the suggestion to promote close relationships between technical commissions and regional associations at the level of their working groups. It recognized that enhanced support would need to be provided to experts from regional associations to achieve a meaningful and viable involvement of experts from regional associations in the implementation of the WMO scientific and technical programmes.

6.4.16 Congress reconfirmed that the role of regional associations should be strengthened. In particular, adequate support should also be provided to ensure the associations' appropriate functioning during the intersessional periods. It noted that the Advisory Working Groups of regional associations could be an effective means of carrying out intersessional activity, in particular to maintain close contacts with regional working groups and rapporteurs and to assist presidents of regional associations to carry out their responsibilities. Close relationships should be established with relevant regional/subregional bodies of regional associations to strengthen the role of regional associations. To further assist the effective functioning of regional associations, Congress requested that the matter of WMO representation in the regions should also be addressed. Concerning the recommendation to replace the term "Regional Association" by another suitable term, Congress recorded its views on that issue under agenda item 11.

Information technology

6.4.17 Congress supported the view of the Council that enhanced use of information and communication technology was crucial for improving WMO's mode of operation and that it would enable better management of the activities of the Organization and communication with Members. Congress therefore stressed the need to accelerate introducing and using electronic means, including the Internet, for general communication, as well as the provision of documentation and information. It also urged the enhanced use of modern information technology for the dissemination of WMO publications and other materials. Congress requested the Secretary-General to consider the procedure whereby electronic versions of WMO material would be provided in the first instance (by default) while printed versions should be considered as additional and/or optional, and would be provided upon request, bearing in mind the particular situation of developing countries.

Future work

6.4.18 Congress agreed that continuing further the review of the WMO structure and of the mode of operation was needed in order to identify ways to improve direct linkages between the structural elements and the WMO Programmes, to manage better the cross-cutting issues and evolving initiatives, and to enhance WMO's mode of operation. Congress felt that in order to ensure an appropriate migration to a new structure, the remit and membership of a group that might be tasked to address that matter in the future should be carefully formulated. Congress agreed on the need to consider all points of view in defining the future WMO structure in the light of the evolving role of WMO, as well as the needs of its Members. Congress requested the Executive Council to

establish a panel of experts, which would consist of a small number of experts representing all constituent bodies, including those other than members of the Executive Council, as appropriate.

6.4.19 The terms of reference for such a group should include the following:

- (a) Take into account the earlier work done in that area, including that undertaken by the Executive Council, technical commissions, regional associations, and the Secretary-General;
- (b) Take into account the vision, desired outcomes and strategies of WMO; the evolving role of WMO; as well as its Programmes, programme structure, and their implementation and assessment, in the light of developments, needs and expected resources;
- (c) Suggest how to encourage/promote commitment to undertake needed and beneficial changes to the WMO structure and mode of operation;
- (d) Consider transparency, accountability and flexibility as desirable attributes of the WMO structure and mode of operation;
- (e) Consider alternative structures, various linkages among the different entities and modes of operation; citing advantages, disadvantages, and cost implications;
- (f) Liaise and coordinate with other relevant work being undertaken such as that on questions concerning the Convention (see agenda item 11.2);
- (g) Make appropriate recommendations including how the WMO structure could be migrated towards a desired future state; and
- (h) Other tasks that might be given by the Executive Council.

6.4.20 Congress requested the Council to continue to address the matter of the evolving role of WMO as well as the WMO structure and mode of operations and to take further action. Congress also requested the Secretary-General to provide the relevant support in that connection. Congress further requested that the work be completed before, and be reported to, Fifteenth Congress.

7. SPECIFIC CHALLENGES FACING WMO

(agenda item 7)

7.1 INTERNATIONAL EXCHANGE OF DATA AND PRODUCTS (agenda item 7.1)

7.1.1 Fourteenth Congress recalled that Thirteenth Congress had reviewed the relevant developments on the international exchange of data and products. It also recalled the importance given by Thirteenth Congress to that issue by adopting the Geneva Declaration. Thirteenth Congress had requested the Executive Council to continue to address that issue and to consider re-establishing the Executive Council Advisory Group on the International Exchange of Data and Products, or an equivalent group.

7.1.2 Congress noted that the Executive Council, by Resolution 4 (EC-LI) established the Advisory Group on the International Exchange of Data and Products to assist the Council on that matter. It noted that the session of that Group was held in Geneva from 29 January to 1 February 2001 and expressed its thanks to the Group for the work done. It further noted that the Council addressed that matter during its recent sessions. It recalled that the commitment to the free and unrestricted international exchange of data and products represented one of the most important challenges facing WMO.

General considerations on Resolution 40 (Cg-XII) — WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities

7.1.3 Congress recalled that the experience with Resolution 40 (Cg-XII) had been largely positive and that there was generally a strong commitment to make it work. It further recalled that the policy and practice on the free and unrestricted exchange of meteorological and related data and products as contained in Resolution 40 (Cg-XII), including its annexes, had continued to be applied in a generally satisfactory manner. Congress felt that Resolution 40 (Cg-XII) had upheld the principle of free and unrestricted exchange while providing ample practical safeguards and guidance. Congress agreed that a suitable approach for now would be to leave Resolution 40 (Cg-XII) in force and to address possible concerns in some other way. Nonetheless, particular difficulties needed to be identified and addressed, as they arose.

7.1.4 Congress agreed with the Executive Council that the continuing success of the unique and integrated international system for obtaining and exchanging meteorological and related data and products under the aegis of WMO largely depended on the continuing commitment to the policy and practice contained in Resolution 40 (Cg-XII).

7.1.5 Congress also noted that it had not been easy to establish the direct link between the quantity of data and products being exchanged (as measured by the monitoring of the bulletin headers in the GTS) and Resolution 40 (Cg-XII), and that there was no perceivable signal that Resolution 40 (Cg-XII) had influenced, either in a positive or negative manner, the flow of data and products measured in the above way. Nonetheless, there had been an increased willingness to make more data and, in particular, more products available in the period after the adoption of Resolution 40 (Cg-XII). Moreover, it noted the results of the survey undertaken by CBS, which covered the period 1994 to 1998, and expressed its satisfaction that the survey indicated that there had been no decrease in the volume of data and products exchanged, which was one of the principal goals of Resolution 40 (Cg-XII).

7.1.6 Congress noted that developments relating to the free and unrestricted access to all data and products exchanged for the research and education communities for their non-commercial activities, were considered by the Council. Certain experiences had resulted in difficulties for some NMSs while others indicated the opening of opportunities, which were also beneficial to NMSs. In that connection, Congress agreed with the Council that a dialogue involving the broader non-governmental sector could be helpful. In that respect, the role of the Permanent Representatives of Members with WMO, whose responsibilities encompassed the interests of the larger national meteorological community, was emphasized.

7.1.7 Regarding the possibility of putting the principle of free and unrestricted exchange of meteorological and related data and products on a firmer legal basis, such as by incorporating it in the WMO Convention, Congress noted that the chairperson of the Executive Council Advisory Group on the International Exchange of Data and Products had been requested to keep that topic under review; that was also considered by the Council in the context of the review of the WMO Convention facilitated by the Executive Council Task Team to Explore and Assess the Possible Changes to the WMO Convention. The considerations of Congress relating to the WMO Convention were reflected under agenda item 11.

Operational implementation

7.1.8 Congress noted that the Secretary-General continued to dispatch circular letters to all Members, as necessary, containing the notifications of Members as received relating to Resolution 40 (Cg-XII), the current lists of additional data and products posted on the WMO Web server, and notification of the updates published in the *WWW Operational Newsletter*.

7.1.9 As regarded the exchange of WWW data and products, Congress noted that 35 Members had submitted lists of their additional data, five Members and the ECMWF had defined additional products, and 28 Members and the ECMWF had placed general conditions on record.

7.1.10 In connection with its repeated appeals to Members to make more or new data and products available, Congress was pleased to note that some Members had increased their product range disseminated on the GTS. In particular, the ECMWF had increased its product range by adding global wind and relative humidity fields and vorticity and divergence fields for the tropics. The new ECMWF products were in a 2.5 x 2.5 degree resolution in GRIB format and categorized as additional products in the sense of Resolution 40 (Cg-XII). Congress was also informed that in the near future, the ECMWF and some Members would also make available selected ensemble prediction system products. Congress expressed its appreciation to

those Members and to the ECMWF for placing new products on the GTS.

7.1.11 Congress noted that the Council had requested CBS to develop a methodology for assessing an increase in the availability of data exchanged on the GTS following the implementation of Resolution 40 (Cg-XII). It was pleased to note that CBS had embarked on the development and testing of a proposed methodology that was expected to monitor all observational data types (except radar and satellites) and to facilitate the assessment and changes of the volume of data exchanged on the GTS, including an evaluation of the impact of Resolution 40 (Cg-XII). In view of the magnitude of the resources needed at RTHs and NMCs to implement and operate the new monitoring methodology, CBS agreed to conduct an initial trial among volunteering centres.

Implementation of Resolution 25 (Cg-XIII) — Exchange of hydrological data and products, and related issues

7.1.12 Congress recalled that Thirteenth Congress had adopted Resolution 25 (Cg-XIII) and requested the president of CHy and the Secretary-General to ensure that it was brought to the attention of the wider community, particularly the international hydrological community.

7.1.13 Congress was informed that, as a follow-up to the adoption of Resolution 25 (Cg-XIII), a brochure entitled *Exchanging Hydrological Data and Information: WMO Policy and Practice* (WMO-No. 925) had been published in four languages describing the context in which the resolution had been drafted and in which it would be implemented. Also, CHy had prepared a technical report on the exchange of hydrological data in which information was given on the types of data being exchanged (see also general summary paragraph 3.5.0.12).

7.1.14 It was noted that the above brochure had been circulated to all Members and distributed at all relevant international and regional meetings, and that the sampling of data transfer at the national, regional and international levels had also commenced. The initial results, based on information provided by some 50 Members, showed that the great majority did in fact exchange hydrological data across their provincial and international borders, where such borders existed. The majority were satisfied with the current level of exchange, but many identified additional data and products which they would be interested in providing and/or receiving. The majority also reported various forms of "restriction" on the exchange of data at both the inter-provincial and international levels, but most of those related to commercial use and use by third parties or were references to international agreements to exchange data. The information provided by the Members was still being studied by CHy as a basis for making further enquiries and taking other action in the spirit of Resolution 25 (Cg-XIII).

7.1.15 Congress welcomed the solidarity that was developing throughout the hydrological community in the adoption of the policy set out in the resolution and saw the monitoring of the exchange of hydrological data and products as an important ongoing activity to be overseen and reported on by CHy.

Exchange of climate data and products

7.1.16 Concerning the exchange of climate data and products, Congress recalled that CCI was requested to give special attention to that matter to help clarify those aspects of Resolution 40 (Cg-XII) pertaining to climate data and products. Thirteenth Congress had agreed that although Resolution 40 (Cg-XII) did not explicitly cover all aspects pertaining to climate data and products, there was no need for a separate resolution on the exchange of climatological data and products.

7.1.17 Thirteenth Congress had also requested the president of CCI to progress work further on the application of Resolution 40 (Cg-XII) to climate data and products. The president of CCI was also requested to make available information on further work undertaken by the Commission to any future group established by the Executive Council to deal with data exchange issues.

7.1.18 Following the request made by Thirteenth Congress, the Commission had further considered the application of Resolution 40 (Cg-XII) to climatological information, concluding that the resolution would be difficult to apply in a consistent way to climatological data and products whose exchange predated the adoption of the resolution.

7.1.19 Congress recalled that the Council agreed with CCI's recommendation that any climate data already inserted into the public domain without any restrictions imposed by the original supplier should remain freely available. Congress recognized that the Council had adopted the following statement:

Climatological data, datasets and products exchanged prior to the date of adoption of Resolution 40 (Cg-XII) are not subject to the terms of the Resolution and may be distributed freely and without restriction by a receiving Member, unless any conditions regarding onwards distribution were stated by the supplying Member at or prior to the date of exchange. Data, datasets and products exchanged after the date of adoption may also be distributed freely and without restriction by the receiving Member, unless the supplying Member explicitly classifies them as "additional" under the terms of the resolution, or places other conditions on their further distribution at, or prior to, the date of exchange. Members are reminded that the minimum set of climatological data and products which Members shall exchange without charge and with no conditions on use

are specified in paragraph 5 of Annex 1 of Resolution 40 (Cg-XII).

7.1.20 In relation to the use of the above text, it was agreed that the distinction between data exchanged before and after the adoption of Resolution 40 (Cg-XII) should not result in a discontinuity in the availability or distribution of climatological data to meet the needs of WMO Programmes and those of the UNFCCC and other environmental conventions.

7.1.21 Congress supported the Council's reiteration that the unrestricted availability of climatological data for research and educational purposes remained a cornerstone of WMO policy on data exchange. It was recognized that there was the ongoing need for high quality and comprehensive datasets to characterize variability and change within the climate system. Congress strongly supported the need for the climate research community to have ready access to data at appropriate time and spatial resolutions required for answering specific questions, consistent with Annex 1 of Resolution 40 (Cg-XII). Congress was informed that the Council endorsed the CCI's proposal that standard climate datasets be identified as essential for exchange.

7.1.22 Congress also noted that CCI-XIII had reaffirmed the necessity for Members to exchange data for climate purposes in the wider interests of community welfare and safety of lives. The Commission had stressed the importance of cooperative linkages among the scientific research, operational meteorology and user communities in stating the need for adequate climate data and in addressing the necessary steps to ensure its availability.

7.1.23 Congress noted that the Council had endorsed the CCI's statement " that the accessibility and use of climate data was at least as important as its collection and archiving, and that WMO and NMHS policy and activity should reflect that comparable importance" (general summary paragraph 5.4.3 of the *Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Climatology* (WMO-No. 938)).

7.1.24 Congress acknowledged that instances of difficulties being encountered in accessing climate data for 'public good' activities in research and education had been noted by CCI-XIII, often exacerbated by insufficient resources within developing countries' Meteorological Services, which took the form of inadequate responsiveness of those holding the data or the high cost of data provision. Congress agreed that such barriers resulted in a loss of benefits of new knowledge and new applications and effectively, lower returns on the heavy public investments in past data gathering. Congress noted the wide range of policies and practices on data provision among Members and the pressures on many NMHSs to employ their data archives for revenue generation. It noted the CCI's observation that, in order to provide better guidance to Members,

there was a need for WMO to develop a better fundamental understanding of the economics of the different policy options. Congress noted that the Council requested the president of CCI to liaise with the Executive Council Advisory Group on the International Exchange of Data and Products (or any equivalent group that the Executive Council might establish) on ways to obtain and summarize quantitative information on Members' policies and practices with respect to data provision and their outcomes in terms of costs and benefits of the different options, and to report to the fifty-sixth session of the Executive Council. Congress agreed that the issue relating to the commercialization of additional climate data and products should also be further addressed.

7.1.25 In that connection, Congress recalled paragraph 8 of Annex 3 to Resolution 40 (Cg-XII) on encouraging collaboration between NMSs and other sectors. It underscored the importance of a partnership between NMSs and the private sector to address pertinent issues so as to come to a mutually satisfactory resolution of concerns raised.

7.1.26 Similarly, Congress recalled paragraphs 7 and 8 of Annex 2 to Resolution 40 (Cg-XII) on collaboration among NMSs in relation to their commercial activity; especially that unless other arrangements had been agreed to, an NMS receiving a request to provide service in another country should refer the request back to the NMS in that country, i.e. to the local NMS. In the event that the local NMS was unable to provide the service for lack of facilities or other legitimate reasons, the external NMS may seek to establish a collaborative arrangement with the local NMS to provide the service.

7.1.27 Congress noted that the Council requested CBS, CCI and GCOS to continue to monitor the availability and flow of climate data, especially for research and impact studies and to recommend/establish, as necessary, further mechanisms, jointly, as appropriate, for that purpose.

7.1.28 Congress further noted that the Council strongly endorsed the recommendation of the CCI/CLIVAR Joint Working Group on Climate Change Detection, made at its first session in Geneva in November 1999, that the historical monthly and daily data and metadata from all CLIMAT and CLIMAT/TEMP stations, including those designated as part of GSN and GUAN, should be considered as part of the set of data and products which were essential to support WMO Programmes as identified in Annex 1 to Resolution 40 (Cg-XII).

7.1.29 Congress recalled that Resolution 40 (Cg-XII) stated that Members should provide to the research and education communities, for their non-commercial activities, free and unrestricted access to all data and products exchanged under the auspices of WMO with the understanding that their commercial activities were subject to the same conditions as for additional data and products.

7.1.30 Congress re-stressed the important role of the regional associations in evolving the recommended network of stations necessary to provide a good representation of climate on the regional scale, in addition to the global scale. In that connection, special consideration needed to be given to the requirements for both land and marine data. Congress requested the regional associations to exercise their responsibility to help ensure the exchange of climate data as prescribed in paragraph 5 of Annex 1 to Resolution 40 (Cg-XII).

7.1.31 In connection with data held by WMO WDC, Congress recalled that guidelines on that subject had been adopted by the fiftieth session of the Executive Council and that those had been concurred with by Thirteenth Congress.

Oceanographic data exchange policy

7.1.32 Congress noted that work was continuing within IOC to try and define an IOC oceanographic data exchange policy, particularly through an inter-governmental working group on IOC oceanographic data exchange policy.

7.1.33 Congress recognized that the issues relating to oceanographic data exchange policy were very complex and that the eventual IOC policy would have far-reaching implications for all IOC programmes, many of which were undertaken jointly with WMO, including the development of operational oceanography through JCOMM.

7.1.34 The work being undertaken regarding oceanographic data exchange policy was very relevant and important to a large number of WMO Members, particularly in relation to the WMO policy and practice as described in Resolutions 40 (Cg-XII) and 25 (Cg-XIII). It was noted that Resolution 40 (Cg-XII) had specified many types of physical oceanographic data to be exchanged without charge and with no conditions on use. That was of vital importance to Members, in particular in the context of maritime safety services and the operation of coupled atmosphere/ocean models.

7.1.35 Congress noted that IOC had been considering a two-tier approach (as used by WMO Resolution 40 (Cg-XII), distinguishing between 'essential' and 'additional' data), as well as the elements to be included in an eventual policy statement. An interim statement had been presented to the IOC Assembly session in 2001, and it was planned that a revised policy statement would be presented to the IOC Assembly session in July 2003 for adoption.

7.1.36 Congress recognized that the development of an IOC data exchange policy would be an arduous and lengthy process and reiterated the full support of WMO Members in that work. It also expressed the hope that the policy and practice adopted by IOC would be fully compatible with those of WMO as expressed in Resolution 40 (Cg-XII), in particular with regard to the data of common interest.

Aeronautical exchange of meteorological data and products

7.1.37 Congress examined the issue of the dissemination of aeronautical meteorological data and products (OPMET), in particular on the Internet, and its possible impact on non-aeronautical meteorological activities. Congress recalled that aeronautical information was excluded from the scope of Resolution 40 (Cg-XII), as specified in Note 3 in Annex 4 to that Resolution.

7.1.38 Congress was informed that the conjoint CAeM-XII/ICAO Meteorology Divisional Meeting (September 2002) had recognized that some concern had been expressed that commercial use was being made of aeronautical information outside the aeronautical sector. In particular, the broad availability of aeronautical information via the Internet allowed private companies to conduct commercial activities in many other economic sectors without contributing to the costs of infrastructures, including maintenance and operation, in countries which had implemented such a policy and from which basic information originated.

7.1.39 Congress noted that the question of the use of the Internet to access WAFS and OPMET information was also discussed at the recent conjoint CAeM/ICAO Meteorology Divisional Meeting. It recommended, among other things, the use of the Internet as a backup (Recommendation 4/5); that ICAO, in coordination with WMO, develop guidance and criteria for the accreditation/qualification of providers of aeronautical meteorological information via the Internet (Recommendation 4/6); and that guidelines be established for access to aeronautical meteorological information for air navigation support purposes only (Recommendation 4/7). In that connection, Congress agreed that WMO should:

- (a) Continue to work closely with ICAO;
- (b) Gather more information on current and possible practices and technologies of providing "authorized access" to OPMET and other aeronautical meteorological information, recognizing the role of the designated meteorological authority;
- (c) Continue to explain, as required, the nature of the international and institutional arrangements for aeronautical meteorological services;
- (d) Work on enhancing user (customer) satisfaction through the improvement of services.

7.1.40 Congress recognized that AMDAR was a very cost-effective upper-air data source and welcomed the current exchange of AMDAR observations through the GTS. Congress was informed that the number of AMDAR data exchanged over the GTS had reached an average of about 150 000 observations per day. To facilitate access to that large volume of AMDAR data by NMSs and as directed by the Council, the AMDAR Panel, in collaboration with the WMO Secretariat, had developed a new set of regional AMDAR bulletins to enable NMSs to download the most appropriate

bulletins suitable to their use. That new set of regional AMDAR bulletins had been submitted for consideration by the extraordinary session of CBS (December 2002) with implementation date in November 2003. In that regard, Congress noted with satisfaction that the conjoint CAeM session with the ICAO Meteorology Divisional Meeting, held in 2002, had recommended that ICAO, in collaboration with WMO, develop guidelines for accessing aeronautical meteorological information for air navigation support only (Recommendation 4/7).

7.1.41 Congress noted that for different reasons, the airlines and WMO expressed concern regarding the overall security of down linked sensitive aviation information that included AMDAR data. In collaboration with the AMDAR Panel, the aviation industry was considering several proposals to develop encryption systems for the down linked aviation information, for adoption as an industry standard to prevent "eavesdropping". That aviation information encryption was expected to be in place in the near future.

7.1.42 Congress felt that it was important to continue the cooperation that existed between NMSs and airline companies in connection with AMDAR so that free and unrestricted exchange of AMDAR data was assured. In that connection, the collaboration of ICAO was recognized as important in regard to Automated Dependent Surveillance aircraft reports.

7.1.43 It was recalled that Thirteenth Congress drew the attention of ICAO upon the potential impact of ICAO aeronautical data distribution policy on all WMO activities and invited ICAO to participate in all efforts undertaken by WMO regarding that issue.

Exchange of agrometeorological data

7.1.44 Congress was informed that with respect to the availability and distribution of agrometeorological data, there were no major issues relating to the international exchange of agrometeorological data or products presently, although there were a number of practical concerns with respect to the merging of agricultural and meteorological data from different sources.

Database protection mechanism and WIPO

7.1.45 Congress noted the relevant developments, particularly those arising from the session of the WIPO Standing Committee on Copyrights and Related Rights. Congress was informed that while discussions continued on a possible international legal instrument on the protection of databases, there had been no specific timetable for the adoption of such an instrument.

7.1.46 Congress felt that it was important to keep a continuing watch on related developments and to keep Members informed, as appropriate, as that was a subject of interest to Members.

Further work

7.1.47 Congress agreed that it was important to give close attention to the issue of international

exchange of meteorological, hydrological and related data and products, as that was a matter of highest importance to the Members and their NMHSs. It recognized that there had been political, legal, economic, social, scientific and technological developments which had a bearing on the implementation of Resolution 40 (Cg-XII) and that those should be taken into account in any review of Resolution 40 (Cg-XII) and the consideration of relevant action in the future. Those included globalization, alternative services delivery, commercialization, cost recovery and the Internet.

7.1.48 Congress requested the Executive Council to keep that issue under review, particularly the implementation of Resolutions 40 (Cg-XII) and 25 (Cg-XIII), as well as identifying and addressing specific concerns, and to report to Fifteenth Congress. It also requested the Secretary-General to provide the needed support and to take appropriate action.

7.2 ROLE AND OPERATION OF NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES (agenda item 7.2)

7.2.1 Congress noted with appreciation the report of the President of WMO submitted on behalf of the Executive Council, on actions taken by the Council in response to Resolution 26 (Cg-XIII) — Role and operation of National Meteorological Services, with the help of the Advisory Group on the Role and Operation of National Meteorological and Hydrological Services which had met twice during the period. It expressed its appreciation for the contributions of all those (including technical commissions, regional associations, expert meetings, meetings of presidents of technical commissions) who had assisted with the relevant work. It recorded its thanks to the Secretary-General for the tasks undertaken by the Secretariat and for the support provided in that connection.

7.2.2 Congress noted that a wide range of issues related to the role and operation of NMHSs had been addressed during the intersessional period, particularly in respect of:

- (a) Consideration of the topics identified in Resolution 26 (Cg-XIII);
- (b) Review of a number of major issues bearing on the future role and operation of NMSs;
- (c) Development of proposals for possible changes to the WMO Convention and General Regulations to represent more clearly the essential role and responsibilities of NMSs in carrying out the purposes of WMO;
- (d) Development of a WMO policy statement on the role and operation of NMSs; and
- (e) Similar work in respect of NHSs.

7.2.3 Congress was informed that the Executive Council, in the course of its work, had agreed in particular that:

- (a) In order to provide an adequate factual database for its analysis of the many issues affecting the role and operation of NMSs, it

would be necessary to circulate a comprehensive questionnaire to Permanent Representatives;

- (b) There was a need for further careful analysis of issues bearing on the appropriate mission and role of NMSs; it reaffirmed that the primary role of the NMS remained in the area of protection of life and property;
- (c) Some NMS functions might, in the future, appropriately be carried out to a greater extent on the basis of regional cooperation while ensuring that appropriate national infrastructure and capabilities were maintained;
- (d) Further analysis of the legal instruments received from Members would provide a useful indication of what countries had already identified their NMSs' activities and priorities;
- (e) There was an increasing need for a rigorous methodology for economic valuation of meteorological services to ensure a better understanding of the benefits accruing from the NMSs. There was also a need for guidelines on methodologies for evaluating economic and social benefits, as well as for a range of case studies by independent experts;
- (f) There was a need for developing a guiding framework for the consideration of funding and related issues as well as, eventually, for describing and evaluating a range of funding models which Members might wish to consider;
- (g) Enhanced promotion of the status and visibility of NMSs, particularly through a better appreciation of their roles by Governments, was needed;
- (h) Ways should be found to provide rapid access to warnings of severe weather issued by NMSs such as through appropriate links to NMSs Web sites on the WMO Home Page, among other things;
- (i) Capacity building might be the greatest challenge now facing WMO and a broad assessment of the overall effectiveness of WMO capacity building activities should be considered;
- (j) Guidance should be developed on how to ensure the quality of meteorological services provided to support the safety and efficiency of aviation;
- (k) A more generalized and continuing international certification process and/or the concept of a professional code of conduct under the auspices of WMO should be explored, including cooperation with professional societies and other similar bodies;
- (l) WMO guidance on the involvement of media, the private sector and academia in the work of NMHSs was needed, since a coordinated approach would better position NMHSs to deliver their mandated services, particularly those in developing countries and countries with economies in transition;

- (m) There was a need to refine the appropriate framework for international cooperation in connection with the relations between NMHSs and the private sector, as well as between NMHSs, including in situations where NMHSs themselves were engaged in commercial activities in other countries; and
- (n) There were some terms whose definitions and use should be agreed upon, in the context of work on the clearer characterization of the role and operation of NMHSs.

7.2.4 Congress further noted that the Council took stock of the work that had been carried out. Those were addressed under the following headings:

- (a) Findings from the questionnaire;
- (b) Economic framework and funding issues;
- (c) Legal instruments;
- (d) Aeronautical meteorological services;
- (e) Regional cooperation;
- (f) WMO standards for weather forecasts;
- (g) Quality management;
- (h) WMO statement on weather and climate forecasting;
- (i) Mechanisms for strengthening NMSs:
 - (i) Statement on the role and operation of NMSs;
 - (ii) Guidelines on the role and operation of NMSs;
 - (iii) High-level conference;
 - (iv) Amendment of the WMO Convention;
- (j) Involvement of the media, the private sector and academia:
 - (i) Involvement in WMO Programmes;
 - (ii) Cooperation between NMSs and the media, the private sector and academia;
- (k) Cooperation with other international organizations;
- (l) Definition of commonly used terms;
- (m) Role and operation of NMSs.

Findings from the questionnaire

7.2.5 Congress agreed that the findings from the analysis by the Secretariat of the questionnaire on the role and operation of NMSs, which made use of all 128 responses received, provided a useful overview of the state of NMSs around the world and a good indication of the diversity of the situations obtained in individual NMSs. It noted the following significant findings from the analysis of the questionnaire:

- (a) The most important national goals served by NMSs', operations were: safety of life and property, reduction of the impact of natural disasters and national sustainable development;
- (b) For about 65 per cent of NMSs, aviation was the most important national economic application sector served. That was followed by disaster management, agriculture, environmental protection, and mass media;
- (c) The main issues currently facing NMSs were: overall level of government funding,

modernization, provision of aeronautical services, capacity building and the role of the NMS at the national level;

- (d) In most cases, the costs of providing public services were met by Governments;
- (e) A significant number of countries met the cost of provision of specialized services to other sectors, such as aviation, through cost recovery arrangements;
- (f) Members gave the highest ratings on WMO support they received in the areas of operations, training and policy. They identified training, technical assistance and research as the three areas where enhanced WMO support was most needed;
- (g) About 60 per cent of the respondents felt that that level of awareness of the NMS within their countries was high to excellent.

Preliminary analyses of the results, including some explanatory text highlighting the major findings were made available to Members by the Secretary-General, including at sessions of regional associations and regional technical conferences.

7.2.6 Congress noted that the information obtained through the questionnaire would serve as a useful benchmark and agreed with the Council that an abridged version of the questionnaire should be prepared to study the evolution of some of the key measures and indicators over time.

Economic framework and funding issues

7.2.7 Congress noted that the Expert Meeting on the Economic Framework for Meteorology had been organized in the WMO Secretariat (25 to 27 March 2002) and had dealt with the following topics:

- (a) Economic framework for the provision of meteorological services;
- (b) Methodologies for the assessment of costs and benefits of meteorological services;
- (c) Guidelines on the economic aspects of meteorological services.

7.2.8 The report of the Expert Meeting was considered by the Advisory Group, and subsequently by the Council. Congress agreed with the Council that it was becoming increasingly important for Members to establish a robust economic framework for the provision of meteorological and related services within their national borders and to agree on an appropriate framework for international cooperation in the provision of services beyond their national borders and in extraterritorial areas. It agreed that the economic framework suggested by the Expert Meeting provided a useful starting point.

7.2.9 Congress noted that the Expert Meeting had undertaken a survey of methodologies for assessment of benefits and costs of meteorological services, and the associated literature. That provided a useful initial response to the need in that area but further work was initiated, particularly to compile a set of examples of how methodologies had been used in connection with the valuation of individual meteorological products and services.

7.2.10 Some draft guidelines on the economic aspects of meteorological services, which were prepared by the Expert Meeting, were considered by the Advisory Group, and subsequently endorsed by the Council.

7.2.11 In respect of follow-up work in that area, Congress agreed with the Council that:

- (a) WMO should facilitate and assist NMSs in their efforts to undertake economic valuation assessments, and in the related institutional capacity building;
- (b) WMO should initiate action to promote the undertaking of interdisciplinary economic assessments, such as through the organization of regional workshops or similar events. Case studies for each Region, to serve as examples, should be encouraged;
- (c) Certain WMO RMTCs could be designated as lead institutions to assist in providing training in meteorological economics;
- (d) In that connection, WMO activities in the development of curricula in the area of meteorological economics (under the WMO Education and Training Programme) should be further pursued;
- (e) A concise compendium of relevant literature, including a literature survey, should be prepared. That should contain a small number of relevant case studies which were simple, appropriate and applicable to the situation of NMSs of both developed and developing countries. It should also include specific examples of how the various methodologies were used;
- (f) The Secretary-General should be requested to arrange for compilation of a set of references to facilitate making relevant literature available to Members, upon their request;
- (g) WMO should keep close watch on relevant developments that could have potential implications for the international access and use of meteorological information. Those included the General Agreement on Trade in Services under the aegis of the World Trade Organization and the discussions at WIPO on the protection of databases;
- (h) The economic consideration relating to the provision of meteorological services should be taken as an ongoing commitment in the WMO community and the relevant processes relating to that subject should be further pursued.

Congress was pleased to learn that the outcome of the Expert Meeting had been taken into account in the drafting of the consolidated set of guidelines on the role and operation of NMSs, which the Advisory Group initiated at its first session. The Secretary-General had also informed Members of the conclusions of the Council and Members had been encouraged to undertake relevant studies.

7.2.12 In connection with promoting enhanced support and funding (especially from Governments), Congress emphasized the importance of NMSs

ensuring a wider range of appropriate products and services to possible user and sectors, including environmental services, as appropriate.

7.2.13 Congress noted the work carried out by some Members on a variety of methodologies (relating to cost management framework) to evaluate the true cost of NMSs' products and services. It further noted that through those studies, economic efficiencies had been found in the overall management and operations of NMSs.

Legal instruments

7.2.14 Congress noted that the compilation and analysis of relevant legal instruments had been prepared by the Secretariat. That would be helpful to countries formulating new legal instruments and/or to those revising/updating existing ones. The compilation would be made available to Members and the substance of the compilation and analysis of legal instruments would be incorporated in the consolidated set of guidelines on the role and operation of NMSs. Members would also be informed on how they could access specific national legal instruments of possible interest to them, e.g., by contacting the countries directly, through the Secretariat or by electronic access through the WMO Web site.

7.2.15 Congress agreed with the view of the Council that consideration should be given to updating the scope and content of *Meteorological Services of the World* (WMO-No. 2) which contained details of NMSs and other state meteorological organizations and institutions, as well as related information. The inclusion of brief information on pertinent legal instruments related to each of the NMSs should be given consideration.

Aeronautical meteorological services

7.2.16 Congress recalled the concerns relating to institutional issues which had arisen in the provision of aeronautical meteorological services and the priority it attached to meeting the need for guidance expressed by many Members. The designation by countries, for ICAO purposes, of a national Meteorological Authority to provide, or to arrange for the provision of, meteorological services for international air navigation on behalf of countries, was a matter of great importance. Congress noted the Council's views on the advantages of the NMS being designated as the national Meteorological Authority for ICAO purposes, while recognizing that alternative arrangements existed in light of varying situations among countries. There were a few cases where the NMS was the designated Meteorological Authority but service was provided by others (under contract or some other arrangement) and other cases where the NMS was not the designated Meteorological Authority but was contracted to provide the service. The various possibilities provided a range of alternative options for NMSs for ensuring, or helping to ensure, that appropriate

meteorological services for aviation were effectively provided and appropriately funded, particularly to assure safety. Congress recognized that most Members shared the Council's views, but also noted that some Members had other arrangements which also had their advantages.

7.2.17 Congress noted that the cost recovery for aeronautical meteorological services was a continuing area of concern in spite of extensive guidance material already provided by WMO and ICAO. While CAeM had taken the initiative in preparing draft guidance material on aeronautical meteorological cost recovery and alternative service delivery for aviation, Congress requested the Executive Council to maintain a close watch on developments in that area. The Executive Council was also requested to take whatever initiatives it could to help ensure a stable international framework for the provision of aviation weather services, and to facilitate the availability to Members of particular cost accounting systems relevant to those services (see also general summary paragraph 7.2.13). Congress requested the Secretary-General to keep close watch also on developments taking place under the aegis of ICAO on cost recovery and related matters, to take any appropriate action, as required, and to keep Members informed.

Regional cooperation

7.2.18 Congress considered various views on that topic, including those discussed by the Council. Among others, it was noted that regional cooperation could take various forms, from collaboration in implementing a joint numerical weather prediction centre to the adoption of a common approach to the procurement of meteorological equipment and supplies. It could also take the form of one country or NMS assuming a lead responsibility in the Region for a particular field, with another country or NMS serving in a similar way for another field. While each NMS would remain the primary channel for provision of service to its national community, the use of complementary arrangements for the operation of components of the infrastructure or for the preparation of individual services could increase the overall efficiency of service provision. The regional cooperation arrangements could strengthen the role, operation and capability of all the NMSs in the Region.

7.2.19 Congress agreed that certain regional collaboration schemes could take the form of "e-NMSs", in which the geographical locations of the specific NMS service provider and the service user/client (another NMS) would not be a major consideration or constraint.

7.2.20 In some cases, regional strategic plans had been adopted by groups of countries to serve as a framework for prioritizing and supporting regional projects or initiatives that were of interest to a group of countries. Various other mechanisms for regional cooperation had been carried out in particular

geographical areas and for realizing different objectives. Collaboration under the auspices of regional/subregional economic groupings had been a very effective way for countries to work together in meteorological and related fields, to their mutual advantage. In a number of subregions, economic groupings had adopted a Meteorological Programme, which provided an umbrella or framework for regional cooperation. That approach had also been effective in enhancing resource mobilization. It should be emphasized that, in many circumstances, regional cooperation would benefit from being planned and carried out through the WMO TCO and Regional Programmes.

7.2.21 Congress noted that a consolidated paper on regional cooperation was under preparation for inclusion in the set of guidelines on the role and operation of NMSs and would include the following elements, among others:

- (a) Rationale for collaboration;
- (b) Principles of collaboration;
- (c) Useful mechanisms and practices (including specific examples).

WMO standards for weather forecasts

7.2.22 Congress was of the view that the establishment of a WMO standard and/or recommended practice for weather forecasting techniques would assist in producing more reliable forecasts, using optimally the current levels of meteorological science and technology. A standard and/or recommended practice for weather forecasting might include a series (or chain) of mandatory and desirable elements representing the stages of weather forecast preparation. While care would be needed to avoid giving the impression that weather forecasting was a purely mechanical linear process, each element of that practice could be described by a set of standard and/or recommended procedures. At the same time, it was important to recognize the need to take into account the varying situations among countries and the possible diversity in the need for, and appreciation of, such standards. CBS had been requested to study the matter with a view to take appropriate steps to develop recommendations.

Quality management

7.2.23 Congress noted that some aspects of quality management had been addressed already by the Executive Council, CBS, CAeM and by the Meetings of the Presidents of Technical Commissions in 2002 and 2003, as well as under other agenda items at the present session (e.g. agenda items 3.1.0 and 3.4.3).

7.2.24 Congress noted also that the matter of quality management had been considered by several NMSs and by WMO for the following reasons:

- (a) The introduction of quality management systems as a recommended practice for the provision of meteorological services for international air navigation through Amendment 72 to ICAO

Annex 3/WMO Technical Regulation [C.3.1] which came into force in November 2001;

- (b) Users/customers of meteorological and related data, products and services were increasingly requesting that quality management systems be in place to provide a level of assurance on the quality of those data, products and services;
- (c) The enhancement of quality of products and services depended substantially on the quality of data and products internationally exchanged through the WMO coordinated systems;
- (d) The benefits experienced by some NMSs through improved effectiveness and efficiency following the implementation of quality management processes; and
- (e) The need by some NMSs for a quality management system to enhance competitiveness in providing meteorological and related products and services.

7.2.25 Congress recognized that quality standards were set for the assessment, as well as for the enhancement, of data, products and services delivered. In that connection, it was important to recall that the users' perspective should be taken into account and that the assessment and/or enhancement of products and services were considered also from the point of view of the level of usefulness of those products and services.

7.2.26 Congress noted that a range of views were expressed concerning the possible adoption or adaptation of an existing quality management system, such as those based on the ISO 9000 series or a similar system. Congress also noted the experiences shared by some Members relating to their development and implementation of such a quality management system, including documentation and costs.

7.2.27 Congress further noted that with respect to ISO 9000 certification, those quality management systems should not be taken as product or service guarantee and ISO 9000 did not contain requirements for specific products or services. When an organization had a quality management system certified to ISO 9000, it meant that an independent auditor had determined that the overall management system and processes conformed to the management system requirements.

7.2.28 Recognizing the need to assist those NMSs that did not wish to follow an ISO or a similar certification path and/or that did not have the financial or human resources needed to embark on an ISO or similar certification process, Congress supported the Executive Council proposal that WMO should work towards its own QMF. However, the costs associated with the development of such a framework had yet to be assessed (see also general summary paragraph 3.1.0.13).

7.2.29 Congress agreed that a WMO QMF should include the following distinct and related elements which should be addressed, possibly on a phased basis:

- (a) WMO technical standards;
- (b) Quality management system(s) including quality control; and
- (c) Certification procedure(s).

In that connection, Congress noted that WMO standards already existed and NMSs which had implemented a quality management system had made use of such standards as they now existed. Nonetheless, Congress felt that there was scope for reviewing and consolidating those standards so as to be readily referenced for purposes of quality management.

7.2.30 In addition, the WMO procedures and practices in the *Technical Regulations* (WMO-No. 49), *Manuals, Guides, Guidelines* and *Technical Publications* might need to be reviewed. Those could be used to develop a quality management system for an NMS that would assure process and data quality.

7.2.31 Congress noted that, in the implementation of a WMO QMF, a certification (registration) process would need to be developed and the following elements would need to be studied further:

- (a) Monitoring the performance of elements of the system;
- (b) Assessment of conformity to the WMO established procedures and recommended practices;
- (c) The need for an independent "certification" or "registration" body or mechanism, and independent auditing component of the quality management system.

The certification was usually in relation to a process conforming with management standards; that was, related to, but different from, data quality assurance.

7.2.32 Congress stressed that a balanced and careful approach would be required to assist NMSs, especially in developing countries, to strengthen their quality management systems for end-user products and services delivery without incurring the overhead burden that might be associated with generic quality management standards developed for application beyond meteorology. In particular, special efforts should be made to address the specific concerns of developing countries with small NMSs, by avoiding complex quality management systems with heavy financial implications. At the same time, Congress stressed that the introduction of a quality management system in an NMS would depend on the management and management requirements of the NMS itself. In that connection, the possibility of undertaking appropriate pilot projects should also be explored (see also general summary paragraph 3.4.3.12).

7.2.33 Congress further noted that the Intercommission Task Group which was established in 2002, developed an overall approach for a WMO QMF. In that connection and taking into account the detailed discussions at Congress, including the experience of a number of NMSs that had adopted a formalized quality management approach, Congress felt that the main emphasis initially should be on reviewing WMO

standards and applying those in the coordination of a quality management system for an NMS. Congress also noted that the existing *Technical Regulations and Guides* in most cases constituted a quality approach on technical aspects of NMS operations. That overall framework would then complement the existing technical reference material, as well as provide guidance to NMSs on the direction to take in embarking on a quality management approach.

7.2.34 Congress endorsed the recommendations of the presidents of technical commissions on a WMO QMF that:

- (a) The WMO QMF should be developed taking into account the ISO 9000 recommended elements which were necessary for the quality management system for meteorological and related data, products and services, and in consultation with ISO where appropriate;
- (b) The WMO QMF should be developed initially for meteorological and related data, products and services to be extended later to encompass hydrological data, products and services based on the experience of quality management for meteorological data, products and services;
- (c) The implementation of the WMO QMF could be a challenging task, as well as an opportunity for improvements especially for NMSs in developing countries, and WMO needed to plan capacity building activities to assist in its implementation.

7.2.35 Congress noted that the amount of work and the timetable would vary for each of the technical commissions for the incorporation of any new material in a quality management approach, and that the technical commissions should be able to achieve some progress, once the broader quality management framework was in place. In that regard, Congress requested the Executive Council to take the lead in the next phase in which broad considerations for a quality management system would be developed as a guide to the Organization and to individual NMSs on how to adapt the existing WMO technical material into supporting a quality management system. It was recognized that that was largely dependent on a strengthened management of NMSs. In turn, quality management would contribute towards enhanced management of NMSs.

7.2.36 Congress expressed its thanks for the work already undertaken in that area, especially by the technical commissions, the regional associations, the Executive Council and the Secretary-General, and requested them to assist further in that area.

7.2.37 In light of the discussions, Congress adopted Resolution 27 (Cg-XIV).

WMO statement on weather and climate forecasting

7.2.38 Congress noted that the WMO policy Statement on the scientific basis for, and limitations of, weather and climate forecasting for use by WMO

Members was prepared by the thirteenth session of CAS and issued with the endorsement of the Executive Council. It was considered that that Statement would be useful to NMSs when explaining the capabilities and limitations of their services to their national communities, particularly in circumstances where particular forecast errors had become the subject of unjustified public or media criticism. Congress agreed on the importance of developing a clear and succinct Executive Summary based on the Statement, written especially for the media and the general public, to promote a better appreciation of the scientific basis for, and limitations of, weather and climate forecasting.

7.2.39 Congress endorsed the Executive Council's action in arranging for preparation by CAS of the WMO Statement on the scientific basis for, and the limitations of, weather and climate forecasting. It requested the Executive Council and CAS to keep the Statement under review.

Mechanisms for strengthening NMSs

7.2.40 Congress noted the various mechanisms and initiatives that had been proposed to assist in strengthening the role and operation of NMSs. It reviewed four specific initiatives that had been considered by the Executive Council at its fifty-second, fifty-third and fifty-fourth sessions (June 2000, June 2001 and June 2002, respectively):

- (a) Preparation of a WMO statement on the role and operation of NMSs;
- (b) Preparation of a consolidated set of guidelines on the role and operation of NMSs;
- (c) Convening of a high-level conference on the role and socio-economic benefits of NMSs;
- (d) Amendment of the WMO Convention to highlight the role of NMSs in line with the Geneva Declaration of Thirteenth Congress.

Statement on the role and operation of NMSs

7.2.41 Congress noted that the Council had decided that the work of its Advisory Group should lead to a WMO policy statement on the role and operation of NMSs. A draft of the proposed statement prepared by the chairperson of the Group was reviewed by the Group and considered by the Council at its fifty-fourth session. The Council agreed that a revised draft statement be circulated by the Secretary-General for further input from Council members and that, after final clearance, the statement would be approved by the President of WMO on behalf of the Council.

7.2.42 Congress agreed that the 2003 Statement of the Executive Council on the role and operation of National Meteorological Services provided useful guidance for Members for their consideration in the light of their particular situation. The Statement had also been taken into consideration in the preparation of the consolidated set of Guidelines on the role and operation of NMSs. Congress underscored the importance of ensuring that such a Statement should

provide appropriate and clear information that would serve to highlight the important role and contribution of NMSs to their respective societies. Congress also agreed that that Statement should be published and disseminated as a WMO statement.

Guidelines on the role and operation of NMSs

7.2.43 Congress was informed that, on the basis of the work of the Advisory Group and in consultation with the chairperson of the Group, the Secretary-General was in the process of assembling a consolidated set of guidelines on the role and operation of NMSs to assist them in carrying out their responsibilities to their nations. That included the provision of advice for decision-making on relevant issues such as climate change and sustainable development. The guidelines should also help in the enhancement of the management of the NMSs and lead to their increased visibility. The guidelines would incorporate chapters/sections on:

- (a) Purpose of the guidelines;
- (b) The role of Meteorological Services;
- (c) Economic framework for the provision of meteorological services;
- (d) Scientific basis for weather and climate forecasting;
- (e) The role of NMSs at the national level;
- (f) The charter, mission and functions of NMSs;
- (g) Legal instruments;
- (h) Organization models;
- (i) Regional and global cooperation;
- (j) Planning and management;
- (k) Training and staff development;
- (l) Quality management;
- (m) Evaluating the benefits of NMS operations and services;
- (n) Funding and charging for meteorological services;
- (o) Collaboration with the private sector, the media and academia;
- (p) Participation in WMO.

Congress requested the Executive Council to ensure that the guidelines were completed and made widely available as early as possible.

High-level conference

7.2.44 Congress noted that after considering two specific proposals developed by the Secretary-General for the holding of a high-level conference on the role and the socio-economic benefits of NMHSs, as well as on further enhancing the visibility and status of NMHSs, the Council agreed that the organization of such a conference during the next financial period should be considered by Fourteenth Congress. After giving that matter consideration, Congress requested the Executive Council to study further that topic, addressing the following elements, among others:

- (a) Specific purpose, theme and desired result(s);
- (b) Particular features that would encourage the involvement of high-level personalities;

- (c) Types and numbers of invitees, consideration being given to include eminent personalities in the non-State Sectors;
- (d) Additional human and financial resources necessary, and how those would be obtained, including possible extrabudgetary resources;
- (e) Possibility of holding that event in conjunction with Fifteenth Congress.

Amendments of the WMO Convention

7.2.45 Congress acknowledged the work of the Executive Council in preparing proposals on possible amendments to the WMO Convention to represent more clearly the essential role and primary responsibilities of NMSs in carrying out the purposes of WMO. Congress decided that there was need for further work on the issue. Congress' consideration on those proposals was recorded under agenda item 11.2.

Involvement of the media, the private sector and academia

7.2.46 Congress noted that the Council considered various contributions on that topic. There was a growing recognition of the importance of cooperation with the media, the private sector, and academia and of the need to consider the opportunities that such cooperation could provide while recognizing the associated challenges. Congress recognized that that included both the involvement of the media, the private sector and academia in the international programmes of WMO and cooperation, at the national level, between those sectors and the NMHSs.

Involvement in WMO Programmes

7.2.47 Congress recalled that, according to General Regulation 6, Permanent Representatives of countries with WMO "shall maintain contact with the competent authorities, governmental or non-governmental, of their own countries on matters concerning the work of the Organization." In that connection, Congress noted that a possible mechanism for involvement of the media, the private sector and academia in the work of WMO could be through the establishment of national committees on WMO activities. Another would be through direct participation of those sectors in the work of the constituent bodies of WMO such as through attendance as advisers to Executive Council members at sessions of the Council and through membership in national delegations to sessions of the other WMO constituent bodies. NMSs could also be more proactive in initiating and/or participating in relevant national committees such as those dealing with pertinent issues like natural disaster mitigation, climate change and water resources management.

Cooperation between NMSs and the media, the private sector and academia

7.2.48 Congress recognized that the nature of the interaction between NMSs and the private sector

varied from country to country, as a result of the different environments (e.g., political, economic) in which the NMSs operated. In certain cases, there were increasing constraints on public funding, including in NMSs, which led some to develop commercial activities in addition to traditional public weather and climate services. In other cases, the NMSs did not feel that they were sufficiently developed and the interaction with the private sector was a definite challenge, while in others, the private sector service providers engaged in activities which were complementary to those of the NMSs.

7.2.49 A strategic alliance between the NMSs and the private sector, the media and academia could lead to the strengthening of NMSs, including developing constituencies which would advocate the maintenance and/or enhancement of government support for the essential infrastructure of the NMSs which supported the needs of all sectors. A particular area of cooperation was associated with having NMSs recognized, by all concerned, as the single official voice for meteorological and hydrological warnings.

7.2.50 It was agreed that mechanisms which had been used to facilitate the desired interaction (including with users) should be identified, described and taken into account in the preparation by the Secretary-General of the consolidated Guidelines on the role and operation of NMSs. Members should be encouraged to make use of mechanisms appropriate to their national situations, taking into account their relevant international (regional and global) commitments.

7.2.51 Congress stressed the importance of cooperation with academia as their research contributed significantly to the advancement of knowledge and the application of such research enhanced the operation and service delivery of NMSs.

Cooperation with other international organizations

7.2.52 The importance of cooperation with other international organizations was stressed by Congress, as that would facilitate the implementation of WMO programme activities. That would have an impact on the role and operation of NMHSs. Such collaboration could also help to enhance the image and visibility of NMHSs and WMO. WMO's collaboration with international organizations could help to promote cooperation between the national corresponding institution of the particular international organization, and the national meteorological/ hydrological community, particularly the NMHSs. The importance of NMHSs' active participation in national delegations to governing and subsidiary bodies of relevant environmental conventions was also stressed.

7.2.53 Congress noted that the Council recognized that it was not always easy to identify other relevant international organizations such as those that represented the private sector segment of interest to WMO and NMHSs. Nonetheless, the

possibility of strengthening cooperation with appropriate international bodies representing the private sector, including those representing professional Meteorological Societies, should be pursued.

Definition of commonly used terms

7.2.54 Congress was informed that the Council had studied a large number of draft definitions compiled by the Secretariat. On that basis, an initial draft of 'working definitions' for a selected set of terms that would help in facilitating discussion on the role and operation of NMSs was prepared. Congress agreed that that set of 'working definitions' should be treated as work in progress for use in the particular context of the role and operation of NMSs (see Annex VIII to this report). It requested the Executive Council to ensure that the refinement of the working definitions was carried out in wide consultation with relevant expert bodies.

Role and operation of NHSs

7.2.55 Congress noted that CHy sponsored the preparation of a comprehensive document on the role and operation of NHSs. Several issues had been identified which should be addressed in the future revision of that document: groundwater; international river basins and aquifers; combined Meteorological and Hydrological Services; and how NMSs and NHSs could best work together.

7.2.56 Congress noted that, as work proceeded on the preparation of the consolidated set of Guidelines on the role and operation of NMSs, similar work was continuing in respect of NHSs. It noted that most of the elements identified in the WMO Statement and consolidated Guidelines on NMSs had been considered in the preparation of similar documents for NHSs.

7.2.57 Congress expressed its appreciation for the preparation of the comprehensive document on the role and operation of NHSs and for the complementary work that was being undertaken, similar to that regarding the role and operation of NMSs. It particularly welcomed the work undertaken and submitted to the fifty-fourth session of the Executive Council, to develop a more detailed framework for dealing with the management of Hydrological Services.

Action by the Secretary-General

7.2.58 Congress recalled that by its Resolution 26 (Cg-XIII) — Role and operation of National Meteorological Services, it requested the Secretary-General to continue his efforts to assist Members, including in seeking and providing scientific, technical, management, financial and other support for the development of NMSs and the enhancement of their role and operation.

7.2.59 Congress took note of the information presented by the Secretary-General concerning actions he had taken to promote the role and operation of NMHSs. Those included the following:

- (a) Status and visibility of NMSs;
- (b) Analysis of the comprehensive questionnaire on the role and operation of NMSs;
- (c) Legal instruments;
- (d) Cost, benefits and value of services;
- (e) Capacity building;
- (f) Provision of meteorological service to aviation;
- (g) Cooperation with the media, private sector and academia;
- (h) Definition of relevant terms;
- (i) Possible changes to the WMO Convention;
- (j) Quality management;
- (k) Regional cooperation;
- (l) Executive Council Statement on the role and operation of NMSs;
- (m) Consolidated guidelines on the role and operation of NMSs;
- (n) Role and operation of NMSs.

7.2.60 Much of the above contributed to the work carried out by the Executive Council Advisory Group on the Role and Operation of NMHSs which had been established to assist the Council in its work in that area.

7.2.61 Congress noted with appreciation that the October 2002 edition of the WMO Bulletin was devoted to the theme of the role and operation of NMHSs and that WMO participated actively in the process leading to, and during, the 2002 WSSD (see also agenda item 9.2).

7.2.62 Congress expressed its thanks to the Secretary-General for the initiatives he had taken and for the extensive support he had provided for the benefit of NMHSs. It requested the Secretary-General to continue efforts in that direction, including facilitating the exchange of relevant experiences among Members.

General consideration

7.2.63 Congress recognized that the role and operation of NMHSs were intimately linked to many other issues of major interest to WMO. It recognized that such links should be carefully considered and should be such as to help WMO and its Members to strengthen complementarity and strategic alliances as well as to meet the major challenges and commitments facing the Organization.

7.2.64 Congress expressed its thanks to Members which had taken pertinent initiatives, including the organization of events in support of enhancing the role and operation of NMHSs. Congress encouraged Members to contribute further in that connection.

7.2.65 Congress requested the Executive Council to keep those topics under review and requested the Secretary-General to take the necessary initiatives and provide the required support. In that connection, Congress felt that the work should proceed taking into account the evolving role of WMO.

7.2.66 In the light of its consideration of the wide range of issues associated with the role and

operation of NMHSs and its conclusion that those should be further pursued as a matter of great importance by the Executive Council, Congress adopted Resolution 28 (Cg-XIV).

7.3 COOPERATION WITH OTHER DISCIPLINES AND PROGRAMMES (agenda item 7.3)

7.3.1 Congress noted the information provided in connection with the possible facilitating role of WMO regarding international coordination in the field of seismology. Some results of the analysis of the questionnaire on activities relating to seismology, as well as a summary review paper prepared by the Secretariat, were presented to Congress to assist discussion. Congress was informed that the Executive Council, at its fifty-fourth session, discussed the issue and requested the Secretary-General to prepare the necessary documentation for consideration by Congress.

7.3.2 Congress thanked the Secretary-General for the documentation provided which included background information and analysis of possible options, and where it was noted that there were several ways of possibly reflecting the activity area in WMO. The documentation was prepared in consultation with a number of Permanent Representatives.

7.3.3 Congress recognized that in addressing that topic, it was important to take into account the purposes of WMO; the programmes and activities of Members, their NMHSs and other international organizations including those in the United Nations system; and the need for, and promotion of, international cooperation as well as the financial implications.

7.3.4 Congress noted suggestions about how operational seismology could become part of WMO's responsibilities such as by developing an appropriate protocol to the WMO Convention and/or inclusion of operational seismology in the cross-cutting WMO Programme on Natural Disaster Prevention and Mitigation.

7.3.5 Congress also noted that for more than 40 Members of WMO, the NMHSs were also responsible for, or were involved in, seismological activity. Hence, for some Members, there was interest in WMO involvement in seismology. On the other hand, there were some questions as to whether that field fell within those reflected in the purposes of WMO as given in Article 2 of the Convention; there were also some concerns about possible additional financial requirements.

7.3.6 After careful consideration of the issue, Congress agreed to request the Executive Council to address further the matter, taking into account additional information and analysis. In that connection, consultation with appropriate international organizations was underscored. Congress also requested the Secretary-General to provide the necessary support.

7.4 DISASTER REDUCTION ACTIVITIES (agenda item 7.4)

Cooperation with ISDR and other organizations

7.4.1 Congress noted that IDNDR was over in December 1999 with success in achieving substantial progress in natural disaster reduction at all levels. Congress expressed its appreciation to the Secretary-General for the leading role played by WMO in support of IDNDR efforts. Congress was informed that an IDNDR Programme Forum had been successfully held in July 1999 as the consolidation and closing event of the Decade under the title "A Safer World in the Twenty-first Century: Disaster and Risk Reduction." Congress noted with satisfaction that WMO and UNESCO, as the two principal United Nations agencies concerned with the scientific and technological aspects of disaster reduction, had convened the Subforum on Science and Technology in Support of Natural Disaster Reduction as a special contribution to the Forum.

7.4.2 Congress was informed that the IDNDR had been succeeded by a new substantive programme, the ISDR, that included an Inter-Agency Task Force and an Inter-Agency Secretariat. The main objectives of ISDR were to enable communities to become resilient to natural hazards and to proceed from an approach of protection against the hazards to the management of the risk. The primary function of the Task Force would be to devise strategies and policies for natural disaster reduction, to identify gaps in policies and programmes, to convene expert meetings on those issues, to ensure complementary action by agencies, and to provide guidance for ISDR Secretariat.

7.4.3 Congress noted that WMO had been designated as a member of the Task Force. Congress also noted that the Secretary-General had taken various initiatives on the structure of the ISDR to ensure a prominent role for science and technology and the operational activities of NMHSs in the implementation of the Strategy.

7.4.4 Congress was informed that the Task Force, as part of its Framework of Action, had established four working groups. Working Group 1 on Climate and Disasters, chaired by WMO, had taken over the responsibilities of the United Nations Task Force on *El Niño* with an expanded mandate to consider all climate-related aspects of disasters. Working Group 2 on Early Warnings was chaired by UNEP, while Working Group 3 on Risk, Vulnerability and Impact Assessment was chaired by UNDP. The Global Fire Monitoring Centre at Freiburg, Germany chaired Working Group 4 on Wildland Fires. Congress noted that WMO actively participated in all Working Groups and encouraged Members to contribute to the work of ISDR. It agreed that there would be considerable advantages for NMHSs in developing close relationships with the groups, including joint projects at the regional level to mitigate the effects of natural disasters.

7.4.5 Congress was pleased to note the statement by the ISDR representative that close collaboration on partnership had been established between the two organizations in scientific and technical areas of natural disaster reduction activities. Congress noted with appreciation that the role of WMO had been well recognized as a key contributor in the field of natural disaster reduction, through its monitoring and forecasting activities and the distribution of early warnings. Congress also noted the contribution of WMO to the Task Force working groups and its participation in the preparation of a publication entitled *Living with Risk*, in the preparation of the Early Warning Conferences, as well as the WMO contribution to WSSD. It noted with appreciation the support of ISDR to a new WMO programme on natural disaster prevention and mitigation that would further enhance the collaboration between WMO and ISDR.

7.4.6 Congress recalled the important role that WMO had played in the work of the United Nations Task Force on *El Niño* in reviewing the effects of the 1997-1998 *El Niño* event and in the implementation of United Nations resolutions on that subject. Congress agreed that WMO should continue to take a central role in providing scientific guidance and technical support in the implementation of United Nations resolutions relating to the *El Niño* phenomenon. In that context, Congress noted with appreciation that the Government of Ecuador and WMO had concluded a Memorandum of Cooperation to establish the International Research Centre on *El Niño* in Guayaquil, as a regional and international facility to foster research on *El Niño*. Congress encouraged Members to participate actively in the activities of the Centre.

7.4.7 Congress noted the important role played by WMO in WSSD where the issue of disaster management had been a key topic in its main outcomes. Natural disaster prevention and mitigation were included in WSSD's Plan of Implementation as essential elements for a safer world in the twenty-first century. The Summit agreed that actions were required at all levels to improve surface-based monitoring and increase the use of satellite data to improve early warning systems and prediction of extreme weather events. The Congress urged its Members to participate actively in the implementation of those actions.

7.4.8 Congress was pleased to note the information provided by Japan that the Government of Japan would host a conference, tentatively entitled World Conference on Natural Disaster Reduction in January 2005 in Kobe, Japan.

7.4.9 Congress noted that the World Bank launched the ProVention Consortium, a partnership between public and private organizations that was aimed at helping developing countries to cope with disasters. It also noted that WMO was a member of the Consortium and was represented in the Consortium Steering Committee. The Consortium

had been hosted by the World Bank in New York. However, as of 2003, it was hosted by the International Federation of the Red Cross and Red Crescent Societies in Geneva. Congress felt that more active collaboration between WMO and the Consortium would be useful for more effective implementation of natural disaster reduction activities by WMO.

7.4.10 Congress was informed of the international activities and efforts in the field of landslide research and landslide risk management and on the establishment of the International Consortium on Landslides. Congress requested the Secretary-General to maintain WMO's high profile and leading role in major aspects of natural disaster reduction including landslides and welcomed the signing of a Memorandum of Understanding between WMO and the International Consortium on Landslides. Congress requested the Secretary-General to ensure provision of appropriate advice to NMHSs in order to enable them to respond adequately and in a timely manner to national demands for services related to landslide prevention and mitigation.

WMO activities in the area of natural disaster prevention and mitigation

7.4.11 Congress noted that WMO played a significant role in international disaster reduction activities through the actions taken within its major scientific and technical programmes, namely WWW, AMP, WCP, HWRP and AREP. Those Programmes were particularly important in contributing to global capabilities in the detection, forecasting and early warning of hazards, and in providing effective means and procedures to minimize their adverse consequences through the application of science and technology.

7.4.12 Congress was pleased to note that the WWW Programme had promoted upgrading of infrastructures to exchange real-time data, forecasts and warnings for the public and the international community. Through its system of RSMCs, WWW provided weather forecasts, early warnings and advisories on tropical cyclones and other severe events. As a part of WWW, the TCP coordinated activities at the international, regional and national levels, to provide upgraded and more effective warnings of tropical cyclones and associated floods and storm surges, and to strengthen related community preparedness through appropriate guidance.

7.4.13 Congress noted with appreciation that PWS, as part of the AMP Programme provided assistance to NMHSs to develop their capability to communicate adequate warning messages to both the public and the emergency management community. That assistance had been provided through training activities and the publication of guidelines on media issues, the use of Internet and the use of new technologies and research.

7.4.14 Congress was informed that the WCP provided assistance to Members through the Climate

System Monitoring Project of the WCDMP at the global and regional levels. Information was distributed via the Internet and through various publications. Congress noted with appreciation that the WCP contributed through the Climate Change Detection Project to the establishment of a climate early warning system with special emphasis on climate extremes and indices. Congress learnt that the WCP also provided assistance to countries through the CLIPS project of WCASP for the application of climate information. Congress was pleased to note the initiatives taken by CCI to provide seasonal to inter-annual climate predictions based on the research carried out within WCRP and its CLIVAR project.

7.4.15 Congress noted that, as part of AREP, the WWRP contributed to promote research on cost-effective and improved techniques for the forecast of high-impact weather phenomena such as tropical cyclones, sand and dust storms, and heavy rainfall that could provoke severe flooding.

7.4.16 Congress noted with satisfaction that HWRP promoted, through the provision of technical guidance and the establishment of technical cooperation, projects, flood risk assessment and forecasting water-related hazards with focus on major floods and droughts. To that effect, HWRP and the Global Water Partnership launched a joint project, the Associated Programme on Flood Management, in the context of integrated water resources management, which considered both negative and positive aspects of floods.

7.4.17 Congress commended the initiative of the Secretary-General to establish the EDRG within the WMO Secretariat to assist, among other things, in the rehabilitation of meteorological and hydrological infrastructures in Member countries following a disaster. In an emergency situation, the EDRG would determine the need to activate the EART for the purpose of providing assistance to NMHSs to ensure their continued ability to operate during and after the disaster. Congress noted the success of EDRG, in particular in providing assistance to Central America during floods through the active interaction with the Subregional Office. It recognized that more involvement of Regional and Subregional Offices in the EDRG activities would be necessary. Congress invited NMHSs to provide information on the impact of natural disasters to meteorological infrastructures to enable the EDRG to take timely action.

Cross-commission activities

7.4.18 Congress noted that, following the general endorsement of the areas of cross-commission activity by the fifty-third session of the Executive Council, the Meeting of the Presidents of Technical Commissions in 2002 had discussed a cross-commission project proposal on natural disaster mitigation in coastal lowlands presented by the co-president of JCOMM. It also noted that presidents had agreed that a document summarizing the proposed activities and related responsibilities within

the project should be prepared for submission to the Council. Following the Meeting recommendations, a draft project proposal entitled Natural Disaster Reduction in Coastal Lowlands had been prepared and presented to the fifty-fourth session of the Executive Council. Congress further noted that the Council had endorsed that cross-commission project proposal, requesting the presidents concerned to submit in consultation with the Secretary-General, specific proposals on the implementation of tasks included in the project.

7.4.19 As regarded further developments in that area, Congress was informed that the co-president of JCOMM had submitted an additional proposal to that project to the Meeting of the Presidents of Technical Commissions in February 2003. Congress noted that that proposal included the development of a generic system for mitigating the impacts of natural disasters, in particular tropical cyclones, in coastal lowlands, based on an assessment of those impacts on agricultural and other socio-economic sectors. Congress also noted the recommendation of the Meeting to incorporate the proposed activities in the project already endorsed by the Council and agreed that the new initiative should be treated as a demonstration project implemented in one of the countries affected by tropical cyclones. Congress requested the Commissions involved, in consultation with the Secretary-General, to finalize the project proposal, to identify a location for implementation of the demonstration project and to find appropriate partners for project funding.

Future trends

7.4.20 Congress noted with concern that the number of natural disasters was increasing, as well as their negative impact on the safety of life and the economy. Congress recognized the necessity of an accurate and systematic evaluation of those impacts and the transmission of the results of that evaluation to decision makers. Congress also recognized the need to define the level of expected and acceptable risk to life and property. Congress reaffirmed that WMO should continue to play a leading role, regarding mitigation of, and preparedness for, natural disasters of meteorological and hydrological origin and stressed the primary role of NMHSs with respect to management of such disasters that occurred in various time and space scales. Congress also recognized the need to assist NMHSs to enhance their role in the disaster reduction process at national and regional levels. Congress noted that natural disaster reduction activities covered a wide range of subjects from research to operational applications, crossing all the activities of WMO. Congress reaffirmed the role that the major programmes had played in natural disaster prevention and mitigation and agreed that they should strengthen their activities in that area.

7.4.21 Congress recognized the necessity to launch a new WMO major programme noting the

change in the main focus of natural disaster activities shifting from protection and recovery to prevention and management of risk. Congress also recognized that the new programme should be a major contributor to the development of developing countries in the future, namely Africa. Congress agreed to initiate a major programme on natural disaster prevention and mitigation, that would enhance international cooperation and collaboration in that field, as a major cross-cutting programme, based on the activities carried out by a number of WMO Programmes. The programme should coordinate WMO actions to improve risk analyses at the national and regional levels, to improve mechanisms and communication for the delivery, use and evaluation of warnings, and the provision of prompt advice and assistance to Members. Congress adopted Resolution 29 (Cg-XIV).

8. CONSOLIDATED PROGRAMME AND BUDGET – 2004-2007 (agenda item 8)

Maximum expenditure for the fourteenth financial period

8.1 Congress considered the programme and budget proposed by the Secretary-General for the fourteenth financial period (2004-2007). Under the present agenda item, Congress considered and decided on the broad expenditure levels for various programmes and parts of the budget. The detailed discussions of various scientific and technical programmes and other activities, and the decisions of Congress thereon, were recorded under the appropriate agenda items.

8.2 Congress noted that the budgetary proposals for the fourteenth financial period were coordinated with the draft 6LTP with the full collaboration of the Executive Council, regional associations, technical commissions and other scientific and technical bodies. Taking into account the advantages of the single and seamless planning and budgeting process, Congress approved that RBB be adopted for the fourteenth financial period. Furthermore, it was noted that the structure of the budget document and the programme priorities reflected in the Secretary-General's proposals had been prepared following the priorities established by the Executive Council at its fifty-third and fifty-fourth sessions.

8.3 The Secretariat presented the computation of the Secretary-General's recosted programme and budget proposals, using the actual inflation rates for Geneva from May 1999 through March 2003 and inflation projections of the Consultative Committee on Administrative Questions of 1.0 per cent per annum from April 2003 through December 2007. The recosting resulted in an increase in purchasing power by approximately SFR 9 million as compared to the original proposal of SFR 253.8 million before recosting. The recosted proposal (SFR 253.8 million) could therefore accommodate all the programme activities contained in the original proposals (totalling

SFR 258.8 million) as well as additional activities worth SFR 4.0 million.

8.4 Many Members expressed their concern about the negative impact on all areas of WMO activities which would be caused by a programme and budget below the zero real growth level. The Secretary-General explained that under the recosted proposal of SFR 253.8 million, a great number of activities implemented during the thirteenth financial period would need to be discontinued and staffing reduced during the fourteenth financial period. Other Members stated that within the overall amount of SFR 253.8 million, priority activities would be implemented and that extrabudgetary resources would supplement the regular budget funding to implement other priority activities.

8.5 After discussion, Congress decided to approve a programme and budget of SFR 253.8 million for the fourteenth financial period, of which SFR 249.8 million would be funded from assessed contributions and SFR 4.0 million would be made available from any surplus arising from the thirteenth financial period, and to adopt Resolution 30 (Cg-XIV).

8.6 Congress agreed to suspend Financial Regulation 9.1 during the fourteenth financial period only, with respect to the distribution of any cash surplus which might result from the thirteenth financial period, and to delegate the Executive Council during the present financial period to allocate such cash surplus, over and above the said SFR 4.0 million, to fully costed high priority activities, as listed in Annex 2 to Resolution 30 (Cg-XIV) as guidance, which activities would be completed within the fourteenth financial period in the most cost-effective and efficient manner. Congress stressed that the reference base for the assessed contributions budget level for the fifteenth financial period would be SFR 249.8 million.

8.7 It was recognized that the financial management of the Secretariat needed to be strengthened in accordance with the recommendation of the External Auditor. In order to address that issue, Congress agreed that an additional amount of SFR 1 million should be allocated for the financial management in the Secretariat within the assessed contributions level of SFR 249.8 million.

8.8 Congress examined the proposed structure of the Secretariat for the fourteenth financial period. It authorized the Secretary-General to arrange that in the best way possible within the financial limitations imposed by the approved maximum expenditure and taking into account the decisions of Congress and the Executive Council on staff matters. Congress decided that, consistent with the RBB methodology, the maximum expenditure level, rather than a numeric limitation for staff, was to be considered as the effective limit of the staffing level.

Results-based budgeting

8.9 The Secretary-General presented the document on RBB and its implementation in WMO

for the fourteenth financial period, and explained the concept underpinning the RBB process, in particular the performance measurement and reporting system required for the full implementation of RBB. It was stressed that RBB was a key instrument for ensuring effective management oversight and that monitoring and evaluation were integral part of the RBB process.

8.10 Congress noted that the policy guidance provided by the Executive Council for the introduction of RBB had been for progressive implementation of RBB. The programme and budget for the biennium 2002-2003 was presented in the RBB format providing funding requirements and performance baseline data such as objectives deriving from the 5LTP, expected results, performance indicators and project activities with description of outputs, which constituted baseline data for performance measurement. Currently, a biennial performance measurement and reporting system was being put in place in the Secretariat. The Secretary-General prepared the programme and budget for the fourteenth financial period taking fully into account the 6LTP and based on the outcome of the pilot RBB presented to the fifty-third session of the Executive Council.

8.11 Congress also noted that RBB required a corporate management information system that processed programmatic and financial data. That system should also be able to generate performance reports that corresponded to the changing needs of WMO Members and the Secretariat. The current WMO management information system should therefore be expanded to build up a corporate management information system that met the requirements for effective implementation of RBB. The resources required for the expansion would need to be funded from voluntary contributions. Congress was of the view that development of skills required for RBB was critical for its successful implementation. Briefing sessions with WMO Members might also be needed to keep them informed of the development of the new budgeting methodology and its implications.

8.12 During the discussion, Congress recognized the importance of RBB as a management tool for the enhancement of the Secretariat's efficiency, effectiveness and responsiveness to the needs of the WMO Members. It also recognized that the single and seamless planning and budgeting process linked with the performance measurement and reporting system would help WMO achieve coherent programme planning and enhance accountability.

8.13 Congress adopted Resolution 31 (Cg-XIV) which incorporated its main decisions on RBB. It affirmed that the key performance indicators listed in Annex 1 to the Resolution were an important tool for effective performance measurement, and also stressed the necessity of putting in place in 2004 an appropriate governance mechanism through the Executive Council with a view to overseeing the implementation of the RBB process, including

monitoring, evaluation and performance reporting as outlined in Annex 2 to the Resolution.

9. COOPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS (agenda item 9)

9.1 COOPERATION WITH THE UNITED NATIONS AND OTHER ORGANIZATIONS (agenda item 9.1)

9.1.1 Congress reviewed the existing relations with the United Nations and other international organizations including NGOs and decided that close cooperation, consultation and coordination with those organizations should be maintained and developed on the basis of the policy laid down in Resolution 6 (Cg-V) — Relations with the United Nations and other international organizations.

9.1.2 Congress noted with satisfaction that WMO had been actively involved and participated in the activities of the United Nations system organizations as well as in the inter-agency coordination of programmes through the United Nations System Chief Executives Board for Coordination, formerly the Administrative Committee on Coordination). It agreed that the Organization should continue to participate in the work of that Board and its subsidiary machinery.

9.1.3 Congress also noted that the Organization had participated in the preparation for, and proceedings of, a number of international summits and conferences convened by the United Nations or its specialized agencies, in particular the United Nations Millennium Summit (New York, 2000), the Third Conference on the Least Developed Countries (Brussels, 2001), the World Summit on Sustainable Development (Johannesburg, 2002) and the World Food Summit (Rome, 2002) as well as in the preparatory process of the World Summit on Information Society (Geneva, 2003; Tunis, 2005). In that connection, it noted the arrangements made for follow-up actions to the United Nations Millennium Summit, the World Summit on Sustainable Development and other global and regional events of relevance to WMO's activities. Congress welcomed WMO's involvement in such activities and requested the Secretary-General to contribute, as far as possible, to the implementation of the programme for action, or the relevant resolutions or decisions adopted by such summits and conferences.

Resolutions addressed to WMO by the United Nations

9.1.4 Congress took note of the action being taken by WMO in response to the resolutions and recommendations of the United Nations General Assembly and other bodies directly related to the Programmes of WMO. The Secretary-General was requested to continue cooperating in those areas with the United Nations and other bodies and agencies of the United Nations system. Congress also took note of those other resolutions and recommendations of the General Assembly

addressed to all bodies, organizations and agencies of the United Nations system, including WMO. It invited the Secretary-General to take those into account insofar as they were appropriate and relevant to the activities of the Organization.

9.1.5 Congress took note of the following resolutions addressed to the specialized agencies, including WMO, by the fifty-seventh session of the General Assembly of the United Nations:

57/1, 2, 3, 4A, 4B, 6, 7, 12, 27, 35, 37, 38, 39, 40, 41, 42, 43, 46, 48, 49, 53, 54, 65, 106, 116, 130A, 133, 140, 141, 144, 145, 152, 155, 156, 157, 163, 164, 167, 170, 171, 180, 181, 182, 184, 192, 205, 206, 209, 210, 211, 212, 216, 217, 221, 223, 226, 237, 238, 240, 241, 242, 243, 245, 246, 247, 250, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 269, 270, 271, 272, 273, 274, 275, 276, 284A, 284B, 285, 286, 294, 295, 296, 297, 300

9.1.6 Congress noted with appreciation the circular letter of the Secretary-General on major outcomes of the fifty-seventh session of the United Nations General Assembly, which were of direct relevance to WMO. The information was useful to Members and the Secretary-General was requested to continue to provide such information that might assist the NMHSs in promoting awareness of developments at the global and regional levels that had implications for the Services.

Cooperation agreement between WMO and CTBTO

9.1.7 Congress noted with appreciation that WMO had been cooperating with the Preparatory Commission for the CTBTO on nuclear emergency response since 1997. During that period, joint activities had been developed and implemented smoothly, such as co-sponsorship of workshops, atmospheric transport modelling, and monitoring of nuclear pollutants in the environment, as well as exercises for hind cast computation of fields regarding the origin of detected nuclear pollutants, in which WMO Emergency Response Centres (RSMCs) actively participated. Members from both Organizations benefited from those joint activities.

9.1.8 Congress examined the draft agreement between the Preparatory Commission for CTBTO and WMO, which was endorsed by the Executive Council at its fifty-third session. Congress agreed that it would be in the mutual benefit of both WMO and CTBTO to establish a close relationship. It approved the draft agreement under the provisions of Article 26(a) of the Convention. In that connection, Congress adopted Resolution 32 (Cg-XIV).

Cooperation with other organizations

9.1.9 Congress noted with satisfaction the action taken by the Executive Council in concluding working arrangements with other international organizations as well as in the granting of consultative status. It

authorized the Executive Council to consider, when appropriate, the advisability of concluding formal working arrangements with other international organizations and to enter into such further working arrangements and consultative status, as might be necessary subject to the provisions of Article 26 of the WMO Convention.

9.1.10 Congress also took note of the actions taken by the Secretary-General regarding the establishment of a number of Memoranda of Understanding or relevant cooperation documents with other organizations. Congress encouraged Members to participate actively in the activities of relevant national and regional organizations, including NGOs, such as meteorological, hydrological, oceanographic, seismological and relevant societies. Initiatives taken in the context of the implementation of those cooperation documents contributed to improving and enhancing the image of WMO and NMHSs. The Secretary-General was requested to explore further all possibilities of extending such collaboration and cooperation with potential partners, including regional, and national meteorological, hydrological and other relevant societies, and to keep NMHSs informed.

9.1.11 Congress noted with satisfaction that the image and visibility of WMO, as well as those of NMHSs had improved through representation at sessions of the United Nations and other international organizations. Congress invited Members to continue their efforts in ensuring representation of WMO and NMHSs, where possible, in events of relevance to the development of meteorology and hydrology and to their application to sustainable development. Congress urged the Secretary-General to continue his efforts in ensuring that WMO played a lead role in areas falling within its mandate as well as related emerging issues. Congress also called for the strengthening of cooperation with United Nations and other international organizations, including private sector and NGOs.

Joint Inspection Unit

9.1.12 Congress noted with satisfaction that the WMO procedures of follow-up on JIU reports was adopted by the Executive Council at its fifty-fourth session as a pilot scheme. In that context, the Secretary-General was requested to submit a progress report to Fifteenth Congress on that matter. Congress also encouraged the Executive Council, through the Secretary-General, to continue to give maximum assistance to JIU within the limits of resources available, in particular those activities of JIU related to WMO.

The IGOS Partnership

9.1.13 Congress was briefed on the current status of the IGOS Partnership. Congress noted that several global observing systems, which were either WMO proper programmes (WWW/GOS, GAW) or co-sponsored by WMO (e.g. GOOS, GTOS,

WHYCOS), in addition to the jointly-sponsored, cross-cutting GCOS, were contributing to the implementation of an integrated global observing strategy through the arrangement of the IGOS Partnership.

9.1.14 Congress agreed that WMO should take a major leading role in the IGOS Partnership while maintaining ultimate responsibilities for the observing systems for which it had sole or shared ownership. The role of WMO in the development of the current Strategy should be through participation in the development of the themes and, ultimately, in the establishment of a coherent synthesis of those themes with existing programmes and activities. Congress noted that all IGOS activities were on a "best" efforts basis with no exchange of funds and hence no additional financial implications for the WMO regular budget. As the Strategy matured, the emerging guidance should be taken into consideration by relevant WMO mechanisms. For example, CBS should take into consideration IGOS strategic guidance as it related to the space-based component of the GOS.

9.1.15 Congress recalled that for many years, CBS had utilized an approved process called the rolling requirements review in order to develop guidance for WMO Members for both components, surface and space-based, of the WWW/GOS. As had been the case in the past for WWW, it was anticipated that WMO Members would voluntarily implement recommendations approved by CBS for the redesign of the GOS. In the context of current IGOS terminology, the long-established WMO process could be considered an atmospheric theme already in its implementation phase and therefore not requiring submission through any IGOS approval process. However, as the other observing systems did not yet have complete and rigorous development/review mechanisms in place, such as that developed through CBS for the atmosphere and in fact also for parts of the ocean and land surface domains served by other observing systems such as GOOS and GTOS, the IGOS process would serve as a most valuable tool. WMO must help formulate the guidance being prepared within the Strategy to ensure compatibility with its own activities. Conversely, the other IGOS Partners needed to remain sensitive to WMO's observing system responsibilities, in view of their critical importance in underpinning the entire Strategy.

Equal opportunities for the participation of women in meteorology and hydrology

9.1.16 Congress recalled its request to the Secretary-General to continue efforts to promote equal opportunities for women in meteorology and hydrology and to assist with implementation of the objectives and recommendations of the International Expert Meeting on the Participation of Women in Meteorology and Hydrology (Bangkok, December 1997). In that regard, Congress appreciated the

proactive support of the Secretary-General in encouraging and facilitating the increased participation of women in the activities and Programmes of WMO, and in urging Members to adopt policies and practices ensuring equal opportunities for women in their Meteorological and Hydrological Services.

9.1.17 Congress was pleased to note that a survey was conducted by WMO in 2001 on the participation of women in meteorology and operational hydrology, and in activities of WMO. The survey elicited responses from 105 Members. The survey's objective was to update data collected in a similar, comprehensive survey in 1997, and track regional and global progress in achieving full opportunity for women in those professions. Congress appreciated that the survey results and analysis were compiled and published as a WMO technical document (*Results of the 2001 Global Survey on the Participation of Women and Men in the Activities of the World Meteorological Organization* (WMO/TD-No. 1120)).

9.1.18 In examining the results of the survey, Congress expressed concern at the key conclusion that, although there had been some small, incremental increases in the percentages of women participating in some WMO activities, there had been no significant change in the overall participation. Women remained underrepresented in WMO activities. Congress noted that participation in technical commissions, regional associations and the Executive Council, as well as employment in both NMHSs and the WMO Secretariat, continued to be overwhelmingly male-dominated and urged that competent and qualified women be given every opportunity to participate in all areas of activity.

9.1.19 Congress noted that with respect to the total number of employees in the WMO Secretariat, the majority of women were in the support category. However, it commended the efforts of the Secretary-General in increasing the number of women in senior positions and noted that by the end of 2002 there had been a small but significant increase in the percentage of professional women, to 23.7 per cent. By early 2003, women held the position of Director in three departments and of chief in a number of divisions within the Secretariat. Congress requested the Secretary-General to continue his efforts in appointing suitably qualified women in decision-making and managerial positions at the Secretariat.

9.1.20 Congress noted with satisfaction that the Second WMO Conference on Women in Meteorology and Hydrology was held successfully at the WMO Headquarters in Geneva from 24 to 27 March 2003. Congress recalled its advice at its thirteenth session that a follow-up meeting to the Bangkok (December 1997) Meeting should be held during the succeeding financial period with the main objective of reviewing progress regarding the participation of women in meteorology and hydrology. The Second Conference was tasked with assessing the situation

to date, with identifying priorities for future action, with identifying benchmarks to measure future progress and with developing strategies to increase the participation of women in the activities of WMO and in the work of NMHSs. Congress was pleased to note the level of enthusiasm generated among the 134 participants from 101 Members represented at the Conference and expressed appreciation to Australia, Canada, Finland, France, Japan, the United Kingdom and the United States for their generous contributions towards the Conference.

9.1.21 Congress noted that the action plan recommended by the Conference was directed at women professionals in meteorology and hydrology, NMHSs and the WMO Secretariat. In particular, it supported the call for the establishment of gender focal points by each Member country and for each regional association and technical commission. It supported the establishment of an advisory panel on gender issues to the Executive Council. Congress also recommended that the Secretary-General identify a gender expert position within the Secretariat to monitor progress and to assist with the implementation of gender activities within the Secretariat and by Members, technical commissions and regional associations.

9.1.22 In reviewing the situation as reflected in the deliberations of the Second Conference and the results and analysis of the 2001 WMO survey, Congress maintained that much more work needed to be done and persistent efforts should be made within WMO and by NMHSs to accelerate progress and encourage and ensure the increased representation of women.

9.1.23 Furthermore, Congress strongly supported the appeal by the Secretary-General to Governments and Directors of NMHSs to take urgent and positive action to improve the participation and representation of women in their national Services. It urged that positive action be taken to avail women of national education programmes in science and technology that would serve effectively in preparing and predisposing them for entry into professions such as meteorology and hydrology. Congress advised that increasing the opportunities for recruitment of women in all sections of the Service and that providing equal opportunities for career advancement to the highest levels would benefit the science, national Services and society in general. Serious and concerted efforts should be made towards bridging the gender gap by finding flexible and workable solutions to the practical difficulties women encountered when trying to balance the demands of office operations and family life.

9.1.24 In addition to education and recruitment of women, Congress reiterated that dedicating a part of the NMHS Web site to the recognition of women professionals, promoting networking among women and highlighting the contributions of female staff could promote meteorology and hydrology as attractive careers for women. Members should

propose promising female candidates as members, experts and rapporteurs in WMO constituent bodies such as the Executive Council, technical commissions and regional associations and nominate qualified female staff for training and educational opportunities. Noting the WMO policy to ensure that equal opportunities were provided to men and women alike for education and training, career advancement and participation in meteorology and operational hydrology, Congress advised Members that in order to increase the representation of women in the WMO Secretariat and other international and regional organizations, they should encourage and support the application of qualified women for appropriate positions.

9.1.25 Congress requested the Secretary-General to continue promoting equal opportunities for women and provide assistance with the implementation of the recommendations and plan of action of the Second Conference. Furthermore, Congress advised that there was urgent need for implementation of gender mainstreaming analysis and measures at WMO since it was a recommended strategy for making women's, as well as men's, concerns and experiences an integral dimension in the design, implementation, monitoring and evaluation of policies and programmes, in all political, economic and societal spheres so that women and men could benefit equally.

9.1.26 In addition, Congress noted that it would be important to continue monitoring future changes in the participation of women in WMO activities and their involvement in national operations of Members through future surveys. Congress requested that that issue be incorporated in the WMO Long-term Plan. Congress acknowledged the need to organize a future third conference to review progress and consider further actions to ensure the increased participation of women in meteorology and hydrology, and requested that the Secretary-General make the appropriate arrangements for that purpose in the next financial period. In that connection, Congress adopted Resolution 33 (Cg-XIV).

Initiative for a Third International Polar Year

9.1.27 Congress noted with satisfaction the proposal of the Russian Federation that WMO propose an initiative to hold a Third International Polar Year in 2007-2008. It stressed that the First and Second International Polar Years, held in 1882-1883 and 1932-1933, respectively had made a fundamental contribution to developing an understanding of hydrometeorological processes in the polar regions, had contributed to the development of the hydrometeorological observing system and to the conduct of work in high latitude regions of the planet.

9.1.28 Congress also noted the importance of developing research into processes governing environmental changes in the polar regions, and also elaborating monitoring and forecasting systems, taking account of the sensitivity of high latitude

regions on our planet to global, natural and human impacts.

9.1.29 Congress noted that global climate change in the twenty-first century might have significant manifestations in the natural environment of polar regions that would be significant for certain kinds of activity carried out in Arctic areas and affect the lifestyles of indigenous communities in the Arctic and their economic livelihoods. Those changes might affect the interests of many countries taking part in Arctic and Antarctic activities.

9.1.30 Congress expressed the opinion that the main international cooperation efforts under a Third International Polar Year should be aimed at determining current, and at evaluating future, climate change and the state of the polar environment. The observational data and scientific results obtained would ensure further development of monitoring and forecasting systems for hydrometeorological processes in the polar regions, and would also form a basis for developing recommendations to government agencies and interested organizations conducting activities in the Arctic and Antarctic.

9.1.31 Congress stressed that the conduct of activities under a Third International Polar Year initiative must combine the interests of all WMO Programmes aimed at studying present and future environmental changes in polar regions and also taking account of the Arctic and Antarctic programmes carried out under the auspices of other international organizations such as the Arctic Council, the Consultative Conference on the Antarctic Treaty, the International Arctic Science Committee, SCAR and IOC (see also agenda items 3.1.8 and 3.3.3).

9.1.32 Congress adopted Resolution 34 (Cg-XIV).

9.2 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT (agenda item 9.2)

9.2.1 Congress noted that the main outcomes of the Summit were the adoption of the Johannesburg Declaration and the Plan of Implementation. It felt that those would be helpful in increasing the contributions of WMO and NMHSs in protecting the global commons, including the Earth's atmosphere, oceans, freshwater and ecosystems. That was particularly true in addressing the issues related to global warming and climate change, natural disaster prevention and mitigation, as well as in promoting advances in science and technology, and their applications to sustainable development activities.

9.2.2 Congress noted further that the Summit had reaffirmed sustainable development as a central element of the international agenda, and that it had given new impetus to global action to fight poverty and protect the environment. The understanding of sustainable development had been broadened and strengthened as a result of the Summit, particularly the important linkages between poverty, the environment, natural disasters and the use of natural resources. Governments had agreed to, and

reaffirmed, a wide range of concrete commitments and targets for action to achieve more effective implementation of sustainable development objectives.

9.2.3 Congress also expressed its satisfaction on the active participation of WMO in the WSSD process, at the preparatory stage, during the Summit itself and the subsequent follow-up stage.

9.2.4 Congress noted WMO's involvement in the preparatory process for the WSSD. That included participation in several regional and subregional preparatory meetings, as well as in sessions of the United Nations Commission on Sustainable Development, acting as the Preparatory Committee for the WSSD. The Permanent Representatives of WMO Members had been kept informed of activities of the United Nations system associated with the Summit, and on developments that had implications for their Services.

9.2.5 Congress was informed that, in the course of the preparatory process for the WSSD, protecting and managing the natural resource base of economic and social development had been thoroughly discussed as one of the pillars for sustainable development. The proposed actions included several that had been constantly promoted by WMO, such as those identified in the paragraph below.

9.2.6 Congress expressed particular appreciation that the Secretary-General had used his attendance at the preparatory events related to the WSSD, particularly the sessions of the Preparatory Committee, to exchange views with a number of national delegations. That helped in highlighting issues of importance for WMO and the NMHSs, in the context of sustainable development. Congress, particularly appreciated the Secretary-General's emphasis on the need (a) to adopt a culture of prevention with respect to natural disasters, particularly those of meteorological and hydrological origin; (b) to strengthen the unique global observational networks coordinated by WMO; (c) to monitor the atmosphere, oceans, rivers and lakes; (d) to recognize the contribution of weather, climate and water applications and services to sustainable development; and (e) to enhance the capacity of NMHSs.

9.2.7 Congress noted with satisfaction that WMO had participated fully in all the proceedings at the Summit itself. The Secretary-General delivered six statements at various events and gave several press conferences and radio interviews. WMO publications and brochures in WMO's official languages were distributed widely. Exhibition stands on WMO activities were set up throughout the period of the Summit at Ubuntu Village, the main exhibition site of WSSD, and at the Water Dome, the main exhibition venue for water issues.

9.2.8 Congress recognized that water had been a key topic of interest to participants at the Summit and that the Water Dome had been set aside as the

central venue for water-related events held in parallel with the Summit. It was a tangible product of international cooperation in the water sector with special emphasis on Africa. Congress emphasized that WMO's participation in the Water Dome had given a very good opportunity to publicize WMO's role in water issues, and had demonstrated the importance of water, energy and climate to global sustainable development.

9.2.9 Congress noted with appreciation that in view of the importance of the outcome of the Summit to all WMO Members, the Secretary-General had prepared and circulated to Permanent Representatives the extracts related to the core activities of WMO and the NMHSs from the text of the Johannesburg Declaration on Sustainable Development and the Plan of Implementation.

9.2.10 Congress noted that the Secretary-General had been taking relevant specific follow-up actions and that focal points had been identified in the Secretariat for that purpose.

9.2.11 Congress emphasized the importance of the follow-up to UNCED and the need for WMO to continue to give the highest priority to the further implementation of Agenda 21 as well as to the effective realization of the Plan of Implementation adopted by the Summit.

9.2.12 Congress urged Members to develop a strategy to implement the outcomes of WSSD in support of sustainable development at the national, subregional and regional levels. Congress requested the Executive Council to keep under review relevant developments relating to the follow-up to WSSD, particularly in connection with the development of an appropriate WMO strategy. It requested the Secretary-General to take the necessary initiative and to provide support to pertinent undertakings, particularly support to Members' efforts to implement the outcomes of WSSD.

10. ADMINISTRATIVE AND FINANCIAL QUESTIONS (agenda item 10)

10.1 FINANCIAL MATTERS (agenda item 10.1)

Revision of the Financial Regulations

10.1.1 Congress recalled that at its thirteenth session, it had agreed that the increased cost of financing, operating and maintaining the new WMO Headquarters building would be offset to the extent possible by rental of excess space so that it did not become an economic burden to the Organization. Considering that point and the recommendation of the Executive Council, Congress agreed that the text of Financial Regulation 10.1 should be amended to reflect that practice.

10.1.2 Congress noted the recommendation of the External Auditor in his report on the accounts for the twelfth financial period, to reconsider the usefulness of preparing special accounts for the financial periods, taking into consideration that the certifications were issued for financial statements of

the two bienniums which fell within them. On the recommendation of the Financial Advisory Committee and the Executive Council — and recognizing that the implementation of the recommendation would no longer require resources for preparing the special accounts for the financial period and that adjustments to the expenditure for the financial period would be reflected in the accounts of the first biennium of the following financial period — Congress agreed that the text of Financial Regulations 14.5, 15.9 and 15.11 should be amended to reflect those changes.

10.1.3 In that connection, Congress adopted Resolution 35 (Cg-XIV).

Staff Compensation Plan Reserve Fund

10.1.4 Noting that the level of the Staff Compensation Plan Reserve Fund did not require an increase, Congress decided to maintain unchanged the level of that Fund during the fourteenth financial period.

Publications Fund

10.1.5 Noting that paragraph 5 of the annex to Resolution 17 (EC-XLIV) — Publications Fund, stated that at the end of each financial period, subject to the approval of Congress, the unobligated cash balance available in the Publications Fund should be transferred to the credit of the Fund on 1 January of the subsequent biennium, Congress agreed that any balance remaining in the Fund at 31 December 2003 would be carried forward to the fourteenth financial period.

Joint Climate Research Fund

10.1.6 Noting that the agreement between WMO, ICSU and IOC provided that amounts standing to the credit of the Fund at the end of any biennium should remain in the Fund, Congress agreed that any balance on the Fund at 31 December 2003 should be carried forward to the fourteenth financial period.

Short-term borrowing authority

10.1.7 Congress considered the recommendation of the Financial Advisory Committee to maintain in force the short-term borrowing authority during the fourteenth financial period. It noted that circumstances might warrant making available, under the same conditions as prevailed in the previous financial periods, additional cash resources to the Secretary-General in order to allow for a timely delivery of the approved programmes. Congress decided to keep in force Resolution 31 (Cg-XIII) — Short-term borrowing authority.

Financial report of the Secretary-General

10.1.8 Congress noted that the audited accounts at 31 December 2001 covering the first biennium of the financial period showed a net cash surplus of SFR 13 109 295 after commencing the thirteenth financial period with a net cash deficit of

SFR 8 106 468 carried forward from the twelfth financial period. That situation was due primarily to improvements in payments of contributions, a budgetary surplus of SFR 2 319 705 resulting from postponement of activities and economy measures stringently applied in order to remain within available cash resources.

10.1.9 The budgetary surplus of SFR 2 319 705 from the first biennium had been re-appropriated to the second biennium (2002-2003) as decided by the fifty-third session of the Executive Council in order to carry out the deferred programme activities to the extent that resources would allow. Congress noted that the current position of the Organization from a cash flow resource availability standpoint would allow for the implementation of the budget for the 2002-2003 biennium including re-appropriations.

10.1.10 Congress examined the overall financial situation of the Organization for the thirteenth financial period. It was satisfied that the Secretary-General was taking all possible steps to administer the financial resources made available to the Organization in a manner consistent with the provisions of the Financial Regulations and the decisions of Thirteenth Congress and the Executive Council.

10.1.11 Congress also noted that the financial situation was regularly reviewed on an annual basis by the Executive Council and the Financial Advisory Committee. The Executive Council had been advised of the difficult situation which prevailed during the current financial period as well as of steps taken by the Secretary-General to redress the situation.

10.1.12 Congress noted with satisfaction the payment by some Members of their long-outstanding contributions. It nevertheless noted with much concern that, in some cases, Members were delaying the settlement of their assessed contributions, which deprived the Organization of cash resources required to implement the programmes.

10.1.13 Congress further noted that, in line with the guidance provided by the fifty-third and fifty-fourth sessions of the Executive Council with regard to the performance evaluation in the RBB process, measurement of programme and budget performance for the 2002-2003 biennium was carried out on the basis of the approved budget and performance baseline data for the 2002-2003 biennium.

10.1.14 Congress also noted that, taking fully into account a United Nations system-wide perspective recommended by the report of JIU on programme-support cost arrangements (JIU/REP/ 2002/3), the current WMO programme-support cost arrangement would be reviewed with a view to determining an appropriate rate, or rates of, reimbursement for programme-support cost based on the cost measurement carried out. In that connection, Congress requested the Secretary-General to report to the fifty-sixth session of the Executive Council on the outcome of his review of the current WMO

programme-support cost arrangement, and also requested the Executive Council to approve a revised arrangement with a view to charging appropriate rates of programme-support cost reimbursement to donors.

10.2 PROPORTIONAL CONTRIBUTIONS OF MEMBERS (agenda item 10.2)

Thirteenth financial period

10.2.1 Congress noted that the following countries became Members during the thirteenth financial period:

<i>Member</i>	<i>From</i>
Bhutan	11 March 2003
Kiribati	24 April 2003

Scale of assessment of contributions

Fourteenth financial period

10.2.2 Congress recalled its decision under Resolution 32 (Cg-XIII) — Assessment of proportional contributions of Members for the thirteenth financial period, that the latest United Nations scales to be approved by the United Nations General Assembly should be adopted as the basis for the calculation of the WMO scales of assessments, duly adjusted for difference in memberships.

10.2.3 Congress noted that the United Nations scales of assessments for the years 2004 to 2006 would be approved by the fifty-eighth United Nations General Assembly (anticipated in December 2003) and that for the year 2007 would be approved by the sixty-first United Nations General Assembly (anticipated in December 2006). It recognized that the WMO scales of assessments for the years 2004 and 2007 would only be available in January of those years and that those would allow an inadequate period of time for planning the budget by some Members.

10.2.4 On the recommendation of the Financial Advisory Committee, the minimum rate of assessment of 0.02 per cent, as adopted for the thirteenth financial period, was retained as the minimum for the fourteenth financial period.

10.2.5 Congress authorized the Executive Council to adjust the WMO scales of assessments for the years 2005-2007 so that the changes in the United Nations scales of assessments, to be adopted by the United Nations General Assembly at its fifty-eighth session in the year 2003, could be taken into account. Corrections should be made to ensure that no Member's rate of assessment would increase to a level which would exceed 200 per cent of the WMO scale for 2003.

10.2.6 Congress adopted Resolution 36 (Cg-XIV) and requested the Secretary General to calculate the advances due to the Working Capital Fund from any new Members joining the Organization after 1 January 2004 on the basis of the scale of contributions for the year 2004 as provided for in Financial Regulation 9.3.

Working Capital Fund

10.2.7 Congress agreed with the Financial Advisory Committee that the Working Capital Fund had proved to be an important means of coping with temporary cash shortfalls of limited duration. It also agreed that the Working Capital Fund could not solve problems from sizeable cash shortfalls of a long-term nature for which alternative solutions had to be found.

10.2.8 On recommendation of the Financial Advisory Committee, Congress decided that the level of the Working Capital Fund should be fixed at SFR 5 000 000 for the fourteenth financial period. The shortfall in the capital of the Working Capital Fund should be met by crediting interest earned on the investments of cash resources of the Working Capital Fund to individual Members' accounts in the Working Capital Fund. Furthermore, it decided that notwithstanding the provisions of Financial Regulations 8 and 9, advances made by the existing Members should be frozen at the level fixed for the thirteenth financial period, and that the advances assessed for new Members joining the Organization after 1 January 2004 would be assessed at the rates established for the year 2004.

10.2.9 Congress adopted Resolution 37 (Cg-XIV).

Consideration of past resolutions on matters related to contributions

10.2.10 On the recommendation of the Financial Advisory Committee, and in order to overcome persistent cash flow problems arising from non-payment and delayed payment of Members' assessed contributions, Congress decided to keep in force the following resolutions:

- Resolution 31 (Cg-X) — Incentive scheme for early payment of contributions;
- Resolution 37 (Cg-XI) — Suspension of Members for failure to meet financial obligations;
- Resolution 35 (Cg-XII) — Settlement of long-outstanding contributions.

10.3 STAFF MATTERS (agenda item 10.3)

Human Resources Management Strategy

10.3.1 Congress took note of the report by the Secretary-General regarding the development and implementation of a Human Resources Management Strategy and encouraged him to pursue efforts in that area and continue its implementation in a timely manner. Congress further requested the Secretary-General to present a progress report to the fifty-sixth session of the Executive Council.

Report on the conditions of service of staff

Internal matters of the Secretariat

10.3.2 In the report to Congress on the conditions of service of staff, the president of the Staff Association expressed the appreciation of staff for having the opportunity to address Congress on behalf of all the staff of WMO.

10.3.3 Congress recognized with appreciation the considerable dedication and hard work of staff, particularly in difficult conditions.

10.3.4 Congress expressed its support for the work underway in the Joint Consultative Committee to acquire the services of an ombudsman on a part-time basis, within available financial resources, and for the adoption of a grievance mechanism in the Secretariat. Congress requested that training in harassment and conflict resolution issues be made available, in particular to management-level staff.

10.3.5 The president brought to the attention of Congress those issues which were of serious concern to staff and on which staff wished Congress to provide its support. Congress expressed its concern that there continued to be a serious staff morale problem in the Secretariat, particularly with regard to the effect of restructuring in the former LPC Department. Congress requested the Secretary-General to continue to address those problems as a matter of urgency.

10.3.6 Bearing in mind that the budgetary levels established for the fourteenth financial period were insufficient to maintain current staffing levels, Congress endorsed the proposal to develop a plan that would allow for an integrated management system of redeployment, retirement and recruitment to be implemented at the beginning of the next financial period.

10.3.7 Congress further agreed that initial steps for the development and implementation of the plan should commence immediately after the fifty-fifth session of the Executive Council in consultation with the Staff Committee and that the necessary funding should be set aside for that purpose.

10.3.8 Congress requested that the practice of employing retired people and consultants to perform functions of a routine nature should be discontinued. Congress requested the Secretary-General to consider the recruitment of younger people, as appropriate. Congress further requested that serving staff be re-trained for re-deployment, where necessary and feasible.

10.3.9 Congress noted with satisfaction the development of a Human Resources Management Strategy aimed at an improved management of the human resources within the Secretariat resulting in the delivery of high-quality programme results. Congress further requested the Secretary-General to report on progress made to the fifty-sixth session of the Executive Council.

10.3.10 Congress was encouraged by the progress made in the implementation of the Staff Development, Learning and Training Strategy and requested the Secretary-General to continue his efforts towards timely delivery of training and learning activities.

Common system matters — International Civil Service Commission

Proposed pay and benefits scheme

10.3.11 Congress recommended that, in developing the New Master Standard in the context of the pay and benefits review, care was taken to respect the Noblemaire principle in determining salary scales. Congress agreed that the full participation of staff was essential in the pilot study of the New Master Standard and endorsed the view of the United Nations General Assembly that it was essential to have a credible and reliable performance appraisal system in place before embarking on the ICSC pilot study.

10.3.12 Congress took note of progress made in the context of the reform of the United Nations common system. It recognized the importance for WMO to continue to participate actively at all stages of the Review of Pay and Benefits initiated by ICSC and reiterated its request that the outcomes of the Review, including a review of the granting of permanent contracts, be integrated into the Human Resources Management Strategy.

10.4 SECRETARY-GENERAL'S CONTRACT (agenda item 10.4)

10.4.1 Congress decided that, with retroactive effect from 1 January 2003, the annual salary of the Secretary-General should be US\$ 141 796, taking into account the salaries of the Executive Heads of other comparable agencies. Congress also decided to authorize the Executive Council to carry out any readjustment of salary which might become necessary if, during the fourteenth financial period, changes in the salary of comparable United Nations staff should occur.

10.4.2 Congress further decided that during the fourteenth financial period the representation allowance for the Secretary-General should be established in Swiss francs at a level of SFR 29 000 per year.

10.4.3 Congress adopted in that connection, Resolution 38 (Cg-XIV) to which the contract to be signed by the President of the Organization and the Secretary-General for the fourteenth financial period was attached.

Salaries and allowances of other ungraded officials

10.4.4 With retroactive effect from 1 January 2003, Congress set the salaries of the Deputy Secretary-General and the Assistant Secretary-General at US\$ 130 156 and US\$ 119 574 per annum, respectively. Those were the levels which applied to Deputy and Assistant Executive Heads of comparable specialized agencies of the United Nations. Congress further decided that during the fourteenth financial period, the representation allowances for the Deputy Secretary-General and the Assistant Secretary-General should be established at SFR 14 500 per annum. In that

connection, Congress decided to authorize the Executive Council to carry out any adjustment of salary which might become necessary if, during the fourteenth financial period, an increase in the salaries of comparable United Nations staff should occur.

Pensionable remuneration of ungraded officials

10.4.5 Congress noted that an increase in pensionable remuneration had been promulgated by the ICSC and that comparable United Nations agencies (ITU and UPU) had consequently adjusted the pensionable remuneration of their ungraded officials. Congress therefore decided also to apply with retroactive effect from 1 November 2002 the following levels of annual pensionable remuneration for the period 1 November-31 December 2002:

Secretary-General	US\$ 236 398
Deputy Secretary-General	US\$ 218 478
Assistant Secretary-General	US\$ 202 187

10.4.6 Congress further noted that, in accordance with the provisions of Article 54(b) of the Regulations of the United Nations Joint Staff Pension Fund, the scale of remuneration for the Professional and higher categories must be adjusted with the same effective date and by the same percentage as the net remuneration increase. Congress noted that the ICSC had promulgated the consequent revised scale of pensionable remuneration applicable to those categories of staff and that comparable United Nations agencies (ITU and UPU) had consequently adjusted the pensionable remuneration of their ungraded officials. Congress therefore decided also to apply with retroactive effect from 1 January 2003 the following levels of annual pensionable remuneration:

Secretary-General	US\$ 251 291
Deputy Secretary-General	US\$ 232 242
Assistant Secretary-General	US\$ 214 925

11. GENERAL AND LEGAL QUESTIONS (agenda item 11)

11.1 IMO AND WMO PRIZES (agenda item 11.1)

11.1.1 Congress noted that no specific proposal had been received on that issue.

11.1.2 Congress also noted that the IMO Prize was the most prestigious prize offered by WMO. It requested the Executive Council to continue to ensure transparency in the selection process.

11.2 QUESTIONS CONCERNING THE CONVENTION (agenda item 11.2)

11.2.1 It was recalled that Thirteenth Congress requested the Executive Council to review the process of electing the members of the Executive Council to ensure an equitable representation among and inside Regions. If changes were proposed, then the Executive Council, as requested by Congress, should present a proposal for consideration by Fourteenth Congress for possible adoption prior to

electing Executive Council members for the fourteenth financial period.

11.2.2 Congress noted that the Executive Council had considered the matter. Upon request of the Council, the Secretary-General initiated consultations with the Regions on that matter, taking into account all relevant considerations. Congress noted the results of consultations with Members on the regional representation in the Executive Council.

11.2.3 Congress was informed that the Council also requested its Task Team on WMO Structure to follow up that matter, in coordination with actions undertaken by the Secretary-General. The Task Team subsequently made its recommendations to the Council.

11.2.4 Congress noted that the Executive Council, at its fifty-fourth session, agreed to propose to Congress that the number of elected members of the Executive Council be increased by one seat in view of the increase in the number of Members of the Organization. Moreover, in order to reach a better representation of the various Regions, the Council also agreed that not less than four members of the Executive Council comprising the President and Vice-Presidents of the Organization, the presidents of regional associations and the elected members, should come from one Region. In light of the above, Congress agreed that the number of elected members of the Executive Council be increased by one seat within existing financial resources. Congress decided that that amendment should enter into force at the present Congress before the election of members of the Executive Council. It also adopted Resolution 39 (Cg-XIV).

11.2.5 Congress noted that following the discussions at Thirteenth Congress and the fifty-second session of the Executive Council, the fifty-third session of the Executive Council established a Task Team to Explore and Assess the Possible Changes to the WMO Convention under the chairmanship of Mr U. Gärtner. The Team worked by correspondence and presented its reports to the Council.

11.2.6 Congress noted that the Executive Council had discussed the proposals of the Task Team, namely, the draft amendments to the Preamble of the WMO Convention, based on the text of the Geneva Declaration adopted by Thirteenth Congress and the amendments to the Convention containing a provision for the adoption of protocols. Some members of the Council did not see the need to provide for the adoption of protocols while some others noted that, in view of the complexity of the issues contained in the amendments to the Convention proposed by the Task Team, there had been little time left before Fourteenth Congress to undertake wider consultations among the Members.

11.2.7 Congress decided that there was a need for further work on that issue. It therefore requested

the Executive Council to establish a Working Group on Questions Concerning the WMO Convention, which should finalize its work in time for the consideration of that subject by Fifteenth Congress. The Group should have a broad membership, including persons other than members of the Executive Council, as appropriate. In that connection, Congress adopted Resolution 40 (Cg-XIV).

Translation of the term "Regional Association" as "Conseil Regional" into French

11.2.8 Congress examined the issue of changing the term "Regional Association" to reflect better the status of an intergovernmental body as requested by the eleventh session of RA I. It noted the concern of RA I about the difficulties involved in the use of the term "Regional Association" which reflected neither the institutional level nor the statutory importance of a WMO Regional Association in relation to most Member governmental authorities, particularly of French-speaking countries.

11.2.9 The Congress noted the views of the fiftieth session of the Executive Council that consideration should be given to translating better the term "Regional Association" into French, in order to reflect more appropriately the status of the constituent body and noted that the views of Members on the subject had been solicited. Eighty Members had sent their replies to the Secretariat, of which 24 expressed the wish to use the term "WMO Regional Association", 22 expressed the wish to maintain the term "Regional Association", 11 opted for "WMO Regional Council", four for "Permanent Regional Council", four for "WMO Regional Commission", three for "Assemblée Régionale de l'OMM pour", and some others made other proposals or did not have any preferences.

11.2.10 Congress further noted that the third session of the Executive Council Task Team on WMO Structure (Geneva, 25 February to 1 March 2002) had discussed the matter of replacing the term "Regional Association" by another suitable term. The Task Team took into account the action taken by the Secretary-General to solicit the views of Members on the matter. Pending the replies by the Members, the Task Team considered five terms: Regional Association, Regional Council, Regional Assembly, Regional Union and Regional Congress and agreed to support the term "Regional Council", noting that it also appeared to be a suitable term in Arabic, French and Spanish.

11.2.11 Congress took into consideration the request of the fifty-fourth session of the Executive Council that the name "Regional Association" be retained but that it be translated into French only as "Conseil Regional". In that regard, Congress decided to amend the Convention accordingly in the French language only, and adopted Resolution 41 (Cg-XIV).

11.3 REVISION OF THE GENERAL REGULATIONS (agenda item 11.3)

Changing the name of Regional Association IV — North and Central America to Regional Association IV — North America, Central America and the Caribbean

11.3.1 Congress noted that, in accordance with Annex II of the WMO General Regulations, Regional Association IV — North and Central America included all WMO Members from the Caribbean area.

11.3.2 The Executive Council, at its fifty-third session, noted the proposal made by RA IV at its thirteenth session (Maracay, Venezuela, 28 March to 6 April 2001), to change the name of Regional Association IV — North and Central America to Regional Association IV — North America, Central America and the Caribbean. The Council requested the Secretary-General to bring the matter for the consideration and decision of Fourteenth Congress.

11.3.3 In accordance with the above request, it was noted that the Caribbean countries were often mentioned under a different grouping from those of the North American and Central American countries. There were also some regional institutions that grouped countries from those regions, namely: the North American Free Trade Agreement (NAFTA), the Central America Integration System (SICA) and Caribbean Community (CARICOM). As it stood now, the name Regional Association IV implied that the Caribbean was part of North and/or Central America.

11.3.4 Congress noted the practice of the United Nations and of some of the specialized agencies that the name "Caribbean" was often referred to expressis verbis in the names of the region, which covered the Caribbean island countries. The understanding of the geographical meaning of that subregion varied and in some cases only covered English-speaking Caribbean island countries, while in others it also covered other island countries of that subregion, namely Cuba, the Dominican Republic and Haiti.

11.3.5 After a careful study of the issue, Congress agreed that the name of Regional Association IV — North and Central America be changed to Regional Association IV — North America, Central America and the Caribbean, and adopted Resolution 42 (Cg-XIV).

Election of members of the Executive Council

11.3.6 Congress considered the proposed amendment to General Regulation 85 as a result of its decision related to the amendment to Article 13(c) of the Convention concerning the change in the minimum number of members per Region of the Executive Council.

11.3.7 In that connection, Congress adopted Resolution 43 (Cg-XIV).

Proposed replacement of the name "USSR"

11.3.8 In accordance with Article 8(f) of the Convention, First Congress, by its Resolution 32 (Cg-I) — Establishment of Regional Associations, established the Regional Associations of WMO and decided their geographical limits by referring, in several cases, to the boundaries of some countries.

11.3.9 In relation to the geographical limits of Region II — Asia (western limit) and in relation to the geographical limit of Region VI — Europe (eastern limit), reference was made to the USSR boundary.

11.3.10 The Executive Council at its fifty-fourth session considered the matter and adopted Resolution 15 (EC-LIV) — Amendments to Annex II to the General Regulations. The Council also requested the Secretary-General to submit the proposed amendment to Fourteenth Congress for decision.

11.3.11 Congress agreed that in view of the fundamental changes which took place in the former USSR and the formation of a number of independent States on its territory as well as the creation of the Russian Federation, there was a need to adjust Annex II to the General Regulations to reflect properly the references to the boundaries of Regions II and VI.

11.3.12 Congress noted that in accordance with Article 18(a) of the WMO Convention regional associations should be composed of the Members of the Organization, the network of which lay in, or extended into, the Region. Accordingly, after the formation of a number of independent States on the former territory of the USSR, all of the newly independent countries in the Caspian region became Members of WMO and, as specified in General Regulation 164, declared the associations of which they considered themselves to be Members, namely:

- (a) The Russian Federation by Note Verbale No. 660, dated 26 December 1991, informed WMO of its continuation of WMO membership of the USSR and through it, its continuation as Member of RA II and RA VI;
- (b) Kazakhstan acceded to WMO on 4 June 1992 and exercised its right to belong to RA II and RA VI;
- (c) Armenia acceded to WMO on 16 September 1992 and exercised its right to belong to RA VI;
- (d) Turkmenistan acceded to WMO on 3 January 1993 and exercised its right to belong to RA II; and
- (e) Azerbaijan acceded to WMO on 26 January 1994 and exercised its right to belong to RA VI.

11.3.13 Congress requested the Executive Council to keep that matter under review, taking into account the results of ongoing relevant negotiations.

Application of General Regulations 177 and 194

11.3.14 Thirteenth Congress considered the request of CAgM-XII (Accra, February 1999) for clarification as to whether the term "decisions" included "elections" in General Regulation 194

concerning sessions of the technical commissions when the required quorum was not obtained, and requested the Executive Council to study the interpretation of General Regulations 177 and 194 on that issue. Congress requested that the matter be studied with the assistance of the United Nations Legal Counsel, and that its findings be submitted to Fourteenth Congress.

11.3.15 In accordance with the above request, the fifty-second session of the Executive Council noted that the view of the United Nations Legal Counsel was that as the Members of the Organization were masters of their own procedures, it would be for them to take a decision on whether the term "decision", as used in General Regulations 177 and 194, included "election". In addition, the Legal Counsel referred to a number of Regulations related to "voting by correspondence including elections" between sessions of WMO constituent bodies that were of a general nature. The Council considered, however, that there was a need for guidance to the regional associations and technical commissions on the application of General Regulations 177 and 194, respectively, if such a case arose before Fourteenth Congress. The Council, bearing in mind the discussions held during Thirteenth Congress, decided to adopt the following statement on the application of General Regulations 177 and 194 which should be reviewed by Fourteenth Congress, namely:

In the application of General Regulations 177 and 194, the term "decisions" does not include "election". In the case where no election is held due to the absence of the quorum, the President of the Organization becomes the acting president of the body concerned after the closure of the session in accordance with General Regulation 16. He shall arrange for the election by correspondence of the president of the body concerned who shall, in turn, arrange for the election of the vice-president by correspondence as envisaged in General Regulation 16.

11.3.16 Congress reviewed the statement regarding the application of General Regulations 177 and 194 and in the light of Regulation 2(f) concerning the interpretation or application of the Regulations decided that the General Regulations 177 and 194 be amended. In that connection, it adopted Resolution 44 (Cg-XIV).

Translation of the term "Regional Association as "Conseil Regional" into French

11.3.17 In the light of its decision relating to the translation of the term "Regional Association" into French only as "Conseil Regional", Congress agreed to amend the General Regulations accordingly. It adopted Resolution 45 (Cg-XIV).

Use of Portuguese

11.3.18 Congress considered the request presented by Angola, Brazil, Cape Verde, Guinea

Bissau, Mozambique, Panama, Portugal, Sao Tome and Principe, Spain and Uruguay concerning the use of Portuguese in WMO and adopted Resolution 46 (Cg-XIV).

11.4 REVIEW OF PREVIOUS RESOLUTIONS OF CONGRESS (agenda item 11.4)

In accordance with General Regulation 135(17), Congress examined its previous resolutions in order that those which no longer had a purpose or which had been replaced by new decisions should not remain in force. Congress accordingly adopted Resolution 47 (Cg-XIV).

11.5 REQUESTS FOR MEMBERSHIP OF THE ORGANIZATION (agenda item 11.5)

11.5.1 Congress noted with appreciation that Bhutan and Kiribati, which were Members of the United Nations, had acceded to the WMO Convention in accordance with Articles 3(b) and 33 of the Convention. The official date of accession for Bhutan was 11 March 2003 and that for Kiribati was 24 April 2003. Congress congratulated and warmly welcomed Bhutan and Kiribati as new Members of the Organization, bringing the total Membership of WMO to 187 comprising 181 Member States and 6 Member Territories. The delegation of Bhutan looked forward to benefiting from, and contributing actively to, the programmes and activities of the Organization.

11.5.2 Congress also noted that the name Yugoslavia had been changed to Serbia and Montenegro as from 4 February 2003. That did not change the Membership of the Organization.

12. ELECTIONS AND APPOINTMENTS (agenda item 12)

12.1 ELECTION OF THE PRESIDENT AND VICE-PRESIDENTS OF THE ORGANIZATION (agenda item 12.1)

12.1.1 Congress unanimously elected Mr A.I. Bedritsky, Director of the Russian Federal Service for Hydrometeorology and Environmental Monitoring, as President of the Organization.

12.1.2 Congress unanimously elected Mr A.M. Noorian, Vice-Minister of Roads and Transportation and General Administrator of the Islamic Republic of Iran Meteorological Organization, as First Vice-President.

12.1.3 Congress unanimously elected Mr T.W. Sutherland, Coordinating Director of the Caribbean Meteorological Organization, as Second Vice-President.

12.1.4 Congress elected Comodoro M.A. Rabiolo, Director-General of the National Meteorological Service of Argentina, as Third Vice-President.

12.2 ELECTION OF MEMBERS OF THE EXECUTIVE COUNCIL (agenda item 12.2)

Congress elected the following as members of the Executive Council in accordance with the provisions of Article 13(c) of the Convention:

H. Al-Sha'er	(Jordan)
M.M. Arafa	(Egypt)
A.C. Vaz de Athayde	(Brazil)
M.L. Bah	(Guinea)
J.-P. Beysson	(France)
Qamar-uz-Zaman Chaudhry	(Pakistan)
Chow Kok Kee	(Malaysia)
M. Couchoud Gregori (Mrs)	(Spain)
M.D. Everell	(Canada)
P. Ewins	(United Kingdom)
U. Gärtner	(Germany)
B. Kassahun	(Ethiopia)
J.J. Kelly	(United States)
D.K. Keuerleber-Burk	(Switzerland)
T. Kitade	(Japan)
R.D.J. Lengoasa	(South Africa)
J. Lumsden	(New Zealand)
F.P. Mote	(Ghana)
J.R. Mukabana	(Kenya)
A. N'Diaye	(Senegal)
H.H. Oliva	(Chile)
Qin Dahe	(China)
B.T. Sekoli	(Lesotho)
R. Sorani	(Italy)
S.K. Srivastav	(India)
E. Zárata H.	(Costa Rica)
J.W. Zillman	(Australia)

12.3 APPOINTMENT OF THE SECRETARY-GENERAL (agenda item 12.3)

12.3.1 Congress appointed Mr Michel Jarraud as the Secretary-General of the Organization for the fourteenth financial period.

Tribute to the Secretary-General

12.3.2 Congress noted the outstanding services rendered by the retiring Secretary-General, Professor G.O.P. Obasi, to the Organization and decided to accord him at the conclusion of his contract as Secretary-General, on 31 December 2003, the honorary title of "Secretary-General Emeritus". Congress accordingly adopted Resolution 48 (Cg-XIV).

13. SCIENTIFIC LECTURES AND DISCUSSIONS (agenda item 13)

IMO Lecture

13.1 The tenth IMO Lecture was delivered at Fourteenth Congress by H.E. Dr Mahmoud Abu-Zeid (Egypt) and Professor I. A. Shiklomanov (Russian Federation) on the subject of "Water resources as a challenge of the twenty-first century". Congress expressed its appreciation to the distinguished lecturers for their in-depth study of current and projected issues related to hydrology and water resources from a scientific, policy and socio-economic development perspective. It was noted that the studies undertaken by Dr Abu-Zeid and Professor Shiklomanov would be published by WMO in the series of IMO Lectures.

13.2 Congress agreed that in continuation of the tradition, an IMO Lecture should be delivered at Fifteenth Congress and requested the Executive Council to make the necessary arrangements, including the selection of the lecturer and the theme for the eleventh IMO Lecture.

SCIENTIFIC LECTURES

13.3 A programme of scientific discussions had been arranged by the Executive Council in accordance with the decisions of Thirteenth Congress. The following lectures were presented:

- (a) THORPEX: A Global Atmospheric Research Programme — improving the skill of high-impact weather forecasts (A. Thorpe, United Kingdom);
- (b) *Environment Change and its Impacts in Western China* (Qin Dahe, China).

13.4 Congress expressed its appreciation to the scientific lecturers for their forward-looking presentation of some of the major challenges facing humanity. It noted that the texts of the lectures would

be published by WMO in a suitable form and requested the Secretary-General to take appropriate action.

13.5 Congress also decided that a programme for scientific discussions should be arranged for Fifteenth Congress and requested the Executive Council to select themes for that purpose and to make the necessary arrangements.

14. DATE AND PLACE OF FIFTEENTH CONGRESS (agenda item 14)

Congress decided that Fifteenth Congress should be held in Geneva from Monday, 7 May to Friday, 25 May 2007, subject to any change which might be decided by the Executive Council.

15. CLOSURE OF THE SESSION (agenda item 15)

Fourteenth Congress closed at 6 p.m. on 23 May 2003.

RESOLUTIONS ADOPTED BY THE SESSION

RESOLUTION 1 (Cg-XIV)

TECHNICAL REGULATIONS OF THE WORLD METEOROLOGICAL ORGANIZATION

THE CONGRESS,

NOTING:

- (1) Articles 8(d) and 14(c) of the Convention,
- (2) Resolution 1 (Cg-XIII) — Technical Regulations of the World Meteorological Organization,
- (3) Resolution 8 (EC-LI) — Report of the extraordinary session (1998) of the Commission for Basic Systems,
- (4) Resolution 4 (EC-LIII) — Report of the twelfth session of the Commission for Basic Systems,
- (5) Resolutions 7 (EC-LIV) — Report of the first session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology,
- (6) Recommendations 1 (CBS-Ext.(02)) — Review of the *Manual on the Global Observing System* (WMO-No. 544), Volume I, Global aspects; 3 (CBS-Ext.(02)) — Amendments to the *Manual on the Global Telecommunication System*

(WMO-No. 386), Volume I, Global aspects, Parts I and II; 4 (CBS-Ext.(02)) — Amendments to the *Manual on Codes* (WMO-No. 306), Volumes I.1 and I.2; 5 (CBS-Ext.(02)) — Amendments to the *Manual on the Global Data-processing System* (WMO-No. 485),

AFFIRMS the authority of the Executive Council to approve amendments to the Technical Regulations or new regulations if they need to be implemented before the time of the next Congress;

AUTHORIZES the Executive Council to approve Recommendations 1, 3, 4 and 5 (CBS-Ext.(02));

REQUESTS the Secretary-General to arrange for the amendments approved by the Executive Council to be included in the Technical Regulations and to ensure the editorial consistency of relevant documents.

NOTE: This resolution replaces Resolution 1 (Cg-XIII), which is no longer in force.

RESOLUTION 2 (Cg-XIV)

WORLD WEATHER WATCH PROGRAMME FOR 2004-2007

THE CONGRESS,

RECALLING:

- (1) Resolution 2 (Cg-XIII) — World Weather Watch Programme for 2000-2003,
- (2) Resolution 3 (Cg-XIII) — Radio-frequencies for meteorological activities,
- (3) Resolution 3234 (XXIX) of the General Assembly of the United Nations — International Co-operation in the Peaceful Uses of Outer Space,
- (4) Resolution 40 (Cg-XII) — WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in meteorological commercial activities,

NOTING:

- (1) *Abridged Final Report with Resolutions of the Thirteenth World Meteorological*

Congress (WMO-No. 902), general summary, agenda item 3.1,

- (2) Resolution 25 (Cg-XIV) — Sixth WMO Long-term Plan,
- (3) The twentieth (2001) (WMO-No. 922) and twenty-first (2003) (WMO-No. 957) *Status Reports on the Implementation of the World Weather Watch*,

EXPRESSES:

- (1) (Its satisfaction that progress has been made in the further improvement of the operation of the WWW during the period 2000-2003, through:
 - (a) A generally stable, or slightly increasing, global output of the surface and upper-air observation networks;
 - (b) A significant increase in the generation and distribution of observational data

- from certain platforms such as aircraft, ships and buoys; and an overall strengthening of the GOS through the inclusion of the R&D satellites in the space-based sub-system of the GOS; and an increase in the number of operational geostationary and polar-orbiting satellites and in the number of ground receiving stations;
- (c) An improved understanding of the impact of various observing systems on NWP and development of coordinated recommendations on the near- and longer-term development of cost-effective components of the GOS;
- (d) Improved coordination and performance of the GOS contribution to GCOS;
- (e) An improved GTS capacity and further implementation of advanced telecommunication techniques and services including data-communications network services, improved MTN project, the coordinated use of the Internet, use of satellite-based techniques; coordinated data-communications protocols and file transfer practices, a file naming convention and a WMO metadata standard, recommended practices on the use of XML;
- (f) Quick response to emerging requirements regarding amendments to codes and data representation forms, and spreading use of WMO table-driven code forms, based on the WMO strategy for migration to table-driven codes;
- (g) Improved WWW operational information services and modernized formats and practices related to *Weather Reporting* (WMO-No. 9), Volumes A and C1 and C2, including e-formats, Web use and on-line access by Members;
- (h) Successful protection of radio frequencies allocated to meteorological systems, including radiosondes, satellites, passive remote sensing and radars;
- (i) Significant improvement of the forecast range and accuracy of NWP products, including EPS-based forecast products, their better use by NMSs, better and wider availability of specialized products, in particular to severe weather forecasting, and extended and long-range predictions, the provision of products and services for special users, and visible progress in emerging GDPS centres in developing countries;
- (j) Designation of new RSMCs with activity specialization;
- (k) Progress in the arrangements for generation, distribution and verification of long-range and seasonal-to-interannual forecasts, and defined global products to be made available by global-scale producing centres;
- (l) Improved quality and availability monitoring procedures;
- (m) Improvement and broadening of the emergency response and related arrangements including collaboration with the CTBTO;
- (n) Successfully ensuring the resilience of the WWW system against the year 2000 problem;
- (2) Its concern that long-standing deficiencies remain and that new deficiencies have arisen in the implementation of the WWW in some Regions;
- (3) Its firm opinion that intensified and coordinated activities in support of the implementation, operation and maintenance of the WWW are needed to meet the objectives of the WMO Long-term Plan and maximize the benefits available to all Members;
- CONFIRMS:**
- (1) That the WWW has the highest priority as the basic WMO Programme on which nearly all other programmes of the Organization depend;
- (2) That the WWW is an essential basis for the implementation of GCOS and the monitoring of the climate;
- (3) That the WWW provides the basis for the operation of meteorological and hydrological services as well as for most of the other programmes of WMO;
- (4) That the WWW continues to provide an effective mechanism for the application of developments in science and technology in operational meteorology so that the full benefits can be reaped by all countries of the world;
- (5) That the WWW should be used only for peaceful purposes, due account being taken of the national sovereignty and security of States, in accordance with the provisions of the Charter of the United Nations and the spirit and tradition of the WMO Convention;
- CONSIDERING:**
- (1) The absolute importance of meteorological observations for determining the state of the atmosphere and for monitoring the climate,

- (2) The continuing need to monitor the composition of the GOS to achieve, in the framework of the integrated observing system strategy, a cost-effective and flexible design of the GOS that can meet in an optimal way the requirements of all WMO Programmes,
- (3) That data gaps still exist in the surface-based networks of the GOS, particularly in the tropical belt, over the oceans and in remote land areas, which have to be closed,
- (4) (That it is necessary to strengthen the GOS to meet the requirements for mitigating the impact of natural disasters,
- (5) That there is a continuing need for upgrading and strengthening the GTS and meteorological information systems and services to overcome existing implementation shortcomings,
- (6) That the implementation and utilization of modern data-processing and forecasting systems and data management techniques need to be further developed to provide enhanced severe weather warnings and forecasts, environmental quality monitoring and prediction products and long-range forecasts and climate predictions, in particular with a view to enabling the NMHSs to respond to natural disasters,
- (7) That natural disasters and environmental emergencies continue to pose a major challenge for the WWW with respect to the provision of basic and specialized observational data and products,
- (8) That increasing requirements for meteorological and related environmental monitoring, combined with limited resources available worldwide for the implementation and operation of the WWW, make it all the more necessary to maximize cooperation and coordination and ensure optimum effectiveness,
- (9) That the application of advanced technology continues to open new possibilities of improving the WWW system, but also calls for special efforts in the provision of technical guidance and specialized training,

DECIDES:

- (1) That the substance of the WWW Programme be as indicated in the Sixth Long-term Plan of WMO adopted under Resolution 25 (Cg-XIV);
- (2) That the WWW Systems Support Activities should continue to be carried out as integral parts of each of the WWW Programme components, with priority being given to:
 - (a) Assisting developing countries in strengthening their operational

capabilities to meet national needs and to facilitate their participation in the WWW;

- (b) Increasing the level of implementation, especially in developing countries, and integration of key WWW components and facilities;
- (c) Improving the efficiency of WWW systems and operations;
- (d) Introducing new techniques and equipment along with the provision of the corresponding training and technical advice, as necessary and appropriate;

STRESSES the role to be played by regional associations in coordinating the WWW implementation, identifying deficiencies, specifying requirements, and planning system support projects, on a regional scale;

INVITES the regional associations:

- (1) To recommend projects and procedures, as necessary, for the coordinated implementation of the WWW Programme in the Regions;
- (2) To recommend systems support and technical cooperation activities needed to assist Members in their implementation and operation of the WWW in accordance with the Programme;
- (3) To keep the WWW Programme under continuous review and establish requirements for adjustments in the light of Members' changing requirements and developments in science and technology, bearing in mind the principles and directives laid down in the Plan;

REQUESTS the Executive Council:

- (1) To ensure that the further development and implementation of the WWW Programme is carried out with the highest priority and in accordance with the WMO Sixth Long-term Plan;
- (2) To coordinate and promote the use of the expanded space-based subsystem of the GOS in support of all WMO Programmes in line with Resolution 5 (Cg-XIV) — WMO Space Programme;
- (3) To adjust the Programme as necessary, particularly in the light of the recommendations made by the Commission for Basic Systems and the regional associations;
- (4) To assist Members in all possible ways in meeting their respective responsibilities within the WWW Programme;
- (5) To promote the establishment of cooperative arrangements for the implementation, operation and maintenance of WWW system components, as appropriate;

- (6) To consider the financial, policy and strategic aspects of the use of new technology in WWW;

REQUESTS the Commission for Basic Systems:

- (1) To pursue the technical planning and development of the WWW Programme and to coordinate its implementation, in accordance with the WMO Sixth Long-term Plan, taking into account any adjustments and directives from the Executive Council;
- (2) Maintain close liaison with the other technical commissions, the regional associations, other relevant international organizations, and international programmes, in particular GCOS, with a view to ensuring that their requirements and recommendations relevant to the WWW Programme are taken into consideration in the planning and implementation of the WWW;
- (3) Identify appropriate initiatives which might be pursued by Members and/or groups of Members, to maximize the performance of the WWW and the benefits to be gained from it;

URGES all Members, especially donor countries individually and through appropriate multinational arrangements, to cooperate actively and enthusiastically, in the implementation and operation of the WWW, and in particular:

- (1) To continue, to the best of their ability, to implement, operate and maintain the surface-based subsystem of the GOS, especially in the data-sparse areas of the globe, and to ensure the required quality and regularity of observations;
- (2) To develop, maintain and operate further the space-based subsystem of the GOS;
- (3) To implement, upgrade, operate and maintain the GTS, including space-based and other modern data communication capabilities, to ensure the timely, reliable and cost-effective collections, distribution and transfer of data, products and other relevant information;
- (4) To enhance information systems and services by further implementing modern data communication and management techniques and practices;
- (5) To enhance GDPS capabilities for generation of higher quality and new types of products and their provision and use for operational and severe weather forecasting, natural disaster mitigation and seasonal to inter-annual predictions, using the present RSMC designation and where appropriate,

create RSMCs with appropriate activity specialization;

- (6) To coordinate and pool their national efforts and resources, in order to establish realistic goals, minimize the implementation and operational costs, and avoid duplication of WWW activities as far as possible;
- (7) To participate in the deployment and use of new systems and techniques and, individually or collectively, to evaluate their effectiveness and their integration in the WWW;
- (8) To keep the Secretary-General informed about their plans and activities regarding the implementation of the WWW;

URGES those Members concerned with the development and operation of the space-based subsystem of the GOS to continue to coordinate their activities with the WMO Space Programme so that all Members may receive the maximum benefit from relevant satellite systems;

APPEALS to Meteorological Services of non-Member countries to apply the WWW procedures and techniques;

REQUESTS the Secretary-General:

- (1) To keep the Members informed of progress and developments in the planning and implementation of the WWW Programme;
- (2) To continue to improve the monitoring of the operation of the WWW and the publication of results;
- (3) To assist Members, as necessary, in overcoming difficulties which may arise in the implementation of the WWW Programme during the fourteenth financial period;
- (4) To propose projects and priorities for the consolidation and further implementation of key WWW facilities;
- (5) To coordinate the requirements of other WMO Programmes for systems support that could be provided by the WWW;
- (6) To assist the Executive Council, the regional associations and the Commission for Basic Systems in the implementation of this resolution;
- (7) To bring this resolution to the attention of all concerned;
- (8) To submit a report to Fifteenth Congress on the implementation of the Plan during the fourteenth financial period together with proposals for the continuation and further development of the WWW.

NOTE: This resolution replaces Resolution 2 (Cg-XIII), which is no longer in force.

RESOLUTION 3 (Cg-XIV)

RADIO FREQUENCIES FOR METEOROLOGICAL AND RELATED ENVIRONMENTAL ACTIVITIES

THE CONGRESS,

NOTING:

- (1) The Sixth Long-term Plan,
- (2) Resolution 3 (Cg-XIII) — Radio-frequencies for meteorological activities,
- (3) The current radio frequency allocations and regulatory provisions related to the Meteorological Aids, Meteorological Satellite, Earth Exploration-Satellite and Radiolocation (weather and wind profiler radars) Services in the Radio Regulations of ITU,
- (4) The outcome of the ITU World Radiocommunication Conferences (especially WRC-2000),
- (5) The agenda of the forthcoming ITU World Radiocommunication Conference (WRC-2003),

CONSIDERING:

- (1) The prime importance of the specific radio-communication services for meteorological and related environmental activities required for the safety of life and property, the protection of the environment, climate change studies and scientific research,
- (2) The crucial importance of the allocation of suitable radio-frequency bands for the operation of surface-based meteorological observing systems, including in particular radiosondes, weather radars, wind profiler radars,
- (3) The crucial importance of the allocation of suitable radio-frequency bands for the operation of Meteorological and R&D satellites, including remote sensing, data collection and data distribution links,

STRESSING that some radio-frequency bands are a unique natural resource due to their special characteristics and natural radiation enabling space-borne passive sensing of the atmosphere and the Earth surface, that deserve adequate allocation to the Earth Exploration Satellite Service (passive) and absolute protection from interference,

EXPRESSES its serious concern at the continuing threat to several frequency bands allocated to the Meteorological Aids, Meteorological Satellite, Earth Exploration-Satellite and Radiolocation (weather and wind profiler radars) Services posed by the development of other radiocommunication services;

REQUESTS the Commission for Basic Systems to pursue the continuous review of regulatory and technical matters related to radio frequencies for operational and research meteorological and

related environmental activities, in coordination with other technical commissions and in liaison with other relevant international bodies, in particular the Coordination Group for Meteorological Satellites;

URGES all Members to do their utmost to ensure the availability and protection of suitable radio-frequency bands required for meteorological and related environmental operations and research, and in particular:

- (1) To ensure that their national Radiocommunication Administrations are fully aware of the importance of and requirements for radio frequencies for meteorological and related activities, and to seek their support in the ITU World Radiocommunication Conferences and Radiocommunication Sector activities;
- (2) To participate actively in the national, regional and international activities on relevant radiocommunication regulatory issues and, in particular, to involve experts from their Services in the work of relevant regional radiocommunication organizations and of ITU-R, especially ITU-R Study Group 7 on Science Services;
- (3) To register adequately with their national Radiocommunication Administrations all radiocommunication stations and radio frequencies used for meteorological and related environmental operations and research;

APPEALS to ITU and its Member Administrations:

- (1) To ensure the availability and absolute protection of the radio-frequency bands which, due to their special physical characteristics, are a unique natural resource for space-borne passive sensing of the atmosphere and the Earth surface; in this regard, the exclusive 23.6-24 GHz passive band that is associated with a water vapour absorption line is of crucial importance for weather, water and climate research and operations;
- (2) To give due consideration to the WMO requirements for radio-frequency allocations and regulatory provisions for meteorological and related environmental operations and research;

REQUESTS the Secretary-General:

- (1) To bring this resolution to the attention of all concerned;
- (2) To pursue as a matter of high priority the coordination role of the Secretariat in radio frequency matters, especially with ITU-R,

- including participation of WMO in ITU-R Radiocommunication Study Groups, conference preparatory meetings and World Radiocommunication Conferences;
- (3) To facilitate the coordination between NMHSs and their national Radiocommunication Administrations, particularly in preparing the ITU World Radiocommunication Conferences, by

- providing appropriate information and documentation;
- (4) To assist the Commission for Basic Systems in the implementation of this resolution.

NOTE: This resolution replaces Resolution 3 (Cg-XIII), which is no longer in force.

RESOLUTION 4 (Cg-XIV)

INSTRUMENTS AND METHODS OF OBSERVATION PROGRAMME

THE CONGRESS,

NOTING Resolution 4 (Cg-XIII) — Instruments and Methods of Observation Programme,

CONSIDERING:

- (1) The continued need for the provision of high quality and homogeneous meteorological data which are of the utmost importance for operational and research programmes of WMO as well as for climate change studies,
- (2) The need for continuous improvement of meteorological, related geophysical and environmental measurement methodologies,
- (3) The importance of applying new technology for the cost-effective generation of measurements and acquisition of observational data,
- (4) The need to ensure complementary and cost-effective observing systems with a view to evolving a composite global observing system,
- (5) The continuing need for training of instrument specialists and technicians for the operation and maintenance of observing systems, especially from developing countries,
- (6) The need to carry out intercomparisons of instruments and observing systems,
- (7) The need for the continuing close collaboration of CIMO with the other technical commissions, especially with CBS and WMO Programmes, for meeting their requirements for measurements and observations,
- (8) The need for close collaboration of WMO with manufacturers and suppliers of instruments and equipment,
- (9) The role of the Regional Instrument Centres in progressing instrument calibration, training and capacity building,

REAFFIRMS that WMO, in further developing and implementing its Instruments and Methods of Observation Programme, should continue its collaboration with international bodies such as the

International Organization for Standardization the International Bureau of Weights and Measures, the European Cooperation in the Field of Scientific and Technical Research and with the Association of Hydrometeorological Equipment Industry;

DECIDES that the substance of the Instruments and Methods of Observation Programme be as indicated in Programme 1.6 of the Sixth WMO Long-term Plan (2004-2011) adopted under Resolution 25 (Cg-XIV);

REQUESTS the Executive Council, with the assistance of CIMO and other relevant technical commissions, to promote, guide and assist in the implementation of the WMO Instruments and Methods of Observation Programme;

INVITES the regional associations:

- (1) To continue providing active support for regional aspects of the Instruments and Methods of Observation Programme, especially as regards capacity building;
- (2) To evaluate, together with CIMO, existing Regional Instrument Centres against established criteria to enhance capability of Regions in instrument maintenance and calibration;

REQUESTS the presidents of technical commissions to keep under continuous study and review the aspects of instruments and methods of observation related to their fields of specialization and to communicate their requirements to CIMO;

URGES Members:

- (1) To collaborate actively in, and to give all possible support to, the implementation of the Instruments and Methods of Observation Programme;
- (2) To continue and, if possible, increase their activities for the development of new observing systems and improved instruments, including sensors for monitoring atmospheric composition and cost-effective upper-air observing systems;
- (3) To support and participate in global and regional intercomparisons of instruments and new methods of observation and to

- apply the results of those comparisons at their observing stations;
- (4) To support development of standards for automation of manual, visual and subjective observations;
 - (5) To continue the development of methods and algorithms for quality control of observing practices and procedures;
 - (6) To support the development of basic procedures for quality management of observations, instrument maintenance, calibration and operational practices;
 - (7) To ensure the training of instrument specialists and technicians through national and regional training programmes, as required;
 - (8) To participate actively in the work of the International Organization for Standardization, in the field of standardization of instruments and observing methods;

REQUESTS the Secretary-General:

- (1) To take within available budgetary resources, necessary actions to assist WMO bodies, including CIMO, in the coordination and implementation of the Instruments and Methods of Observation Programme;
- (2) To provide assistance and advice to Members in the field of instruments and methods of observation;
- (3) To report annually to the Executive Council on the progress and future activities of the Instruments and Methods of Observation Programme;
- (4) To report to Fifteenth Congress on the progress achieved and to submit proposals for the future.

NOTE: This resolution replaces Resolution 4 (Cg-XIII), which is no longer in force.

RESOLUTION 5 (Cg-XIV)

WMO SPACE PROGRAMME

THE CONGRESS,

NOTING:

- (1) The *Abridged Final Report with Resolutions of the Fifty-third Session of the Executive Council* (WMO-No. 929), agenda item 3.3,
- (2) The *Abridged Final Report with Resolutions of the Fifty-fourth Session of the Executive Council* (WMO-No. 945), agenda item 3.3,
- (3) The final report of the third session of the WMO Consultative Meetings on High-level Policy on Satellite Matters, agenda item 4,

CONSIDERING:

- (1) The agreement by the Executive Council at its fifty-third session to expand the space-based component of the GOS to include appropriate R&D environmental satellite missions,
- (2) The agreement by the Executive Council at its fifty-fourth session to establish a WMO Space Programme as a matter of priority,
- (3) The recommendation by the third session of the Consultative Meetings on High-level Policy on Satellite Matters that the new WMO Space Programme have the status of a Major WMO Programme,

RECOGNIZING the critical importance for data, product and services provided by WWW's expanded space-based component of the GOS to WMO Programmes and supported Programmes and that such importance would continue to expand rapidly,

DECIDES:

- (1) To initiate a new major WMO Space Programme as a cross-cutting programme to increase the effectiveness and contributions from satellite systems to WMO Programmes;
- (2) To approve the WMO Space Programme as indicated in Chapter 6, Section 6.10 of the Sixth WMO Long-term Plan, adopted under Resolution 25 (Cg-XIV);
- (3) That the activities under the WMO Space Programme for the fourteenth financial period be as indicated in the consolidated programme and budget (2004-2007), as approved by Fourteenth Congress, and supplemented by extrabudgetary funds as they become available;

URGES Members to collaborate actively in, and give all possible support to, the implementation of the WMO Space Programme;

INVITES participating international and inter-governmental organizations also to collaborate actively in, and give all possible support to, the implementation of the WMO Space Programme;

REQUESTS the Executive Council and the Consultative Meetings on High-level Policy on Satellite Matters, with the assistance from all technical commissions and with CBS providing lead responsibility, to promote the implementation of the WMO Space Programme;

REQUESTS the Secretary-General within the available budgetary resources:

- (1) To assist in the implementation of the Programme;

- (2) To collaborate in the implementation of the Programme with other interested international and intergovernmental organizations and programmes.

RESOLUTION 6 (Cg-XIV)

WMO CONSULTATIVE MEETINGS ON HIGH-LEVEL POLICY ON SATELLITE MATTERS

THE CONGRESS,

NOTING:

- (1) The *Abridged Final Report with Resolutions of the Fifty-second Session of the Executive Council* (WMO-No. 915), agenda item 3.3,
 (2) The final report of the third session of the WMO Consultative Meetings on High-level Policy on Satellite Matters, agenda item 4,

CONSIDERING:

- (1) The agreement by the Executive Council at its fifty-second session that a mechanism for discussions between the Meteorological and Hydrological Services and the environmental satellite communities should be provided in the form of Consultative Meetings on High-level Policy on Satellite Matters,
 (2) The recommendation by the third session of the Consultative Meetings on High-level

Policy on Satellite Matters that the Consultative Meetings be continued and "institutionalized",

RECOGNIZING the now established dialogue between the environmental satellite communities and the wide range of user communities under the auspices of WMO through the Consultative Meetings had matured rapidly to the great benefit of all and that they should be continued and institutionalized,

DECIDES To establish the WMO Consultative Meetings on High-level Policy on Satellite Matters as described in the annex to this resolution;

REQUESTS the Executive Council to consider the advice and recommendations from the annual Consultative Meetings and take actions as appropriate;

REQUESTS the Secretary-General to provide the necessary Secretariat support for the meetings.

ANNEX TO RESOLUTION 6 (Cg-XIV)

WMO CONSULTATIVE MEETINGS ON HIGH-LEVEL POLICY ON SATELLITE MATTERS

1. Background

In the opening decade of the twenty-first century, a major opportunity to support and enhance WMO Programmes could be obtained through existing and planned satellite programmes. At the same time, there is a need to demonstrate the value of those satellite programmes to all concerned and to ensure that future plans take into account WMO needs. Within the above context, the satellite operators and WMO agree that regular meetings to discuss high-level policy matters would be beneficial to all parties concerned. Such meetings would build on the good relationships that already existed between satellite operators and WMO bodies, and would enhance the working relations already in place through existing mechanisms. Those meetings would promote the achievement of further efficiencies in the satellite observing system and would ensure a common understanding of objectives and lead to better harmonization of programmes, requirements, usage of satellite data products and services, and high-level policy matters.

High-level policy matters could have a substantial impact on satellite operators and on most, if not all, WMO Members as well as on the allocation of resources. For WMO, the relevant decision-making authorities are Congress and the Executive Council; for the satellite operators, the equivalent decision-making organ would be their relevant governing bodies.

2. Purpose

The purpose of the Consultative Meetings on High-level Policy on Satellite Matters is to discuss matters of mutual interest between the satellite operators and the WMO user communities. One outcome of the meetings will be to ensure a better understanding of issues. A second, and more important objective, is to agree on advice and guidance to be forwarded to the WMO Executive Council and/or satellite operators.

3. Membership, organization and resource implications

The Consultative Meetings will be attended by the Directors of satellite operating agencies either contributing, or with the potential to contribute, to the space-based component of the GOS, members of the WMO Bureau, the president of the WMO CBS (who would represent all WMO technical commissions and

who would be accompanied by representatives of the other commissions, as appropriate), and sufficient members of the Executive Council to reflect adequately the broad interests of WMO Members (including consideration of regional balance, user representation and the role of the Permanent Representatives of those Members with satellite operating agencies). The satellite operators will attend meetings at their own expense and the timing will be harmonized, as far as possible, with WMO Bureau sessions. The President of WMO will serve as the chairperson of the Consultative Meetings. Preparation for the meetings will be assured by the WMO Space Office staff as part of their normal duties, and the meetings will be convened by WMO. Additionally, the chairpersons of the Joint Scientific Committee for WCRP and the Steering Committee for GCOS will serve as members.

4. Terms of reference

The meetings could focus on a list of topics including:

- (a) Coordination and implementation of the WMO Space Programme as described in the 6LTP, the WMO Space Programme Long-term Strategy and the programme and budget for 2004-2007;
- (b) Discussion with satellite operators on WMO Programmes and WMO-sponsored programmes, on meteorology (including climatology), oceanography and hydrology. That would provide WMO with a forum to present its requirements for meteorological and environmental satellites (operational, research, and technology programmes) in a coordinated fashion;
- (c) Consideration of the evolutionary design of the space-based component of the GOS to take account of future technological developments and the evolution of the present day in situ networks. WMO would become more proactive in providing a vision on future state-of-the-art systems;
- (d) Preparation for the implementation of the transition between research and operational programmes through: (i) development of WMO recommendations identifying appropriate R&D instruments and missions based on the utility of their products and services in operational use; (ii) demonstration of the use of new capabilities by WMO Members and work with satellite operators to evaluate the contributions towards meeting societal needs; and (iii) WMO assessments of new satellite systems from a user perspective to provide formal evaluation results to the satellite operators;
- (e) Consideration of the ways and means to reduce costs, including standardization of equipment, taking into account the efficiency and effectiveness of the total observing system (including ground systems), as well as consideration of the needs for the compatibility among satellite systems, particularly ground stations and product requirements;
- (f) Maximizing the benefits to be derived from existing and planned satellite products and services in order to improve utilization of existing satellite data, products and services, and to provide for better coordination of these benefits for all WMO Members;
- (g) Evaluating satellite missions to ensure, inter alia, the better use of existing and planned R&D missions in support of WMO Programmes and provide an assessment on their operational utility;
- (h) Other relevant topics and issues as may be requested by Congress and the Executive Council.

5. Interests of developing countries

In all deliberations, the meetings should take into account the needs of developing countries to ensure that they keep up with advances in satellite products and services. In particular, attention should be given to the access to satellite data, products and services and appropriate education and training programmes, especially those at the WMO Regional Meteorological Training Centres.

RESOLUTION 7 (Cg-XIV)

TROPICAL CYCLONE PROGRAMME

THE CONGRESS,

NOTING:

- (1) The twenty-sixth, twenty-seventh and twenty-eighth annual status reports on the implementation of the Tropical Cyclone Programme issued in 2000, 2001, and 2002,
- (2) Actions taken particularly in relation to the International Strategy for Disaster Reduction,

EXPRESSES its appreciation for the contributions of Members to the activities conducted under the

general and regional components of the Tropical Cyclone Programme and for the invaluable assistance provided to developing countries to support implementation of the regional component through the WMO Voluntary Cooperation Programme, the European Union, donor Members and bilateral arrangements;

FURTHER EXPRESSES its appreciation for the progress so far achieved in implementing the Tropical Cyclone Programme, particularly with regard to the improvements to the operational system resulting from the comprehensive regional

cooperation programmes of the regional tropical cyclone bodies and to the valuable guidance material published under the general component of the Programme;

REAFFIRMS its grave concern at the heavy loss of life and severe damage still being caused by tropical cyclones and associated storm surges, floods and landslides in many areas of the world and the human suffering, economic losses, setback to social and economic development and destruction of the environment resulting from them;

RECOGNIZING that, while the measures already taken under the Tropical Cyclone Programme have helped many Members to improve their protective systems, continuing and furthermore vigorous action to combat the adverse effects of tropical cyclones is a high priority requirement,

CONSIDERING that the Tropical Cyclone Programme has much to contribute to the mitigation of disasters caused by tropical cyclones and associated phenomena, and hence to the active involvement in activities of the International Strategy for Disaster Reduction and to helping Members achieve sustainable development,

DECIDES:

- (1) That the WMO Tropical Cyclone Programme shall be further strengthened;
- (2) That the substance of the Tropical Cyclone Programme be as indicated in Programme 1.8 of the Sixth WMO Long-term Plan (2004-2011) adopted under Resolution 25 (Cg-XIV);

URGES Members to ensure that their Meteorological and Hydrological Services take whatever steps are within their competence and coordinate with the appropriate authorities:

- (1) To promote awareness of the dangers posed by tropical cyclones and associated phenomena;
- (2) To continue to strengthen their forecasting and warning capabilities and ensure wide dissemination and understanding of their products, particularly at the community and local level;

- (3) To see that the measures necessary to save human lives and reduce damage are carried out at all levels, including the community level, as a consequence of tropical cyclone forecasts and warnings;

CALLS for the continuation of the fruitful and close cooperation with other international organizations, especially the United Nations Economic and Social Commission for Asia and the Pacific, the United Nations Secretariat for the International Strategy for Disaster Reduction, the International Civil Aviation Organization, the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology and regional disaster mitigation and preparedness agencies to promote a multidisciplinary approach towards the attainment of the humanitarian goals of the programme;

APPEALS to the Voluntary Cooperation Programme donor Members, the United Nations Development Programme, Development Banks and other international organizations and funding agencies concerned with the goals of the WMO Tropical Cyclone Programme to give the maximum possible support to those activities by contributing the resources essential for their expeditious implementation;

REQUESTS the Secretary-General:

- (1) To bring this resolution to the attention of all concerned;
- (2) To keep Members concerned fully informed of progress and of developments in the planning and implementation of the programme;
- (3) To assist Members in their efforts to safeguard life and property from tropical cyclones and associated phenomena by supporting, to the maximum extent possible within the available budgetary resources, activities related to the programme and especially those directly linked with the provision of accurate and timely warnings and the organization of proper community response.

NOTE: This resolution replaces Resolution 5 (Cg-XIII), which is no longer in force.

RESOLUTION 8 (Cg-XIV)

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

THE CONGRESS,

NOTING:

- (1) Resolution 8 (Cg-XII) — Intergovernmental Panel on Climate Change,
- (2) Resolutions 1 (EC-LII) and 3 (EC-LIII) — Intergovernmental Panel on Climate Change,

RECOGNIZING the key role of IPCC in preparing and disseminating scientific, technological and socio-economic assessments to underpin international policy formulation on climate change issues,

EXPRESSES:

- (1) Its gratitude to Governments, intergovernmental organizations and other

- organizations for their continuing strong support of the Panel's activities;
- (2) Its appreciation to UNEP for its continued co-sponsorship of the Panel;
 - (3) Its thanks to all those experts who contributed their time in one or more of the roles of coordinating lead author, lead author, contributing author, review editor and expert reviewer. Without the extraordinary commitment of time and energy by these individuals the IPCC would be unable to deliver the scientific, technical and socio-economic assessments that have become the international benchmark;

CONGRATULATES the Panel on the successful completion of:

- (1) The Third Assessment Report in 2001;
- (2) The Special Reports on:
 - (a) Methodological and Technological Issues in Technology Transfer in 2000;
 - (b) Emissions Scenarios in 2000;
 - (c) Land Use, Land-Use Change, and Forestry in 2000;
 - (d) Aviation and the Global Atmosphere in 1999;
- (3) The Technical Paper on Climate Change and Biodiversity in 2002;
- (4) (Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories in 2000;

NOTES that the Panel works closely with the UNFCCC to develop Special Reports, Methodology Reports and Technical Papers, in a

timely fashion, that address key issues in international climate change policy;

AFFIRMS that an independent IPCC is indispensable for providing objective scientific, technical and socio-economic assessments of the issues relating to climate change;

ENCOURAGES the Panel to continue with its planning for a Fourth Assessment Report which would make effective use of papers and reports in a wide variety of languages, engage experts from all parts of the world, and incorporate new scientific results to increase understanding of the regional impacts of climate change as well as highlight options for adaptation and mitigation;

FURTHER ENCOURAGES the Panel to review its terms of reference and propose updated terms of reference for consideration and endorsement by the Executive Council and, as appropriate, by the Governing Council of UNEP;

INVITES Members to ensure effective national input to the work of IPCC involving, in particular, the contribution of scientists from NMHSs;

REQUESTS the Secretary-General, jointly with the Executive-Director of UNEP, to continue to maintain financial and organizational support for the IPCC Secretariat, to assist with the publication and dissemination of IPCC reports, and to ensure the participation of technical specialists in the activities of the Panel;

URGES all Governments and relevant intergovernmental organizations to continue to support the activities of the Panel through donations to the IPCC Trust Fund at least at their current level of contribution and, where possible, at an increased level.

RESOLUTION 9 (Cg-XIV)

GCOS CLIMATE MONITORING PRINCIPLES

THE CONGRESS,
NOTING Resolution 10 (Cg-XIV) — Global Climate Observing System,
RECOGNIZING the stringent requirements on long-term observations of the climate system to ensure their adequacy for climate applications,

ADOPTS the GCOS Climate Monitoring Principles for effective monitoring of the climate system, as presented in the annex to this resolution.

ANNEX TO RESOLUTION 9 (Cg-XIV)

GCOS CLIMATE MONITORING PRINCIPLES

Effective monitoring systems for climate should adhere to the following principles:*

1. The impact of new systems or changes to existing systems should be assessed prior to implementation.
2. A suitable period of overlap for new and old observing systems is required.

* The 10 basic principles were adopted (in paraphrased form) by the Conference of the Parties to the UNFCCC through Decision 5/CP.5 of COP-5 at Bonn in November 1999.

3. The details and history of local conditions, instruments, operating procedures, data processing algorithms and other factors pertinent to interpreting data (i.e., metadata) should be documented and treated with the same care as the data themselves.
4. The quality and homogeneity of data should be regularly assessed as a part of routine operations.
5. Consideration of the needs for environmental and climate-monitoring products and assessments, such as IPCC assessments, should be integrated into national, regional and global observing priorities.
6. Operation of historically-uninterrupted stations and observing systems should be maintained.
7. High priority for additional observations should be focused on data-poor regions, poorly-observed parameters, regions sensitive to change, and key measurements with inadequate temporal resolution.
8. Long-term requirements, including appropriate sampling frequencies, should be specified to network designers, operators and instrument engineers at the outset of system design and implementation.
9. The conversion of research observing systems to long-term operations in a carefully-planned manner should be promoted.
10. Data management systems that facilitate access, use and interpretation of data and products should be included as essential elements of climate monitoring systems.

Furthermore, operators of satellite systems for monitoring climate need to:

- (a) *Take steps to make radiance calibration, calibration-monitoring and satellite-to-satellite cross-calibration of the full operational constellation a part of the operational satellite system; and*
- (b) *Take steps to sample the Earth system in such a way that climate-relevant (diurnal, seasonal, and long-term interannual) changes can be resolved.*

Thus satellite systems for climate monitoring should adhere to the following specific principles:

11. Constant sampling within the diurnal cycle (minimizing the effects of orbital decay and orbit drift) should be maintained.
12. A suitable period of overlap for new and old satellite systems should be ensured for a period adequate to determine inter-satellite biases and maintain the homogeneity and consistency of time-series observations.
13. Continuity of satellite measurements (i.e. elimination of gaps in the long-term record) through appropriate launch and orbital strategies should be ensured.
14. Rigorous pre-launch instrument characterization and calibration, including radiance confirmation against an international radiance scale provided by a national metrology institute, should be ensured.
15. On-board calibration adequate for climate system observations should be ensured and associated instrument characteristics monitored.
16. Operational production of priority climate products should be sustained and peer-reviewed new products should be introduced as appropriate.
17. Data systems needed to facilitate user access to climate products, metadata and raw data, including key data for delayed-mode analysis, should be established and maintained.
18. Use of functioning baseline instruments that meet the calibration and stability requirements stated above should be maintained for as long as possible, even when these exist on de-commissioned satellites.
19. Complementary in situ baseline observations for satellite measurements should be maintained through appropriate activities and cooperation.
20. Random errors and time-dependent biases in satellite observations and derived products should be identified.

RESOLUTION 10 (Cg-XIV)

GLOBAL CLIMATE OBSERVING SYSTEM

THE CONGRESS,

NOTING:

- (1) Resolution 7 (Cg-XIII) — Global Climate Observing System,
- (2) Resolution 40 (Cg-XII) — WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities,
- (3) Resolution 25 (Cg-XIII) — Exchange of hydrological data and products,

- (4) The Memorandum of Understanding between WMO, IOC of UNESCO, UNEP and ICSU concerning the Global Climate Observing System,
- (5) Agenda 21: Programme of Action for Sustainable Development,
- (6) UNFCCC,
- (7) Decisions 2/CP.4 — Additional guidance to the operating entity of the financial mechanism, and 14/CP.4 — Research and systematic observation, of the fourth

- session of the Conference of the Parties to the UNFCCC,
- (8) Decisions 4/CP.5 — Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications, and 5/CP.5 — Research and systematic observation, of the fifth session of the Conference of the Parties to the UNFCCC,
 - (9) The Second Report on the Adequacy of the Global Observing Systems for Climate (GCOS-82, WMO/TD-No. 1143), prepared by the GCOS Secretariat for the UNFCCC,
 - (10) Resolution 9 (Cg-XIV) — GCOS Climate Monitoring Principles,

CONSIDERING:

- (1) The continuing importance and urgency to acquire comprehensive information on the properties and evolution of the Earth's climate system for detecting climate change, for supporting climatological applications for economic development, and for developing climate science and predictions,
- (2) The specific observational needs expressed by IPCC, WCRP and IGBP; the global observations for sustainable development noted in Agenda 21; and the requirements for comprehensive observations in support of the UNFCCC,
- (3) The close cooperation needed among the climate research activities of WCRP and IGBP, the data management, application, and impacts components of WCP, and the various operational activities of the WMO scientific and technical programmes, to develop a comprehensive global observing system for climate,
- (4) The deficiencies, and in many parts of the world, the decline in the number and availability of systematic observations for climate,

RECOGNIZING:

- (1) The urgent need for ongoing coordination of global observing systems for climate to meet the needs of a range of different clients and the important role being played by the Steering Committee and Secretariat of GCOS,
- (2) The active and supportive roles taken by the sponsoring organizations of GCOS, namely WMO, IOC of UNESCO, UNEP and ICSU,
- (3) The interdisciplinary nature of the activities being undertaken to develop and implement a comprehensive approach to climate system observations,

- (4) The need to integrate both in situ and space-based observations into an integrated global observing system,

RECOGNIZING WITH APPRECIATION:

- (1) The support and guidance of the Executive Council in the planning and early implementation phases of GCOS,
- (2) The efforts of the Secretary-General to provide WMO leadership and to encourage support for GCOS,
- (3) The strong support and active cooperation of the constituent bodies of WMO in GCOS planning and implementation activities,
- (4) The excellent inter-agency cooperation in the process of planning, development and implementation of GCOS and, in particular, the close partnership between GCOS, GOS, GAW, GOOS, and GTOS,

REAFFIRMS that WMO should continue its leadership role in the further planning, development and implementation of GCOS;

DECIDES that:

- (1) GCOS should be continued as an essential activity in support of Governments, the WCP, the UNFCCC and other climate-related intergovernmental activities,
- (2) The inter-agency arrangements for coordination should be further strengthened in view of the increasing interest and involvement of Governments and, inter alia, the need for integrating both surface and space-based observations,

URGES Members:

- (1) To continue to support their national atmospheric, hydrological and related oceanic and terrestrial observing systems in order to ensure that the stations identified as elements of the GCOS networks, based on the WWW and GAW and underpinning the needs of the UNFCCC, are fully operational and use best practices, including the free and unrestricted exchange of all relevant data in accordance with WMO resolutions and adherence to the GCOS Climate Monitoring Principles;
- (2) To enhance the GCOS initial operational systems for atmospheric, oceanic and relevant terrestrial observations through augmentation of existing systems and the addition of new elements in response, inter alia, to the findings of the *Second Report on the Adequacy of the Global Observing Systems for Climate*;
- (3) To support and participate in GCOS regional workshops and cooperate in the development and implementation of regionally-based action plans that address deficiencies in observing systems for climate, and in the presentation of these plans to potential funding agencies, and the

- Global Environment Facility, for their consideration;
- (4) To recognize the critical need for daily and hourly climate data for impact studies and analysis of extremes, and to ensure that such data are made freely and openly available for such applications in accordance with Resolutions 40 (Cg-XII) and 25 (Cg-XIII);
 - (5) To assist developing country Members in improving their observing systems for climate;
 - (6) To ensure that NMHSs actively participate in the preparation of national reports to the UNFCCC on their activities with regard to systematic observation of the global climate system, including, as appropriate, the provision of support for capacity-building in developing countries related to the collection, exchange and utilization of data to meet national, regional and international needs;
 - (7) To ensure that their delegations to sessions of the UNFCCC/COP and its subsidiary bodies are properly informed of the key role played by NMHSs in implementing and operating observing systems necessary to meet national obligations under the Convention, for example through the inclusion in national delegations of representatives of NMHSs;
 - (8) To encourage NMHSs to coordinate, as necessary, among the national counterparts of the GCOS international sponsoring agencies to identify a national focal point for GCOS, in order to coordinate and facilitate national actions in regard to observing systems for climate;
 - (9) To strengthen international and intergovernmental programmes assisting countries to acquire and use climate information through the provision of resources and the contribution of facilities to undertake quality control and archiving activities;
 - (10) To enhance their support to the GCOS Secretariat to the extent possible, for

example through secondment of experts or contributions to the Climate Observing System Fund, to enable it to carry forward the tasks of implementing GCOS and of responding to the findings of the *Second Report on the Adequacy of the Global Observing Systems for Climate* and the needs of the UNFCCC and other clients;

REQUESTS the Executive Council:

- (1) To keep under regular review developments within GCOS and to provide constructive guidance and support as it moves forward with implementation;
- (2) To ensure that the GCOS Secretariat is adequately resourced, within available budget levels, to respond to the demands placed upon it;
- (3) To take steps to develop further support among Members, sponsoring bodies, and international organizations for the implementation of global observing systems for climate;

REQUESTS the GCOS Steering Committee and the WMO technical commissions to continue their interaction and cooperation in the development and implementation of GCOS, especially in responding to the findings and recommendations of the *Second Report on the Adequacy of the Global Observing Systems for Climate*;

REQUESTS the Secretary-General, using whatever flexibility might exist within the regular budget:

- (1) To support the further planning, development and implementation of GCOS, including the actions in response to the needs of the UNFCCC/COP and the recommendations of the *Second Report on the Adequacy of the Global Observing Systems for Climate*, as might be appropriate;
- (2) To continue to urge ongoing, and new, participation by sponsoring organizations in GCOS (e.g. FAO);
- (3) To articulate, at all appropriate forums, the need for broad support by nations of the observational and resource requirements for implementing GCOS.

RESOLUTION 11 (Cg-XIV)

SERVICES OF THE WORLD CLIMATE PROGRAMME (COVERING THE WORLD CLIMATE DATA AND MONITORING PROGRAMME AND THE WORLD CLIMATE APPLICATIONS AND SERVICES PROGRAMME)

THE CONGRESS,

NOTING:

- (1) The *Abridged Final Report with Resolutions and Recommendations of the Thirteenth*

Session of the Commission for Climatology (WMO-No. 938),

- (2) The report of the CCI Management Group,
- (3) The *Abridged Final Report with Resolutions of the Thirteenth World Meteorological*

Congress (WMO-No. 902), agenda item 3.2,

- (4) The leadership role provided by WMO under the CLIPS project in addressing the effects of the 1997-1998 *El Niño* event and in assessing its implications for the development of effective mechanisms for alerting decision makers in the future,
- (5) Resolution 25 (Cg-XIV) — Sixth WMO Long-term Plan,
- (6) The IPCC Third Assessment Report,

EXPRESSES:

- (1) Its satisfaction that progress has been made in the WCDMP and the WCASP including the CLIPS project during the period 2000-2003, through:
 - (a) Significant progress in completing Parts I and II of the *Guide to Climatological Practices* (WMO-No. 100);
 - (b) Establishment of requirements for RCCs and of the process through which regional associations establish RCCs;
 - (c) Increased cooperation among CCI, the GCOS Atmospheric Observation Panel for Climate, the WCRP Joint Scientific Committee, and START;
 - (d) Preparation of a statement of guidance on observational needs for seasonal to interannual climate prediction models;
 - (e) Closer links with the climate modelling community on development and use of climate variability and change indices;
 - (f) Completion of the seventh Global Climate System Review (WMO-No. 950), four WMO Statements on the Status of the Global Climate, and the *1997-1998 El Niño Event: A Scientific and Technical Retrospective* (WMO-No. 905);
 - (g) Increased for use of the Internet for climate system monitoring for the dissemination of climate information and prediction guidance, including links from Members' sites;
 - (h) Data rescue meetings and missions to increase the number of observations in Members' and global centres' databases;
 - (i) Preparation and distribution of global and regional data sets and metadata, including the World Weather Records 1981-1990;
 - (j) Evaluation and distribution of information on the initial seven CDMSs;
 - (k) Significant growth in the Regional Climate Outlook Forum process, and incorporation of the results of the International Expert Meeting on

Regional Climate Outlook Forums (Pretoria, South Africa, October 2000);

- (l) Successful outcome of the CLIPS Food Chain Showcase Project;
 - (m) Progress in multi-organizational projects such as CLIMAG and the Showcase Projects on Heat/Health Warning Systems in Rome and Shanghai;
 - (n) Establishment of the CLIPS Focal Points component, endorsed by RAs I, II, III, V and VI, the CLIPS Focal Points Workshops in RAs I and V; and development of the CLIPS Curriculum;
- (2) Its concern that climate system monitoring and the development of applications is being hindered by costs or non-availability of data;
 - (3) Its concern that long-standing deficiencies remain in the receipt of GSN, GUAN, CLIMAT, and CLIMAT TEMP reports;
 - (4) Its concern that the CLICOM project software is becoming obsolete, putting in jeopardy numerous national digital climate databases;
 - (5) Its firm opinion that intensified and coordinated activities in support of the implementation, operation and maintenance of the WCDMP and WCASP (including CLIPS) are needed to meet the objectives of the WMO Long-term Plan and maximize the benefits available to all Members;
 - (6) Its concern over the resource constraints under which the CLIPS project is being implemented;

CONFIRMS:

- (1) That the WCDMP and WCASP have high priority as the basic WMO programmes on which the climate-related decision support activities of Members depend;
- (2) That the WCDMP and WCASP provide the basis for the operation of climate services of the Organization;
- (3) That the CLIPS project is the essential WCP activity that integrates WCDMP and WCASP outputs for the benefit of all Members;

CONSIDERING:

- (1) The absolute importance of high quality climatological observations and data sets for defining and monitoring climate variability and change, and for implementing climate applications and prediction services;
- (2) That the accessibility and use of climate data is as important as its collection and archiving;
- (3) That there is a pressing need to implement the migration from CLICOM to CDMSs to

meet the requirements of all Members in a cost-effective way;

- (4) That data gaps still exist in the surface-based climate networks of the GCOS, the RBCN, and national Reference Climate Networks, particularly in the tropical belt, over the oceans and in remote land areas;
- (5) The need to build an effective infrastructure for seasonal to interannual climate predictions that consolidates, in an operational framework, the progress made by research programmes sponsored by WMO in this area;
- (6) The need to support regional cooperation for capacity building and infrastructure development within NMHSs for the provision of climate monitoring services for seasonal to interannual climate predictions;
- (7) That the provision of climate information and predictions through effective climate applications and services can improve socio-economic decision-making and support the goal of sustainable development;
- (8) The need to provide sufficient resources to ensure accomplishment of the objectives of WCASP and the CLIPS project for the benefit of the Members;

DECIDES:

- (1) That the substance of the operational services of the WCP Programme be as indicated in the Sixth WMO Long-term Plan adopted under Resolution 25 (Cg-XIV);
- (2) That the implementation of the WCDMP and WCASP (including CLIPS) should continue to be carried out, with priority being given to:
 - (a) Improvement to climate databases through data rescue and implementation of CDMSs and improving access and expanding use of the databases;
 - (b) Improvement of regular climate system monitoring through routinely published reports, expanded use of the Web and implementation of a Climate Alert System;
 - (c) Improvement of human capacity and the infrastructure for intraseasonal, and seasonal to interannual climate predictions through climate centres such as DMCs, RCCs and the Regional Climate Outlook Forum process;
 - (d) Improvement of the availability of regionally-relevant climate data, monitoring, prediction and applications of climate information and services through the expansion of the CLIPS

Focal Point concept and the support of the establishment of RCCs;

STRESSES the role to be played by regional associations in coordinating the implementation of WCDMP and WCASP, in identifying deficiencies, in specifying requirements and in planning system support projects, on a regional scale;

INVITES the regional associations:

- (1) To initiate rapidly the process of establishing RCCs with the guidance of CCI and CBS;
- (2) To recommend sustainable ways to provide Regional Climate Outlook Forums in cooperation with Members, the WCP and stakeholders;

REQUESTS the Executive Council:

- (1) To carefully and efficiently consider the needs and requirements of RCCs, and to develop the appropriate terms of reference prior to initiating the process needed to establish RCCs, in liaison with CCI and CBS as appropriate;
- (2) To consider the financial, policy and strategic aspects of the use of new technology in WCP;

REQUESTS the Executive Council and CCI:

- (1) To identify appropriate initiatives which might be pursued by Members and/or groups of Members, to maximize the value of WCP;
- (2) To promote the use of environmental satellite systems and geographic information systems in support of WCP programmes;
- (3) To develop guidelines on climate alert systems;

URGES all Members, especially donor countries individually and through appropriate multinational arrangements, to cooperate actively and enthusiastically in the implementation and operation of WCDMP and WCASP and, in particular:

- (1) To continue as far as possible to implement, maintain and enhance climate observation networks, for national, regional and global climate analysis;
- (2) To implement, upgrade, maintain and enhance access to national digital climate archives;
- (3) To enhance climate monitoring, alerting and prediction capabilities for the generation of higher quality and new types of products and services;
- (4) To participate in the deployment and use of new climate database management systems and techniques;
- (5) To keep the Secretary-General informed about their plans and activities regarding the implementation of WCP;

URGES Members to supplement through extrabudgetary contributions the resources required for the further development and implementation of the CLIPS project;

APPEALS to Meteorological Services of non-Member countries to apply the WCP procedures and techniques;

REQUESTS the Secretary-General:

- (1) To keep the Members informed of progress and developments in the planning and implementation of the WCP Programme;
- (2) To assist Members, as necessary, in overcoming difficulties which may arise in the implementation of the WCP Programme during the fourteenth financial period;

- (3) To propose projects and priorities for the consolidation and further implementation of key WCP components;
- (4) To assist the Executive Council, the regional associations and CCI in the implementation of this resolution;
- (5) To bring this resolution to the attention of all concerned;
- (6) To submit a report to Fifteenth Congress on the implementation of the Sixth WMO Long-term Plan during the fourteenth financial period together with proposals for the continuation and further development of WCDMP and WCASP.

RESOLUTION 12 (Cg-XIV)

THORPEX: A GLOBAL ATMOSPHERIC RESEARCH PROGRAMME

THE CONGRESS,

NOTING that the skilful prediction of high-impact weather is one of the greatest scientific and societal challenges of the twenty-first century,

CONSIDERING:

- (1) The substantial increase in the forecast skill achieved by improvements in atmospheric observing technology, data-assimilation methods, new numerical model formulations, the use of ensemble techniques and transferring these advances for the benefit of society and the economy,
- (2) That despite these improvements, the ability to forecast high impact weather events falls below that required by society,

DECIDES to establish THORPEX as a 10-year long international Global Atmospheric Research Programme under CAS as part of WWRP, in order to accelerate improvements in weather forecasting on short-, medium- and extended-range time scales;

REQUESTS the Secretary-General:

- (1) To encourage WMO Members to participate actively in the implementation of THORPEX;
- (2) To assist WMO Members in the international coordination of THORPEX;
- (3) To establish at the WMO Secretariat a THORPEX International Programme Office funded by THORPEX participating countries;
- (4) To assist WMO Members from developing countries in their utilization of THORPEX-related forecast products;
- (5) To assist THORPEX in coordination with CBS, WCRP, JCOMM and other WMO Programmes, as appropriate;
- (6) To facilitate the participation in THORPEX of other international bodies;

REQUESTS the president of CAS to facilitate the activities of the International Core Steering Committee and International Science Steering Committee of THORPEX.

RESOLUTION 13 (Cg-XIV)

PUBLIC WEATHER SERVICES PROGRAMME

THE CONGRESS,

NOTING:

- (1) Resolution 11 (Cg-XIII) — Public Weather Services,
- (2) Resolution 28 (Cg-XIV) — Role and Operation of National Meteorological and Hydrological Services,
- (3) *The Abridged Final Report with Resolutions of the Fifty-fourth Session of the Executive Council* (WMO-No. 945),

- (4) *The Abridged Final Report with Resolutions and Recommendations of the Twelfth Session of the Commission for Basic Systems* (WMO-No. 923),
- (5) *The Abridged Final Report with Resolutions and Recommendations of the Extraordinary Session (2002) of the Commission for Basic Systems* (WMO-No. 955),

CONSIDERING:

- (1) That the provision of PWS is one of the most fundamental functions of NMSs and

an important channel through which national communities can benefit from the work of the NMS,

- (2) That there is an increasing demand for more accurate, timely and understandable warnings and forecasts to ensure the safety of life and the protection of property and to contribute to sustainable development, delivered through more reliable and advanced communication systems,
- (3) That there is an urgent need for action by WMO and Members to eliminate the potential for public confusion due to the availability of weather warnings and forecasts from other sources,
- (4) That there is continuing need to strengthen Members' capability to deliver high quality services through capacity building,

DECIDES that the substance of the Public Weather Services Programme should be as indicated in Programme 4.1 of the Sixth WMO Long-term Plan (2004-2011) adopted under Resolution 25 (Cg-XIV);

URGES Members:

- (1) To continue to collaborate actively in, and give support to, enhancing the visibility of NMSs, the implementation of the PWS Programme and take all possible steps to strengthen their national PWS through developing and improving forecast, warning and climatological advisory services, ensuring effective service delivery and raising the level of public awareness of, and response to, these services;

- (2) To improve coordination and communication user communities and important partners, especially emergency management, the media and the meteorological private sector;

- (3) To adopt methodologies for assessing the level of user satisfaction and quality of service provided; to avail themselves of the advice and guidance on specialized topics contained in material published by the PWS Programme, and to support capacity building activities;

REQUESTS the Secretary-General:

- (1) To continue to assist Members in their efforts to develop and implement PWS activities at the national level and in particular to give high priority to training requirements;
- (2) To ensure further development and effective implementation of the Programme;
- (3) To coordinate the relevant WMO Programmes to contribute effectively to the objectives of the PWS Programme and to promote collaboration with other interested international organizations;

REQUESTS the Executive Council to consider an appropriate mechanism for its oversight of the PWS Programme in close coordination with the related new Programme on Natural Disaster Prevention and Mitigation.

NOTE: This resolution replaces Resolution 11 (Cg-XIII), which is no longer in force.

RESOLUTION 14 (Cg-XIV)

AGRICULTURAL METEOROLOGY PROGRAMME

THE CONGRESS,

NOTING:

- (1) Resolution 12 (Cg-XIII) — Agricultural Meteorology Programme,
- (2) Resolution 4 (EC-LIV) — Report of the twelfth session of the Commission for Agricultural Meteorology,
- (3) The progress made in the implementation of the programme (including that on drought and desertification),
- (4) The *Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Agricultural Meteorology* (WMO-No. 951),
- (5) The report of the president of the Commission for Agricultural Meteorology,

EXPRESSES its appreciation for steps taken to assist Members in combating desertification, in alleviating the effects of drought and other natural

disasters and in applying agrometeorology in the development of agrometeorological services for sustainable farming systems;

RECOGNIZING:

- (1) That food production and food self-sufficiency continue to be of a high priority in most countries,
- (2) That there is a continuing need for operational applications of agrometeorology using innovative technologies for services to farmers for decision making in agriculture, silviculture and aquaculture,
- (3) That there still remains the urgent need to improve agricultural production and protect its resource base, reduce losses and risks, decrease costs, increase efficiency in the use of water, energy and labour in agriculture, conserve natural resources, increase product quality and decrease pollution by agricultural chemicals and other

agents that contribute to the degradation of the environment,

- (4) That desertification, drought and other natural disasters and decrease of agricultural production continue to affect many countries, in particular in Africa, and that the world community has decided to take steps to combat desertification to alleviate the effects of drought and other natural disasters and to develop sustainable farming systems,

ENDORSES the decision of the thirteenth session of the Commission for Agricultural Meteorology on the implementation of the Agricultural Meteorology Programme as described in the Sixth WMO Long-term Plan;

URGES all Members:

- (1) To collaborate actively in, and to give all possible support to, the implementation of the Agricultural Meteorology Programme;
- (2) To continue to promote the applications of meteorological, climatological and hydrological data and information on the implementation of agricultural activities and programmes, taking into account the Agricultural Meteorology Programme, including that of new methods for agrometeorological predictions, desertification, drought and meteorological and agricultural developments in both the scientific and practical fields;
- (3) To develop their national Agricultural Meteorological Services by transferring and methodology through education and training programmes with emphasis on agrometeorological services for farmers;
- (4) To promote agrometeorological services for agricultural production, focusing on operational and research activities that serve farmers' needs in decision making in agricultural production;
- (5) To enhance support systems for agrometeorological services, concentrating on network observations, data and information management, and technological developments needed to advance the production of services for farmers and

other decision makers in agricultural production;

- (6) To address the priority issues affecting sustainable agriculture, such as climate change, climate variability and natural disasters;
- (7) To introduce effective methods for the exchange of agrometeorological data and products and for the dissemination of information and warnings to farmers and other decision makers in agricultural production;

REQUESTS the Executive Council, with the assistance of the Commission for Agricultural Meteorology and other relevant technical commissions to promote, guide and assist in the implementation of the Agricultural Meteorology Programme;

REQUESTS the Secretary-General:

- (1) To take necessary actions, within available budgetary resources, to support Members in their efforts to implement the priority activities in the Agricultural Meteorology Programme as described in the Long-term Plan, at the national level, including support to their efforts in combating desertification, in alleviating the effects of drought and other natural disasters and in applying agrometeorology in the development of sustainable farming systems;
- (2) To assist regional associations and their subsidiary bodies to implement the subregional and regional aspects of their priority activities in agrometeorology;
- (3) To continue to cooperate and collaborate with other relevant international organizations in the implementation of the Long-term Plan, especially in the areas of education and training in agrometeorology and the preparation of guidelines on the improvement of management practices in agriculture and forestry;
- (4) To report annually to the Executive Council on progress achieved and to submit proposals for the future;
- (5) To report to Fifteenth Congress on progress achieved and to submit proposals for the future.

RESOLUTION 15 (Cg-XIV)

AERONAUTICAL METEOROLOGY PROGRAMME

THE CONGRESS,

NOTING:

- (1) Resolution 13 (Cg-XIII) — Aeronautical Meteorology Programme,
- (2) The *Abridged Final Report with Resolutions and Recommendations of the Twelfth*

Session of the Commission for Aeronautical Meteorology (WMO-No. 953),

- (3) Recommendation 1 (CAeM-XII) — Training activities of the Aeronautical Meteorology Programme,

CONSIDERING:

- (1) That the aviation community is one of the primary recipients of meteorological services worldwide,
- (2) That a need exists for continuing efforts in the scientific, technical and procedural aspects of aeronautical meteorology to ensure the provision of timely and adequate meteorological services to meet fully the requirements for safety and efficiency of rapidly evolving aviation operations,
- (3) That, in order to continue to ensure good quality services, the need exists for obtaining adequate funding for their provision, in particular through the recovery of meteorological service costs,
- (4) That continued close cooperation between WMO and ICAO is essential,
- (5) The importance of ensuring the wide availability and application of modern meteorology and service delivery, through a vigorous training component,
- (6) The need for continuing close collaboration of CAeM with the other technical commissions, especially with CBS in relation to the support provided by WWW, with CIMO in relation to observing matters, and with CAS in relation to the need for further scientific advances to benefit aeronautical meteorology,

DECIDES:

- (1) That the WMO Aeronautical Meteorology Programme should be further intensified;
- (2) That the substance of the Aeronautical Meteorology Programme be as indicated in Programme 4.3 of the Sixth WMO Long-term Plan (2004-2011) adopted under Resolution 25 (Cg-XIV);
- (3) That the activities under the Aeronautical Meteorology Programme for the fourteenth financial period be as indicated in the

consolidated programme and budget, (2004-2007), as approved by Fourteenth Congress;

- (4) That additional funding be provided for training activities, in particular for convening a technical conference with emphasis on improvement to aeronautical meteorological services, and for cost recovery;

URGES Members to collaborate actively in, and give all possible support to, the implementation of the Aeronautical Meteorology Programme;

REQUESTS the Executive Council, with the assistance of CAeM and other relevant technical commissions concerned (CAS, CBS and CIMO) to promote, guide and assist in the implementation of the Aeronautical Meteorology Programme;

REQUESTS the president of CAeM to ensure that CAeM takes the lead in the preparation of the appropriate material for the Seventh WMO Long-term Plan for the Aeronautical Meteorology Programme under the guidance of the Executive Council;

REQUESTS the Secretary-General:

- (1) To assist in the implementation of the Programme and in particular to give high priority to training requirements;
- (2) To collaborate in the implementation of the Programme with ICAO, ASECNA, aviation user groups and other interested organizations;
- (3) To continue to monitor the evolution of national and regional institutional frameworks for the provision of meteorological service for international air navigation;
- (4) To bring this Resolution to the attention of all concerned.

NOTE: This resolution replaces Resolution 13 (Cg-XIII), which is no longer in force.

RESOLUTION 16 (Cg-XIV)

MARINE METEOROLOGY AND OCEANOGRAPHY ACTIVITIES PROGRAMME

THE CONGRESS,

NOTING:

- (1) Resolution 15 (Cg-XIII) — Marine meteorology and associated oceanographic activities,
- (2) Resolution 16 (Cg-XII) — WMO's involvement in operational oceanography,
- (3) Resolution 7 (EC-LIV) — Report of the first session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology,
- (4) Relevant resolutions of the IOC Assembly and Executive Council,

- (5) The report of the co-presidents of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology,

CONSIDERING:

- (1) That a continuing concerted effort by National Meteorological Services is needed, in association with national oceanographic agencies and institutions as appropriate, in order that marine meteorological and oceanographic services meet national, regional and international requirements,
- (2) That all types of marine environmental services and research, including climate

- monitoring, research and prediction, must be supported by efficient and coordinated programmes for the acquisition, exchange, processing and dissemination of all marine meteorological, oceanographic and other related marine environmental data, from both in situ and remotely-sensed sources,
- (3) That an increasing number of developing countries are becoming involved in the implementation of requirements and responsibilities for monitoring of the marine environment and for the provision of meteorological and oceanographic services to marine users, and that these countries require assistance and support for implementing national marine observing, data management and services programmes,

REAFFIRMS the principle that WMO, in further developing and implementing its marine meteorological and oceanographic activities, should continue to maintain direct contacts with international organizations representing users' interests, and should work jointly wherever possible with IOC;

DECIDES:

- (1) That the substance of the Marine Meteorology and Oceanography Programme should be as given in Programme 4.4 of the Sixth WMO Long-term Plan, adopted through Resolution 25 (Cg-XIV);
- (2) That detailed programme planning and implementation should be undertaken primarily through JCOMM, jointly with IOC;
- (3) That the activities under the Marine Meteorology and Oceanography Programme for the fourteenth financial period should be as detailed in the consolidated programme and budget 2004-2007, as approved by Fourteenth Congress;

REQUESTS the Executive Council, with the assistance of JCOMM, other relevant technical commissions, the Intergovernmental Committee for GOOS, the GOOS Steering Committee and the regional associations to promote, guide and assist in the implementation of the WMO Marine Meteorology and Oceanography Programme;

URGES Members concerned to give all possible support to the implementation of the Marine Meteorology and Oceanography Programme and the work of JCOMM through:

- (1) Strengthening their marine meteorological and oceanographic services, including both basic services in support of the safety of life and property at sea as required under SOLAS, and also specialized services for various marine user groups;

- (2) Continuing and/or expanding their contributions to the collection and archival of meteorological and oceanographic data from voluntary observing ships, with their associated metadata;
- (3) Continuing and/or expanding their contributions to other in situ marine observing and data collection systems, including surface and sub-surface buoys, floats and similar platforms, including in particular the Argo project;
- (4) Making full use of modern telecommunication facilities for the collection of marine environmental data and the dissemination of information;
- (5) Expanding the application of remotely-sensed ocean data to the provision of services and to global climate studies, and assisting developing countries to access and make best use of these data;
- (6) Enhancing coordination at the national, regional and global levels with appropriate oceanographic institutions and agencies, including through the GOOS Regional Alliances, in the operation of marine observing systems, the management of the data and the provision of marine meteorological and oceanographic services;
- (7) Assisting developing countries to fulfil their responsibilities under, and gain full benefit from, the Marine Meteorology and Oceanography Programme, in particular through strengthening specialized training facilities and programmes in marine meteorology and oceanography;
- (8) Facilitating national involvement in JCOMM through support and encouragement of experts and key relevant officers to participate in, and contribute to, intersessional activities, such as the work of the JCOMM expert teams and main subsidiary bodies, or national activities being developed or undertaken in support of the JCOMM work programme;

REQUESTS the co-presidents of JCOMM to ensure that JCOMM takes the lead in the preparation of the appropriate parts of the Seventh WMO Long-term Plan for the Marine Meteorology and Oceanography Programme, under the guidance of the Executive Council;

REQUESTS the Secretary-General, within the available budgetary resources:

- (1) To arrange for coordination of WMO's activities under the Marine Meteorology and Oceanography Programme with the IOC and other international organizations;
- (2) To assist in the implementation of these activities;

- (3) To seek extrabudgetary resources, as necessary, to facilitate the implementation of the programme and the work of JCOMM;
- (4) To bring this resolution to the attention of all concerned.

NOTE: This resolution replaces Resolution 15 (Cg-XIII), which is no longer in force.

RESOLUTION 17 (Cg-XIV)

HYDROLOGY AND WATER RESOURCES PROGRAMME

THE CONGRESS,

NOTING:

- (1) Resolution 16 (Cg-XIII) — Hydrology and Water Resources Programme,
- (2) Resolution 19 (Cg-XII) — Strategy and action plan for monitoring and assessing water resources of Africa,
- (3) Resolution 20 (Cg-XII) — World Hydrological Cycle Observing System (WHYCOS),
- (4) Resolution 21 (Cg-XII) — Global Runoff Data Centre (GRDC),
- (5) Resolution 25 (Cg-XIII) — Exchange of Hydrological Data and Products,
- (6) Resolution 9 (EC-LIII) — Report of the eleventh session of the Commission for Hydrology,
- (7) The report of the president of the Commission for Hydrology to Fourteenth Congress,
- (8) The views and recommendations on matters relating to freshwater of recent high-level intergovernmental meetings, in particular the World Summit on Sustainable Development (August, 2002) and the Ministerial Conference on the occasion of the Third World Water Forum (March, 2003),

NOTING FURTHER:

- (1) That the increasing scarcity, quality problems and misuse of fresh water pose a serious threat to sustainable development,
- (2) That the recent increase in the frequency of water-related disasters is the cause of an increasing number of deaths and property damage,
- (3) That, in order for countries to develop integrated water resources management and water efficiency plans, as called for by the Plan of Implementation of WSSD, an effective water resources assessment is a necessary prerequisite,
- (4) That, despite the availability of effective technology, many countries are still unable to assess and manage their freshwater resources in a sustainable manner and provide protection from water-related disasters,
- (5) The call of the WSSD's Plan of Implementation for "support for developing

countries and countries with economies in transition in their efforts to monitor and assess the quantity and quality of water resources, including through the establishment and/or further development of national monitoring networks and water resources databases and the development of relevant national indicators",

- (6) That the challenges of global change, including climate variability and change, demand a response from hydrologists and those responsible for water resources management,
- (7) That the need for collaboration between the hydrological, meteorological and climatological communities in this regard, identified by previous Congresses, remains a high priority,

CONSIDERING:

- (1) That efficient National Hydrological Services are essential to the integrated management of water resources and to the sustainable development of their countries,
- (2) That such Services are also essential to activities aimed at mitigating the effects of floods, droughts, desertification and tropical cyclones, while, at the same time, these phenomena pose special problems for the collection, analysis and use of hydrological data,
- (3) That WMO has a responsibility to assist Members, particularly National Hydrological Services, to meet their obligations in this regard,
- (4) That the HWRP provides the framework for all scientific and technical aspects of WMO's activities in the field of hydrology and water resources,
- (5) That HOMS provides an effective means of meeting the differing needs of Members for technology transfer in the fields of hydrology and water resources,

DECIDES:

- (1) That the substance of the HWRP be as indicated in Part 6.5 of the Sixth WMO Long-term Plan adopted under Resolution 25 (Cg-XIV);
- (2) That WMO should continue its efforts, with the support of other donor countries and

- agencies, to develop WHYCOS as a component of the HWRP;
- (3) To endorse the Implementation Plan for HOMS in the twenty-first century adopted by CHy-XI, and to encourage the Commission to take the necessary steps to ensure the effective implementation of HOMS;
 - (4) That WMO should take a leading role, jointly with UNESCO, in the follow-up to WSSD as regards water resource assessment;
 - (5) That WMO should contribute actively to the follow-up to WSSD in respect to other areas of freshwater such as capacity building;
 - (6) That WMO should seek to improve further the coordination of the HWRP with UNESCO's International Hydrological Programme;
 - (7) That WMO should continue its efforts towards further enhancement of cooperation between HWRP and other WMO programmes;

INVITES Members:

- (1) To take all possible measures to continue full support to the implementation of the five component programmes of the HWRP;
- (2) To arrange for their Hydrological, Hydrometeorological and Meteorological Services to continue to cooperate in the implementation of national and international plans for the assessment and management of their water resources and to participate in the implementation of WHYCOS;
- (3) To arrange for their Hydrological and Hydrometeorological Services to contribute to the exchange of operationally-proven technology in hydrology and water resources through active participation in HOMS;
- (4) To continue their close coordination in the planning and implementation of national inputs to international programmes in the field of hydrology and water resources;
- (5) To institute or continue the cooperation between Hydrological, Hydrometeorological

- and Meteorological Services and other water-related institutions at the regional and subregional level within shared river basins;
- (6) To participate in, and contribute to, technical cooperation activities in hydrology and water resources;

REQUESTS the president of CHy:

- (1) To ensure that the Commission takes the lead in the preparation of the appropriate material for the Seventh WMO Long-term Plan for HWRP;
- (2) To continue the valuable efforts of the Commission in enhancing the role of WMO in the field of hydrology and water resources;
- (3) To arrange for contributions from CHy to other WMO Programmes, as appropriate;

REQUESTS the Executive Council to conduct, with the assistance of CHy, a regular review of the progress in the implementation of the HWRP and to take appropriate action as may be required;

REQUESTS the Executive Council and the Secretary-General, as appropriate and within the available budgetary resources:

- (1) To arrange for the implementation of the HWRP in view of the increasing need for its enhanced participation in the resolution of the world water issues;
- (2) To take all the necessary action to assist CHy and all bodies concerned in implementing the HWRP, in accordance with **DECIDES** (1);
- (3) To continue to provide assistance in support of training events for Members in the fields of hydrology and water resources, particularly those in developing countries and countries with economies in transition;
- (4) To continue to provide support to regional activities of the HWRP;
- (5) To continue to cooperate with other governmental and non-governmental organizations in the field of hydrology and water resources.

NOTE: This resolution replaces Resolution 16 (Cg-XIII), which is no longer in force.

RESOLUTION 18 (Cg-XIV)

PANEL OF EXPERTS ON FRESH WATER

THE CONGRESS,

NOTING the *Abridged Final Report with Resolutions of the Fifty-fourth Session of the Executive Council* (WMO-No. 945), general summary paragraphs 7.1.15 to 7.1.17, 7.5.10 and Annex VI to paragraph 7.1.15 of the general summary — Concept for an Intergovernmental review and action mechanism on freshwater,

CONSIDERING:

- (1) The call of World Leaders at the World Summit on Sustainable Development (Johannesburg, August 2002) to improve water resources management and scientific understanding of the water cycle; and to promote effective coordination among the various international and intergovernmental

bodies and processes working on water-related issues,

- (2) That the Intergovernmental Council of the International Hydrological Programme of UNESCO during its fifteenth session in June 2002 took note of Annex VI to general summary paragraph 7.1.15 mentioned under **NOTHING** above and proposed that further discussions be held,
- (3) That at its last and final session, the ACC Subcommittee on Water (Delft, October 2002) was informed of the concept on an intergovernmental review and action mechanism on freshwater,

RECOGNIZING:

- (1) That there is an urgent need for a better scientific analysis to support global efforts on fresh water, within the broader context of international action on poverty alleviation and sustainable development and the need to bring this to the attention of Member States,
- (2) That fresh water is not only a resource, but can become a threat to lives and property, which especially affects the poor, and that the implementation of a major initiative on "natural disaster prevention and mitigation" is being proposed by Fourteenth Congress,
- (3) That there is currently a process under way within the United Nations system to improve coordination among agencies dealing with water issues,

- (4) That a credible effort to advance global understanding on freshwater issues will require increased scientific and technical capacity supported by dedicated resources,

ADOPTS a stand to encourage further collaboration among Members, organizations of the United Nations and governmental as well as non-governmental organizations with the overall goal to establish a Panel of Experts on Fresh water;

URGES Members to support the establishment of a Panel of Experts on Fresh water;

REQUESTS the Secretary-General:

- (1) To provide the resources required to develop the proposal for the Panel of Experts on Fresh water that will:
 - (a) Define its terms of reference;
 - (b) Describe how the Panel will operate;
 - (c) Define, in this initiative, the role of WMO, other United Nations organizations and international agencies working on water issues; and
 - (d) Determine the level of resources that will be required;
- (2) To invite and engage these United Nations organizations and international agencies in the further development of this initiative;

FURTHER REQUESTS the Executive Council to monitor the process that would lead to the establishment of a Panel of Experts on Fresh water with a view to implement this initiative and to invite the Commission for Hydrology to provide support.

RESOLUTION 19 (Cg-XIV)

EDUCATION AND TRAINING PROGRAMME

THE CONGRESS,

NOTING:

- (1) Resolution 17 (Cg-XIII) — Education and Training Programme,
- (2) Resolution 10 (EC-L) — Executive Council Panel of Experts on Education and Training,
- (3) That education and training in meteorology, operational hydrology and related disciplines is a substantive part of the work of WMO,

CONSIDERING:

- (1) That suitably trained staff is the key to the effectiveness of NMHSs and is thus fundamental to the successful implementation of the entire individual WMO Programmes,
- (2) That the Education and Training Programme is needed as a vehicle to promote capacity building by assisting NMHSs in the attainment of self-sufficiency

in meeting their education and training needs in developing their human resources,

- (3) That the need for trained specialists in the application of meteorology, operational hydrology and related disciplines in support of social and economic progress at the global, regional and national levels remains acute in many developing countries,

DECIDES:

- (1) That the major thrusts of the Education and Training Programme should be directed towards assisting Members in obtaining educated and trained staff for the continued development of their NMHSs so as to enable them to discharge their ongoing operational responsibilities as well as to meet the challenges of new functions;
- (2) That special emphasis should be placed on developing and maintaining the continuing education of staff in all fields of activities of the Organization and promoting the exchange of training knowledge, resources

and expertise between Members, making particular use of relevant new and emerging technologies and techniques, including e-learning;

URGES Members:

- (1) To collaborate actively in, and to give all possible support to, the implementation of the Organization's education and training activities;
- (2) To strengthen their national capacity in the attainment of self-sufficiency in meeting their training needs and developing their human resources;
- (3) To make maximum use of the training opportunities offered by the WMO RTMCs for the training of their staff and, along with donor agencies, to expand their efforts to assist those centres to become more efficient and focused on the highest priority regional needs;
- (4) To provide the Secretariat with modern training materials available in their own Services for the benefit of other Members and the training efforts of RTMCs;
- (5) To make their best efforts to encourage national and regional training institutions to apply computer-aided and distance learning technologies and to use the Internet in the learning process;

INVITES the presidents of regional associations and technical commissions to keep under continuous review the relevant education and training issues for a better coordination; to study regional and specialized training needs of Members and to establish a policy dialogue between RTMCs host countries and the regional associations aiming at further development of those centres in their respective Regions;

REQUESTS the Executive Council:

- (1) To take all necessary actions to enable the Education and Training Programme to meet its objectives under the Sixth WMO Long-term Plan;
- (2) To give high priority to ensuring effective overall coordination and leadership of the

Organization's Education and Training Programme and to continue to draw fully on the advice and assistance of experts in meteorological and hydrological education and training from the academic sector as well as from the RTMCs and training institutions of NMHSs in the further development of the programme;

REQUESTS the Secretary-General:

- (1) To collaborate closely with Members to ensure the effective implementation of the Organization's education and training activities;
- (2) To continue, within the available resources, to provide assistance and advice on the training equipment, materials and methodology suitable for use by WMO RTMCs, NMHSs and national training institutions;
- (3) To provide education and training support from regular and extrabudgetary resources to activities in the new priority areas of emphasis within major WMO Programmes;
- (4) To support strongly any requests from Members for assistance for education and training in the fields of meteorology and operational hydrology from UNDP, other international bodies, and national bodies, including bilateral arrangements;
- (5) To maintain close liaison with the Standing Conference of Heads of Training Institutions of National Meteorological Services (SCHOTI) with respect to the effective use of distance learning technologies with emphasis on computer-aided learning techniques, particularly in RTMCs and developing countries;
- (6) To support strongly the new electronic training approaches, methods and technologies in education and training and to provide the necessary resources for their implementation.

NOTE: This resolution replaces Resolution 17 (Cg-XIII), which is no longer in force.

RESOLUTION 20 (Cg-XIV)

THE WMO VOLUNTARY COOPERATION PROGRAMME

THE CONGRESS,

NOTING:

- (1) That, in accordance with the directives contained in Resolution 18 (Cg-XIII), the WMO VCP has functioned in the thirteenth financial period in a highly satisfactory manner,
- (2) That this Programme is a major element in the implementation of the WWW

Programme as well as of other scientific and technical programmes of WMO and the provision of fellowships,

- (3) That this Programme is an appropriate mechanism for the promotion and support of Technical Cooperation among Developing Countries,
- (4) That during recent years, on average, annual contributions received for the

VCP(F) fund amounted to US\$ 320 000 and contributions received in the equipment and services component (VCP(ES)) amounted to US\$ 7.5 million,

COMMENDS the Members concerned for their continued support to the success of this Programme;

CONSIDERING the continued and increasing needs for support during the fourteenth financial period for the implementation of the various technical programmes of WMO,

DECIDES:

- (1) That the WMO VCP shall be continued in the fourteenth financial period;
- (2) That, as in the thirteenth financial period, the fields of cooperation covered by the VCP during the fourteenth financial period shall include the following:
 - (a) The implementation of the WWW as a first priority;
 - (b) The granting of short-term and long-term fellowships;
 - (c) The support to short-term training seminars for personnel engaged in WWW and other activities covered under the VCP Programme;
 - (d) The support to meteorological applications activities;
 - (e) The support to the activities of the HWRP;
 - (f) The establishment and strengthening of observing and data-processing facilities necessary for the WCP;
 - (g) The support to activities within the WCASP;

(h) The establishment and maintenance of the GAW stations;

(i) The support to meteorological and hydrological activities related to the environment protection;

- (3) That the VCP in the fourteenth financial period shall follow the same general procedures as during the thirteenth financial period;
- (4) That special assistance should be provided to new Members of the Organization including the Newly Independent States, small island developing States as well as the Least Developed Countries within the framework of the VCP;

URGES Members of the Organization to contribute to the maximum extent possible to the Programme during the fourteenth financial period both in financial form and in equipment and services, including fellowships, and to use the mechanism of Technical Cooperation among Developing Countries, where possible;

AUTHORIZES the Executive Council to review the present rules and procedures for the operation of the WMO VCP, when necessary, bearing in mind the decisions of Fourteenth Congress;

REQUESTS the Secretary-General:

- (1) To continue to administer the VCP during the fourteenth financial period;
- (2) To report to Fifteenth Congress on the assistance rendered during the fourteenth financial period, in addition to the annual report on the VCP distributed to Members.

NOTE: This resolution replaces Resolution 18 (Cg-XIII), which is no longer in force.

RESOLUTION 21 (Cg-XIV)

WMO PROGRAMME FOR THE LEAST DEVELOPED COUNTRIES

THE CONGRESS,

NOTING:

- (1) That the third United Nations Conference on the LDCs (Brussels, May 2001) adopted a Programme of Action for the LDCs for the decade 2001-2010,
- (2) That the objective of the Programme of Action is to improve the human conditions of more than 600 million people in the 49 countries concerned, through accelerated sustained economic growth,
- (3) That the United Nations system, including WMO, was requested to play a key role in the implementation of the Programme of Action,
- (4) That several United Nations organizations have already drawn up special programmes for LDCs in their areas of competence,

- (5) That the NMHSs have a major role to play in the socio-economic development efforts of the countries concerned,

CONSIDERING:

- (1) That the WMO Executive Council, during its fifty-third session, had agreed on the need to develop a WMO programme for the LDCs,
- (2) That the Council had requested the Secretary-General to prepare appropriate proposals concerning WMO's support to the implementation of the Programme of Action for the LDCs,
- (3) That several special actions have already been carried out to support NMHSs of LDCs but with limited results,

DECIDES:

- (1) To establish a WMO programme for LDCs with the long-term objective of ensuring that NMHSs of the LDCs contribute effectively to the social and economic development programmes of the countries concerned;
- (2) To include this programme in the Sixth WMO Long-term Plan within the framework of the Technical Cooperation Programme;

REQUESTS the Executive Council to monitor the progress in the development and implementation of the programme and advise on the best ways

and means of mobilizing resources for this purpose;

REQUESTS the Secretary-General:

- (1) To establish a Trust Fund for the WMO programme for LDCs and to take appropriate measures for the mobilization of the required resources;
- (2) To report to Fifteenth Congress on the implementation of the programme;

URGES Members to participate actively in, and to, contribute to, the funding of the programme.

RESOLUTION 22 (Cg-XIV)

PUBLICATIONS PROGRAMME FOR THE FOURTEENTH FINANCIAL PERIOD

THE CONGRESS,

CONSIDERING:

- (1) Resolution 21 (Cg-XIII) — Publications Programme for the thirteenth financial period,
- (2) That the accurate and timely production and distribution of publications in the agreed languages is essential to almost all functions of the Organization and that as a matter of general policy, high priority shall be given to the Publications Programme,
- (3) That the publications of the Organization generally fall into two broad categories:
- (4) Mandatory publications, defined by the Convention, the General Regulations or by specific decisions of Congress, for which funds are provided directly under the Publications Programme,
- (5) Programme-supporting publications, such as WMO Technical Notes, World Weather Watch Planning Reports, Operational Hydrology Reports, Marine Science Affairs Reports, Special Environmental Reports, the WMO Blue Training Series, etc., for which funds are provided under the relevant scientific and technical programmes,

DECIDES:

- (1) That the mandatory publications of WMO and the languages in which these publications shall be issued are as shown in the annex to this resolution;

- (2) That the management of the Publications Programme, notably the presentation and method of reproduction of the publications and the most economic use of the available publication funds including the revenue from sales of publications, shall be the responsibility of the Secretary-General within the framework established by Congress and taking into account the guidance given by the Executive Council;

REQUESTS the Executive Council:

- (1) To continue to review regularly the status of the Publications Programme taking into account the funds and facilities available and to review the continuing needs resulting from the introduction of new technology and the widening availability of alternatives to printed material;
- (2) To consider any proposals for improved services or their cost-efficiency and to provide guidance on the best way to ensure the information flow to Members and others through the Publications Programme;

REQUESTS the Secretary-General to assist in those reviews by providing the Executive Council, and any mechanism it may establish to oversee the introduction of electronic publishing, with information on available funds, facilities, sales potentials and any possible limitations.

NOTE: This resolution replaces Resolution 21 (Cg-XIII), which is no longer in force.

ANNEX TO RESOLUTION 22 (Cg-XIV)

WMO MANDATORY PUBLICATIONS AND THE LANGUAGES IN WHICH THEY SHALL BE ISSUED IN THE FOURTEENTH FINANCIAL PERIOD

<i>Publication</i>	<i>Number</i>	<i>Languages</i>
1. Basic documents		
(a) <i>Basic Documents</i>	WMO-No. 15	A, C, E, F, R, S
(b) <i>Agreements and Working Arrangements with Other International Organizations</i>	WMO-No. 60	E, F, R, S
(c) <i>Technical Regulations</i>	WMO-No. 49	A, C, E, F, R, S
(d) Annexes to the <i>Technical Regulations</i> :		
(i) <i>International Cloud Atlas, Volume 1</i>	WMO-No. 407	All in E, F, R, S
(ii) <i>Manual on Codes</i>	WMO-No. 306	
(iii) <i>Manual on the Global Telecommunication System</i>	WMO-No. 386	
(iv) <i>Manual on the Global Data-processing and Forecasting System</i>	WMO-No. 485	
(v) <i>Manual on the Global Observing System</i>	WMO-No. 544	
(vi) <i>Manual on Marine Meteorological Services</i>	WMO-No. 558	
2. Operational publications		
(a) <i>Meteorological Services of the World</i>	WMO-No. 2	Bilingual: E/F
(b) <i>Composition of WMO</i>	WMO-No. 5	Bilingual: E/F
(c) <i>Weather Reporting</i>	WMO-No. 9	All in E*
(i) Volume A — Observing stations		
(ii) Volume C1 — Catalogue of meteorological bulletins		
(iv) Volume D — Information for shipping		
(d) <i>International List of Selected, Supplementary and Auxiliary Ships</i>	WMO-No. 47	
(e) <i>Compendium of Training Facilities for Meteorology and Operational Hydrology</i>	WMO-No. 240	M
(f) <i>Climatological normals (CLINO) for the period 1961–1990</i>	WMO-No. 847	M
3. Official records		
(a) Abridged reports with resolutions of Congress		A, C, E, F, R, S
(b) Proceedings of Congress		E, F
(c) Abridged reports with resolutions of the Executive Council		A, C, E, F, R, S
(d) Abridged reports with resolutions and recommendations of the regional associations		Same as for session documentation
(e) Abridged reports with resolutions and recommendations of the technical commissions		A, C, E, F, R, S
(f) Resolutions of Congress and the Executive Council	WMO-No. 508	E
4. WMO Guides		
(a) <i>Guide to Meteorological Instruments and Methods of Observation</i>	WMO-No. 8	E, C, F, R, S
(b) <i>Guide to Climatological Practices</i>	WMO-No. 100	A, C, E, F, R, S
(c) <i>Guide to Agricultural Meteorological Practices</i>	WMO-No. 134	All in E, F, R, S†
(d) <i>Guide to Hydrological Practices</i>	WMO-No. 168	
(e) <i>Guide on the Global Data-processing and Forecasting System</i>	WMO-No. 305	
(f) <i>Guide to Marine Meteorological Services</i>	WMO-No. 471	
(g) <i>Guide on the Global Observing System</i>	WMO-No. 488	
(h) <i>Guide on the Automation of Data-processing Centres</i>	WMO-No. 636	
(i) <i>Guide to Wave Analysis and Forecasting</i>	WMO-No. 702	
(j) <i>Guide on Meteorological Observation and Information Distribution Systems at Aerodromes</i>	WMO-No. 731	
(k) <i>Guide to Practices for Meteorological Offices Serving Aviation</i>	WMO-No. 732	
(l) <i>Guide to the Applications of Marine Climatology</i>	WMO-No. 781	
(m) <i>Guide on World Weather Watch Data Management</i>	WMO-No. 788	
(n) <i>Guide to Public Weather Services Practices</i>	WMO-No. 834	
5. Terminologies		
<i>International Meteorological Vocabulary</i>	WMO-No. 182	M
<i>International Glossary of Hydrology (jointly with UNESCO)</i>	WMO-No. 385	M
6. Annual reports of WMO		E, F, R, S
7. WMO Bulletin		E, F, R, S

NOTES:

* Expanded introductory and explanatory text in English, French, Russian and Spanish.

A – Arabic; C – Chinese; E – English; F – French; R – Russian; S – Spanish; M – Multilingual

† Where resources permit

RESOLUTION 23 (Cg-XIV)

INFORMATION AND PUBLIC AFFAIRS PROGRAMME

THE CONGRESS,

CONSIDERING:

- (1) The need for a greater visibility of the Organization and NMHSs and the indispensable role they play in support of the socio-economic development and progress of all nations including the safety and security of life and property,
- (2) The important role that communications can play in mitigating the devastating impact of the current trends of extreme climatic variability, the continuing depletion of the ozone layer and the growing water scarcity and pollution,
- (3) The need for the Organization and its Members to promote public knowledge about their work in the areas of weather, water and climate in the pursuit of sustainable development,
- (4) That the WMO Global Communication Strategy should guide and enhance, through effective approaches and means, the process of making NMHSs and WMO more visible and better appreciated,
- (5) That in a financially difficult context, a strategic approach to communications might enable WMO and its Members to increase the cost-effectiveness of their activities,

DECIDES to maintain a WMO Information and Public Affairs Programme, the objectives of which should be to work with the Members to inform the public at large and decision makers of:

- (a) Advances in the sciences of meteorology, hydrology and related disciplines;
- (b) The significance of weather, climate and water resources to the sustainable development of nations;
- (c) The impact of climate variability and extreme weather events on social, health and economic sectors;
- (d) The important role of NMHSs in mitigating natural disasters and in contributing to socio-economic progress;
- (e) The active role of WMO in international cooperation in the fields of meteorology,

operational hydrology and related disciplines;

URGES Members to take appropriate measures to support the Information and Public Affairs Programme and to develop an active public information programme at the national level that contributes to the implementation of the Global Communication Strategy;

REQUESTS the Secretary-General:

- (1) To consider appropriate and urgent actions to assure continued progress in implementing the WMO Information and Public Affairs Programme and its Global Communication Strategy in cooperation with national institutions through the Permanent Representatives, and with international organizations, both governmental and non-governmental;
- (2) To collaborate closely with Members to ensure mutual assistance and support in matters related to public information and communication including partnerships and constituency-building, resource mobilization and contacts with the media, NGOs and advocacy groups, academic circles, parliamentarians, schools, universities, national meteorological and hydrological societies, the private sector and corporate foundations and other civil society institutions and public figures;
- (3) To make best possible use of available and extrabudgetary resources to strengthen the Information and Public Affairs Programme, which is supportive of, and integrated with, the major WMO Programmes;
- (4) To undertake additional public awareness raising activities and products, such as exhibits, greeting cards, Web site developments, promotional materials designed for children and youngsters;
- (5) To bring this resolution to the attention of all concerned.

NOTE: This resolution replaces Resolution 22 (Cg-XIII), which is no longer in force.

RESOLUTION 24 (Cg-XIV)

A SUBTITLE FOR WMO

THE CONGRESS,

NOTING:

- (1) The *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902), general summary paragraph 3.5.0.14,
- (2) The *Abridged Final Report with Resolutions of the Fifty-fourth Session of the Executive Council* (WMO-No. 945), general summary paragraphs 7.1.12 and 7.1.13,

CONSIDERING:

- (1) That there was merit in adopting a subtitle which would better reflect the fields of responsibility of WMO,
- (2) The fact that several United Nations agencies and programmes have adopted, or are considering adopting, subtitles or

slogans and mottos that better illustrate their fields of activities,

- (3) The practice of other organizations as well as the fact that the proposed subtitle translates well into the other official WMO languages,
- (4) The recommendation of the fifty-fourth session of the Executive Council that the subtitle of WMO be "weather, climate and water",
- (5) That, because of its simplicity, the proposed subtitle would act as a "motto" that would immediately indicate to the wider public what WMO is about,

DECIDES to adopt the subtitle "weather, climate and water" for the Organization, to be used on all official documentation, correspondence and publications.

RESOLUTION 25 (Cg-XIV)

SIXTH WMO LONG-TERM PLAN

THE CONGRESS,

NOTING the decision of Thirteenth Congress in Resolution 24 (Cg-XIII) concerning the preparation of the Sixth WMO Long-term Plan,

ADOPTS, under the provision of Article 8(a), (b) and (c) of the WMO Convention, the Sixth WMO Long-term Plan (hereinafter called "the Plan") for the period 2004-2011;

REQUESTS the Secretary-General to arrange for the publication of the Plan and a self-contained Executive Summary for Decision Makers and their early distribution to all Members and constituent bodies of WMO and to other international organizations, as appropriate;

URGES Members to take the Plan into account in developing and carrying out their national programmes in meteorology, hydrology and related disciplines, as well as in their participation in the programmes of the Organization;

REQUESTS the Executive Council, the regional associations, the technical commissions and the Secretary-General to adhere to the policies set forth in the Plan and to organize their activities so as to realize the WMO vision, desired outcomes, strategies and associated goals as described in the Plan, as well as to achieve the overall and main long-term objective associated with the WMO Programmes contained therein;

FURTHER REQUESTS the Executive Council to use the Plan as a benchmark to monitor progress and performance in the implementation of the programmes and activities of the Organization and to submit a report to Fifteenth Congress.

NOTE: This resolution replaces Resolution 23 (Cg-XIII), which remains in force only until 31 December 2003.

RESOLUTION 26 (Cg-XIV)

PREPARATION OF THE SEVENTH WMO LONG-TERM PLAN

THE CONGRESS,

NOTING Resolution 25 (Cg-XIV) — Sixth WMO Long-term Plan,

CONSIDERING:

- (1) That WMO Long-term Plans are a useful guide to Members and their NMHSs in

consolidating their own planning policies, programmes and activities,

- (2) That there is a continuing need for a longer lead time in planning the main directions of the scientific and technical work of the Organization to assist Members in their planning activities and WMO itself in

- providing a long-term framework within which to develop programme plans,
- (3) That the WMO planning process enables the Organization to reflect on its goals and aspirations, as well as to anticipate and/or respond to changes and variations,
 - (4) That the WMO planning system has added to the effectiveness and status of WMO within the United Nations system,
 - (5) That the WMO Long-term Plans should build on the WMO vision and desired outcomes,

REAFFIRMING that the overall purpose of the planning process in WMO is to set broad objectives and a strategy for the Organization and to provide sufficient guidance for the formulation of the four-year programme and budget document of WMO,

NOTING FURTHER that the method of preparation of WMO Long-term Plans under the guidance of the Executive Council provides a suitable model for the evolution of subsequent Plans,

DECIDES that the Seventh WMO Long-term Plan should be prepared;

REQUESTS the Executive Council:

- (1) To study further, in the light of the experience gained during the preparation of the previous Plans, the overall approach for the future Plan with a view to improve further the planning process and WMO Long-term Plans;
- (2) To establish the necessary coordination mechanism for the preparation of the Seventh WMO Long-term Plan;
- (3) To guide and coordinate the content of the Plan;

- (4) To study and evaluate further the use of key performance indicators in the WMO planning system;

REQUESTS the regional associations:

- (1) To provide a forum for consideration of the Plan and, in particular, to provide an integrated view of their respective activities and priorities within the context of the Seventh WMO Long-term Plan, including through regional analyses and assessments;
- (2) To coordinate, as necessary, national contributions to regional aspects of the Plan;

REQUESTS the technical commissions to lead the formulation of all scientific and technical aspects of WMO Programmes and activities falling within their respective responsibilities, including providing relevant analysis, assessment and indication of priorities;

REQUESTS the Secretary-General:

- (1) To provide Secretariat support for implementing those decisions;
- (2) To ensure that the programme and budget proposals for the fifteenth financial period and the draft Seventh WMO Long-term Plan are fully coordinated, taking into account the results-based budgeting approach;
- (3) To submit the draft Seventh WMO Long-term Plan to Fifteenth Congress on behalf of the Executive Council.

NOTE: This resolution replaces Resolution 24 (Cg-XIII), which is no longer in force.

RESOLUTION 27 (Cg-XIV)

QUALITY MANAGEMENT

THE CONGRESS,

AWARE of the desire of National Meteorological or Hydrometeorological Services to continue to enhance their operations, services and products;

NOTING that users/customers of meteorological and related data, products and services are also increasingly requesting that quality management systems be in place to help provide a level of assurance on the quality of those data, products and services,

NOTING FURTHER an ICAO recommended practice on the introduction of quality management systems for the provision of meteorological services for international air navigation,

RECOGNIZING that the enhancement of the quality of products and services also depended substantially on the quality of data and products

internationally exchanged through the WMO coordinated systems,

RECOGNIZING FURTHER that standards, elements of quality control, performance monitoring and related training of professionals could be found in a number of WMO publications,

EXPRESSING appreciation for the establishment of the Intercommission Task Group, with the leadership of CBS, to develop an overall approach for a WMO quality management framework,

TAKING INTO ACCOUNT the relevant work undertaken by the Executive Council,

DECIDES that WMO should work toward a Quality Management Framework (QMF) for NMSs that would eventually include and develop the following distinct though related elements, which could be addressed, possibly on a phased basis:

- (1) WMO technical standards;
- (2) Quality management system(s) including quality control; and
- (3) Certification procedure(s);

while recognizing that the costs associated with the development of such a framework had yet to be assessed;

DECIDES FURTHER that the development of a WMO QMF should enable the provision of early and continuing relevant advice to Members on developing their quality management system;

AGREES ALSO that the first priority is to consolidate the available pertinent technical standards to enable easy access and reference in the WMO QMF;

AGREES FURTHER that following work on standards, there should be consideration of possible aspects of quality management system(s) for NMSs, including those already widely accepted, and then eventually the matter of certification would need to be addressed;

REQUESTS:

- (1) The Executive Council:
 - (a) To take the lead in this matter, with the help of the technical commissions, making use of the already developed comprehensive system of WMO procedures and practices documented in the *Technical Regulations, Manuals,*

Guides, Guidelines and Technical Publications; and considering the need for possible adaptation of existing systems and procedures, especially relevant WMO regulatory material, that would assist NMSs to meet increasing expectations of users/customers for more effective and efficient service delivery;

- (b) To guide the development of the QMF, including the early availability of broad guidelines for Members, especially their NMSs; and
 - (c) To establish the appropriate mechanism for ensuring that this work is carried out;
- (2) Technical commissions to assist in the provision of technical guidance, advice, review and assessment, as appropriate;
 - (3) Regional associations to provide advice and feedback on this matter;
 - (4) Members to share relevant experience and cooperate with one another in progressing work in this area, including providing assistance to Members with specific needs on this matter, as appropriate;
 - (5) The Secretary-General to provide Secretariat support and take appropriate initiatives for the implementation of relevant actions.

RESOLUTION 28 (Cg-XIV)

ROLE AND OPERATION OF NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES

THE CONGRESS,

RECALLING its Resolutions 30 (Cg-XI) — Development of National Meteorological and Hydrological Services, and 26 (Cg-XIII) — Role and operation of National Meteorological Services, as well as the Geneva Declaration of the Thirteenth World Meteorological Congress,

RECOGNIZING that many of the activities under the WMO scientific and technical programmes which are tailored to meet society's needs are implemented through the NMHSs of the Members of the Organization in cooperation with other data and service providers,

REAFFIRMING the vital importance of the mission of the NMHSs in observing and understanding weather, climate and water resources as well as in providing meteorological, hydrological and related services in support of national needs, such as:

- (1) Protection of life and property;
- (2) Safeguarding the environment;
- (3) Contributing to national security and sustainable development;
- (4) Promotion of endogenous capacity building;

CONSIDERING that, in addition to meeting national needs, the effective operation of NMHSs is essential to ensure the provision of weather, climate, water and related services to meet international responsibilities of Members, as well as to ensure the effective implementation of the WMO scientific and technical programmes,

NOTING that national arrangements for the provision of meteorological, hydrological and related services have recently been subject to review in many countries, including both the basic role and operation of NMHSs and the role of other parts of Government and the private sector in the provision of special services,

EMPHASIZING the importance of maintaining and strengthening the unique and integrated international system for the observation, collection, processing and dissemination of meteorological and related data and products, including those relating to climate change and variability,

RECOGNIZING that issues on weather, climate and water require nations to work together in a spirit of mutual assistance and cooperation to ensure the

effective monitoring, understanding and prediction of relevant systems,

RECOGNIZING FURTHER the needs expressed by Members for WMO guidance on the role and operation of NMHSs, while also recognizing the diversity in the circumstances of individual countries such as their economic framework, legal systems and relevant government policies,

ENDORISING the guidance provided in the 2003 Statement of the Executive Council on the Role and Operation of National Meteorological Services,

URGES Members to ensure the most effective and efficient arrangements possible for the provision of meteorological, hydrological and related activities and services to meet society's needs,

ENCOURAGES Members to provide a clear statement of the role and mission for their NMHSs, and to assist in enhancing their status and visibility, as well as to provide appropriate financial and other support to their NMHSs,

FURTHER ENCOURAGES Members to maintain and strengthen their national meteorological and hydrological infrastructure to ensure the availability and quality of meteorological, hydrological and related data and products needed to:

- (1) Provide the full range of weather, climate and water services for the general safety, welfare and convenience of their national communities, in partnership with other government organizations, and/or academia, and in cooperation with the media and the private sector;
- (2) Meet their government's obligations for international exchange of those of its data and products which are essential for basic weather and climate service provision in other countries, for the support of the safety and efficiency of international shipping and aviation and water resources management;
- (3) Ensure the availability, for future generations, of a continuous, reliable, comprehensive historical record of its

nation's weather, climate and water resources;

INVITES Members to recognize that the unique nature of meteorological and related service provision requires:

- (1) A commitment by Governments to maintain and strengthen the basic meteorological and related infrastructure operated by their NMHSs, in the public interest;
- (2) A willingness on the part of all countries to continue the free and unrestricted international exchange of essential data and products among Members and their NMHSs;
- (3) A high level of international cooperation and collective action by NMHSs and other data and service providers;
- (4) Effective partnership between NMHSs and the media, academia and private meteorological sectors;

DECIDES that the topic of the role and operation of NMHSs should be further pursued as a matter of great importance;

REQUESTS the Executive Council:

- (1) To keep the subject of the role and operation of NMHSs under review;
- (2) To set up the necessary mechanism to ensure the further strengthening of the role and operation of NMHSs, taking into account the evolving role of WMO;
- (3) To encourage actively and facilitate the development of cooperative arrangements and partnerships, including with specific groups, among all relevant sectors and service providers;

REQUESTS the Secretary-General to provide support in this connection, to take the necessary initiatives and to continue his efforts to assist Members, including in seeking and providing scientific, technical, management, financial and other support for the development of NMHSs and the enhancement of their role and operation, as well as the sharing of relevant experiences among Members.

RESOLUTION 29 (Cg-XIV)

NATURAL DISASTER PREVENTION AND MITIGATION PROGRAMME

THE CONGRESS,

NOTING:

- (1) The *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902), agenda item 9.4,
- (2) The *Abridged Final Report with Resolutions of the Fifty-fourth Session of the*

Executive Council (WMO-No. 945) agenda item 11,

CONSIDERING:

- (1) The increasing demands for NMHSs to play a key role for natural disaster reduction at the local, national and international levels for sustainable development and poverty eradication,

- (2) That IDNDR has been succeeded by a new substantive initiative, the ISDR, and that there is a need to ensure a substantial contribution of WMO and NMHSs to the implementation of the ISDR,

RECOGNIZING the significant role that WMO and NMHSs play in international disaster reduction activities that concern mitigation of, and preparedness for, natural disasters of meteorological or hydrological origin,

DECIDES:

- (1) To initiate a new WMO major programme on Natural Disaster Prevention and Mitigation as a cross-cutting programme to enhance international cooperation and collaboration in the field of natural disaster activities;
- (2) That the substance of the Natural Disaster Prevention and Mitigation Programme be as indicated in Chapter 6, Section 6.9 of the Sixth WMO Long-term Plan, adopted under Resolution 25 (Cg-XIV);

- (3) That the activities under the Natural Disaster Prevention and Mitigation Programme for the fourteenth financial period be as indicated in the consolidated programme and budget (2004-2007), as approved by Fourteenth Congress;

URGES Members to collaborate actively in, and give all possible support to, the implementation of the WMO Natural Disaster Prevention and Mitigation Programme;

REQUESTS the Executive Council, with the assistance of technical commissions concerned, to promote the implementation of the Natural Disaster Prevention and Mitigation Programme;

REQUESTS the Secretary-General within the available budgetary resources:

- (1) To assist in the implementation of the Programme;
- (2) To collaborate in the implementation of the Programme with other interested international organizations and programmes, in particular with ISDR.

RESOLUTION 30 (Cg-XIV)

MAXIMUM EXPENDITURES FOR THE FOURTEENTH FINANCIAL PERIOD

THE CONGRESS,

NOTING:

- (1) Article 23 of the WMO Convention,
- (2) Article 4 of the Financial Regulations of the Organization,

AUTHORIZES the Executive Council during the fourteenth financial period from 1 January 2004 to 31 December 2007:

- (1) To incur expenditures of two hundred and fifty-three million eight hundred thousand Swiss francs (SFR 253 800 000), of which SFR 249 800 000 shall be from the assessed contributions and shall serve as the reference base for the assessed contributions budget level for the fifteenth financial period, and the balance of SFR 4 000 000 shall be from any cash surplus resulting from the thirteenth financial period, and the division of such expenditures into parts being shown in Annex 1 to this resolution;
- (2) To approve biennial appropriations within these limits;

FURTHER AUTHORIZES the Executive Council to incur any necessary expenditures additional to the sum stated above, resulting from:

- (1) Any unanticipated increases in Secretariat staff salaries and allowances over and above 1 per cent per annum as from 1 May 2003, consequent to changes in the United Nations salaries and allowances, if the Executive Council is satisfied that they cannot reasonably be met without affecting adversely the programmes approved by Congress;
- (2) Any substantial increase in inflation estimates over and above the 1 per cent per annum as from 1 May 2003 to the extent that the Executive Council is satisfied that they cannot reasonably be met by economies within the approved budget; and
- (3) Any cash surplus arising from the thirteenth financial period, over and above SFR 4 000 000, to be used for fully costed high priority activities listed in Annex 2 as guidance, which activities would be completed within the fourteenth financial period.

ANNEX 1 TO RESOLUTION 30 (Cg-XIV)
MAXIMUM EXPENDITURE FOR THE FOURTEENTH FINANCIAL PERIOD
(thousands of Swiss francs)

<i>Revenue</i>		<i>Expenditures</i>	<i>Assessed budget</i>	<i>Cash surplus resulting from the thirteenth financial period*</i>	<i>Total</i>
Assessed contributions	249 800.0	1. Policy-making organs	6 501.8	0.0	6 501.8
Cash surplus resulting from the thirteenth financial period*	4 000.0	2. Executive management	13 606.5	40.0	13 646.5
		3. Scientific and technical programmes:			
		3.0 Overall coordination of the scientific and technical programmes	8 830.7	0.0	8 830.7
		3.1 World Weather Watch Programme	25 936.5	478.5	26 415.0
		3.2 World Climate Programme	25 244.4	468.7	25 713.1
		3.3 Atmospheric Research and Environment Programme	14 192.8	266.9	14 459.7
		3.4 Applications of Meteorology Programme	16 430.8	316.4	16 747.2
		3.5 Hydrology and Water Resources Programme	11 887.1	221.0	12 108.1
		3.6 Education and Training Programme	15 216.1	292.2	15 508.3
		3.7 Technical Cooperation Programme	5 678.5	108.7	5 787.2
		3.8 Regional Programme	15 051.5	517.5	15 569.0
		Sub-total Part 3	138 468.4	2 669.9	141 138.3
		4. Linguistic, Publication and Conference Services	44 176.7	618.5	44 795.2
		5. Resource management	42 352.8	671.6	43 024.4
		6. Other budgetary provisions	1 921.4	0.0	1 921.4
		7. Acquisition of capital assets – Headquarters building	2 772.4	0.0	2 772.4
TOTAL	253 800.0	TOTAL	249 800.0	4 000.0	253 800.0

* Subject to availability of cash surplus resulting from the thirteenth financial period.

ANNEX 2 TO RESOLUTION 30 (Cg-XIV)

**HIGH PRIORITY ACTIVITIES TO BE FUNDED FROM CASH SURPLUS
RESULTING FROM THE THIRTEENTH FINANCIAL PERIOD****SUMMARY TABLE**

	<u>SFR</u>
PRIORITY GROUP 1	
Unmet institutional needs (including the following activities)	3 769 900
EC Working Groups on the WMO Structure and Conventions, additional EC member, partial restoration of FIN staff, Oracle Financials upgrade 11i, HR module, and Arabic/Chinese	
Unmet programme needs (including the following activities)	1 000 000
Quality management, expansion of CLIPS, technical conference on improvement of services in terminal areas, supplementary funding for regional expert meetings in hydrology, 3 training seminars on cost recovery, and additional funding for regional seminars and technical conferences	
Total, Priority Group 1	<u>4 769 900</u>
PRIORITY GROUP 2	
Unmet institutional needs (including the following activities)	2 468 300
Arabic/Chinese (additional funding), Oracle payroll module, Oracle maintenance/IT support, language tools, and web development	
Unmet programme needs (including the following activities)	1 484 300
High-level Conference on Role and Socio-economic Benefits of NMHSs, fourth Workshop on Hurricane Forecasting and Warning, data rescue/CDMS/climate monitoring, 4 regional workshops on public weather services related to disaster reduction, 2 regional Technical Conferences on Water Resources Assessment, 3 regional Workshops on Application of the Operational <i>Manual on Water Resources Assessment</i> , Technical Conference on Flood Forecasting, and regional seminars and technical conferences (supplement to the Priority Group 1 funding)	
Total, Priority Group 2	<u>3 953 200</u>
PRIORITY GROUP 3	
Unmet institutional needs (including the following activities)	2 969 900
EDMS, restoration of FIN staff, benefit module, Oracle add-in tools, and Oracle Financials upgrade 12i/maintenance	
Unmet programme needs (including the following activities)	1 213 200
Seed money for the third Conference on Women, a Conference on Decision Processes in Climate Applications, a P-5 post for resource mobilization	
Total, Priority Group 3	<u>4 183 100</u>
Grand total	<u>12 906 200</u>

**HIGH PRIORITY ACTIVITIES TO BE FUNDED FROM CASH SURPLUS
RESULTING FROM THE THIRTEENTH FINANCIAL PERIOD**

LIST 1: UNMET INSTITUTIONAL NEEDS

	<u>SFR</u>
PRIORITY GROUP 1	
EC Working Groups on the WMO Structure and Convention	127 800
Additional EC member	32 200
Partial restoration of FIN staff	1 220 000
Oracle Financial upgrading 11i/maintenance	1 150 000
HR module	600 000
Arabic and Chinese*	639 900
Total, Priority Group 1	<u>3 769 900</u>
PRIORITY GROUP 2	
Arabic and Chinese (additional funding)*	684 900
Oracle payroll module	400 000
Oracle maintenance/IT support	400 000
Language tools	184 000
Web development	800 000
Total, Priority Group 2	<u>2 468 900</u>
PRIORITY GROUP 3	
EDMS	300 000
Restoration of FIN staff	1 219 900
Staff benefits module	300 000
Oracle Add-in tools	300 000
Oracle Financials upgrade 12i/maintenance	850 000
Total, Priority Group 3	<u>2 969 900</u>
Grand total	<u>9 208 700</u>

* The full requirements for Arabic and Chinese linguistic services amount to SFR 824 800 and SFR 500 000, respectively.

LIST 2: UNMET INSTITUTIONAL NEEDS

	<u>SFR</u>
PRIORITY GROUP 1	
Consultancy services to develop preliminary documentation aimed at initiating the quality of management	50 000
Increased funding for various projects under CCI: expansion of the CLIPS activities	104 000
Organization of the Technical Conference on Improvement of Services in Terminal Areas	85 000
Supplementary funding to upgrade six regional expert meetings (included in the additional activities worth SFR 4 million)	143 300
Organization of three training seminars related to cost recovery	200 000
Additional funding for regional seminars and technical conferences	417 700
Total, Priority Group 1	<u>1 000 000</u>
PRIORITY GROUP 2	
Organization of a High-level Conference on the Role and the Socio-economic Benefits of NMHSs (subject to EC approval)	127 800
Organization of the additional fourth workshop with provision of linguistic services in both English and Spanish (SFR 60 000 for provision of linguistic services in English only)	95 000
Increased funding for various projects under CCI: expansion of the data rescue, CDMS and climate monitoring activities	255 000
Organization of four regional Workshops on Public Weather Services related to disaster reduction	200 000
Two regional Technical Conferences on Water Resources Assessment	205 200
Three regional Workshops on Application of the Operational <i>Manual on Water Resources Assessment</i>	156 200
One worldwide synthesis Technical Conference on Flood Forecasting	205 200
Additional funding for regional seminars and technical conferences (supplement to the Priority Group 1 funding)	239 900
Total, Priority Group 2	<u>1 484 300</u>
PRIORITY GROUP 3	
Seed money for the organization of the Third Conference on Women in Meteorology and Hydrology (covering the travel costs of 50 to 80 participants)	150 000
Organization of a Conference on Decision Processes in Climate Applications	80 000
An additional post (P-5) for resource mobilization	983 200
Total, Priority Group 3	<u>1 213 200</u>
Grand total	<u>3 697 500</u>

RESOLUTION 31 (Cg-XIV)

RESULTS-BASED BUDGETING

THE CONGRESS,

NOTING:

- (1) Article 23 of the WMO Convention,
- (2) The report of the Joint Inspection Unit on the experience of United Nations system organizations with RBB,
- (3) Recommendation 5 of the 2001 report of the Financial Advisory Committee,

CONSIDERING that RBB includes three main features, namely:

- (a) Use of "logical framework" for informed budgetary decision making;
- (b) Resources justification by results;
- (c) Infusion of performance measurement into the budgetary decision-making process;

That RBB is a key instrument for ensuring effective management oversight and that monitoring and evaluation are integral parts of the RBB process,

CONSIDERING FURTHER that WMO has been implementing an RBB-like approach for several years, and the essential elements of strategic planning integrated with the programme budget and performance monitoring focused on programme outputs are in place,

ENDORSES the actions taken by the Executive Council and the Secretary-General on RBB in connection with the preparation of the Sixth WMO Long-term Plan and the programme and budget for the fourteenth financial period;

STRESSES in this regard the need for continued improvement in the whole RBB process including formulation of objectives, expected results and performance indicators, as well as its built-in system for performance measurement and reporting, with full involvement of the relevant constituent bodies;

DECIDES:

- (1) That RBB should be introduced into the WMO system;
- (2) That the RBB process should be implemented in a gradual and incremental manner, taking fully into account the WMO established rules and regulations;
- (3) That the design of programme objectives should be in the context of the preparation of the WMO Long-term Plan;

APPROVES the nine key performance indicators to be used by Congress and the Executive Council to measure the Secretariat's performance in programme and budget implementation for the fourteenth financial period as presented in Annex 1 to this Resolution;

ADOPTS the concept of RBB for WMO as set out in Annex 2 to this Resolution;

NOTES that no revision to the WMO Financial Regulations is required for implementation of the RBB process;

REQUESTS the Executive Council:

- (1) To address further the issue of the policy framework for strategic planning, programming and budgeting, performance evaluation, oversight and accountability;
- (2) To establish appropriate machinery (mechanism) through the Executive Council Working Group on Long-term Planning with responsibility for:
 - (a) Monitoring the implementation of the programme and budget for the fourteenth financial period 2004-2007;
 - (b) Submitting to Fifteenth Congress a report on the Secretariat performance measured on the basis of the nine key performance indicators for the fourteenth financial period;
 - (c) Preparing key performance indicators and related performance measurement and reporting system to be used by Congress and the Executive Council to measure the Secretariat's performance in programme and budget implementation for the fifteenth financial period 2008-2011;

REQUESTS the Secretary-General:

- (1) To bring this Resolution to the attention of all concerned;
- (2) To take all necessary action for the implementation of the RBB process for monitoring and evaluating of the programme and budget for the fourteenth financial period 2004-2007, as well as for preparing the biennial budgets 2004-2005 and 2006-2007, and proposals for the fifteenth financial period 2008-2011;
- (3) To ensure that the expected results and performance indicators are directly and clearly linked to the objectives of the programmes in accordance with the Long-term Plan;
- (4) To keep the guidelines on the WMO RBB under review and to take appropriate measures to implement an adequate training programme, within available budgetary resources;
- (5) To submit a report to Fifteenth Congress on the implementation of the RBB during the fourteenth financial period 2004-2007.

ANNEX 1 TO RESOLUTION 31 (Cg-XIV)

**KEY PERFORMANCE INDICATORS FOR THE FOURTEENTH FINANCIAL PERIOD (2004-2007)
PRESENTED IN RELATION TO THE NINE STRATEGIES OF THE 6LTP****6LTP STRATEGY 1**

To enable the delivery of increasingly accurate and reliable warnings of severe events related to weather, water, climate and the related natural environment throughout the world, and ensure that they are able to reach their target audience (individuals, emergency services, decision makers) in a timely and useful manner.

KEY PERFORMANCE INDICATOR 1

Involvement of WMO in the establishment and effective operation of regional/subregional centres and their activities in the issuance of early warnings for disaster preparedness: measured by the number of new centres established and the degree of effective operation of all centres issuing early warnings before severe weather, water, climate and related natural environment events.

6LTP STRATEGY 2

To enable the provision of increasingly beneficial weather, water, climate and related environmental services to the public, Governments and other users/customers throughout the world.

KEY PERFORMANCE INDICATOR 2

Sets of guidelines for use by WMO Members in assisting them in facilitating cooperation between users and providers: measured by WMO Members' responses as to the usefulness of the guidelines.

6LTP STRATEGY 3

To enhance WMO's role as the United Nations system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources; including ensuring that it contributes to relevant international conventions, protocols, and other legal instruments, and that relevant agreements are scientifically based.

KEY PERFORMANCE INDICATOR 3

The production of manuals, guides and technical documents dealing with the establishment and maintenance of operational activities associated with meteorology including climatology, hydrology and oceanography: measured by the number of internationally recognized WMO manuals, guides and technical reports and their distribution as well as users responses to these documents.

6LTP STRATEGY 4

To inform and educate the public, Governments and other interested parties about the socio-economic benefits of understanding the weather, water, climate and related environment.

KEY PERFORMANCE INDICATOR 4

Degree of satisfaction of Members and other external users accessing the WMO Web site: measured by statistics of WMO Web site visited in terms of hits by external users and comments received on the usefulness of the Web site.

6LTP STRATEGY 5

To understand and improve the modelling of the processes which affect the current and future state of the atmosphere, the weather, water resources, the physical state of the oceans, climate change and related environmental states such as air quality and pollution levels.

KEY PERFORMANCE INDICATOR 5

The progress of skill of relevant atmospheric and ocean modelling in their contribution to weather forecasting, water resources management, climate prediction, climate scenario projections and environmental issues such as air quality and pollution levels: measured by a survey among WMO Members to assess the benefits of the WMO contribution to the progress.

6LTP STRATEGY 6

To observe, record and report on the weather, water resources, climate and the related natural environment, to use these data for the preparation of operational forecast and warning services and related information, and to maintain and enhance systems to exchange these data, products and information.

KEY PERFORMANCE INDICATOR 6

Production of statistical and other reporting information on the level of implementation and effective functioning of observing systems, communications systems and data-processing systems supporting the

delivery of operational services on weather, water, climate, and the related natural environment: measured by an improved level of reporting on the effectiveness of operational systems supporting the delivery of services.

6LTP STRATEGY 7

To enhance NMHSs capabilities to deliver services, and improve cooperation and collaboration between them.

KEY PERFORMANCE INDICATOR 7

The degree of satisfaction of Members and participants in training events and fellowship awards, and the degree to which these have contributed to the human resources development in Members' NMHSs: measured by assessment of the degree of satisfaction of NMHSs and participants on training received, and by the degree of contribution to human resources development of training events and fellowships awarded.

6LTP STRATEGY 8

To work more effectively with international partners, other relevant organizations, academia, the media and the private sector.

KEY PERFORMANCE INDICATOR 8

Cooperative arrangements with other agencies and bodies of the United Nations system and with other intergovernmental organizations in programme areas of common interest: measured by the number of new and actively ongoing cooperative agreements and joint activities and by the number of associated projects in planning or under way.

6LTP STRATEGY 9

To improve the effectiveness, efficiency and flexibility of the structure and working mechanisms and practices of WMO, to enable it to respond more rapidly to the changing needs of society and to the new opportunities provided by technological advances.

KEY PERFORMANCE INDICATOR 9

The extent to which the Secretariat operates, on the basis of modernized integrated results-based management system, including results-based performance measurement and reporting system: measured by the degree of satisfaction by the Financial Advisory Committee and the Executive Council as expressed during their respective sessions and other feedback received from Members.

ANNEX 2 TO RESOLUTION 31 (Cg-XIV)

CONCEPT OF RESULTS-BASED BUDGETING

Definition of results-based budgeting

1 RBB is a programme budget process in which:

- (a) Programme formulation and resources justification involves a set of predefined objectives, expected results, outputs, inputs and performance indicators, which constitute a "logical framework";
- (b) Expected results justify resource requirements which are derived from, and linked to, outputs to be delivered with a view to achieving such results; and
- (c) Actual performance in achieving results is measured by predefined performance indicators.

2. This definition captures three main features of RBB, namely, (a) use of "logical framework" for informed budgetary decision-making; (b) resources justification by results; and (c) infusion of performance measurement into the budgetary decision-making process.

Logical framework for informed budgetary decision-making

3. The logical framework is a conceptual tool for designing programmes, which involves the description of: (a) objectives to be reached within the budgetary period; (b) expected results necessary in order to reach the objectives; (c) outputs (services and products) to be delivered by the Secretariat to achieve the expected results; (d) inputs (resources) to be used for the output delivery; and (e) performance indicators to be used to measure the actual performance against the expected results. Within the logical framework, programmes and resources requirements are presented in a coherent way, providing WMO Members with a comprehensive picture of programmes.

4. The programme activities formulated within the logical framework should be a translation of the Long-term Plan. The quadrennial/biennial programme perspective should derive from the long-term perspective and quadrennial/biennial objectives and expected results need to be based on long-term objectives and

results. In this way, long-term strategic planning and programme budgeting are interlinked en cascade, and become a seamless process.

Resources justification by results

5. In the RBB process, budgetary resources are justified by expected results. The greater emphasis placed on expected results will not only optimize the use of resources, but also improve the responsiveness of the Secretariat to WMO Members. The needs of the WMO Members determine expected results, and the use of resources will be fine-tuned specifically to address the needs of the WMO Members. Consequently, the Secretariat will choose the most efficient and effective modalities of action within available resources, in order to be responsive to the needs of WMO Members.

6. The Secretariat will be held accountable for achieving results within areas of its responsibility. In this connection, however, it should be noted that external factors including WMO Members' actions, which are uncontrollable by the Secretariat, might influence the achievement of expected results. This is why main stakeholders, in particular, WMO Members, would need to be involved in the definition of expected results, so that they will positively take part in achievement of results within their areas of responsibility.

Infusion of performance measurement into the decision-making process

7. In the RBB system, the seamless planning, programming, budgeting, implementation, monitoring and evaluation cycle revolves around the concept of result, and, through this focus on results, the achievement of results and continuous improvement based on performance information become central to the decision-making process.

8. Performance should be measured in a coherent way at the strategic level, as well as other levels, such as programme, subprogramme and projects. Programmatic performance and financial performance will be holistically measured on the basis of results. The infusion of coherent and holistic performance measurement at all levels of programme implementation will foster organizational learning and will help Congress, the Executive Council, regional associations, technical commissions and the Secretariat to ensure that lessons learnt are fed back into the planning process.

Oversight and governance

9. If fully implemented, RBB is a key instrument for ensuring effective oversight functions and good governance. Monitoring and evaluation should be integral parts of the RBB process. Programme managers will, therefore, have to monitor and evaluate their own performance and regularly report on it to their supervisors. Senior management will consequently reinforce its oversight functions in this process, with assistance from the Chief, Internal Audit.

10. Reporting on results achieved to WMO Members is critical in the RBB process. This reporting requirement will increase the effective involvement of WMO Members in programme budget decision-making, and will eventually enhance their governance role. Results-oriented long-term planning will provide a clearer strategic framework that serves as the basis of the logical framework for RBB. The use of RBB does not preclude the review of budgetary resources by WMO Members at an appropriate level of detail. It will enhance their review of programme budget proposals and performance, allowing them to examine both financial and programmatic information. Results-based performance reporting will therefore enhance the ability of Congress and the Executive Council to address accountability of the Secretariat and to exercise their oversight functions with assistance from regional associations and technical commissions.

Conclusions

11. RBB is, by and large, a "learning by doing" process. The full implementation of RBB will require a lengthy process over several bienniums. Like other budgeting methodologies, RBB is not a panacea that offers magic solutions, but only after their long-term concerted efforts to apply RBB, the WMO Members and the Secretariat can benefit from this new promising methodology.

RESOLUTION 32 (Cg-XIV)

AGREEMENT BETWEEN THE PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION AND THE WORLD METEOROLOGICAL ORGANIZATION

THE CONGRESS,

NOTING:

- (1) Article 26 of the WMO Convention,
- (2) Resolution 6 (Cg-V) — Relations with the United Nations and other international organizations,

- (3) General summary paragraphs 14.4.1 to 14.4.4 of the *Abridged Final Report with Resolutions of the Fifty-third Session of the Executive Council* (WMO-No. 929) concerning the establishment of an agreement with the Preparatory

Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization,
DECIDES to approve the Agreement between the Preparatory Commission for the Comprehensive

Nuclear-Test-Ban Treaty Organization and WMO as given in the annex to this resolution;
AUTHORIZES the Secretary-General to sign the Agreement on behalf of WMO.

ANNEX TO RESOLUTION 32 (Cg-XIV)

AGREEMENT BETWEEN THE PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION AND THE WORLD METEOROLOGICAL ORGANIZATION

WHEREAS the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereinafter the "Commission") was established for the purpose of carrying out the necessary preparations for the effective implementation of the Comprehensive Nuclear-Test-Ban Treaty;

WHEREAS the World Meteorological Organization (hereinafter the "Organization"), a specialized agency of the United Nations, is recognized as the organization responsible, for facilitating international cooperation in the field of meteorology, hydrology and related geophysical services, and promoting the rapid exchange of meteorological information;

NOW, THEREFORE, the Commission and the Organization have decided to conclude an agreement for cooperation and have agreed as follows:

ARTICLE I

Cooperation and consultation

1. The Commission and the Organization agree that with a view to facilitating the effective attainment of the objectives set forth in their respective constitutional instruments, within the general framework established by the Charter of the United Nations, they will act in close cooperation with each other and will consult each other regularly in regard to matters of common interest.
2. The Commission recognizes the responsibilities of the Organization as set forth in the Convention of that Organization and recognized in the agreement between the United Nations and the Organization.
3. The Organization recognizes the responsibilities of the Commission as set forth in the Comprehensive Nuclear-Test-Ban Treaty and the Resolution Establishing the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, and as recognized in the agreement between the United Nations and the Commission.
4. In particular, the Organization recognizes the responsibility of the Commission with regard to the verification regime for the Comprehensive Nuclear-Test-Ban Treaty, without prejudice to the responsibility of the Organization in matters relating to meteorology and other geophysical sciences and their operational aspects as defined in its Convention.
5. More specifically, the Commission and the Organization agree to cooperate closely with regard to meteorological measurements, the exchange of meteorological observations and transport modeling, and to establish specific procedures to that end in accordance with the provisions of this Agreement.
6. In all cases where either Organization proposes to initiate a programme or activity on a subject in which the other Organization has or may have a substantial interest, the first party shall consult the other before bringing to finality the programme or initiating the activity.

ARTICLE II

Reciprocal representation

1. Representatives of the Organization shall be invited to attend the sessions of the Commission and to participate without vote in the deliberations of that body and, where appropriate, of its working groups with respect to items on their agenda in which the Organization has an interest.
2. Representatives of the Commission shall be invited to attend the Congress of the Organization and to participate without vote in the deliberations of that body, and where appropriate, of its committees or commissions with respect to items on their agenda in which the Commission has an interest.
3. Representatives of the Commission shall be invited, as appropriate, to attend meetings of the Executive Council of the Organization and to participate without a vote in the deliberations of that body and of its committees with respect to items on their agenda in which the Commission has an interest.
4. Appropriate arrangements shall be made by agreement from time to time for the reciprocal representation of the Commission and the Organization at other meetings convened under their respective auspices which consider matters in which the other organization has an interest.

ARTICLE III**Exchange of information and documents**

1. Subject to such arrangements as may be necessary for the safeguarding of confidential material, the Provisional Technical Secretariat of the Commission and the Secretariat of the Organization shall keep each other fully informed concerning all projected activities and all programmes of work which may be of interest to the other party.
2. The Commission and the Organization recognize that they may find it necessary to apply certain limitations for the safeguarding of confidential information furnished to them. They therefore agree that nothing in this Agreement shall be construed as requiring either of them to furnish such information as would, in the judgment of the party possessing the information, constitute a violation of the confidence of any of its Members or anyone from whom it has received such information or otherwise interfere with the orderly conduct of its operations.
3. The parties agree that meteorological observations which are exchanged in accordance with the provisions of this Agreement shall, subject to the need to protect those observations from illegal commercial use, not be subject to any other restrictions.
4. The Executive Secretary of the Commission and the Secretary-General of the Organization or their representatives shall, at the request of either party, arrange for consultations regarding the provision by either party of such special information as may be of interest to the other party.

ARTICLE IV**Proposal of agenda items**

After such preliminary consultations as may be necessary, the Organization shall include on the provisional agenda of its Congress or its Executive Council items proposed to it by the Commission. Similarly, the Commission shall include on its provisional agenda items proposed by the Organization. Items submitted by either party for consideration by the other shall be accompanied by an explanatory memorandum.

ARTICLE V**Cooperation between Secretariats**

The Provisional Technical Secretariat of the Commission and the Secretariat of the Organization shall maintain a close working relationship in accordance with such arrangements as may have been agreed upon from time to time by the Executive Secretary of the Commission and the Secretary-General of the Organization.

ARTICLE VI**Administrative and technical cooperation**

The Commission and the Organization agree to consult each other from time to time regarding the most efficient use of personnel and resources and appropriate methods of avoiding the establishment and operation of competitive or overlapping facilities and services.

ARTICLE VII**Statistical services**

In view of the desirability of maximum cooperation in the statistical field and of minimizing the burdens placed on national Governments and other organizations from which information may be collected, the Commission and the Organization undertake to avoid undesirable duplication between them with respect to the collection, compilation and publication of statistics and to consult with each other on the most efficient use of information, resources and technical personnel in the field of statistics.

ARTICLE VIII**Personnel arrangements**

1. The Commission and the Organization agree to consult whenever necessary concerning matters of common interest relating to the terms and conditions of employment of staff.
2. The Commission and the Organization agree to cooperate regarding the exchange of personnel and to determine conditions of such cooperation in supplementary arrangements to be concluded for that purpose in accordance with Article X of this Agreement.

ARTICLE IX
Financing of special services

If compliance with a request for assistance made by either Organization to the other would involve substantial expenditure for the organization complying with the request, consultation shall take place with a view to determining the most equitable manner of meeting such expenditure.

ARTICLE X
Implementation of the Agreement

The Executive Secretary of the Commission and the Secretary-General of the Organization may enter into such arrangements for the implementation of this Agreement as may be found desirable in the light of the operating experience of the two Organizations.

ARTICLE XI
Notification to the United Nations and filing and recording

1. In accordance with its agreement with the United Nations, the Organization will inform the United Nations forthwith of the terms of the present Agreement.
2. On the coming into force of the present Agreement in accordance with the provisions of Article XIII, it will be communicated to the Secretary-General of the United Nations for filing and recording.

ARTICLE XII
Revision, termination and succession

1. On six months' notice given by either party, this Agreement shall be subject to revision by agreement between the Commission and the Organization.
2. This Agreement may be terminated by either party on 31 December of any year by notice given not later than 30 June of that year.
3. Upon the succession of either party, the successor organization shall notify the other party of its succession in respect of this Agreement.

ARTICLE XIII
Entry into force

1. This Agreement shall come into force on its approval by the Commission and by the Congress of the Organization.
2. Upon the approval of this Agreement by the Commission and its endorsement by the Executive Council of the Organization, and pending its approval by the Congress of the Organization, the Executive Secretary of the Commission and the Secretary-General of the Organization may implement provisional measures consistent with this Agreement.

PROTOCOL

This Agreement was approved by the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization on and by the Congress of the World Meteorological Organization on, and thus, in accordance with the terms of Article XIII of the Agreement, it entered into force on the latter date.

IN WITNESS WHEREOF, the Executive Secretary of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the Secretary-General of the World Meteorological Organization have affixed their signatures to two original copies of the Agreement in the English language.

For the Preparatory Commission for the
Comprehensive Nuclear-Test-Ban Treaty Organization

For the
World Meteorological Organization

RESOLUTION 33 (Cg-XIV)

EQUAL OPPORTUNITIES FOR THE PARTICIPATION OF WOMEN IN METEOROLOGY AND HYDROLOGY

THE CONGRESS,

NOTING:

- (1) Resolution 29 (Cg-XIII) — Equal opportunities for participation of women in meteorology and hydrology,
- (2) That all WMO regional associations had passed recommendations and resolutions encouraging and supporting increased participation of women in the work of the associations,
- (3) That all WMO technical commissions had passed resolutions encouraging equal opportunities for men and women in the work of the commissions,

NOTING FURTHER:

- (1) The United Nations Conference on Women (Beijing, 1995) and its recognition of the importance of women and their contributions to science,
- (2) The recommendations and plan of action of the Second WMO Conference of Women in Meteorology and Hydrology (Geneva, March 2003),
- (3) The results of the 2001 WMO global survey on the participation of women and men in activities of WMO,
- (4) That WMO is responsible for coordinating the world's work in meteorology and operational hydrology for all mankind, men and women alike,

CONSIDERING:

- (1) The need for trained, qualified and diligent professionals regardless of gender, in the work of WMO,
- (2) The ultimate and desirable goal of working towards and achieving gender balance in WMO and NMHSs,
- (3) The urgent need to encourage national education programmes in science and technology that actively target girls and women predisposing and training them to

enter the fields of meteorology and operational hydrology,

- (4) The need to increase opportunities and inducements for the recruitment of women in all sections of NMHSs, and provide equal opportunities for career advancement to the highest levels,

WELCOMING and supporting the active participation of women in Congress, the Executive Council, technical commissions and regional associations,

ENCOURAGES increased participation and involvement of women in these and other WMO bodies;

URGES Members to implement the recommendations made by the Second WMO Conference of Women in Meteorology and Hydrology (Geneva, March 2003) in order to speed up the process of equal opportunity for the increased participation of women in these professions and WMO constituent bodies;

RECOMMENDS that Members:

- (1) Continue to encourage, promote and facilitate equal opportunities for women in science and technology in order to prepare them for careers in scientific professions such as meteorology and hydrology;
- (2) Facilitate the participation of women in education and training activities of WMO;
- (3) Provide active encouragement and support for equal opportunity for the participation of women in all fields of meteorology including climatology, and hydrology, at decision-making levels, and in national regional and international cooperation programmes;

REQUESTS the Secretary-General to continue his efforts as regards this important issue and to report to Fifteenth Congress on progress made on aspects of the implementation of this resolution during the fourteenth financial period.

NOTE: This resolution replaces Resolution 29 (Cg-XIII), which is no longer in force.

RESOLUTION 34 (Cg-XIV)

HOLDING OF A THIRD INTERNATIONAL POLAR YEAR IN 2007-2008

THE CONGRESS,

CONSIDERING the fundamental contribution of the first and second International Polar Years, held in 1882-1883 and 1932-1933, to the understanding of hydrometeorological processes in the polar regions,

NOTING the sensitivity of high latitude regions of our planet to natural and human impacts at the global and regional levels and the need in this connection to study processes governing environmental changes in polar areas,

NOTING FURTHER that the main efforts at international cooperation under a Third International Polar Year will be to determine present and evaluate future climate change and the state of the environment in the polar regions, **CONSIDERING FURTHER** that the observational data and scientific research results obtained will form a basis for developing recommendations for national government agencies and bodies involved in activities in the Arctic and Antarctic, **APPROVES** the idea of holding a Third International Polar Year in 2007-2008 under the auspices of WMO; **REQUESTS** the Executive Council at its fifty-sixth session to examine the preparation and holding of

a Third International Polar Year in 2007-2008 in collaboration with other international organizations such as the Arctic Council, the Consultative Conference on the Antarctic Treaty, the International Arctic Science Committee, the Intergovernmental Oceanographic Commission and the Scientific Committee on Antarctic Research and the establishment of an ad hoc working body to prepare a plan of action in preparation for a Third International Polar Year and to coordinate its implementation;

REQUESTS the Secretary-General to prepare the relevant programme document for the above-mentioned Executive Council session.

RESOLUTION 35 (Cg-XIV)

ESTABLISHMENT OF THE FINANCIAL REGULATIONS OF THE WORLD METEOROLOGICAL ORGANIZATION

THE CONGRESS,

NOTING:

- (1) That Article 8(d) of the Convention of the World Meteorological Organization authorizes Congress to determine regulations prescribing the procedures of the various bodies of the Organization and, in particular, the Financial Regulations,
- (2) The decisions taken by previous Congresses, in establishing Financial Regulations,

CONSIDERING that Financial Regulations 10.1, 14.5, 15.9 and 15.11 require amendment, **DECIDES** that the Financial Regulations as set out in the annex to this resolution shall apply to the fourteenth financial period, commencing on 1 January 2004.

NOTE: This resolution replaces Resolution 30 (Cg-XIII), which remains in force only until 31 December 2003.

ANNEX TO RESOLUTION 35 (Cg-XIV)

PROPOSED REVISIONS TO THE FINANCIAL REGULATIONS

ARTICLE 1

Applicability

- 1.1 These Regulations shall govern the financial administration of the World Meteorological Organization (hereinafter called the Organization). They may be amended only by Congress. In the event of any conflict between any provisions of these Regulations and any provisions of the Convention, the Convention shall prevail.

ARTICLE 2

The financial period

- 2.1 The financial period shall be four years beginning on 1 January of the calendar year immediately following a session of Congress and ending on 31 December of the fourth year.
- 2.2 Nevertheless, in the event that a session of Congress is completed before the beginning of the last full year of a financial period, a new financial period shall begin on 1 January following that session of Congress.

ARTICLE 3

Maximum expenditures for the financial period

- 3.1 Estimates of maximum expenditures which may be incurred by the Organization in the financial period shall be prepared by the Secretary-General.
- 3.2 The estimates shall cover the income and expenditures for the financial period to which they relate and shall be presented in Swiss francs.

- 3.3 The estimates shall be divided into parts, sections, chapters and articles and shall be accompanied by such informational annexes and explanatory statements as may be requested by, or on behalf of, Congress, and such further annexes or statements as the Secretary-General may deem necessary and useful.
- 3.4 The estimates shall be submitted to the Executive Council at least five weeks prior to the meeting at which they will be considered. The Executive Council shall examine them and prepare a report on them to Congress.
- 3.5 The estimates prepared by the Secretary-General shall be transmitted to all Members at least six months prior to the opening of Congress. The report of the Executive Council on the estimates shall be transmitted with the estimates or as soon as possible thereafter, but not later than three months before the beginning of the session of Congress.
- 3.6 The maximum expenditures for the following financial period shall be voted by Congress after consideration of the estimates and of any supplementary estimates prepared by the Secretary-General and of the reports of the Executive Council on them.
- 3.7 Supplementary estimates for the financial period may be submitted to the Executive Council by the Secretary-General during the interval between the submission of the estimates to the Executive Council and the opening of Congress.
- 3.8 The Secretary-General shall prepare each supplementary estimate in a form consistent with the applicable portion of the estimates for the financial period.
- 3.9 When time permits, the Executive Council shall examine the supplementary estimates and prepare a report thereon to Congress; otherwise they shall be left for consideration by Congress.

ARTICLE 4

Authorization of appropriations for the financial period

- 4.1 The maximum expenditures voted by Congress shall constitute an authority to the Executive Council to approve appropriations for each of the two bienniums comprising the financial period. The total appropriations shall not exceed the amount voted by Congress.
- 4.2 Transfers between appropriation parts may be authorized by the Executive Council, subject to the total amount of such transfers not exceeding 3 (three) per cent of the total maximum expenditure authorized for the financial period.

ARTICLE 5

The biennium

- 5.1 The first biennium will begin with the commencement of the financial period, followed by the second biennium beginning on 1 January of the third year of the financial period.

ARTICLE 6

The biennial budget

- 6.1 The biennial budget estimates shall be prepared by the Secretary-General.
- 6.2 The estimates shall cover income and expenditure for the biennium to which they relate and shall be presented in Swiss francs.
- 6.3 The biennial budget estimates shall be divided into parts, sections, chapters and articles and shall be accompanied by such informational annexes and explanatory statements as may be requested by, or on behalf of, the Executive Council, and such further annexes or statements as the Secretary-General may deem necessary and useful.
- 6.4 The Secretary-General shall submit to the regular meeting of the Executive Council estimates for the following biennium. The estimates shall be transmitted to all members of the Executive Council at least five weeks prior to the opening of the regular session of the Executive Council.
- 6.5 The budget for the following biennium shall be approved by the Executive Council.
- 6.6 Supplementary estimates may be submitted by the Secretary-General whenever necessary.
- 6.7 The Secretary-General shall prepare these supplementary estimates in the same form as that of the applicable portions of the estimates for the biennium and shall submit the estimates to the Executive Council for approval.

ARTICLE 7

Appropriations

- 7.1 The appropriations approved by the Executive Council shall constitute an authorization to the Secretary-General to incur obligations and make payments for the purposes for which the appropriations were approved and up to the amounts so approved.
- 7.2 Appropriations shall be available for obligation during the biennium to which they relate.

- 7.3 Appropriations shall remain available for twelve months following the end of each of the two biennia to which they relate to the extent that they are required to discharge contractual obligations in respect of orders placed, contracts awarded, services received, and any other legal obligation entered into during the biennium. At the end of the first biennium the remaining balance shall be re-appropriated subject to the approval of the Executive Council to the corresponding parts of the budget of the second biennium for the implementation of the programme approved by Congress. At the end of the second biennium the balance of the appropriations shall be surrendered.
- 7.4 At the end of the period provided in Regulation 7.3, the then remaining balance of any appropriations retained shall be surrendered.
- 7.5 Notwithstanding the provisions of Regulations 7.3 and 7.4 in the case of outstanding legal obligations in respect of fellowships, the portion of the appropriation required shall remain available until the fellowships are completed or otherwise terminated. At the time of the termination of the fellowship, any remaining balance shall be retained in the General Fund for the sole purpose of financing further long-term and short-term fellowships.
- 7.6 Amounts surrendered in accordance with Regulations 7.3 and 7.4 shall be retained for the purposes approved by Congress for the financial period subject to the provisions of Regulation 9.1.
- 7.7 A transfer between appropriation sections may be made by the Secretary-General subject to confirmation by the Executive Council.

ARTICLE 8 Provision of funds

Assessments

- 8.1 Appropriations shall be financed by contributions from Members of the Organization according to the scale of assessments determined by Congress, such contributions to be adjusted in accordance with the provisions of Regulation 8.2. Pending the receipt of such contributions the appropriations may be financed from the Working Capital Fund.
- 8.2 For each of the two years of a biennium the contributions of Member States shall be assessed on the basis of one half of the appropriations approved by the Executive Council for the biennium, except that adjustments shall be made to the assessment in respect of supplementary appropriations for which contributions have not previously been assessed on Member States.
- 8.3 After the Executive Council has approved the biennial budget and determined the amount needed for the Working Capital Fund, the Secretary-General shall:
- (a) Transmit the relevant documents to the Members of the Organization;
 - (b) Inform the Members of their commitments in respect of annual contributions and advances to the Working Capital Fund;
 - (c) Request them to remit their contributions and advances.
- 8.4 Contributions and advances shall be considered as due and payable in full within thirty days of the receipt of the communication of the Secretary-General referred to in Regulation 8.3 above, or as of the first day of the year to which they relate, whichever is the later. As of 1 January of the following year, the unpaid balance of such contributions and advances shall be considered to be one year in arrears.
- 8.5 Annual contributions and advances to the Working Capital Fund of the Organization shall be assessed and paid in Swiss francs.
- 8.6 Notwithstanding the provisions of Regulation 8.5 and to facilitate payments by Members, the Secretary-General may accept, to the extent he may find it practicable, payments of contributions in freely convertible currencies other than the Swiss franc. The exchange rate applicable to these payments in establishing their equivalent in the currency of the State in which the Organization has its headquarters shall be the official United Nations rate of exchange in force on the date of credit to the WMO bank account.
- 8.7 Payments made by a Member of the Organization shall be credited first to the Working Capital Fund, then applied in chronological order to the reduction of the contributions which are due in accordance with the scale of assessments.
- 8.8 Notwithstanding the provisions of Regulation 8.7, amounts received in respect of the current year's contribution will be credited to that year providing that the full yearly instalment due under the terms of special arrangements as established by Congress concerning the repayment of long-outstanding contributions has been paid to the Organization. These special arrangements may be concluded with any Member being in arrears for more than four years on the date of entry into force of such arrangements.
- 8.9 The Secretary-General shall submit to the regular sessions of the Executive Council a report on the collection of contributions and advances to the Working Capital Fund.

Contributions from new Members

- 8.10 New Members of the Organization shall be required to make a contribution for the unexpired portion of the biennium in which they become Members and to provide their proportion of the total

advances to the Working Capital Fund at rates to be determined provisionally by the Executive Council, subject to subsequent approval by Congress.

Contributions from Members withdrawing from the Organization

- 8.11 A Member withdrawing from the Organization shall make its contribution for the period from the beginning of the biennium in which it withdraws up to and including the date of its withdrawal and shall be entitled only to the amount standing to its credit in the Working Capital Fund, less any sum due from that Member of the Organization.

ARTICLE 9

Funds

- 9.1 There shall be established a General Fund for the purpose of accounting for expenditures authorized under Regulations 7.1, 7.2 and 7.3. The General Fund will be credited with contributions paid by Member States under Regulations 8.1, 8.10, 8.11 and miscellaneous income as defined under Regulation 10.1. Cash surpluses on the General Fund except that part of such surplus which represents income from interest received on funds other than the Working Capital Fund shall be credited on the basis of the scale of assessments to the Members of the Organization as follows:
- (a) For Members who have paid in full their previous contributions, by deduction from the next assessment;
 - (b) For Members who have paid in full their contribution in respect of all previous financial periods, but who have not paid in full their contributions in respect of the period which relates to the surplus to be distributed, by reduction of their arrears, and thereafter by deduction from the next assessment;
 - (c) For Members who are in arrears for more than the financial period concerning the one which relates to the surplus to be distributed, their share of the surplus will be retained by the World Meteorological Organization in a special account and will be paid when the provisions of Regulation 9.1(a) or (b) are met.
- 9.2 Income from interest on funds other than the Working Capital Fund which forms part of the cash surplus for any financial period shall be disposed of in accordance with decisions of Congress, and in the manner determined by Congress due consideration being given to the date of receipt of assessed contributions of Members of the Organization.

Working Capital Fund

- 9.3 There shall be established a Working Capital Fund to an amount fixed by Congress and for purposes to be determined from time to time by the Executive Council. The moneys of the Working Capital Fund shall be advanced by the Members of the Organization, or at the discretion of Congress provided from interest to the extent that it is earned on the investment of the cash resources of the Fund. Interest retained in the Fund shall be credited to Members' advance accounts in accordance with current balances. Advances by Members shall be calculated by the Executive Council in accordance with the scale of assessments for the apportionment of the expenses of the Organization, and shall be carried to the credit of those Members which have made such advances.
- 9.4 Advances made from the Working Capital Fund to finance appropriations during a biennium shall be reimbursed to the Fund as soon as and to the extent that income is available for that purpose.
- 9.5 Except when such advances are recoverable from some other source, advances made from the Working Capital Fund for unforeseen and extraordinary expenses or other authorized purposes shall be reimbursed through the submission of supplementary estimates.
- 9.6 Income derived from investments of the Working Capital Fund, not retained in the Fund to meet an increase in the level of the capital of the Fund, shall be credited to miscellaneous income.
- 9.7 Trust funds, reserve and special accounts may be established by the Secretary-General and shall be reported to the Executive Council.
- 9.8 The purpose and limits of each trust fund, reserve and special account shall be clearly defined by the Executive Council. Unless otherwise provided by the Congress, such funds and accounts shall be administered in accordance with the present Financial Regulations.
- 9.9 Income derived from investments of trust funds, reserve and special accounts shall be credited as provided in the provisions applicable to such funds or accounts or at the request of the donors at any time. In other circumstances, Regulation 10.1 shall apply.

ARTICLE 10

Other income

- 10.1 All other income, except:
- (a) Contributions to the budget;
 - (b) Direct refunds of expenditures made during the biennium;
 - (c) Advances or deposits to funds and accounts;

- (d) Interest earned on the Working Capital Fund to the extent that it is required to augment the level of the Working Capital Fund;
 - (e) Revenue from rental of excess space, conference rooms and cafeteria facilities;
- shall be classed as miscellaneous income, for credit to the General Fund, unless otherwise specified in accordance with Regulation 9.9.

Voluntary contributions, gifts or donations

- 10.2 Voluntary contributions, whether or not in cash, may be accepted by the Secretary-General, provided that the purposes for which the contributions are made are consistent with the policies, aims and activities of the Organization and provided that the acceptance of such contributions which directly or indirectly involve additional financial liability for the Organization shall require the consent of Congress or, in case of urgency, of the Executive Council.
- 10.3 Moneys accepted for purposes specified by the donor shall be treated as trust funds or special accounts under Regulations 9.7 and 9.8.
- 10.4 Moneys accepted in respect of which no purpose is specified shall be treated as miscellaneous income and shall be reported as "gifts" in the annual accounts.

ARTICLE 11

Custody of funds

- 11.1 The Secretary-General shall designate the bank or banks in which the funds of the Organization shall be kept.

ARTICLE 12

Investment of funds

- 12.1 The Secretary-General may make short-term investments of moneys not needed for immediate requirements and shall inform the Executive Council periodically of the investments thus made.
- 12.2 The Secretary-General may make long-term investments of moneys standing to the credit of trust funds, reserve and special accounts, except as may be otherwise provided by the appropriate authority in respect of each such fund or account and having regard to the particular requirements as to the liquidity of funds in each case.

ARTICLE 13

Internal control

- 13.1 The Secretary-General shall:
- (a) Establish detailed financial procedures in order to ensure effective financial administration and the exercise of economy;
 - (b) Cause all payments to be made on the basis of supporting vouchers and other documents which ensure that the services or goods have been received, and that payments have not previously been made;
 - (c) Designate the officers who may receive moneys, incur obligations and make payments on behalf of the Organization.
- 13.2 (a) In addition to payments authorized under clause (b) below, and notwithstanding Regulation 13.1(b) above, the Secretary-General may, when he deems it in the interest of the Organization to do so, authorize progress payments;
- (b) Except where normal commercial practice in the interest of the Organization so requires, no contract or purchase order shall be made on behalf of the Organization which requires a payment in advance of the delivery of goods or performance of contractual services.
- 13.3 No obligations shall be incurred until allotments or other appropriate authorizations have been made in writing under the authority of the Secretary-General.

Ex gratia payments

- 13.4 The Secretary-General may with the approval of the President make such ex gratia payments as he deems to be necessary in the interest of the Organization, provided that a statement of such payments shall be submitted to the Executive Council with the biennial accounts.

Writing-off of losses or deficiencies

- 13.5 The Secretary-General may, after full investigation, authorize the writing-off of losses of cash, stores and other assets, except unpaid contributions, provided that a statement of all such amounts written off shall be submitted to the External Auditor with the biennial accounts.

Contracts and purchases

- 13.6 Tenders for equipment, supplies, and other requirements shall be invited by advertisement, except where the Secretary-General deems that, in the interests of the Organization, a departure from the rule is desirable.

Internal audit and investigation

- 13.7 Under the broader scheme of internal oversight which would include the programme evaluation mechanism, the Secretary-General shall establish an Internal Audit and Investigation Service (IAIS). It shall provide for an independent verification of financial, administrative and operational activities of WMO in order to ensure:
- (a) The regularity of the receipt, custody and disposal of all funds and other financial resources of the Organization;
 - (b) The conformity of expenditure with the appropriations or other financial provisions voted by Congress or approved by the Executive Council, or with the purpose and rules related to trust funds and special accounts;
 - (c) The compliance of all financial and other management activities with the established legislation;
 - (d) The timeliness, completeness and accuracy of financial and other administrative data; and
 - (e) The effective, efficient and economical use of all resources of the Organization.
- 13.8 The IAIS shall also be responsible for investigating all allegations or presumptions of fraud, waste or mismanagement.
- 13.9 The Secretary-General shall appoint a technically qualified Chief of IAIS after consulting with, and obtaining the approval of, the President of WMO acting on behalf of the Executive Council. Notwithstanding Articles 9, 10 and 11 of the Staff Regulations dealing with separation from service, disciplinary measures and appeals, respectively, the Secretary-General shall likewise consult the President of WMO acting on behalf of the Executive Council and obtain his approval before separation of the Chief of IAIS. These actions by the President in accordance with General Regulation 145 shall be reported to the following regular session of the Executive Council.
- 13.10 The IAIS shall function in accordance with the following provisions:
- (a) The Chief of IAIS shall report directly to the Secretary-General;
 - (b) IAIS shall have full, free and prompt access to all records, property, personnel, operations and functions within the Organization which, in IAIS opinion, are relevant to the subject matter under review;
 - (c) IAIS shall be available to receive directly from individual staff members complaints or information concerning the possible existence of fraud, waste, abuse of authority or other irregular activities. No reprisals shall be taken against staff members providing such information unless this was wilfully provided with the knowledge that it was false or with intent to misinform;
 - (d) IAIS shall report the results of its work and make recommendations to the Secretary-General with a copy to responsible managers for action and the External Auditor. At the request of the Chief of IAIS, any such report shall be submitted to the Executive Council together with the Secretary-General's comments thereon;
 - (e) IAIS shall submit a summary report annually to the Secretary-General with a copy to the External Auditor on IAIS activities, including the orientation and scope of such activities. This report shall be submitted to the Executive Council by the Secretary-General together with any comments he/she wishes to make.

ARTICLE 14

The accounts

- 14.1 The Secretary-General shall submit accounts for each biennium. In addition he shall maintain, for management purposes, such accounting records as are necessary and shall submit biennial accounts showing for the biennium to which they relate:
- (a) The income and expenditures of all funds;
 - (b) The status of appropriations, including:
 - (i) The original budget appropriations;
 - (ii) The appropriations as modified by any transfers;
 - (iii) Credits, if any, other than the appropriations approved by the Executive Council;
 - (iv) The amounts charged against those appropriations and/or other credits;
 - (c) The assets and liabilities of the Organization.
He shall also give such information as may be appropriate to indicate the current financial position of the Organization.
- 14.2 The biennial accounts of the Organization shall be presented in Swiss francs. Accounting records may, however, be kept in such currency or currencies as the Secretary-General may deem necessary.
- 14.3 Appropriate separate accounts shall be maintained for all trust funds, reserve and special accounts.
- 14.4 The biennial accounts shall be submitted by the Secretary-General to the External Auditor not later than 31 March following the end of the biennium.

- 14.5 The Secretary-General shall submit in the accounts of the first biennium, a statement of the total expenditures made in respect of the previous financial period.
- 14.6 The Secretary-General will submit to each regular session of the Executive Council an unaudited account on the status of implementation of the current biennial budget and a report on the financial situation of the Organization.

ARTICLE 15
External audit

Appointment

- 15.1 An External Auditor, who shall be the Auditor-General (or officer holding the equivalent title) of a Member State, shall be appointed in the manner and for the period decided by the Executive Council.

Tenure of office

- 15.2 If the External Auditor ceases to hold that office in his own country, his tenure of office as External Auditor shall thereupon be terminated and he shall be succeeded as External Auditor by his successor as Auditor-General. The External Auditor may not otherwise be removed during his tenure of office except by the Executive Council.

Scope of audit

- 15.3 The audit shall be conducted in conformity with generally accepted common auditing standards, and, subject to any special directions of the Executive Council, in accordance with the additional terms of reference set out in the annex to these Regulations.
- 15.4 The External Auditor may make observations with respect to the efficiency of the financial procedures, the accounting system, the internal financial controls and, in general, the administration and management of the Organization.
- 15.5 The External Auditor shall be completely independent and solely responsible for the conduct of the audit.
- 15.6 The Executive Council may request the External Auditor to perform certain specific examinations and issue separate reports on the results.

Facilities

- 15.7 The Secretary-General shall provide the External Auditor with the facilities he may require in the performance of the audit.
- 15.8 For the purpose of making a local or special examination or of effecting economies of audit cost, the External Auditor may engage the services of any national Auditor-General (or equivalent title) or commercial public auditors of known repute or any other person or firm who, in the opinion of the External Auditor, is technically qualified.

Reporting

- 15.9 The External Auditor shall issue reports on the audit of the financial statements and relevant schedules reflecting the position of the final accounts for each biennium, which shall include such information as he deems necessary in regard to matters referred to in Regulation 15.4 and in the Additional Terms of Reference.
- 15.10 The External Auditor's reports shall be transmitted, together with the relevant audited financial statements, to the Executive Council, which shall examine them in accordance with any directions given by Congress.
- 15.11 The financial statement for the biennium, together with the External Auditor's certificates, shall be transmitted to the Members of the Organization by the Secretary-General.

ARTICLE 16
Decisions involving expenditures

- 16.1 No regional association, technical commission or other competent body shall take a decision involving either an administrative change in a programme approved by Congress or the Executive Council, or the possible requirement of expenditure, unless it has received and taken account of a report from the Secretary-General on the administrative and financial implications of the proposal. Where, in the opinion of the Secretary-General, the proposed expenditure cannot be made from the existing appropriations, it shall not be incurred until the Executive Council has made the necessary appropriations, unless the Secretary-General certifies that provision can be made under the conditions of the resolution of the Executive Council relating to unforeseen expenditure.

ARTICLE 17
General provisions

- 17.1 In case of urgency and with the approval of the President of the Organization, the Secretary-General shall refer to Members, for decision by correspondence, financial matters which are beyond the competence of the Executive Council.
- 17.2 The applications of any of the present Regulations may be suspended for a period which shall not extend beyond the next session of Congress if the Executive Council has decided that the matter under consideration is of such a character that a decision should be taken before the next Congress. In such circumstances, the proposal of the Executive Council for such a suspension shall be communicated by the Secretary-General to all Members for consultation and subsequently for a postal ballot according to the procedures for voting by correspondence in the General Regulations.
- 17.3 In the application of Regulation 17.1 the proposal shall be adopted, and in the application of Regulation 17.2 the suspension of regulations shall be put into force, if two-thirds of the votes cast for and against which have reached the Secretariat within ninety days of the date of dispatch of the request to vote to Members are in the affirmative. The decisions shall be communicated to all Members.
- 17.4 In case of doubt as to the interpretation or application of any of these Financial Regulations, the Secretary-General is authorized to rule thereon, subject to confirmation by the President in important cases.
- 17.5 The present Financial Regulations do not apply to the field projects of the technical cooperation activities of the Organization financed by the United Nations Development Programme; the Secretary-General is authorized to administer those activities under Financial Regulations and Rules established by the governing body and the Administrator of the United Nations Development Programme.

ANNEX

ADDITIONAL TERMS OF REFERENCE GOVERNING EXTERNAL AUDIT

- (1) The External Auditor shall perform such audit of the accounts of the Organization, including all trust funds and special accounts, as he deems necessary in order to satisfy himself:
- (a) That the financial statements are in accord with the books and records of the Organization;
 - (b) That the financial transactions reflected in the statements have been in accordance with the rules and regulations, the budgetary provisions and other applicable directives;
 - (c) That the securities and moneys on deposit and on hand have been verified by certificate received direct from the Organization's depositaries or by actual count;
 - (d) That the internal controls are adequate in the light of the extent of reliance placed thereupon;
 - (e) That procedures satisfactory to the External Auditor have been applied to the recording of all assets, liabilities, surpluses and deficits.
- (2) The External Auditor shall be the sole judge as to the acceptance in whole or in part of certifications and representations by the Secretary-General and may proceed to such detailed examination and verification as he chooses of all financial records, including those relating to supplies and equipment.
- (3) The External Auditor and his staff have free access at all convenient times to all books, records and other documentation which are, in the opinion of the External Auditor, necessary for the performance of the audit. Information which is classified as privileged and which the Secretary-General (or his designated senior official) agrees is required by the External Auditor for the purposes of the audit and information classified as confidential shall be made available on application. The External Auditor and his staff shall respect the privileged and confidential nature of any information so classified which has been made available and shall not make use of it except in direct connection with the performance of the audit. The External Auditor may draw the attention of the Executive Council to any denial of information classified as privileged which in his opinion was required for the purpose of the audit.
- (4) The External Auditor shall have no power to disallow items in the accounts but shall draw to the attention of the Secretary-General for appropriate action any transaction concerning which he entertains doubt as to legality or propriety. Audit objections to these, or any other transactions, arising during the examination of the accounts shall be communicated immediately to the Secretary-General.
- (5) The External Auditor shall express and sign an opinion on the financial statements of the Organization. The opinion shall include the following basic elements:
- (a) The identification of the financial statements audited;
 - (b) A reference to the responsibility of the Secretary-General and the responsibility of the External Auditor;
 - (c) A reference to the audit standards followed;
 - (d) A description of the work performed;
 - (e) An expression of opinion on the financial statements as to whether:

- (i) The financial statements present fairly the financial position as at the end of the period and the results of the operations for the period;
 - (ii) The financial statements were prepared in accordance with the stated accounting policies;
 - (iii) The accounting policies were applied on a basis consistent with that of the preceding financial period;
 - (f) An expression of opinion on the compliance of transactions with the Financial Regulations and legislative authority;
 - (g) The date of the opinion;
 - (h) The External Auditor's name and position;
 - (i) Should it be necessary, a reference to the report of the External Auditor on the financial statements.
- (6) The report of the External Auditor to the Executive Council on financial operations of the period should mention:
- (a) The type and scope of his examination;
 - (b) Matters affecting the completeness or accuracy of the accounts, including, where appropriate:
 - (i) Information necessary to the correct interpretation of the accounts;
 - (ii) Any amounts which ought to have been received but which have not been brought to account;
 - (iii) Any amounts for which a legal or contingent obligation exists and which have not been recorded or reflected in the financial statements;
 - (iv) Expenditures not properly substantiated;
 - (v) Whether proper books of accounts have been kept. Where in the presentation of statements there are deviations of a material nature from the generally accepted accounting principles applied on a consistent basis, these should be disclosed;
 - (c) Other matters which should be brought to the notice of the Executive Council, such as:
 - (i) Cases of fraud or presumptive fraud;
 - (ii) Wasteful or improper expenditure of the Organization's money or other assets (notwithstanding that the accounting for the transaction may be correct);
 - (iii) Expenditure likely to commit the Organization to further outlay on a large scale;
 - (iv) Any defect in the general system or detailed regulations governing the control of receipts and disbursements or of supplies and equipment;
 - (v) Expenditure not in accordance with the intention of Congress and/or the Executive Council after making allowance for duly authorized transfers within the budget;
 - (vi) Expenditure in excess of appropriations as amended by duly authorized transfers within the budget;
 - (vii) Expenditure not in conformity with the authority which governs it;
 - (d) The accuracy or otherwise of the supplies and equipment records as determined by stock-taking and examination of the records;
 - (e) If appropriate, transactions accounted for in a previous biennium concerning which further information has been obtained or transactions in a later biennium concerning which it seems desirable that the Executive Council should have early knowledge.
- (7) The External Auditor may make such observations with respect to his findings resulting from the audit and such comments on the Secretary-General's financial report as he deems appropriate to the Executive Council or to the Secretary-General.
- (8) Whenever the scope of audit of the External Auditor is restricted, or whenever he is unable to obtain sufficient evidence, the External Auditor shall refer to the matter in his report, making clear in his report the reasons for his comments and the effect on the financial position and the financial transactions as recorded.
- (9) In no case shall the External Auditor include criticism in his report without first affording the Secretary-General an adequate opportunity of explanation on the matter under observation.
- (10) The External Auditor is not required to mention any matter referred to in the foregoing that, in his opinion, is insignificant in all respects.

RESOLUTION 36 (Cg-XIV)

ASSESSMENT OF PROPORTIONAL CONTRIBUTIONS OF MEMBERS FOR THE FOURTEENTH FINANCIAL PERIOD

THE CONGRESS,

NOTING:

(1) Article 24 of the WMO Convention,

(2) Resolution 32 (Cg-XIII) — Assessment of proportional contributions of Members for the thirteenth financial period,

DECIDES:

- (1) That the scale of assessment of proportional contributions of Members for the year 2004 shall be as presented in Table 1 of the annex to this resolution and for the years 2005 to 2007 the scales shall be based on the United Nations scales of assessments to be adopted by the United Nations General Assembly at its fifty-eighth session, and adjusted for differences in memberships;
- (2) That the latest United Nations scales of assessments to be approved by the United Nations General Assembly should continue to be used as the basis for the calculation of the WMO scales of assessments, duly adjusted for differences in memberships;
- (3) That the proportional contributions of countries specified in Table 2 of the annex to this resolution, which are not Members but which may become Members, shall be assessed as shown in that table;

AUTHORIZES the Secretary-General to accept and implement any proposal for the adjustment of individual percentage assessments submitted jointly by two or more Member, provided that the aggregate percentage assessments of any

Member submitting such a proposal shall remain after adjustment equal to their aggregate assessments and to inform the Executive Council of any such arrangements;

AUTHORIZES the Executive Council:

- (1) To adjust the scales of assessments for the years 2005 to 2007 using the United Nations scales of assessments to be adopted by the United Nations General Assembly in the year 2003, and adjusted for difference in memberships provided that for the WMO scale, the minimum rate shall remain at 0.02 per cent and that corrections shall be made to ensure that no Member's rate of assessment would increase to a level which would exceed 200 per cent of the WMO scale in 2003;
- (2) To make a provisional assessment in respect of non-Members in the event of any such non-Members becoming Members, the method of assessment being based on principles similar to those governing the assessments laid down in this resolution.

NOTE: This resolution replaces Resolution 32 (Cg-XIII), which remains in force only until 31 December 2003.

ANNEX 1 TO RESOLUTION 36 (Cg-XIV)

TABLE I
PROPORTIONAL CONTRIBUTIONS FOR THE FOURTEENTH FINANCIAL PERIOD

<i>Member</i>	<i>Scale of assessment for 2004</i>
Afghanistan, Islamic State of	0.02
Albania	0.02
Algeria	0.07
Angola	0.02
Antigua and Barbuda	0.02
Argentina	1.12
Armenia	0.02
Australia	1.60
Austria	0.93
Azerbaijan	0.02
Bahamas	0.02
Bahrain	0.02
Bangladesh	0.02
Barbados	0.02
Belarus	0.02
Belgium	1.11
Belize	0.02
Benin	0.02
Bhutan	0.02
Bolivia	0.02
Bosnia and Herzegovina	0.02
Botswana	0.02
Brazil	2.34
British Caribbean Territories	0.02
Brunei Darussalam	0.03

<i>Member</i>	<i>Scale of assessment for 2004</i>
Bulgaria	0.02
Burkina Faso	0.02
Burundi	0.02
Cambodia	0.02
Cameroon	0.02
Canada	2.51
Cape Verde	0.02
Central African Republic	0.02
Chad	0.02
Chile	0.20
China	1.50
Colombia	0.20
Comoros	0.02
Congo	0.02
Cook Islands	0.02
Costa Rica	0.02
Côte d'Ivoire	0.02
Croatia	0.04
Cuba	0.03
Cyprus	0.04
Czech Republic	0.20
Democratic People's Republic of Korea	0.02
Democratic Republic of the Congo	0.02
Denmark	0.73
Djibouti	0.02
Dominica	0.02
Dominican Republic	0.02
Ecuador	0.02
Egypt	0.08
El Salvador	0.02
Eritrea	0.02
Estonia	0.02
Ethiopia	0.02
Fiji	0.02
Finland	0.51
France	6.32
French Polynesia	0.02
Gabon	0.02
Gambia	0.02
Georgia	0.02
Germany	9.56
Ghana	0.02
Greece	0.53
Guatemala	0.03
Guinea	0.02
Guinea-Bissau	0.02
Guyana	0.02
Haiti	0.02
Honduras	0.02
Hong Kong, China	0.02
Hungary	0.12
Iceland	0.03
India	0.33
Indonesia	0.20
Iran, Islamic Republic of	0.27
Iraq	0.08

<i>Member</i>	<i>Scale of assessment for 2004</i>
Ireland	0.29
Israel	0.41
Italy	4.97
Jamaica	0.02
Japan	19.11
Jordan	0.02
Kazakhstan	0.03
Kenya	0.02
Kiribati	0.02
Kuwait	0.14
Kyrgyz Republic	0.02
Lao People's Democratic Republic	0.02
Latvia	0.02
Lebanon	0.02
Lesotho	0.02
Liberia	0.02
Libyan Arab Jamahiriya	0.07
Lithuania	0.02
Luxembourg	0.08
Macao, China	0.02
Madagascar	0.02
Malawi	0.02
Malaysia	0.23
Maldives	0.02
Mali	0.02
Malta	0.02
Mauritania	0.02
Mauritius	0.02
Mexico	1.07
Micronesia, Federated States of	0.02
Monaco	0.02
Mongolia	0.02
Morocco	0.04
Mozambique	0.02
Myanmar	0.02
Namibia	0.02
Nepal	0.02
Netherlands	1.70
Netherlands Antilles and Aruba	0.02
New Caledonia	0.02
New Zealand	0.24
Nicaragua	0.02
Niger	0.02
Nigeria	0.07
Niue	0.02
Norway	0.63
Oman	0.06
Pakistan	0.06
Panama	0.02
Papua New Guinea	0.02
Paraguay	0.02
Peru	0.12
Philippines	0.10
Poland	0.37
Portugal	0.45
Qatar	0.03

<i>Member</i>	<i>Scale of assessment for 2004</i>
Republic of Korea	1.00
Republic of Moldova	0.02
Republic of Yemen	0.02
Romania	0.06
Russian Federation	1.18
Rwanda	0.02
Saint Lucia	0.02
Samoa	0.02
Sao Tome & Principe	0.02
Saudi Arabia	0.54
Senegal	0.02
Serbia and Montenegro	0.02
Seychelles	0.02
Sierra Leone	0.02
Singapore	0.34
Slovakia	0.04
Slovenia	0.08
Solomon Islands	0.02
Somalia	0.02
South Africa	0.40
Spain	2.47
Sri Lanka	0.02
Sudan	0.02
Suriname	0.02
Swaziland	0.02
Sweden	1.01
Switzerland	1.25
Syrian Arab Republic	0.08
Tajikistan	0.02
Thailand	0.29
The former Yugoslav Republic of Macedonia *	0.02
Togo	0.02
Tonga	0.02
Trinidad & Tobago	0.02
Tunisia	0.03
Turkey	0.43
Turkmenistan	0.02
Uganda	0.02
Ukraine	0.05
United Arab Emirates	0.20
United Kingdom of Great Britain and Northern Ireland	5.42
United Republic of Tanzania	0.02
United States of America	21.55
Uruguay	0.08
Uzbekistan	0.02
Vanuatu	0.02
Venezuela	0.20
Viet Nam, Socialist Republic of	0.02
Zambia	0.02
Zimbabwe	0.02
Total	100.00

NOTE: For the years 2005 to 2007, the United Nations scales to be approved by the fifty-eighth United Nations General Assembly (in 2003) duly adjusted for differences in memberships would be adopted.

* Following the decision of the United Nations General Assembly on 8 April 1993, the State is being provisionally referred to for all purposes within the Organization as "the Former Yugoslav Republic of Macedonia" pending settlement of differences that have arisen over its name.

ANNEX 2 TO RESOLUTION 36 (Cg-XIV)

TABLE 2
COUNTRIES WHICH MAY BECOME MEMBERS

<i>Country</i>	<i>Percentage assessment (to be confirmed)*</i>
Andorra	0.02
Equatorial Guinea	0.02
Grenada	0.02
Holy See	0.02
Liechtenstein	0.02
Marshall Islands	0.02
Nauru	0.02
Palau	0.02
Republic of East Timor	0.02
Saint Kitts and Nevis	0.02
Saint Vincent and the Grenadines	0.02
San Marino	0.02
Tuvalu	0.02

* Based on the decision regarding minimum percentage to be applied.

RESOLUTION 37 (Cg-XIV)

REVIEW OF THE WORKING CAPITAL FUND

THE CONGRESS,

NOTING:

- (1) Resolution 33 (Cg-XIII) — Review of the Working Capital Fund,
- (2) Financial Regulations 8 and 9,
- (3) That the Financial Regulations provide for the establishment of a Working Capital Fund financed by advances from Members in the scale of proportional contributions to the General Fund of the Organization,

DECIDES:

- (1) That the Working Capital Fund shall continue to be maintained for the following purposes:
 - (a) To finance budgetary appropriations pending receipt of contributions;
 - (b) To advance such sums as may be necessary to cover unforeseen and extraordinary expenses which cannot

be met from current budgetary provisions;

- (2) That the principal of the Working Capital Fund during the fourteenth financial period shall be fixed at SFR 5 000 000;
- (3) That the additional principal shall be provided by crediting interest earned on the investment of cash resources of the Working Capital Fund. The interest earned will be credited to the individual Members' advance accounts in the Working Capital Fund. The existing advances of each Member shall, notwithstanding the provisions of Financial Regulations 8 and 9, be frozen at the level fixed for the thirteenth financial period, and advances for new Members joining the Organization after 1 January 2004 would be assessed at the rates established for the year 2004.

RESOLUTION 38 (Cg-XIV)

SECRETARY-GENERAL'S CONTRACT

THE CONGRESS,

NOTING Article 21(a) of the Convention of the World Meteorological Organization,

DECIDES that the terms of the appointment of the Secretary-General should be set forth in the draft contract in the annex to this resolution.

ANNEX TO RESOLUTION 38 (Cg-XIV)

SECRETARY-GENERAL'S CONTRACT

In application of Article 21(a) of the Convention of the World Meteorological Organization, prescribing that the Secretary-General shall be appointed by Congress on such terms as Congress may approve; and Having regard to the resolution adopted by the Fourteenth Congress of the World Meteorological Organization approving the terms of appointment included in the present agreement; It is hereby agreed as follows:

Between the World Meteorological Organization, hereinafter called the Organization, represented by its President, on the one part, and, Mr M. Jarraud appointed Secretary-General by the Fourteenth World Meteorological Congress during its meeting of 14 May 2003, on the other part,

1. The Secretary-General's term of appointment shall take effect from 1 January 2004.
2. The Secretary-General, at the time of taking up his appointment, shall subscribe to the following oath or declaration:

"I solemnly swear (undertake, affirm, promise) to exercise in loyalty, discretion and conscience the functions entrusted to me as an international civil servant of the World Meteorological Organization, to discharge these functions and regulate my conduct with the interests of the Organization only in view, and not to seek or accept instructions in regard to the performance of my duties from any government or other authority external to the Organization".

This oath or declaration shall be made orally by the Secretary-General in the presence of the President and either a Vice-President or another member of the Executive Council.

3. During the term of his appointment, the Secretary-General shall enjoy the privileges and immunities in keeping with his office which are granted him by appropriate agreements entered into by the Organization; he shall not engage in any activity that is incompatible with the proper discharge of his duties as Secretary-General of the Organization; he shall renounce any employment or remunerated activities other than those of Secretary-General of the Organization, except those activities authorized by the Executive Council; he shall not accept any honour, decoration, favour, gift or remuneration from any source external to the Organization without first obtaining the approval of the Executive Council.

4. The term of appointment of the Secretary-General shall end:
 - (a) By expiration of this agreement on 31 December 2007; or
 - (b) By this official's resignation submitted in writing to the President of the Organization, in which case the Secretary-General shall cease his functions two months after the date of acceptance of his resignation by the Executive Council; or
 - (c) By termination for serious failure to carry out his duties and obligations, and in particular those set out in paragraphs (2) and (3) of this agreement. In such case, the Secretary-General shall be heard as of right by the Executive Council; if the Executive Council decides to terminate the appointment, the decision shall take effect two months after the date of pronouncement and on conditions to be determined by the Executive Council. After consultation with the Executive Council, the President of the Organization may suspend the Secretary-General from the exercise of his functions pending investigation by the Executive Council and until this Council has taken a decision.

5. The Secretary-General shall receive from the Organization:
 - (a) An annual salary of US\$ 141 796 net (after deduction for staff assessment), with the application of the appropriate post adjustment at a rate equivalent to that applied to Executive Heads of other comparable specialized agencies, salary and post adjustment to be paid in monthly instalments; and
 - (b) An annual representation allowance of SFR 29 000, to be paid in monthly instalments; and
 - (c) Other allowances including dependency benefits, education, installation and repatriation grants, payment of removal, if pertinent, and travel and subsistence allowances appropriate and under the conditions applicable to Under-Secretaries of the United Nations.

All the above-mentioned sums will be paid in the currency of the country where the Secretariat is located, unless the Executive Council and the Secretary-General agree to some other arrangement.

The salary and emoluments received from the Organization will be free of tax.

6. The Secretary-General shall be allowed 30 working days' leave each year. In order that the Secretary-General may take his annual leave every two years in his home country, the Organization shall pay the expenses in connection with the travel of the Secretary-General, his spouse and his dependent children, under the conditions applicable to Under-Secretaries of the United Nations.

7. The Secretary-General shall participate in any social security scheme established by the Organization, the benefits he would receive being not less favourable than those which would accrue in similar circumstances to an official of the next highest rank of the staff covered by the scheme.

8. Any divergence of views concerning the application or interpretation of the present agreement, which it shall not have been possible to settle by direct discussion between the parties, can be submitted by one or the other of the parties to the judgement of the Administrative Tribunal, the competence of which is recognized by the Organization, whose decisions will be final. For any appeals by the Secretary-General against the non-observation of the statutes of the United Nations Joint Staff Pension Fund, of which the Secretary-General shall be a participant in accordance with the regulations and rules of that Fund, the Administrative Tribunal whose jurisdiction has been accepted by the Organization for pension cases is recognized hereby as the competent arbitrator.

Done and signed in duplicate at _____ on the _____ 2003.

(A.I. Bedritsky)
President of the World
Meteorological Organization

(M. Jarraud)
Secretary-General appointed
by the Fourteenth
World Meteorological Congress

RESOLUTION 39 (Cg-XIV)

AMENDMENTS TO ARTICLE 13(c) OF THE CONVENTION

THE CONGRESS,

CONSIDERING:

- (1) The increase in the number of Members of the Organization,
- (2) The need for a better representation of the various Regions in the Executive Council,

DECIDES:

- (1) That the text of Article 13(c) of the Convention should be amended as follows:
"(c) Twenty-seven Directors of Meteorological or Hydrometeorological Services of Members of the Organization, who can be replaced at sessions by alternates, provided:

- (i) That these alternates shall be as provided for in the Regulations;
- (ii) That no more than nine and not less than four members of the Executive Council, comprising the President and Vice-Presidents of the Organization, the presidents of regional associations and the twenty-seven elected Directors, shall come from one Region, this Region being determined in the case of each member in accordance with the Regulations.";

- (2) That these amendments shall come into force on 14 May 2003.

RESOLUTION 40 (Cg-XIV)

QUESTIONS CONCERNING THE WMO CONVENTION

THE CONGRESS,

CONSIDERING the achievements of WMO since its establishment in 1950,

NOTING the evolution of meteorology and hydrology during the last 50 years and relevant new interdisciplinary scientific, technical and operational activities, which should be reflected in the Convention,

RECOGNIZING the need to study further questions concerning the WMO Convention,

DECIDES that further work on this subject is needed;

REQUESTS the Executive Council to:

- (1) Establish a working group on questions concerning the WMO Convention, with a

broad membership including persons other than members of the Executive Council, as appropriate, with the following terms of reference:

- (a) Make an analysis of the WMO Convention and Regulations in line with the discussions at sessions of Executive Council and Congress; as well as relevant work already undertaken;
- (b) Explore, assess, and recommend amendments to the WMO Convention and Regulations with a view to examining the potential benefits and risks involved;

- (c) Study and analyse the possible use of protocols;
- (d) Assess the nature of any proposed amendment with a view to recommending whether it qualifies under paragraph (c) of Article 28 of the WMO Convention; among others;
- (e) Report to the Executive Council sessions on its findings and recommendations, with a view to presenting a comprehensive report, with concrete proposals for adoption, to Fifteenth Congress;

- (f) Other tasks that the Executive Council may assign;
- (2) To ensure that this working group draws on all relevant expertise required for completion of its work before the fifty-eighth session of the Executive Council and to consult widely with Members and present a consolidated set of proposals for the modernization of the Convention to Fifteenth Congress;

REQUESTS the Secretary-General to provide the necessary support and take appropriate action.

RESOLUTION 41 (Cg-XIV)

AMENDMENTS TO THE CONVENTION — TRANSLATION OF THE TERM "REGIONAL ASSOCIATION"

THE CONGRESS,

NOTING:

- (1) General summary paragraphs 15.1.3.1 to 15.1.3.3 of the *Abridged Final Report with Resolutions of the Eleventh Session of Regional Association I (Africa)* (WMO-No. 820),
- (2) General summary paragraph 3.7.0.13 of the *Abridged Final Report with Resolutions of the Twelfth World Meteorological Congress* (WMO-No. 827),
- (3) General summary paragraphs 17.2.1 to 17.2.3 of the *Abridged Final Report with Resolutions of the Fiftieth Session of the Executive Council* (WMO-No. 883),
- (4) General summary paragraph 10.14 of the *Abridged Final Report with Resolutions of the Fifty-third session of the Executive Council* (WMO-No. 929),
- (5) General summary paragraphs 18.2.16 to 18.2.22 of the *Abridged Final Report with Resolutions of the Fifty-fourth Session of the Executive Council* (WMO-No. 945),

CONSIDERING:

- (1) The difficulties involved in the use of the term "Regional Association" which reflects neither the institutional level nor the

- statutory importance of a WMO regional body in relation to some Members' governmental authorities, particularly of the French-speaking countries,
- (2) The view expressed by the fiftieth session of the Executive Council that consideration should be given to translating better the term "Regional Association" into French, in order to reflect more appropriately the status of the constituent body,
- (3) That the selection of a new term for "Regional Association" should be appropriate to the Members of all Regions and should reflect the functioning of the constituent body as a permanent body which works through its sessions as well as between sessions through its president and subsidiary bodies and is entitled to adopt decisions by correspondence,
- (4) The proposal of the fifty-fourth session of the Executive Council that the name "Regional Association" be retained but that it be translated into French only as "Conseil Regional",

DECIDES to amend Articles 4(a)(3), 6(a), 8(f) and (j), 11(a)(4), 13(b), and (c)(ii), 14(f) and Article 18, including its title, of the WMO Convention in French only, by translating the term "Regional Association" into "Conseil Regional".

RESOLUTION 42 (Cg-XIV)

AMENDMENTS TO ANNEX II OF THE WMO GENERAL REGULATIONS

THE CONGRESS,

NOTING:

- (1) The proposal of Regional Association IV at its thirteenth session,

- (2) The proposal to change the name of Regional Association for North and Central America to Regional Association for North America, Central America and the Caribbean (general summary paragraph 10.14 of the *Abridged Final Report with*

Resolutions of the fifty-third session of the Executive Council (WMO-No. 929)),

DECIDES:

- (1) To change the name of Regional Association IV — North and Central America to Regional Association IV — North America, Central America and the Caribbean;

- (2) To amend Annex II of the WMO General Regulations by changing the name of Regional Association IV — North and Central America to Regional Association IV — North America, Central America and the Caribbean;
- (3) That this amendment shall come into force on 25 May 2003.

RESOLUTION 43 (Cg-XIV)

AMENDMENT TO GENERAL REGULATION 85(a)

THE CONGRESS,

CONSIDERING the decision of Congress related to the amendments to Article 13(c) of the Convention,

ADOPTS the following amendment to General Regulation 85(a):

"(a) A first election consisting of separate elections conducted simultaneously shall be held to fill those places on the Executive Council which need to be filled by candidates from particular Regions in order to satisfy the requirement in

accordance with Article 13(c)(ii) of the Convention that not less than four members of the Executive Council shall come from each Region. The list of candidates for this election shall be confined to the candidates belonging to the Regions which are not yet represented by four members. In this election, separate voting slips shall be used for each Region involved;"

DECIDES that this amendment shall come into force on 14 May 2003.

RESOLUTION 44 (Cg-XIV)

APPLICATION OF GENERAL REGULATIONS 177 AND 194

THE CONGRESS,

NOTING:

- (1) General summary paragraph 11.3.2 of the *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902),
- (2) General summary paragraph 16.2.2 of the *Abridged Final Report with Resolutions of the Fifty-second Session of the Executive Council* (WMO-No. 915),
- (3) General Regulations 2(f), 177 and 194,

CONSIDERING:

- (1) The fact that the view of the United Nations Legal Counsel on the issue was that as the Members of the Organization were masters of their own procedures, it would be for them to take a decision on whether the term "decision", as used in General Regulations 177 and 194, included "election",
- (2) The decision of the fifty-second session of the Executive Council to adopt the following statement on the application of General Regulations 177 and 194 until reviewed by Fourteenth Congress in accordance with the provision of General Regulation 2(f): "In the application of General Regulations 177 and 194, the term "decisions"

does not include "election". In the case where no election is held due to the absence of the quorum, the President of the Organization becomes the acting president of the body concerned after the closure of the session in accordance with General Regulation 16. He shall arrange for the election by correspondence of the president of the body concerned who shall, in turn, arrange for the election of the vice-president by correspondence as envisaged in General Regulation 16",

DECIDES:

- (1) To adopt the statement mentioned under **CONSIDERING** (2) above;
- (2) To amend General Regulation 177 as follows:
"If a quorum is not obtained at a session, the decisions, other than elections, adopted by a simple majority vote of those Members present shall be referred by correspondence to all Members of the Organization belonging to the association. Any such decision shall be considered a decision of the association only when it has been approved by a simple majority of votes

- cast for and against within ninety days after it has been sent to the Members.”;
- (3) To amend General Regulation 194 as follows:
- “If a quorum is not obtained at a session the decision, other than elections, adopted by a majority vote of those Members present shall be referred by correspondence to the Permanent Representatives of

Members of the Organization which have designated experts to represent them permanently in the commission. Any such decision shall be considered a decision of the commission only when it has been approved by a majority of votes cast for and against within ninety days after it has been sent to the Members.”

RESOLUTION 45 (Cg-XIV)

AMENDMENT TO THE GENERAL REGULATIONS — TRANSLATION OF THE TERM “REGIONAL ASSOCIATION”

THE CONGRESS,
NOTING the amendments to the Convention relating to the translation of the term “Regional Association” into French only as “Conseil Regional” adopted by Resolution 41 (Cg-XIV) — Amendments to the Convention — Translation of the term “Regional Association”,
CONSIDERING that the General Regulations should be amended accordingly,

DECIDES to adopt the following amendment to the General Regulations:

In the French text only of the General Regulations, the term "Regional Association" should be translated as "Conseil Regional" and "Association" should be translated as "Conseil".

RESOLUTION 46 (Cg-XIV)

USE OF PORTUGUESE

THE CONGRESS,
NOTING:
(1) That Portuguese is a historical language of science and culture spoken by more than 200 million people in Angola, Brazil, Cape Verde, Guinea-Bissau, Mozambique, Portugal and Sao Tome and Principe, which are Member countries of WMO and of three of its regional associations and is used in some international organizations,
(2) Resolutions 26 (Cg-XII) and 20 (Cg-XIII) — Use of Portuguese, and the request of Regional Association I, that Congress reconsider its request to include Portuguese as an official and working language of WMO,

CONSIDERING that the work of WMO would be greatly facilitated by the use of Portuguese,

DECIDES:

- (1) That Portuguese shall be used for interpretation at sessions of Regional Associations I and III using available resources, and of Congress, subject to the availability of extrabudgetary resources;
(2) To continue with existing arrangements for a separate Trust Fund account to provide such extrabudgetary resources;

REQUESTS the Secretary-General to explore the most cost-effective means of providing Portuguese interpretation, including the use of locally-contracted interpreters where appropriate;
URGES all WMO Members to contribute to this Trust Fund.

RESOLUTION 47 (Cg-XIV)

REVIEW OF PREVIOUS CONGRESS RESOLUTIONS

THE CONGRESS,
CONSIDERING that it is important not to let accumulate a collection of resolutions from previous Congresses, some of which would have

become redundant and others which have been replaced by new decisions,

NOTING:

- (1) General Regulation 135(17) concerning the review of previous Congress resolutions,

- (2) Resolution 38 (Cg-XIII) — Review of previous Congress resolutions,

HAVING EXAMINED its previous resolutions still in force,

DECIDES:

- (1) To keep in force the following resolutions:

Second Congress	18
Third Congress	3, 4, 29
Fifth Congress	6, 15, 30
Seventh Congress	32, 39 (expect paragraph 1 under DECIDES and paragraph 1 of the Annex)
Eighth Congress	33, 36, 48
Ninth Congress	9, 30
Tenth Congress	9, 29, 31
Eleventh Congress	8, 19, 24, 30, 37

Twelfth Congress 7, 19, 20, 21, 24, 25, 35, 40

Thirteenth Congress 8, 9, 19, 25, 26, 28, 31, 36, 37

- (2) To keep in force but only until 31 December 2003:
Resolutions 2, 21, 30, 32, 33, 34 (Cg-XIII);
- (3) Not to keep in force other resolutions adopted before the fourteenth session of Congress;
- (4) To publish the texts of resolutions kept in force pursuant to resolutions adopted by Fourteenth Congress.*

NOTE: This resolution replaces Resolution 38 (Cg-XIII), which is no longer in force.

* The full text of the resolutions of Congress and the Executive Council which are kept in force are published in *Resolutions of Congress and the Executive Council* (WMO-No. 508).

RESOLUTION 48 (Cg-XIV)

TRIBUTE TO THE SECRETARY-GENERAL

THE CONGRESS,

NOTING:

- (1) That the contract of the Secretary-General, Professor G.O.P. Obasi, will terminate on 31 December 2003 and that he will then have completed 20 years of continuous service in that office,
- (2) That prior to his appointment as Secretary-General, Professor Obasi had served as Director of the Education and Training Department in the WMO Secretariat, and as a WMO expert in the field for 15 years in total,
- (3) That by the end of his contract in December 2003, Professor G.O.P. Obasi would have rendered dedicated service to the Organization for a total of 35 years,

RECALLING that the Executive Council and the regional associations had on several occasions commended Professor Obasi for his outstanding contributions in support of the activities of the Organization and for the initiatives launched by him for the promotion of meteorology and operational hydrology globally,

RECOGNIZING:

- (1) That Professor Obasi has played an important and continuous role in the activities of the Organization,
- (2) That he has, in particular, performed his duties as Secretary-General at all times in a manner which merit the highest praise and commendation,
- (3) That he has thereby rendered outstanding services to the World Meteorological Organization and hence to the cause of international cooperation, policy-making and understanding in the fields of meteorology and hydrology and related geophysical and environmental sciences, as well as to natural resource management and sustainable development,

PLACES ON RECORD its deep appreciation, gratitude and respect for Professor G.O.P. Obasi; **ACCORDS** to Professor G.O.P. Obasi at the conclusion of his contract as Secretary-General the honorary title of "Secretary-General Emeritus".

ANNEXES

ANNEX I

Annex to paragraph 2.3.1 of the general summary

RECOMMENDATIONS OF THE FINANCIAL ADVISORY COMMITTEE TO FOURTEENTH CONGRESS

Consideration of the Secretary-General's programme and budget proposals for the fourteenth financial period (2004-2007)

Recommendation 1

- 1.1 That Congress approve a programme and budget of up to SFR 253.8 million for the fourteenth financial period, of which SFR 249.8 million would be funded from assessed contributions and up to SFR 4.0 million would be made available from any surplus arising from the thirteenth financial period;
- 1.2 That the SFR 4.0 million from surplus funds be allocated to separate, fully-costed, specific proposals for high priority activities which would be concluded by the end of the fourteenth financial period;
- 1.3 That the amount of SFR 249.8 million would be the baseline figure for the computation of the budget proposals for the fifteenth financial period.

Results-based budgeting

Recommendation 2

That Congress:

- 2.1 Adopt the draft text for inclusion in the general summary of its report, as contained in Cg-XIV/Doc. 8(3), Appendix A;
- 2.2 Adopt Resolution 31 (Cg-XIV) — Results-based budgeting.

Contribution matters

Recommendation 3

That Congress:

- 3.1 Adopt the draft text for inclusion in the general summary of its report, as contained in Cg-XIV/Doc. 10.2(1), Appendix A;
- 3.2 Adopt Resolution 36 (Cg-XIV) — Assessment of proportional contributions of Members for the fourteenth financial period.

Working Capital Fund

Recommendation 4

- 4.1 That Fourteenth Congress fix the present level of the Working Capital Fund at SFR 5 000 000 for the fourteenth financial period (2004-2007);
- 4.2 That the increase in the principal of the Working Capital Fund be provided by crediting interest earned on investments of the cash resources of the Fund to individual Members' accounts in the Fund until such time as the principal reached the approved level of SFR 5 000 000;
- 4.3 That notwithstanding the provisions of Financial Regulations 8 and 9, advances made by the existing Members should be frozen at the level fixed for the thirteenth financial period, and that the advances assessed for new Members joining the Organization after 1 January 2004 would be assessed at the rates of assessment of contributions established for the year 2004.

Measures to overcome persistent cash flow problems

Recommendation 5

That Fourteenth Congress keep in force the following resolutions:

- (a) Resolution 31 (Cg-X) — Incentive scheme for early payment of contributions;
- (b) Resolution 37 (Cg-XI) — Suspension of Members for failure to meet their financial obligations;
- (c) Resolution 35 (Cg-XII) — Settlement of long-outstanding contributions; and
- (d) Resolution 31 (Cg-XIII) — Short-term borrowing authority.

Review of other Congress documents having budgetary and financial implications

Other financial matters

Recommendation 6

- (a) That Congress adopt the revisions to Financial Regulations 10.1, 14.5, 15.9 and 15.11;
- (b) That Congress suspend Financial Regulation 9.1 during the fourteenth financial period only with respect to the distribution of any cash surplus which may result from the thirteenth financial period and give specific delegation to the Executive Council during this financial period to allocate such cash surplus, or part of, to fully-costed, specific proposals for high priority activities which would have well-defined beneficial outcomes, including information and communication technology requirements, long-term fellowships and emergency non-recurrent activities;
- (c) That the principal of the Staff Compensation Plan Reserve Fund during the fourteenth financial period be kept unchanged at SFR 306 000, the level fixed by Tenth Congress;
- (d) That any balance left in the Publications Fund and the Joint Climate Research Fund at 31 December 2003 be carried over to the fourteenth financial period (2004-2007).

Office automation and information technology support

Recommendation 7

That Congress endorse the establishment of a Trust Fund according to the terms of reference and rules contained in Cg-XIV/Doc. 4.4, which should be revised to include ICT tools to meet requirements for all working languages of the Organization, as appropriate.

ANNEX II

Annex to paragraph 3.1.2.11 of the general summary

STUDY ON POLICY-LEVEL IMPLICATIONS OF THE FUTURE WMO INFORMATION SYSTEM

Impact of FWIS on Members' responsibilities and resources

1. The FWIS concerns only telecommunication and data management functions of the WMO and does not affect the WWW GDPS or the data-processing components of other WMO Programmes.
2. For most Members, the introduction of FWIS would not result in new responsibilities or requirements for additional resources. Rather, it is expected that FWIS, through expanded use of commercial off-the-shelf technology and increased use of the Internet, would result in lower costs, especially for the least developed Members. However, Members wishing to operate a DCPC or a GISC would incur some additional responsibilities and costs.
3. The FWIS would have an impact on the responsibilities and functions of RTHs that wish to expand their responsibility and serve other WMO Programmes as DCPCs, mainly due to the added flexibility in connecting to the WMO information system. The extent of the impact would depend upon the wishes of the Members operating those RTHs. If they accept no additional responsibilities then no additional resources would be needed. For those that expand their services, injection of time-critical data from other WMO Programmes into the system would mean an additional responsibility. The increase in resources needed would possibly be a small fraction of the current resources needed to operate the existing RTH. Provision of data and products on the basis of request/reply services would likely be the most significant addition. While request/reply services would be provided via Internet, the experts have assumed that in most cases RTHs intending to serve as DCPCs would already have an Internet connection. It is expected that the increase in resources needed would be somewhat larger than above, but most likely not prohibitive.
4. There are a number of centres around the world that currently provide a variety of products for WMO Programmes (long-term forecasts, hydrological products, climatological products, etc.). Should those providers agree to participate in FWIS, they would either serve as DCPCs or would ask other DCPCs to receive and disseminate their products. In either case, it would mean changes in agreed-upon practices and procedures. This would require additional resources during implementation but would result in less duplication of effort and reduction of costs in the longer term.
5. No centre was currently providing all of the functions envisioned for GISCs. The services they would provide correspond most closely to those of RTHs associated with large numerical modelling centres, such as World Meteorological Centres within the present WWW. These RTHs have a higher workload due to their responsibility to provide global products. If these RTHs were to become GISCs, then the largest need for resources would be for the creation and maintenance of a product catalogue. Definition of the structure and

contents of such a catalogue is currently under active discussion in several expert groups and it is understood that the maintenance of a comprehensive catalogue of WMO would be a significant undertaking requiring many staff-years of effort.

Other possible policy issues

6. The introduction of the FWIS could provide Permanent Representatives with an opportunity to increase the visibility and capability of the NMHS. The FWIS should provide coordinated information services to all relevant WMO Programmes, which would enhance the role of the NMHS as the national focal point for information services to many new user groups within the country. For those NMHSs that wish to enhance their role by providing these information services, additional responsibilities and resources might be needed. However, NMHSs could make provision of services contingent on reimbursement from clients who request them. It is believed that this cooperation would reduce the total costs of WMO-related programmes within the Member country concerned.

7. The private dedicated communication system of the WWW (currently provided by the GTS) had been used to exchange time-critical meteorological data and corresponding data from other WMO Programmes. This role would continue within FWIS. While the current GTS would be embedded within FWIS, the FWIS is planned to be more flexible, providing more data from a larger range of WMO Programmes and supporting different types of connections to the system, in particular ad hoc data requests via a pull mechanism.

8. The Internet is used for the exchange of non-time critical data of WMO Programmes in many parts of the world. Within FWIS, the Internet would continue to be the connection medium of choice to handle ad hoc data but the use of Internet would be expanded to take advantage of the ubiquity of its connections, its decreasing costs and the positive experiences gained to date with its use. Currently, several data providers make meteorological data and products available over the Internet, which is used for the exchange of non-time critical data of WMO Programmes in many parts of the world. For the most part, they have instituted procedures to ensure that any applicable conditions placed on these data sets are followed. Considerable experience has been gained on the effectiveness of those procedures, but expanding the use of the Internet to collect and distribute meteorological data could be a concern to some Members.

9. The FWIS is intended to serve all relevant WMO Programmes. It would bring savings to the meteorological/hydrological community as a whole and increase efficiency of their operations. However, shared use of telecommunications for time-critical applications from all WMO Programmes with other players having other objectives would require careful planning and a comprehensive and accurate assessment possibly on a case by case basis of requirements, risks and costs before moving into the use of the Internet. The full benefits cannot however be realized unless all relevant Programmes participate in the planning, development and operation of FWIS.

10. The technical training needed to support the GTS is, to a significant extent, specific to that system. In the FWIS, the need for such specific technical training would be reduced, since the technology to be used is already broadly applied. Therefore, after the implementation of FWIS, standard generic information and communication technology training would meet operational and development requirements, facilitating specific training to be focused into more scientific and meteorological areas.

11. By making use of off-the-shelf technologies of a lower cost, the FWIS would allow least developed Members, for the first time, to participate actively in the WMO Programmes, specifically the WWW. While lowering costs, the FWIS would also provide improved exchange of data and products and would enhance the role of developing countries within the meteorological community.

ANNEX III

Annex to paragraph 3.4.4.31 of the general summary

MEMORANDUM OF UNDERSTANDING BETWEEN WMO AND THE INTERNATIONAL OCEANOGRAPHIC COMMISSION REGARDING REGULATORY AND PROCEDURAL ASPECTS OF THE CONDUCT OF THE JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY

The Secretary-General of the World Meteorological Organization (WMO) and the Executive Secretary of the Intergovernmental Oceanographic Commission (IOC) of UNESCO,

RECALLING the establishment in 1999 of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), through Resolutions 14 (Cg-XIII) and XX-12, respectively, of the World Meteorological Congress and the IOC Assembly,

RECALLING FURTHER the considerations that lead to the establishment of JCOMM, namely:

- (1) The need for a fully coordinated mechanism for implementing the requirements for ocean and surface marine meteorological data in support of GOOS and GCOS,
- (2) The expanding requirements of all marine users for a comprehensive range of marine meteorological data and products,
- (3) The need to coordinate and manage better the existing range of marine-related activities of WMO and IOC, to reduce duplication and overlap, enhance efficiencies and reduce costs to both Organizations,
- (4) The potential benefits to be gained from making better use of the diverse and extensive range of expertise and facilities available to both WMO and IOC at all levels,
- (5) The expected cost savings from a rationalization of existing marine-related bodies and activities, and from joint support of marine programme activities by WMO and IOC.

NOTING the great success of the first session of JCOMM (Akureyri, Iceland, 19-29 June 2001) which, by formal agreement of the Executive Councils of WMO and IOC, was organized and funded by WMO and was conducted entirely according to WMO rules and procedures for sessions of technical commissions,

RECOGNIZING that, as a major intergovernmental technical subsidiary body of both WMO and IOC, the work of JCOMM, including sessions of the Commission, should be undertaken in conformity with the relevant rules and procedures of both Organizations pertaining to such bodies,

RECOGNIZING FURTHER that, in view of the fully joint nature of JCOMM, a single set of mutually agreed rules and procedures should apply to the work of the Commission,

HAVE AGREED as follows:

- (NOTES: (i) Regulations of the WMO General Regulations and Rules of the IOC Rules of Procedure are referred to hereafter as "Regulation(s)" and "Rule(s)", respectively.
- (ii) The text below in small font and square brackets contains an analysis of those sections of the Regulations and Rules which contain apparent inconsistencies or require clarification. The substance of the agreements relating to these sections is given in the preceding numbered paragraphs.)

SESSIONS OF JCOMM

Place of session

1. It is agreed that the procedure for accepting an invitation to host a session of JCOMM should be as laid down in Regulation 17 and its Annex, irrespective of which Organization has the lead role for the preparation of the session.

[If a session of JCOMM is not held in the Headquarters of WMO or IOC, Regulation 17 and its Annex lay down the procedure for accepting the invitation to hold a session of a WMO technical commission. Such a procedure will be applied if WMO is the lead Organization for the preparation of a session of JCOMM. This is not in contradiction with the equivalent UNESCO rules (see Article 24 of the "Regulations for the general classification of the various categories of meetings convened by UNESCO", in "Basic Texts" of UNESCO)]

Credentials of the delegations to sessions of JCOMM

2. It is agreed that the Secretary-General of WMO and the Executive Secretary IOC should jointly consult Members/Member States, to request them to designate an appropriate national authority for authorizing the credentials of all experts from such Members/Member States in JCOMM sessions, and for designating the head of delegation. Regulation 20 is then sufficient to also cover IOC credential procedures.
3. It is further agreed that, during the sessions of JCOMM, experts nominated by each Member of WMO/Member State of IOC together shall constitute a single national delegation, with a single head of delegation.

[During the sessions of JCOMM, experts nominated by each Member of WMO/Member State of IOC together shall constitute a single national delegation.

Regulation 190 stipulates that each session of a technical commission shall consider a report on credentials on the basis of Regulations 20 and 21. For this purpose, WMO Members have designated those who are authorized to sign the credentials of their delegations to sessions of the WMO technical commissions.

JCOMM membership differs from that of other WMO technical commissions, as it includes members drawn from both the meteorological and oceanographic agencies representing their Governments in WMO and IOC respectively. However, IOC does not have an equivalent Rule or procedure for formalizing credentials. In any case, it would appear preferable that there be only one authority in each Member/Member State designated to sign the credentials for the whole delegation from that Member/Member State to sessions of JCOMM.]

Quorum at sessions of JCOMM

4. It is agreed that the quorum at JCOMM sessions will be defined in accordance with Regulations 193 and 194, taking into consideration paragraph 7 below concerning voting rights. In addition, it is recognized

that Members/Member States without experts at a session may formally designate an expert from another Member/Member State to represent them by proxy, for the purposes of voting. No individual person shall have more than one vote in sessions of JCOMM.

[IOC Rule 37(1) stipulates that a simple majority of the members of the Executive Committee and of committees and subsidiary or other bodies shall constitute a quorum for meetings of these bodies.

For WMO technical commissions, Regulation 193 stipulates that the quorum for a meeting of the Commission shall be a majority of the Members with voting rights represented at that time at that session, provided this majority shall not be less than one-third of Members with voting rights which have designated experts to represent them permanently in the Commission. Regulation 194 provides the procedures to be followed if the quorum is not obtained.]

Languages at sessions of JCOMM

5. It is agreed that the obligation of WMO to apply its Regulation 120 in sessions of JCOMM shall be maintained, namely that the official languages for sessions of JCOMM shall be Arabic, Chinese, English, French, Russian and Spanish. At the same time, to allow conformity also with IOC Rule 33, it is further agreed that WMO will be solely responsible for providing the documentation and interpretation services for Arabic and Chinese for all sessions of JCOMM, irrespective of which Secretariat has primary responsibility for the preparation and conduct of the session. This agreement will only apply, however, while the official languages of IOC remain as presently defined in Rule 33, namely English, French, Russian and Spanish. The addition of Arabic and/or Chinese to the official languages of IOC will immediately confer an obligation on IOC to provide for appropriate services also in the additional language(s), specifically at those sessions of JCOMM for which IOC has primary responsibility.

[WMO Regulation 120 stipulates that the six official and working languages of WMO, namely Arabic, Chinese, English, French, Russian and Spanish, shall be used in the WMO technical commissions and their committees.

On the other hand, IOC Rule 33(1) stipulates that the official languages of IOC shall be English, French, Russian and Spanish. Further, IOC Rule 33(4) confines the use of the official languages of the IOC committees, subsidiary or other bodies, to the appropriate working languages according to the needs of the representatives of Member States at the meeting.]

Conduct of business in sessions of JCOMM

6. It is recognized that voting on procedural matters other than for the election of officers is extremely rare. Therefore an invocation of Regulation 60 is unlikely to arise in practice at sessions of JCOMM. However, in the event that it is invoked, it is agreed that the provisions of Regulations 60 to 62 will be applied to JCOMM, since they do not conflict with any of the IOC Rules.

[There are no major differences for the conduct of business for JCOMM as provided for in WMO Regulations and IOC Rules.

The main difference between the WMO and IOC procedures for voting is that while Regulations 60, 61 and 62 provide for the process of voting by secret ballot if so demanded by two or more delegations, IOC Rule 45 does not provide for such a process. Voting by secret ballot is only provided for election by virtue of Rule 42(1).]

Voting rights at sessions of JCOMM

7. It is agreed that any Member/Member State with voting and related rights and privileges within either WMO or IOC shall be able to exercise these within the context of JCOMM only, as a joint body of both Organizations.

[This agreement is designed to ensure that there is no misunderstanding or conflict regarding voting and related rights. A major difference between the WMO procedures for voting and election during sessions of constituent bodies and those of IOC arises through the application of WMO Resolution 37 (Cg-XI) — Suspension of Members for failure to meet financial obligations, which states that:

- (a) *Members who through non-payment of their contributions are in arrears for more than two consecutive calendar years shall not be entitled to vote in sessions of the WMO constituent bodies including the technical commissions;*
- (b) *That nationals or representatives of a Member in arrears as indicated in (a) above shall not be eligible for nomination or renomination for elected offices of WMO constituent bodies including the technical commissions.*

It is recognized that this is a complicated issue, as some IOC Member States are not Member States of UNESCO, and therefore do not contribute to the UNESCO regular budget. They pay contributions to IOC on a "voluntary" basis, into the IOC Trust Fund. Also, there may be Member States that are paid up to UNESCO/IOC but not to WMO, or vice versa. In this case, it is quite likely that some Members/Member States will fall into different voting rights categories in WMO and IOC, making this Congress resolution difficult to apply consistently. At the same time, however, it is logical to consider that a Member/Member State with voting rights under either WMO or IOC rules should therefore be eligible to vote and exercise all other relevant rights, within the context of JCOMM alone, as a joint body of both Organizations.]

VOTING, ELECTION AND CONSULTATION BY CORRESPONDENCE

8. It is agreed that the procedures detailed in Regulations 65 to 78 and 90 to 93 should apply to JCOMM, since these do not conflict with anything in the IOC Rules. It is further agreed that the Secretary-General of WMO and the Executive Secretary IOC will jointly approach Members/Member States, with a

view to having a single national authority designated for the purposes of voting by correspondence for JCOMM. This approach should be conducted together with that agreed in paragraph 2 above.

[While the WMO General Regulations provide detailed procedures for voting and election by correspondence in Regulations 65 to 78 and Regulations 90 to 93, respectively, there are no provisions for such procedures in the IOC Statutes and Rules of Procedure.

The only procedure for consulting IOC Member States by correspondence occurs for the IOC Executive Council in Rule 23, whereby the Council or its chairman are authorized to consult Member States by correspondence on substantial matters prior to taking action, and may establish a reasonable time-limit for the replies. There are no detailed provisions for this procedure.

By virtue of IOC Rule 25, a Committee, subsidiary or other bodies shall, whenever possible, carry out their work by correspondence.]

DOCUMENTATION

9. It is agreed that the documentation style for JCOMM sessions should be largely consistent with that for sessions of other WMO constituent bodies. This style will apply irrespective of which Organization has primary responsibility for preparing the session.

[Although this does not strictly concern the regulations, there is nevertheless a difference in the documentation styles used by WMO and IOC for meetings of technical commissions or equivalent. For JCOMM-I, WMO used the style adopted for Congress and the Executive Council, with a few exceptions. The IOC style (for its Executive Council, Assembly and Committees) at present does not include any draft text for the final report in pre-session documentation. However, IOC has begun to introduce such draft text for sessions of its Executive Council and Assembly. It is important that a common style be adopted for all formal JCOMM sessions.]

[MEMBERSHIP OF JCOMM

During the discussions preceding the approval of JCOMM at the IOC Assembly in 1999, it was agreed that JCOMM would be a partnership, with 50 per cent of its members from meteorology and 50 per cent from oceanography (final report of the Assembly, paragraph 32).

Article 19(b) of the WMO Convention stipulates that all the Members of the Organization (States and Territories) have the right to be represented on the technical commissions. Regulation 182 gives the right to WMO Members to designate such number of experts to serve on a technical commission as it deems necessary.

It is, therefore, not appropriate to impose on WMO Members/IOC Member States the designation of limited numbers of experts for JCOMM to meet the concept of partnership referred to in paragraph 1, above.

It is agreed that this does not represent a problem for JCOMM, and in any case does not require consideration of a possible change to WMO regulations. If any imbalance in JCOMM members develops over time, in either sense, it will be addressed by encouraging more members from the other discipline, and not by restricting the membership of either meteorologists or oceanographers.]

[PRESIDENCY AND VICE-PRESIDENCY OF JCOMM

Thirteenth WMO Congress decided that there should be two co-presidents of JCOMM who should be drawn one from the oceanic and one from meteorological sciences. This principle was endorsed by the twentieth session of the IOC Assembly. (*Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902), general summary paragraph 3.4.4.5 and Report of the Assembly, paragraph 32).

By virtue of Regulations 11, 12, 184 and 190(11), each WMO technical commission shall elect a president and vice-president of the Commission whose term of office shall be from the end of an ordinary session to the end of the succeeding ordinary session of the Commission. They will be eligible for re-election at the end of this term of office.

No mention was made of a vice-president in the decisions or proceedings of the WMO Thirteenth Congress or of the twentieth session of the IOC Assembly referred to above. As there are two co-presidents of JCOMM, it is unclear, from a WMO standpoint, whether or not there should also be two co-vice-presidents of the Commission, who would be drawn equally from the oceanic and meteorological sciences. Such an uncertainty does not arise for IOC.

This uncertainty was resolved by the fifty-second session of the WMO Executive Council, which "...agreed that (the decision of Congress) should be interpreted as meaning that, for JCOMM as a technical commission sponsored jointly by another international organization, the two co-presidents were the equivalent of the normal president and vice-president as officers of a technical commission." (See the *Abridged Final Report with Resolutions of the Fifty-second Session of the Executive Council* (WMO-No. 915), general summary paragraph 6.4.5.) In addition, JCOMM, at its first session (Akureyri, June 2001), "... agreed that, in order to avoid confusion regarding management responsibilities, the meteorology co-president should assume primary authority for guiding the work of JCOMM during the first two years of the intersessional period, and the oceanography co-president during the second two years." It is thus agreed that this matter no longer represents a difficulty for JCOMM.]

ANNEX IV

Annex to paragraph 3.7.1.33 of the general summary**WMO PROGRAMME FOR THE LEAST DEVELOPED COUNTRIES****Purpose and scope**

1. In line with the overall Programme of Action for the LDCs for the decade 2001-2010, adopted by the Third United Nations Conference for the LDCs, the WMO programme for the LDCs will encompass the five following strategic areas:

- (a) Fostering a people-centred policy framework;
- (b) Strengthening productive capacities;
- (c) Building human and institutional capacities;
- (d) Reducing vulnerability and conserving the environment; and
- (e) Resource mobilization.

2. Resources mobilized within the framework of this programme, through a special Trust Fund, will be used to support NMHSs of LDCs to enhance their capabilities to participate and contribute actively in activities related to priority areas such as poverty alleviation and natural disaster preparedness and mitigation. Specific projects will be developed for individual countries and on a subregional basis for countries in Africa, Asia and the Pacific.

Main long-term objective

3. The long-term objective of the programme is to enhance the capacities of the NMHSs of LDCs so that they can contribute efficiently and in a timely manner to the socio-economic development efforts of the countries concerned.

Implementation activities 2004-2007

4. During the period, project proposals will be developed and resources mobilized to assist the NMHSs of eight countries in RA I, eight countries in RA II, five in RA V and one in RA IV. In addition, three regional projects will be prepared to enhance regional cooperation in the countries concerned especially in areas such as training and the development of climate and seasonal prediction capabilities. The main focus will be to ensure that the NMHSs are able to address adequately such issues as disaster prevention and mitigation, water resources management and climate change and its impacts on the economies.

5. The planned activities of the programme include, among other things, the following:

- (a) The provision of assistance to NMHSs in the preparation of development plans based on the priority needs of countries and in the implementation of the plans;
- (b) The development of technical cooperation projects and programmes;
- (c) The provision of support in the area of human resources development through the training of selected staff;
- (d) The development of capacity building activities including in the area of planning, management and resource mobilization; and
- (e) The provision of assistance to NMHSs in the mobilization of resources for the development of their activities.

ANNEX V

Annex to paragraph 3.7.1.35 of the general summary**WMO TRUST FUND FOR THE NMHSs OF LEAST DEVELOPED COUNTRIES****Terms of reference and rules****Introduction and purpose of the Fund**

1. It will be recalled that within the context of the United Nations, special attention has been given to the development of the LDCs through, among other things, the organization of special conferences to develop and agree on actions to be taken by the LDCs and the international community to support their struggle against poverty and economic difficulties. In this regard, the Third United Nations Conference on the LDCs was held in Brussels in May 2001 to review the implementation of the Plan of Action for LDCs approved in Paris in 1991 by the Second Conference on the LDCs. The Conference adopted a Programme of Action for the LDCs for the decade 2001-2010, the implementation of which will be based on actions by the LDCs and commensurate measures by the developed partners. In this connection, the United Nations system including

WMO, was requested to play a key role in the implementation of the Programme of Action. In this regard, the WMO Executive Council, during its fifty-third session, noted with satisfaction the inputs of WMO to the Programme of Action for the LDCs for the decade 2001-2010 and agreed on the need to develop a WMO programme for the LDCs to contribute to the overall Programme.

2. Noting that partnerships are essential for implementation of this new programme for the LDCs, regional and subregional economic groupings, public and private sectors, banks and funding agencies and multilateral organizations will be solicited and drawn in WMO's initiatives for the LDCs. Coordination with the interested partners will be organized through consultative meetings. In order to mobilize additional and new resources for the programme, a Trust Fund is therefore established to facilitate the development and implementation of national and regional projects in support of NMHSs of LDCs.

3. The Fund will be established from voluntary cash contributions from Members, bilateral and multilateral funding agencies, including the World Bank, regional development banks, NGO's and the private sector. Contributions may include grants and donations and shall be normally made in Swiss Francs or any other convertible currency.

Administration of the Fund

4. The Secretary-General of WMO, or his authorized representative, shall be responsible for the management of funds contributed by the above-mentioned donors through WMO.

5. The Secretary-General of WMO shall administer the Fund in accordance with the Financial Regulations, Standing Instructions and established procedures of WMO, supplemented by the provision of the present rules.

6. The accounting of the expenditures of the Fund shall be as provided for in paragraph 5 above as well as for any other directly identifiable charges related to the administration of the Fund (e.g., costs of consultants, experts, scientific and technical staff, bank charges and/or commissions, communication charges, etc.). The interest accrued from any investment of the principal of the Fund will constitute an income to the Fund.

7. Financial reports on the Fund will be made in Swiss Francs. The United Nations rate of exchange prevailing on the date of the transaction or report will apply for the conversion into Swiss Francs of contributions or income received and payments made or charges incurred in any other currency. WMO shall submit a financial report, annually, to the Executive Council, and report to Congress on the overall use of the Fund.

8. The biennial statement of income and expenditure of the Fund will be incorporated in the overall audited financial statements submitted by the Secretary-General of WMO to the WMO Executive Council for approval. External audit will be conducted as provided for in the WMO Financial Regulations. The audit report will be available to contributing partners on request.

Procedures for the utilization of the Fund

9. The utilization of the Fund shall be based upon decisions of the Secretary-General, based on agreed project proposals and requests from Members on specific indications from contributors.

10. The Secretary-General of WMO will not enter into any financial commitments unless he has received the funds required.

Legal responsibilities

11. Under no circumstances will the Fund be made liable to pay and/or reimburse any taxes on emoluments or honorarium, or any customs and import duties, value added taxes or similar charges. If applicable, these will be payable by the beneficiaries of the support provided.

Review of the rules

12. Congress may review these rules in the light of experience gained and make any changes as appropriate.

ANNEX VI
Annex to paragraph 4.1.1 of the general summary

**PROVISIONAL PROGRAMME OF SESSIONS OF CONSTITUENT BODIES DURING THE FOURTEENTH
FINANCIAL PERIOD (2004-2007)**

<i>Session</i>	<i>Place</i>	<i>Remarks</i>
2004		
Executive Council (fifty-sixth session)	Geneva	
Regional Association II (Asia) (thirteenth session)	Hong Kong, China	
Commission for Basic Systems (thirteenth session)	Kenya	
Commission for Hydrology (twelfth session)		
2005		
Executive Council (fifty-seventh session)	Geneva	
Regional Association III (South America) (fourteenth session)	Peru	Intention to host mentioned during the last session of the Association
Regional Association IV (North and Central America) (fourteenth session)		
Regional Association VI (Europe) (fourteenth session)	Germany	
Commission for Climatology (fourteenth session)		
Commission for Atmospheric Sciences (fourteenth session)	Morocco South Africa Turkey	Intention to host mentioned during the last session of the Commission
Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (second session)	Canada	EC-LIV had planned this session for 2004. Canada will host it, but only if it takes place in 2005. It is to be noted that IOC will be in charge of the organization and documentation of the session
2006		
Executive Council (fifty-eighth session)	Geneva	
Regional Association I (Africa) (fourteenth session)	Egypt Kenya Nigeria Senegal	Intention to host mentioned during the last session of the Association. Egypt and Nigeria confirmed their invitation during Cg-XIV
Regional Association V (South-West Pacific) (fourteenth session)	Australia	
Commission for Aeronautical Meteorology (thirteenth session)	Egypt	
Commission for Agricultural Meteorology (fourteenth session)	India	Intention to host mentioned during the last session of the Commission
Commission for Basic Systems (extraordinary session)		
2007		
Commission for Instruments and Methods of Observation (fourteenth session)		
Fifteenth World Meteorological Congress	Geneva	
Executive Council (fifty-ninth session)	Geneva	

ANNEX VII
Annex to paragraph 4.4.6 of the general summary

TRUST FUND FOR INFORMATION AND COMMUNICATION TECHNOLOGY DEVELOPMENT

Terms of reference and rules

Purpose of the Fund

1. The Fund will be established from voluntary cash contributions from Members and the civil society, as well as from other sources of funding.
2. The purpose of the Fund is to provide complementary extrabudgetary funding to ensure that WMO is properly equipped with up-to-date ICT tools for enhanced management of WMO programme activities, in particular to communicate actively with Members, to meet the requirements for all working languages of the Organization, as appropriate, and to upgrade the current Oracle Financial system and other ICT tools in the area of financial and human resources management, payroll, results-based performance management, Web development, electronic document management system and other ICT-related support functions.

Administration of the Fund

3. The Secretary-General of WMO, or his authorized representative, shall be responsible for the management of contributions made to the Trust Fund.
4. The Secretary-General of WMO shall administer the Fund in accordance with the WMO Financial Regulations, Standing Instructions and established procedures of WMO, supplemented by the provision of the present rules.
5. The accounting of the expenditures of the Fund shall be as provided for in paragraph 4 above as well as for any other directly identifiable charges related to the administration of the Fund. The interest accrued from any investment of the principal of the Fund will constitute an income to the Fund.
6. Financial reports on the Fund will be made in Swiss Francs. The United Nations rate of exchange prevailing on the date of the transaction or report will apply for the conversion into Swiss Francs of contributions or income received and payments made or charges incurred in any other currency. WMO shall report to the Executive Council on the use of the Fund in the biennial accounts.
7. The biennial statement of income and expenditure of the Fund will be incorporated in the overall audited financial statements submitted by the Secretary-General of WMO to the WMO Executive Council for approval. External audit will be conducted as provided for in the WMO Financial Regulations. The audit report will be available to contributing partners on request.

Procedures for the utilization of the Fund

8. The utilization of the Fund shall be based upon decisions of the Secretary-General.
9. The Secretary-General of WMO will not enter into any financial commitments unless he has received the funds required.

Legal responsibilities

10. Under no circumstances will the Fund be made liable to pay and/or reimburse any taxes on emoluments or honorarium, or any customs and import duties, value added taxes or similar charges. If applicable, these will be payable by the beneficiaries of the support provided.

Review of the rules

11. Congress may review these rules in the light of experience gained and make any changes as appropriate.

Estimated financial requirements for the ICT development for 2004-2007

Regular budget funding	SFR 1.9 million
Additional requirements	
• Upgrading and further development/extension of the current Oracle system (SFR 1 million per annum)	SFR 4.0 million
• EDMS	SFR 0.3 million
• Web development	SFR 0.8 million
Total requirements	SFR 7.0 million

ANNEX VIII

Annex to paragraph 7.2.54 of the general summary**LIST OF RELEVANT TERMS FOR WHICH WORKING DEFINITIONS WERE SUGGESTED**

During its consideration of issues associated with the role and operation of NMHSs, Thirteenth Congress agreed that some of the issues could be resolved more easily if there was a means to develop standard definitions for certain terms. It requested the Executive Council to address the problem of definition of relevant commonly used terms.

The Executive Council, in turn, agreed that, while many of the key terms involved in the discussion on the role and operation of NMHSs fall within the province of WMO (and some are already to be found in WMO glossaries and guides), many others derive from fields such as economics, law and management where well established definitions exist and where it would be inappropriate for WMO to attempt to assign its own meaning to such commonly used terms.

In this connection, a number of terms were identified for which working definitions were suggested. These are intended as interim working definitions to facilitate discourse on NMHS-related issues within the WMO community. These fall into three groups:

- (a) Terms which are fully within the area of competence of WMO and for which the definitions are either identical with definitions included in existing WMO publications or represent new or updated definitions which will be submitted for endorsement by the Executive Council for use in connection with deliberation on the role and operation of NMHSs;
- (b) Terms from other fields for which the definitions can be attributed directly to an authoritative source; followed, in some cases, by brief elaboration, on their application in the WMO context;
- (c) Terms from other fields for which no single appropriate quotable definition has yet been located but for which a summary interpretation has been prepared from the literature for working purposes within WMO.

The terms for which draft working definitions have been identified are the following:

- | | |
|--|--|
| 1. Attribution | 24. Marketing |
| 2. Basic services | 25. Meteorology |
| 3. Basic systems | 26. Mission |
| 4. Charter | 27. National Hydrological Service |
| 5. Client | 28. National Hydrometeorological Service |
| 6. Climatology | 29. National Meteorological Service |
| 7. Commercial sector | 30. Oceanography |
| 8. Commercialization | 31. Outcome |
| 9. Competition policy | 32. Outputs |
| 10. Core (or Basic) functions of an NMHS | 33. Outsourcing |
| 11. Cost recovery | 34. Overhead costs |
| 12. Customer | 35. Partnership |
| 13. Designated Meteorological Authority | 36. Private sector |
| 14. Direct costs | 37. Privatization |
| 15. Effectiveness | 38. Product |
| 16. Efficiency | 39. Public good |
| 17. Functions | 40. Public Interest |
| 18. Globalization | 41. Public service |
| 19. Goal | 42. Service |
| 20. Hydrology | 43. Single official voice |
| 21. Level playing field | 44. Specialized services |
| 22. Mandate | 45. User |
| 23. Marginal cost | |

APPENDIX A

LIST OF PERSONS ATTENDING THE SESSION

A. Representatives of WMO Members			<i>Member</i>	<i>Name</i>	<i>Capacity</i>
<i>Member</i>	<i>Name</i>	<i>Capacity</i>			
Afghanistan	A.Q. Qadeer	Principal delegate	Azerbaijan	M. Najafov	Principal delegate
	G.H. Nawabi	Delegate		E. Hasanov	Delegate
	M.M. Ahmadi	Delegate		Bahamas	A.W. Rolle
Albania	V. Thanati	Principal delegate	Bahrain		A.M.H. Isa
	P. Goxhi (Ms)	Alternate		H.A. Al-Aali	Alternate
	M. Sanxhaku	Delegate	Bangladesh	T. Ali	Principal delegate
	A. Mara	Delegate		Md. A. Hossain	Alternate
Algeria	M.A-S. Dembri	Principal delegate		F. Rabab (Ms)	Delegate
	A. Kirouane (5-16.5)	Principal delegate	Barbados	C. Layne	Principal delegate
	M. Kadi (17-24.5)	Alternate		Belarus	Y.M. Pokumeiko
	B. Zeddigha	Delegate	I. Egorova (Ms)		Delegate
	A. Lagha	Delegate	Belgium	H. Malcorps	Principal delegate
	M. Haouach	Delegate		M. Adam	Delegate
	C. Smaïl	Delegate		J. Zikmundova (Ms)	Delegate
	A. Benzeguir	Delegate		A. Quinet	Delegate
	L. Ben Brahim	Delegate		G. Demarée	Delegate
	D. Soltani (Ms)	Delegate		E. Honnay (Ms)	Delegate
M. Abbani	Delegate	Belize		C. Fuller	Principal delegate
Angola	G.H. Joao		Delegate	Benin	S. Amehou
	E.N. Sanguve	Delegate	F.A. Lawson		Delegate
	S.P.S. Da Silva (Ms)	Delegate	E. Laourou		Delegate
	C.P. Baptista	Delegate	B.E. Accrombessi		Delegate
	L.D. Constantino	Delegate	Bhutan		Bap Kesang
	A. Mengawako	Delegate		C. Tenzin	Delegate
	L.T. Nanizeyi (Ms)	Delegate		S. Tenzin	Delegate
Antigua and Barbuda	P. Jeremiah	Principal delegate	Bosnia and Herzegovina	M. Vukašinovic	Principal delegate
	Argentina	M.A. Rabiolo		Principal delegate	E. Sarac
N. Nascimbene		Alternate		D. Tekulja	Delegate
de Dumont (Ms)				M. Muminovic	Delegate
F.P. Requena		Alternate		D. Kremenovic-	Delegate
C.A. Damboriana		Delegate	Kusmuk		
A. Repetti (Ms)	Delegate	Botswana	C. Ntwaagae	Principal delegate	
Australia	J.W. Zillman		Principal delegate	G.K. Ramothwa (Ms)	Principal delegate
	K. O'Loughlin (5-14.5)		Alternate	P. Phage	Alternate
	R.R. Brook (15-24.5)		Alternate	G. Pitso	Alternate
	V.K. Tsui		Delegate	K. Kalaote	Delegate
	K.J. Wilson	Delegate	Brazil	A.C. Vaz de Athayde	Principal delegate
	A. Watson	Delegate		M.A. Vasconcelos	Delegate
	C. Muller (Ms)	Delegate		de Freitas	
	M.J. Manton	Delegate	O. Vieira	Delegate	
	P. Schwerdtfeger	Delegate	British Caribbean Territories	T. Sutherland	Principal delegate
	A. Forbes	Delegate		F. Sambula	Alternate
N. Lawson	Delegate	Brunei Darussalam		M.H. Aji	Principal delegate
M. Smith	Delegate		R. Kamaludin (Ms)	Delegate	
L. Brodrick	Delegate		H.Z. Pungut	Delegate	
Austria	P. Steinhauser	Principal delegate	Bulgaria	K. Tzankov	Principal delegate
	F. Neuwirth	Alternate		L. Bojkova (Ms)	Delegate
	G. Zapletal	Alternate		R. Mitreva (Ms)	Delegate
	P. Storer	Delegate			

<i>Member</i>	<i>Name</i>	<i>Capacity</i>
Burkina Faso	F.N. Ouattara	Principal delegate
Burundi	J. Bihotori (Ms)	Principal delegate
Cameroon	J.S. Ndjemba	Principal delegate
	Endezoumou	
	F. Ngantcha	Delegate
	B. Bidima	Delegate
Canada	M.D Everell (12-21.5)	Principal delegate
	D. Grimes (5-14.5)	Alternate
	B. Angle (15-24.5)	Alternate
	M. Béland (15-23.5)	Delegate
	N. Cutler (Ms) (12-18.5)	Delegate
	A. Tellier (part-time) (5-24.5)	Delegate
	T. Yuzyk (6-14.5)	Delegate
	A. Simard (Ms) (5-12.5)	Delegate
	B. O'Donnell (18-24.5)	Delegate
	P. Morrisette (14-15.5)	Delegate
Cape Verde	A.P. Alves Lopes	Principal delegate
Chad	T. Moussa	Principal delegate
Chile	H. Oliva	Principal delegate
	R. Espinosa	Alternate
	E. Valenzuela	Delegate
China	Qin Dahe	Principal delegate
	Zheng Guoguang	Alternate
	Yu Jixin	Delegate
	Zheng Yunjie	Delegate
	Chen Zhenlin	Delegate
	Han Li	Delegate
	Pang Hong Kui	Delegate
	Ruan Shui-gen	Delegate
	Shi Yuguang	Delegate
	Yu Xinwen	Delegate
	Zhang Guocai	Delegate
	Zhao Datong	Delegate
Colombia	C. Reyes-Rodriguez	Principal delegate
	M. Henriquez	Alternate
	V. Gonzalez-Ariza (Ms)	Delegate
Congo	R.J. Menga	Principal delegate
	P. Ondongo	Delegate
	J.M. Megot	Delegate
	S. Boret Bokwango	Delegate
Cook Islands	P. Wichman	Principal delegate
	A. Ngari	Delegate
Costa Rica	E. Zárate	Principal delegate
Côte d'Ivoire	C. Béké	Principal delegate
	A. Kignaman-Soro	Principal delegate
Croatia	B. Gelo	Principal delegate
	K. Pandžic	Alternate
	D. Trninic	Delegate
	D. Glasnovic	Delegate
	M. Adamic (Ms)	Delegate
	I. Cacic	Delegate
Cuba	T. Gutierrez	Principal delegate
	J.I. Mora Godoy	Delegate

<i>Member</i>	<i>Name</i>	<i>Capacity</i>
Cuba	C. Hurtado Labrador	Delegate
<i>(Cont.)</i>	O. León Gonzalez	Delegate
Cyprus	F-G. Lanitou	Alternate
	Williams (Ms)	
	H. Mina (Ms)	Alternate
Czech Republic	I. Obrusník	Principal delegate
	A. Slabý	Alternate
	R. Tolasz	Alternate
	J. Kubát	Delegate
	J. Novák	Delegate
Democratic People's Republic of Korea	Ri Tcheul	Principal delegate
	So Se Pyong	Delegate
	Ri Kwang Il	Delegate
	Kim Yong Ho	Delegate
Democratic Republic of the Congo	A.M. Kesia-Mbe	Principal delegate
	S. Mutomb Mujing	Delegate
	F. Sambassi Khakessa	Delegate
Denmark	L.P. Prahm	Principal delegate
	L. Wester-Andersen (Ms)	Alternate
Djibouti	O.S. Said	Principal delegate
Dominica	C. Depradine	Principal delegate
	T. Sutherland	Alternate
Dominican Republic	R.D. Núñez	Principal delegate
	J.M. Duquela	Delegate
	M. Belode Kemper (Ms)	Delegate
Ecuador	G. García	Principal delegate
	M. Muñoz (Ms)	Alternate
Egypt	M.M. Arafa	Principal delegate
	M.H. Doos	Delegate
	M. Elewa	Delegate
El Salvador	M. Castro Grande	Principal delegate
	R. Recinos Trejo	Delegate
	M.A. Alcaine	Delegate
Eritrea	G.B. Kelati	Principal delegate
	W. Bereket	Alternate
Estonia	J. Saar	Principal delegate
	R. Kärner	Delegate
	E. Peenar (Ms)	Delegate
	A. Kallis	Delegate
	R. Schank	Delegate
Ethiopia	F. Yimer	Principal delegate
	B. Kassahun	Delegate
	A. Shiketa	Delegate
Fiji	R. Prasad	Principal delegate
Finland	P. Taalas	Principal delegate
	P. Huhtaniemi	Alternate
	M. Hurtola (Ms)	Alternate
	K. Soini (Ms)	Delegate
	M. Heikinheimo	Delegate
	Y. Viisanen	Delegate
	P. Plathan	Delegate
	M. Wiljander	Delegate
	P. Saarikivi	Delegate
	P. Seuna	Delegate
	J. Karanko	Delegate
France	D. Bussereau	Principal delegate
	B. Kessedjian	Alternate
	J.-P. Beysson	Alternate

<i>Member</i>	<i>Name</i>	<i>Capacity</i>	<i>Member</i>	<i>Name</i>	<i>Capacity</i>
France (Cont.)	P. Courtier	Delegate	Iceland	S.H. Jóhannesson	Principal delegate
	M. Giacomini	Delegate		M. Jónsson	Principal delegate
	P. Givone	Delegate	I. Davidsdottir (Ms)	Delegate	
	O. Moch	Delegate	A. Snorrason	Delegate	
	F. Duvernet	Delegate	India	S.K. Srivastav	Principal delegate
	D. Lambergeon	Delegate		T. A. Khan	Delegate
	T. Berthelot	Delegate		S. Mahto	Delegate
	J-P Dufour	Delegate		A. Pande	Delegate
	F. Maniaci	Delegate		S. Singh	Delegate
S. Connois (Ms)	Delegate	G. Srinivasan	Delegate		
French Polynesia	L. Finaud	Principal delegate	Indonesia	I. Gunawan	Principal delegate
	M. Lecorcher (Ms)	Alternate		D. Kasri	Delegate
Gabon	Y. Biké (Ms)	Principal delegate		H. Harjanto	Delegate
	A. Abena (Ms)	Delegate	T. Sunoko	Delegate	
	A.R. Mackosso (Ms)	Delegate	A.P. Sarwono	Delegate	
Gambia	S. Waffa-Ogoo (Ms)	Principal delegate	Iran, Islamic Republic of	A-M. Noorian	Principal delegate
	B.P. Jallow	Delegate		M.R. Alborzi	Alternate
Georgia	N. Beradze	Principal delegate		G.A. Kamali	Delegate
	Germany	U. Gärtner		Principal delegate	B. Sanaee
S. Mildner		Alternate		M. Amirshaghghi	Delegate
G. Steinhorst		Delegate		A-H. Delju	Delegate
G-R. Hoffmann		Delegate		A. Sardari	Delegate
V. Vent-Schmidt		Delegate		D. Parhizkar	Delegate
D. Frömming		Delegate		M. Jabbari (Ms)	Delegate
S. Demuth		Delegate		L. Salimabadi (Ms)	Delegate
K. Hofius		Delegate		E. Farman (Ms)	Delegate
H. Hüster		Delegate	F. Rahimzadeh (Ms)	Delegate	
P. Päßgen		Delegate	L. Yekanizadeh (Ms)	Delegate	
M. Wesseler (Ms)		Delegate	M. Mirsadeghi	Delegate	
D. Schulze		Adviser	M Esferi	Delegate	
Ghana	F.P. Mote	Principal delegate	A. Heyrani Nobari	Delegate	
	F. Poku	Alternate	Ireland	D. Murphy	Principal delegate
	K. Wurodu	Delegate		E. Murphy	Delegate
	J. Wellens-Mensah	Delegate		B. Cahalane	Delegate
Greece	A. Papaioannou	Principal delegate	Israel	Y. Levy	Principal delegate
	(5-16.5)			J. Zarka	Alternate
	G. Sakellaris	Principal delegate		E. Fauvel (Ms)	Delegate
	(17-24.5)		S. Herlin (Ms)	Delegate	
Guatemala	M-F. Katsimardou-Refene (Ms)	Delegate	Italy	R. Sorani	Principal delegate
	I. Bassiakos (17-24.5)	Delegate		M. Capaldo	Alternate
	R.H.E. Alvarado	Principal delegate		P. Pagano	Delegate
Ortigoza		S. Pasquini		Delegate	
C. Arroyave	Delegate	N. Vassalli		Delegate	
Guinea	M.L. Bah	Principal delegate		F. Ferrini	Delegate
	B.M. Camara	Delegate	L.M. Michaud	Delegate	
Guyana	S. Kahuha	Principal delegate	G. Monacelli (Ms)	Delegate	
	Honduras	J.B. Zapata	Principal delegate	F. Prodi	Delegate
H. Flores Calix		Principal delegate	Jamaica	R. Smith	Principal delegate
G. Bu (Ms)		Delegate		S. McGill (Ms)	Principal delegate
M. Pérez		Delegate		P. Davies (Ms)	Delegate
Hong Kong, China	Lam Chiu-ying	Principal delegate	S. Betton (Ms)	Delegate	
		Hungary	T. Kitade	Principal delegate	
I. Mersich	Principal delegate		K. Nagasaka	Alternate	
Z. Dunkel	Alternate		A. Beppu	Delegate	
S. Nagy	Delegate		S. Nakagawa	Delegate	
K.C. Szalóki (Ms)	Delegate	I. Takahashi	Delegate		
Jordan	H.N. Sha'er	Principal delegate	K. Kuroiwa	Delegate	
		A. Isa Saleh	Alternate		
		J.K. Al-Rabadi	Alternate		
		A.H. Abu Hazim	Delegate		

<i>Member</i>	<i>Name</i>	<i>Capacity</i>
Kazakhstan	N. Danenov	Principal delegate
	T. Kudekov	Alternate
	M. Tashibayev	Delegate
	O. Abramenko (Ms)	Delegate
Kenya	A. Ligale	Principal delegate
	A. Mohamed (Ms)	Principal delegate
	J.R. Mukabana	Delegate
	M. Musoma (Ms)	Delegate
	S. Aura (Ms)	Delegate
	S.R. Masika	Delegate
	W. Nyakwada	Delegate
	S.W. Kahuha	Delegate
	S.M. Waweru	Delegate
	S. Ayub	Delegate
	R. Ogola (Ms)	Delegate
M.L. Emurugat	Delegate	
M. Oyugi	Delegate	
Kiribati	T. Teitiba	Principal delegate
Kuwait	K. Shuaibi	Principal delegate
	A. Altaho	Delegate
Kyrgyz Republic	M. Bakanov	Principal delegate
Lao People's Democratic Republic	N. Somsanith	Principal delegate
Latvia	A. Leitass	Principal delegate
	J. Karklins	Alternate
	E. Kalniņš	Delegate
Lebanon	A. Bejjani	Principal delegate
	R. Nouredine (Ms)	Delegate
Lesotho	M. Moleleki	Principal delegate
	B.T. Sekoli	Alternate
	K. Tau	Delegate
	J. Setipa	Delegate
Libyan Arab Jamahiriya	A.R. El Haj	Principal delegate
	A.M. Al-Balazi	Delegate
	W.S. Al Hares	Delegate
Lithuania	P. Korkutis	Principal delegate
Luxembourg	A. Berns	Principal delegate
	M. Godefroid	Delegate
Madagascar	N. Raelinera	Principal delegate
Malawi	J.A. Chikwenga	Principal delegate
	D.R. Kamdonyo	Alternate
	J. Chirwa	Delegate
Malaysia	Chow Kok Kee	Principal delegate
	Tan Huvi Vein	Delegate
Maldives	A. Majeed	Principal delegate
Mali	M. Konaté	Principal delegate
Malta	M. Bartolo	Principal delegate
	A. Mifsud (Ms)	Alternate
Mauritania	M.S.O.M. Lemine	Principal delegate
	M.O.M.L Béchir	Principal delegate
	H.O. Hemet	Delegate
Mauritius	S.N. Sok Appadu	Principal delegate
	B.K. Rudhee	Delegate
	V. Mungur	Delegate

<i>Member</i>	<i>Name</i>	<i>Capacity</i>
Mexico	M. Rosengaus	Delegate
	Moshinsky E. Pizano Cejka (Ms)	Delegate
Monaco	B. Fautrier	Principal delegate
	C. Lanteri (Ms)	Delegate
	W. Deri	Delegate
	A. Jahlan	Delegate
Mongolia	K. Bekhbat	Principal delegate
	S. Enkhuvshin	Principal delegate
	D. Dagvadorj	Delegate
	V. Enkhbold	Delegate
Morocco	Mr A. Zahoud	Principal delegate
	A. Diouri	Principal delegate
	A. Belhouji	Alternate
	A. Mokssit	Delegate
	O. Ouzzine (Ms) A. El Kadiri	Delegate
Mozambique	F.D. Freires Lúcio	Principal delegate
Myanmar	San Hla Thaw	Principal delegate
Namibia	F. Uirab	Principal delegate
	E.N.Z. Kambueza	Alternate
Nepal	M.L. Shrestha	Principal delegate
Netherlands	J. de Jong	Principal delegate
	A. Kattenberg	Alternate
	M. van der Valk	Delegate
	M. Noteboom (Ms)	Delegate
Netherlands Antilles and Aruba	A.J. Dania	Principal delegate
New Caledonia	P. Maresca	Principal delegate
	A. de Billy (Ms)	Alternate
New Zealand	J.R. Lumsden	Principal delegate
	N. Gordon	Delegate
	J. Schuyt	Delegate
Niger	K. Souleymanem	Principal delegate
	M. Labo	Delegate
Nigeria	L.E. Akeh	Principal delegate
	T. Obidike	Alternate
	I.D. Nnodu	Delegate
	O. Odumosu	Delegate
	O.A.C. Orji (Ms) J. Chabo	Delegate
Niue	R. Raj	Principal delegate
Norway	A. Eliassen	Principal delegate
	L. Svendsen (Ms)	Alternate
	K. Bjørheim	Delegate
	K. Repp	Delegate
	J. Sunde P.I. Lied	Delegate
Oman	Y.M. Al-Saifi	Principal delegate
	A.H.M. Al-Harhi	Delegate
	A. Al-Qassimi	Delegate
Pakistan	Q.Z. Chaudhry	Principal delegate
	S.S. Hasan	Delegate
	F.I. Khan	Delegate

<i>Member</i>	<i>Name</i>	<i>Capacity</i>	<i>Member</i>	<i>Name</i>	<i>Capacity</i>
Panama	A. Beliz	Principal delegate	Saudi Arabia	A. Al-Sheikh	Delegate
Papua New Guinea	Tau Ray Gabi	Principal delegate	(<i>Cont.</i>)	M. Bin Shafi	Delegate
Paraguay	H. Valiente Ramírez	Principal delegate	Senegal	O. Camara	Principal delegate
	F. Barreiro	Delegate		A. Ndiaye	Alternate
Peru	W. Gamarra	Principal Delegate		D.M. Sene	Delegate
	J. Yerren	Delegate		F.A. Lô (Ms)	Delegate
	C. Alarcón	Delegate	Serbia and Montenegro	M. Šcepanovic	Principal delegate
	D. Beleván	Delegate		D. Kardum	Principal delegate
Philippines	V.V. Asiddao (Ms)	Principal delegate		D. Divjak-Tomic (Ms)	Alternate
Poland	J. Zielinski	Principal delegate		G. Jovanovic (Ms)	Delegate
	J. Sadon	Alternate		D. Pavicevic	Delegate
	R. Klejnowski	Alternate		I. Milovanovic (Ms)	Delegate
	A. Dubicki	Delegate	Seychelles	W. Agricole (14-23.5)	Principal delegate
Portugal	J.C.D. Costa Pereira	Principal delegate		S. Masika	Delegate
	A.D. Baptista (6-15.5)	Principal delegate	Sierra Leone	D.S. Lansana	Principal delegate
	O. Rasquinho (5-13.5)	Alternate	Singapore	Woon Shih Lai	Principal delegate
	A.M. Saraiva (12-22.5)	Delegate		Lim Tian Kuay	Delegate
	R.A.D. Carvalho (6-11.5)	Delegate	Slovakia	Š. Škulec	Principal delegate
	A. Fernandes (Ms)	Delegate		V. Pastircák	Alternate
	P. Alves	Adviser		M. Kmošena	Delegate
Qatar	A.A.M. Al-Nuami	Principal delegate		K. Martinka	Delegate
	A.H. Al-Mulla	Alternate		P. Petrovic	Delegate
Republic of Korea	Ahn Myung-hwan	Principal delegate		P. Roncak	Delegate
	Shin Kyung-sup	Alternate	Slovenia	J. Roškar (5-11.5)	Principal delegate
	Park Kwang-joon	Delegate		A. Markov (Ms)	Alternate
	Chung Yun-ang	Delegate	South Africa	R. Mabudafhasi (Ms)	Principal delegate
	Park Jeong-gyoo	Delegate		J. Lengoasa	Alternate
	Lee Dong-il	Delegate		E. Poolman	Delegate
	Choi Kyong-lim	Delegate		M.L. Kamoetie	Delegate
	Lee Mi-yon (Ms)	Delegate	Spain	M. Couchoud	Principal delegate
Republic of Moldova	V. Cazac	Principal delegate		Gregori (Ms)	
Republic of Yemen	F. Bin Ghanem	Principal delegate		R. Diaz-Pabon (Ms)	Delegate
	M. Al-Zandani	Delegate		J. García-Legaz	Delegate
Romania	M. Ioana	Principal delegate		J. Segovia	Delegate
	G. Constantinescu (Ms)	Delegate		A. Rodriguez-Fontal	Delegate
Russian Federation	A.I. Bedritsky	Principal delegate		C. Abad	Delegate
	O.S. Pushkareva (Ms)	Delegate		A. Yeves	Delegate
	A.A. Pankin	Delegate		J. Tamayo	Delegate
	P.G. Chernikov	Delegate		E. Cormenzana	Delegate
	N.N. Sikachev	Delegate		C. Martinez-Lopez (Ms)	Delegate
	A.I. Gusev	Delegate	Sri Lanka	N.A. Amaradasa	Principal delegate
	V. Bakumov	Delegate		S. Gunaratna	Delegate
	I.A. Shiklomanov	Delegate	Sudan	F.K. El Sayem	Principal delegate
	N.N. Pomoshchnikov	Delegate		I.A. Leimoon	Alternate
Rwanda	D. Musoni	Principal delegate		C. Jada	Delegate
Samoa	F. Malele	Principal delegate		M.H. El Rayah	Delegate
Sao Tome and Principe	A. Santana	Principal delegate	Sweden	H. Sandebring	Principal delegate
Saudi Arabia	A.A. Attar	Principal delegate		E. Liljas	Alternate
	T.N. Abdulaziz	Principal delegate		G. Wennerberg (Ms)	Alternate
	A.A.K. Althwaini	Alternate		T. Kvick	Delegate
	S.M.S. Mohalfi	Alternate	Switzerland	D. Keuerleber-Burk	Principal delegate
	S.M. Al-Shehri	Delegate		J.M. Boulgaris	Alternate
	S.A.I. Bukhari	Delegate		G. Nützi (Ms)	Delegate
				E. Balzli	Delegate
				J. Romero	Delegate
				M. Spreafico	Delegate
				G. Müller	Delegate
				P. Morscher	Delegate

<i>Member</i>	<i>Name</i>	<i>Capacity</i>
Switzerland (<i>Cont.</i>)	P. Rauh	Alternate
	C. Stocker (Ms)	Delegate
	A. Rubli	Delegate
Syrian Arab Republic	N. Al-Shalabi	Principal delegate
	I. A-D. Al-Beik	Delegate
	K. Moalla	Delegate
Tajikistan	B. Makhmadaliev	Principal delegate
Thailand	P. Buranaprapa	Principal delegate
	S. Huntrakul (Ms)	Alternate
	C. Suvanpimol	Delegate
	N. Balankura	Delegate
The former Yugoslav Republic of Macedonia	S. Alcinova	Principal delegate
	Monevska (Ms)	
	D. Zafirovska (Ms)	Delegate
	L. Panov	Delegate
Tonga	N. Dzaferi	Delegate
	U.L. Ata	Principal delegate
	A. Faletau	Principal delegate
Trinidad and Tobago	O. Fa'anunu	Delegate
	W. Mills	Principal delegate
Tunisia	H. Mansour	Principal delegate
	A. Ben Jemaa	Delegate
	M.S. Koubaa	Delegate
	S.I. Ammar (Ms)	Delegate
Turkey	A. Ünal	Principal delegate
	H. Kivanç	Alternate
	M. Adigüzel	Delegate
	H. Ergani	Delegate
Turkmenistan	S. Bayramov	Principal delegate
Uganda	N. Irumba	Principal delegate
	S.A.K. Magezi	Alternate
	A. Gakwandi	Delegate
Ukraine	V. Lipinsky	Principal delegate
	S. Homanovska (Ms)	Delegate
United Arab Emirates	N.S. Al-Aboodi	Principal delegate
	M.A.H. Al-Mualla (Ms)	Principal delegate
	(15-24.5)	
	A.A. Algifri (5-16.5)	Alternate
	A.D. Karaeen (13-24.5)	Delegate
	F.H.S. Al-Mehairi (5-16.5)	Delegate
	A.H. Mangoosh	Delegate
	A.A. Almandoos	Delegate
	M.M. Alawar (Ms) (5-7.5)	Delegate
	R.A. Bin Fahad (5-7.5)	Delegate
E.M. Abdellatif (5-7.5)	Delegate	
United Kingdom of Great Britain and Northern Ireland	S.W. Fuller	Principal delegate
	P. Ewins	Alternate
	G. Ryall (Ms)	Alternate
	P. Tarif (Ms)	Delegate
	G. Pankiewicz	Delegate
	C. Smith (Ms)	Delegate
	S. Palmer	Delegate
	P. Mason	Delegate
	J. Mitchell	Delegate
	S. Noyes	Delegate
	J. Hearth	Delegate

<i>Member</i>	<i>Name</i>	<i>Capacity</i>
United Kingdom of Great Britain and Northern Ireland (<i>Cont.</i>)	A. Eccleston	Delegate
	C. Johnson (Ms)	Delegate
	A. Calver (Ms)	Delegate
	S. Goodchild (Ms)	Delegate
	A. Broad	Delegate
United Republic of Tanzania	J. Harmer	Delegate
	M.J. Mwandosya	Principal delegate
	M.S. Mhita	Principal delegate
	C. Mutalemwa	Alternate
	P.F. Tibaijuka	Delegate
	K.A. Suleiman	Delegate
	D.G. Rutashoby	Delegate
	M.R. Matitu	Delegate
	I. Kasyanju (Ms)	Delegate
	P. Kato	Delegate
United States of America	J.J. Kelly, Jr. (5-18.5)	Principal delegate
	J.E. Jones, Jr. (19-24.5)	Principal delegate
	D.R. Rogers	Alternate
	C.C. Barrett	Delegate
	W.C. Bolhofer	Delegate
	J.M. Cowley (Ms)	Delegate
	C. Lautenbacher	Adviser
	H.L. April	Adviser
	R.O. Masters	Adviser
	R. McPherson	Adviser
	V.R. Schneider	Adviser
	G.W. Withee	Adviser
	E. Wuchte (Ms)	Adviser
	M.C. Yerg, Jr.	Adviser
	B. Brennan	Adviser
	R. Hopkins	Adviser
	D.W. Koran	Adviser
	D. Larson (Ms)	Adviser
	J. Lewis (Ms)	Adviser
	L. Poulton-Kamakura (Ms)	Adviser
	J.F.W. Purdom	Adviser
	D. Stone (Ms)	Adviser
C. Stonecipher	Adviser	
T. Talley	Adviser	
Uruguay	R. Micheline	Principal delegate
	R. Franco (Ms)	Delegate
Vanuatu	W. Posen	Principal delegate
	J. Napat	Alternate
Venezuela	B. Portocarrero (Ms)	Principal delegate
	F. Camargo Duque	Principal delegate
	T. Carballo	Alternate
	M. Hernandez (Ms)	Delegate
Viet Nam, Socialist Republic of	Nguyen Cong Thanh	Principal delegate
	Q.X. Ngo	Alternate
	D.K. Nguyen	Delegate
	D.H. Tran	Delegate
	V.H. Tran	Delegate
Zambia	H.T. Vu	Delegate
	L. Mtesa	Principal delegate
	M. Muchinda	Principal delegate
Zimbabwe	A. Zulu	Delegate
	C.M. Katsande	Principal delegate
	C. Chipaziwa	Alternate
	A. Makarau	Alternate
	S.T. Mukanduri	Delegate
C. Zvirawa	Delegate	

B. Representatives of non-Member countries of WMO

Holy See F. Nwachukwu

C. Observer

Palestine Y.O.A. El-Qawasma

D. Presidents of technical commissions

<i>Commission</i>	<i>Name</i>
Acting president CBS	A. Gusev
Co-presidents JCOMM	J. Guddal S. Narayanan (Ms)
President CAeM	N. Gordon
President CAS	A. Eliassen
President CCI	Y. Boodhoo
President CHy	D.G. Rutashobya
President CIMO	S.K. Srivastav
Vice-president CAgM	L.E. Akeh

E. Invited experts

D. Berthomier
M.-C. Dumesnil (Ms)
P. Mason
R. Pachauri

F. IMO lecturers

M. Abu-Zeid
I.A. Shiklomanov

G. Scientific lecturers

A. Thorpe
Qin Dahe
H.M. Wood (Ms)

H. Representatives of international organizations

<i>Organization</i>	<i>Name</i>
United Nations Environment Programme (UNEP)	J. Carstensen
United Nations Framework Convention on Climate Change (UNFCCC)	A. Keil
United Nations Convention to Combat Desertification (UNCCD)	A. Cissoko
United Nations Development Programme (UNDP)	E. Bonev
United Nations Educational, Scientific and Cultural Organization (UNESCO)	A. Szollosi-Nagy

<i>Organization</i>	<i>Name</i>
United Nations International Strategy for Disaster Reduction (ISDR)	J. Harding T. Jeggle
International Civil Aviation Organization (ICAO)	O. Turpeinen
World Health Organization (WHO)	C. Corvalan
World Intellectual Property Organization (WIPO)	J. Neale
Agency for Air Safety in Africa and Madagascar (ASECNA)	A. Fadiga F.L. Finke J.-P. Makosso A. Salihi M. Sissako
International Atomic Energy Agency (IAEA)	J. Rissanen (Ms)
European Centre for Medium-range Weather Forecasts (ECMWF)	D. Burridge
European Space Agency (ESA)	E. Oriol-Pibernat (Ms)
European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)	P. Counet T. Mohr D. Williams
International Association of Broadcast Meteorology (IABM)	G. Fleming W.G. Giles I. Niedek (Ms) J. Teather
International Commission on Irrigation and Drainage (ICID)	A. Musy
Intergovernmental Oceanographic Commission (IOC)	P. Bernal B. Lee (Ms) C. Summerhayes
African Centre of Meteorological Applications for Development (ACMAD)	M.S. Boulahya A.J. Micko (Ms)
Caribbean Meteorological Organization (CMO)	C. Depradine T. Sutherland
International Astronautical Federation (IAF)	L. Adame
Permanent Inter-State Committee on Drought Control in the Sahel (CILSS)	A.A. Diallo M.S. Mbenga
Arab Organization for Agricultural Development (AOAD)	S. Al-Lozi
Association of Hydrometeorological Equipment Industry (HMEI)	B. Dieterink C. Lee
European Commission (EC)	M. Moren
Institute for Polar and Marine Research (AWI)	P. Lemke
International Committee for Weights and Measures (BIPM)	R. Wielgosz
International Ocean Institute (IOI)	I. Oliounine
International Research Institute for Climate Prediction (IRI)	R. Basher S.E. Zebiak

<i>Organization</i>	<i>Name</i>	<i>Organization</i>	<i>Name</i>
International Union of Geodesy and Geophysics (IUGG)	R. List	Permanent Delegation of the African Union	S.A. Kalinde (Ms) I.O. Mensa-Bonsu A. Musa
League of Arab States (LAS)	S. El Farargi M. El Sayed A.N.E. Shalaby	Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)	R.M. Kebeasy

APPENDIX B

LIST OF ABBREVIATIONS

ABCN	Antarctic Basic Climatological Network
ABSN	Antarctic Basic Synoptic Network
ACC	United Nations Administrative Committee on Coordination
ACMAD	African Centre of Meteorological Applications for Development
ACSYS	Arctic Climate System Study
AeMP	Aeronautical Meteorology Programme
AGRHYMET	Regional Training Centre for Agrometeorology and Operational Hydrology and their Applications
AMDAR	Aircraft Meteorological Delay Relay
AMP	Applications of Meteorology Programme
ANA	Brazilian National Water Agency
ANEEL	Brazilian National Agency for Electric Energy
AOC-HYCOS	West and Central Africa Hydrological Cycle Observing System
APFM—SAMTAC	Associated Programme on Flood Management—South American Technical Advisory Committee
APT	Asia-Pacific Telecommunity
ARCHISS	Archival Climatic History Survey Project
AREP	Atmospheric Research and Environment Programme
ASEAN	Association of South-East Asian Nations
ASECNA	Agency for Air Safety in Africa and Madagascar
AWG	Advisory Working Group
AWS	Automatic Weather Station
CAeM	Commission for Aeronautical Meteorology
CAgM	Commission for Agricultural Meteorology
CAEA	Climate and Atmospheric Environment Activities
CAL	Computer-aided Learning
CARIB-HYCOS	Caribbean Hydrological Cycle Observing System
CARICOM	Caribbean Community
CAS	Commission for Atmospheric Sciences
CBD	Convention on Biological Diversity
CBS	Commission for Basic Systems
CCI	Commission for Climatology
CDMS	Climate Database Management System
CEOP	Coordinated Enhanced Observing Period
CEOS	Committee on Earth Observation Satellites
CEPT	European Conference of Postal and Telecommunications Administrations
CGC	Coordination Group for the Composite Observing System for the North Atlantic
CGMS	Coordination Group for Meteorological Satellites
CHy	Commission for Hydrology
CIC	Intergovernmental Coordinating Committee of the La Plata River Basin Countries
CICG	Geneva International Conference Centre
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CIMO	Commission for Instruments and Methods of Observation
CIS	Commonwealth of Independent States
CITEL	Inter-American Telecommunication Commission
CLiC	Climate and Cryosphere
CLICOM	Climate Computing
CLIMAG	Climate Prediction for Agriculture
CLIPS	Climate Information and Prediction Services
CLIVAR	Climate Variability and Predictability
CNES	National Centre for Space Studies
COMET	Cooperative Programme for Operational Meteorology Education and Training

COP	Conference of the Parties
COPE	Climate System Observational and Prediction Experiment
COSNA	Composite Observing System for the North Atlantic
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
DAB	Digital Audio Broadcasting
DARE	Data Rescue
DBCP	Data Buoy Cooperation Panel
DCPC	Data Collection or Product Centre
DEMETER	Development of a European Multimodel Ensemble System for Seasonal to Interannual Prediction
DIVERSITAS	International Programme of Biodiversity Science
DMC	Drought Monitoring Centre
DWD	Deutscher Wetterdienst
EAMAC	African School of Meteorology and Civil Aviation
EART	Emergency Assistance Response Team
EC	Executive Council
ECMWF	European Centre for Medium-Range Weather Forecasts
EDRG	Emergency and Disaster Response Group
EMEP	Cooperative Programme for the Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
EMMA	European Multi-services Meteorological Awareness
ENSO	El Niño/Southern Oscillation
EPS	Ensemble Prediction System
ERA	Emergency Response Activity
ESA	European Space Agency
ESSP	Earth System Science Partnership
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ETRP	Education and Training Programme
EUCOS	European Composite Observing System
EUMETNET	European Meteorological Network
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
5LTP	Fifth WMO Long-term Plan
FAO	Food and Agriculture Organization of the United Nations
FTP	File Transfer Protocol
FWIS	Future WMO Information System
GARP	Global Atmospheric Research Programme
GAW	Global Atmosphere Watch
GCOS	Global Climate Observing System
GDPFS	Global Data-processing and Forecasting Systems
GDPS	Global Data-processing System
GDSIDB	Global Digital Sea-ice Data Bank
GEF	Global Environment Facility
GEWEX	Global Energy and Water Cycle Experiment
GISC	Global Information System Centre
GODAE	Global Ocean Data Assimilation Experiment
GOES	Geostationary Operational Environmental Satellites
GOOS	Global Ocean Observing System
GOS	Global Observing System
GPC	Global Producing Centre
GPS	Global Positioning System
GRDC	Global Runoff Data Centre
GSN	GCOS Surface Network
GTN-G	Global Terrestrial Network for Glaciers
GTN-H	Global Terrestrial Network for Hydrology
GTN-P	Global Terrestrial Network for Permafrost
GTOS	Global Terrestrial Observing System
GTS	Global Telecommunication System

GTSP	Global Temperature and Salinity Profile Programme
GUAN	GCOS Upper-air Network
GURME	GAW Urban Research Meteorology and Environment
HKH-HYCOS	Hindu Kush Himalayan Hydrological Cycle Observing System
HMEI	Association of Hydrometeorological Equipment Industry
HOMS	Hydrological Operational Multipurpose System
HWRP	Hydrology and Water Resources Programme
HYDRONIGER	Hydrological Forecasting System in the River Niger Basin
IABM	International Association of Broadcast Meteorology
IACCA	Inter-agency Committee on the Climate Agenda
IAEA	International Atomic Energy Agency
IAHS	International Association of Hydrological Sciences
IAMAS	International Association of Meteorology and Atmospheric Sciences
IATA	International Air Transport Association
IBAMA	Brazilian Institute for the Environment and Renewable Natural Resources
ICAO	International Civil Aviation Organization
ICIMOD	International Centre for Integrated Mountain Development
ICRISAT	International Crop Research Institute for the Semi-arid Tropics
ICSC	International Civil Service Commission
ICSU	International Council for Science
ICT	Information and Communication Technology
ICTP	International Centre for Theoretical Physics
IDNDR	International Decade for Natural Disaster Reduction
IGAC	International Global Atmospheric Chemistry Programme
IGACO	Integrated Global Atmospheric Chemistry Observations
IGAD	Intergovernmental Authority on Development
IGAD-HYCOS	Intergovernmental Authority on Development-Hydrological Cycle Observing System
IGBP	International Geosphere-Biosphere Programme
IGO	Intergovernmental Organization
IGOS	Integrated Global Observing Strategy
IHDP	International Human Dimensions Programme on Global Environmental Change
ILO	International Labour Organization
IMO	International Meteorological Organization
IMOP	Instruments and Methods of Observation Programme
IMTN	Improved Main Telecommunication Network
INFOHYDRO	Hydrological Information Referral Service
INMET	Brazilian National Meteorological Institute
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
IPA	Information and Public Affairs
IPAB	International Programme for Antarctic Buoys
IPCC	Intergovernmental Panel on Climate Change
ISDR	International Strategy for Disaster Reduction
ISESCO	Islamic Educational, Scientific and Cultural Organization
ISO	International Organization for Standardization
ITU	International Telecommunication Union
ITU-R	ITU Radiocommunication Sector
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM In Situ Observing Platform Support Centre
JIU	Joint Inspection Unit
JMA	Japan Meteorological Agency
JSC	Joint Scientific Committee
LDC	Least Developed Country
LRF	Long-range Forecast
MCSS	Marine Climatological Summaries Scheme
MED-HYCOS	Mediterranean Hydrological Cycle Observing System

METEOREX	Exhibition of Meteorological Instruments, Equipment and Services
MRC	Mekong River Commission
MTN	Main Telecommunication Network
NAFTA	North American Free Trade Agreement
NASA	National Aeronautics and Space Administration
NASDA	National Space Development Agency
NBA	Niger Basin Authority
NCDC	National Climatic Data Center
NCEP	National Centres for Environmental Predictions
NEPAD	New Partnership for Africa's Development
NESDIS	National Environmental Satellite, Data and Information Service
NGO	Non-governmental Organization
NHS	National Hydrological Service
NMC	National Meteorological Centre
NMHS	National Meteorological and Hydrological Service
NMS	National Meteorological or Hydrometeorological Service
NOAA	National Oceanic and Atmospheric Administration
NWP	Numerical Weather Prediction
OECD	Organization for Economic Cooperation and Development
OPAG	Open Programme Area Group
OPMET	Operational Meteorological Information
OSE	Observing System Experiment
OSSE	Observing Systems Simulation Experiment
PATU	Pan-African Telecommunications Union
PIRATA	Pilot Research Moored Array in the Tropical Atlantic
PIREM	Platform for Regional Institutions for the Environment and Meteorology
PUMA	Preparation for the Use of Meteosat Second Generation in Africa
PWS	Public Weather Services
QMF	Quality Management Framework
R&D	Research and Development
RA	Regional Association
RANET	Radio and Internet
RBB	Results-based Budgeting
RBCN	Regional Basic Climatological Network
RBSN	Regional Basic Synoptic Network
RCC	Regional Climate Centre
READER	Reference Antarctic Data for Environmental Research
RIC	Regional Instrument Centre
RMTC	Regional Meteorological Training Centre
RMTN	Regional Meteorological Telecommunication Network
RRR	Rolling Requirements Review
RSMC	Regional Specialized Meteorological Centre
RTH	Regional Telecommunication Hub
7LTP	Seventh WMO Long-term Plan
6LTP	Sixth WMO Long-term Plan
SADC	Southern African Development Community
SADC-HYCOS	SADC-Hydrological Cycle Observing System
SBSTA	Subsidiary Body for Scientific and Technological Advice
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SCAR	Scientific Committee on Antarctic Research
SCHOTI	Standing Conference of Heads of Training Institutions of National Meteorological Services
SICA	Central America Integration System
SIDS	Small Island Developing States
SOLAS	International Convention for the Safety of Life at Sea

SOOP	Ship of Opportunity
SOPAC	South Pacific Applied Geoscience Commission
SPARC	Stratospheric Processes and their Role in Climate
SPREP	South Pacific Regional Environment Programme
START	System for Analysis, Research and Training
TC	Tropical Cyclone
TCS	Typhoon Committee Secretariat
TCWC	Tropical Cyclone Warning Centre
TCO	Technical Cooperation
TCP	Tropical Cyclone Programme
TCP/IP	Transmission Control Protocol/Internet Protocol
TECO	Technical Conference
THORPEX	The Observing System Research and Predictability Experiment
TOGA	Tropical Ocean and Global Atmosphere Programme
TREND	Working Group on Training, the Environment and New Developments in Aeronautical Meteorology
UCAR	University Cooperation for Atmospheric Research
UKMO	United Kingdom Meteorological Office
UNCCD	United Nations Convention to Combat Desertification
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN/FCCC	United Nations Framework Convention on Climate Change
UPU	Universal Postal Union
VCP	Voluntary Cooperation Programme
VCP(ES)	Voluntary Cooperation Equipment and Services
VCP(F)	Voluntary Cooperation Fund
VOS	Voluntary Observing Ship
VSAT	Very Small Aperture Terminal
WAFS	World Area Forecast System
WCASP	World Climate Applications and Services Programme
WCDMP	World Climate Data and Monitoring Programme
WCIRP	World Climate Impact Assessment and Response Strategies Programme
WCP	World Climate Programme
WCRP	World Climate Research Programme
WDC	World Data Centre
WGH	Working Group on Hydrology
WHO	World Health Organization
WHYCOS	World Hydrological Cycle Observing System
WIPO	World Intellectual Property Organization
WMC	World Meteorological Centre
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
WRC	World Radiocommunication Conference
WSSD	World Summit on Sustainable Development
WWRP	World Weather Research Programme
WWW	World Weather Watch

