Instruments and Methods of Observation
Programme

Report of President of CIMO
for
Fourteenth WMO Congress

Dr S.K. Srivastava
President of CIMO
Geneva, 9 May 2003
Instruments and Methods of Observation Programme (IMOP)

Summary of Presentation:

1. Document 3.1.5
   - To be introduced by Secretariat

2. IMOP/ CIMO
   - Scope & Mandate

3. Major Achievements
   - a) Standardization and
   - b) Capacity building

4. New structure
   - OPAGs and Expert Teams

5. Future plans
   - IMOP & WMO 6LTP
2. IMOP – Scope & Mandate

- Commission for Instruments and Methods of Observation (CIMO)
  - Instrument Intercomparisons & testing
  - Requirements of data users
  - Standardization of instruments and measurements
  - National training activities
  - Regional training workshops
  - Technical Conferences and Exhibitions
  - Commission sessions
  - Specialized Centres (RiCs, RRCc)
  - OPAGs Experts Teams

- Improvement of data quality and homogeneity
3a. IMOP - Major Achievements
Standardization
The 9th International Pyrheliometer Comparison
Conjointly held with Regional Pyrheliometer Comparisons
World Radiation Center (WRC/PMOD) Davos, Switzerland
2nd September to 13th October, 2000

- 60 participants from 39 Members,
- 16 participants from 11 scientific institutions and manufacturers
- 18 out of 21 RRCs
- 22 NRCs
- WRR- and calibration- factors computed for 82 pyrheliometers, including 7 of the WSG
- Stability of WSG is guaranteed
- The main objective - the dissemination of the WRR in order to ensure worldwide homogeneity of met. radiation measurements - was achieved.
# WMO Intercomparison of GPS Radiosondes

Brazilian Air Force Satellite/Rocket Launch Centre Alcantara  
25 May - 5 June 2001

<table>
<thead>
<tr>
<th>No</th>
<th>Manufacturers</th>
<th>Sondes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr. Graw Messgeräte GmbH, Germany</td>
<td>DFM-97</td>
</tr>
<tr>
<td>2</td>
<td>Modem, France</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>InterMet Systems, USA</td>
<td>GL-98</td>
</tr>
<tr>
<td>4</td>
<td>Sippican, Inc, USA</td>
<td>MKII</td>
</tr>
<tr>
<td>5</td>
<td>Vaisala Oyj, Finland</td>
<td>RS80, RS90</td>
</tr>
<tr>
<td>6</td>
<td>MeteoLabor, Switzerland</td>
<td>SnowWhite RH sensor</td>
</tr>
</tbody>
</table>
The performance of GPS-radiosondes were compared in 43 comparison flights. Revealed significant differences were subsequently rectified by manufacturers and new designs of sondes developed. The main objective – to improve the operational reliability of radiosondes designs and compatibility of data – was achieved.
Expert Meeting on Requirements and Representation of Data from AWSs
De Bilt, Netherlands, 19-23 April 1999

Participants:
22 participants from all WMO Technical Commissions, EUMETNET and 2 major instrument manufacturers.

Main Task:
Evaluate present and future requirements of WMO Programmes for the use of Automatic Weather Stations to assist in standardization of observations.

Main Outcome:
Commonly agreed proposal of Present and Future Requirements for the use of Automatic Weather Stations.
Expert Meeting on Operational Issues for Radiosonde Applications in the Tropics and Sub-Tropics
Geneva, Switzerland, 18.-22 October 1999

TASK:
Review the present status of radiosonde operations in the tropics and sub-tropics and prepare relevant recommendations

MAIN OUTCOMES:
1. Guidance material to be applied for training courses / workshops related to operators at upper-air observing stations;
2. Important instructions for Vaisala GPS radiosonde systems;
3. Guidance material for managing and evaluating national radiosonde networks;
4. Some considerations on the future application of GPS-based systems;
5. Recommendations for tropical and sub-tropical inter-comparison of radiosondes.
Expert meeting on Rainfall Intensity Measurements
Bratislava, Slovakia, 23-25 April 2001

Decision on: “Present and Future Requirements for RI Measurements”

Proposal on:
Measuring range and uncertainty requirements for RI measurements

Approved by CIMO-XIII
3b. IMOP - Major Achievements
Capacity Building
**3b. IMOP - Major Achievements**

**Capacity Building – Expert Meeting**

**Expert Meeting on Capacity Building related to IMOP**

**Beijing, China, 23-25 September 1999**

Expert Meeting developed 12 recommendations for enhancing CIMO’s activities related to Capacity Building, such as:

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of the work undertaken by RICs</td>
<td>Questionnaire sent to RICs</td>
</tr>
<tr>
<td></td>
<td>Replies are being analyzed</td>
</tr>
<tr>
<td>Recommendation on basic technical requirements for RICs</td>
<td>Presented to CIMO-XIII</td>
</tr>
<tr>
<td>Preparation of Instrument Catalogue</td>
<td>WMIC 2000 &amp; 2002 produced</td>
</tr>
<tr>
<td>CIMO/IMOP web site</td>
<td>Done &amp; continuously updated</td>
</tr>
</tbody>
</table>
3b. IMOP - Major Achievements
Capacity Building – Technical Conferences

TECO-2000 - Beijing, China, 23-27 October 2000
TECO-2002 - Bratislava, Slovakia, 23-25 September 2002

<table>
<thead>
<tr>
<th></th>
<th>TC 2000</th>
<th>TC 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries</td>
<td>61</td>
<td>77</td>
</tr>
<tr>
<td>Particip.</td>
<td>230</td>
<td>276</td>
</tr>
<tr>
<td>Papers</td>
<td>98</td>
<td>80</td>
</tr>
</tbody>
</table>
3b. IMOP - Major Achievements
Capacity Building – Instrument Exhibitions

METEOREX-2000 - Beijing, China, 24-26 October 2000
METEOREX-2002 - Bratislava, Slovakia, 23-25 September 2002

No of participating Manufacturers
METEOREX-2000: 56
METEOREX-2002: 61
3b. IMOP - Major Achievements
Capacity Building - RICs

• 13 RICs are operational in spite of constraints due to non availability of resources and lack of well trained staff.

• “Basic and enhanced requirements for RICs” prepared by Morocco for CIMO-XIII.

• With a view of strengthening of RICs the process of their evaluation was initiated.
3b. IMOP - Major Achievements

Capacity Building – Instrument Catalogue

1st edition in 2000
Produced by CMA

2nd edition in 2002
Produced by CMA
3b. IMOP - Major Achievements
Capacity Building – CIMO-Guide

- Work on update of CIMO Guide started in 2000
- Five Chapters revised in 2002
- Work continues till end 2003
- Publication of Seventh edition by the end of 2004
3b. IMOP - Major Achievements
Capacity Building - Training

Training Workshop on Upper-Air Observations for RA I English speaking countries, Gaborone, Botswana, 7-11 April 2003

Participation
- 4 core lecturers (UK, USA)
- 34 trainees from 20 NMSs
- HMEI

Outcomes
- Improved knowledge & skills of trainees
- Proposals for procurement strategies
- Set of recommendations to improve U/A Obs. Practices

Similar Workshop for RA I French speaking countries is planned in Morocco, Nov. 2003
4. New CIMO Structure

- CIMO-XIII discussed options for working more effectively during the next intersessional period and concluded that the most effective, flexible and responsive means of carrying out CIMO tasks would be a system of Expert Teams complemented by suitable ways to inform and involve all CIMO members in the process.

- The commission agreed that its activities and teams should be grouped together and handled by Open Programme Area Groups (OPAGs) and decided to establish three OPAGs.

- CIMO Management Group in Feb. 2003 determined regionally balanced membership of ETs, tuned their TOR and activated them.
4. New CIMO Structure

CIMO MANAGEMENT GROUP
President
Vice-President
7 OPAG Co-chairs

OPAG
Surface Observation Technology
2 Co-chairs
ET on Surface Technology
Chair + 8 Members
5 Representatives of other Bodies
ET on Surface-Based Instrument Intercoparisons and Calibration Methods
Chair + 5 Members
2 Representatives of other Bodies
ET on Meteorological Radiation and Atmospheric Composition Measurements
Chair + 3 Members
3 Representatives of other Bodies

OPAG
Upper Air Observation Technology
3 Co-chairs
ET on Upgrading the Global Radiosonde Network
Chair + 7 Members
3 Representatives of other Bodies
ET on Upper-Air Systems Intercomparisons
Chair + 5 Members
1 Representative of other Body
ET on Remote Sensing Upper-Air Technology and Techniques
Chair + 11 Members
2 Representatives of other Bodies

OPAG
Capacity Building
2 Co-chairs
ET on Training Activities and Training Materials
Chair + 6 Members
ET on RICs, QM Systems and Commercial Instrument Initiatives
Chair + 7 Members
ET on CIMO Guide and Information Dissemination
Chair + 3 Members
CIMO-XIII proposed to concentrate on the following main activities:

- Develop performance measures to demonstrate continuous improvement in the quality of observations;
- Conduct instrument intercomparisons;
- Contribute to the review and update of WMO technical regulations, guides and other material related to quality management and standardization of observations;
- Evaluate existing RICs and review their terms of reference;
- Facilitate standardization of measurements of long-wave radiation;
- Automation of manual, visual and subjective observations;
- Strengthen links with relevant international organizations.