

**G** GLOBAL  
**C** CLIMATE  
**O** OBSERVING  
**S** SYSTEM



WORLD METEOROLOGICAL  
ORGANIZATION

INTERGOVERNMENTAL  
OCEANOGRAPHIC COMMISSION

**THIRD MEETING OF THE GCOS COOPERATION BOARD**

**Geneva, Switzerland, 27 April 2007**

**Meeting Report**

**July 2007**

**GCOS – 113**

**(WMO/TD No. 1396)**

UNITED NATIONS  
ENVIRONMENT PROGRAMME

INTERNATIONAL COUNCIL FOR  
SCIENCE

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# TABLE OF CONTENTS

1.	Background and Objectives .....	1
2.	Priorities .....	2
3.	Opportunities .....	2
3.1.	Climate for Development in Africa (ClimDev Africa).....	2
3.2.	G-8, GEO/GEOSS and Societal Benefits .....	4
4.	GCOS System Improvement.....	5
4.1.	Programme Activities.....	5
4.2.	Priorities by the AOPC Advisory Group on GSN/GUAN (AGG).....	6
5.	National Reports.....	6
5.1.	New Zealand.....	6
5.2.	United Kingdom (Met Office) .....	7
5.3.	United Kingdom (DEFRA) .....	7
5.4.	Germany .....	7
5.5.	The Netherlands .....	7
5.6.	Spain.....	8
5.7.	Australia.....	8
5.8.	United States .....	8
6.	Outlook .....	8
Appendix 1	Agenda.....	11
Appendix 2	List of Participants.....	13
Appendix 3	GCOS Cooperation Mechanism Terms of Reference (August 2004).....	15
Appendix 4	List of donor activities in the GCOS Cooperation Mechanism.....	19
Appendix 5	List of Actions from the Meeting.....	20

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# Third Meeting of the GCOS Cooperation Board

## 1. Background and Objectives

The 3<sup>rd</sup> meeting of the Global Climate Observing System (GCOS) Cooperation Board took place on 27 April 2007 at the World Meteorological Organization in Geneva, Switzerland. The purpose of the meeting was to review, discuss and further stimulate the GCOS Coordination Mechanism (GCM) process. The meeting brought together representatives from seven countries that have been providing active and ongoing support to GCOS, as well as participants from the GCOS Secretariat. It was held in conjunction with the 13<sup>th</sup> session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC-XIII, 23-27 April 2007), which allowed for the presentation of AOPC priorities to the Board.

Howard Diamond (NOAA, US GCOS) was designated chair of the session. In his presentation, he recalled the history of the GCM along the following steps:

- GCM formed following the initiative by Australia and the US at UNFCCC SBSTA (May 2003),
- Draft Terms of Reference developed (October 2003),
- First GCOS Collaboration Board Meeting (London, UK, June 2004),
- Second GCOS Collaboration Board Meeting (Montréal, Canada, December 2005).

According to its Terms of Reference (see Appendix 3), the GCM provided for

*“a coordinated multi-governmental approach to address the high-priority needs for stable long-term funding for key elements of global observing systems for climate in support of the requirements of the UNFCCC and other GCOS clients, especially those needs in developing countries, taking into account the special needs and situations of least developed countries and small island developing States.”*

The GCM consists of a Cooperation Board and a Cooperation Fund.

Since its inception, contributions to the GCOS Cooperation Fund have been made by different countries, both actual funds as well as significant in-kind contributions. Areas of support are GCOS Secretariat operations, GCOS science panels (i.e., meeting support), GCOS network operations (i.e., instruments and consumables), GCOS implementation in more general terms, Technical Support Projects, scientific meetings, capacity building events, and workshops. These efforts have had significant impact in sustaining GCOS networks, improving local capacity, and ensuring data access and availability in developing countries. Since 2004, a designated GCOS Implementation Manager (Richard Thigpen, affiliated with the GCOS Secretariat) has been in charge of administering several technical projects in support of GCOS networks, in particular GUAN stations, on the basis of GCM funding contributions. It was stressed that support for network improvement by the GCM was not limited to atmospheric observation networks, despite the initial and ongoing focus on these.

Diamond recommended that the Board maintain its momentum through regular meetings, with a view to making the GCM a permanent and sustainable funding mechanism for the support of GCOS. Participation at Board meetings should include many more potential donor countries, including India and China, with a near-term goal of 20 countries for next year's session, following a suggestion by John Zillman (Australia; GCOS Steering Committee Chairman). Participation should, if possible, include representatives from the political level present at SBSTA sessions, as well as from development institutions.

**Action: GCOS Collaboration Board members to meet regularly, at least once a year, preferably on the margins of UNFCCC SBSTA spring sessions (currently in Bonn, Germany).**

**Action: For its 2008 session, GCOS Collaboration Board members, in collaboration with the GCOS Secretariat, to secure participation of at least 20 potential or actual donor countries, including India and China, with a wider spectrum of participants (political level, development institutions). Deadline: May 2008.**

## 2. Priorities

Setting priorities in supporting GCOS interests through the GCM was subject of substantial discussion, initiated by David Goodrich (GCOS Secretariat). The following factors contribute to prioritization within the GCM:

- Availability of direct and in-kind support by countries;
- National priorities;
- Scientific advice and operational needs (e.g., identified through the GCOS science panels and the GCOS Monitoring Centres);
- Priorities identified in the GCOS Implementation Plan<sup>1</sup>;
- Priorities identified in the ten GCOS Regional Action Plans<sup>2</sup>.

The Board agreed that the GCM should continue to identify, and make best use of, synergies between these priorities, in order to ensure maximum impact of donations. As a long-term objective, the risk incurred by budget cuts on the part of individual donor countries in relation to the overall sustained functioning of the GCM should be minimized.

Wherever possible, all support projects identified as a priority by donors to the GCM should be coordinated with the World Meteorological Organization (WMO) Informal Planning Meeting (IPM) of the Voluntary Cooperation Programme (VCP), as is currently the case in the GCOS System Improvement programme (see section 4). The VCP's main focus on observations and improvement of networks was seen as an advantage over the priorities of other potential donors, such as development and aid agencies. The latter were, consistent with their mandate, mostly interested in the ultimate societal benefits of climate services, but less so in the observations underpinning these services (see also section 3.1). It was also noted that some donors double-counted their contribution to both the GCM and the VCP, and that VCP guidelines did not allow for its use for purchasing consumables (e.g., radiosondes).

See section 4.2 for the priorities identified by the GCOS/World Climate Research Programme (WCRP) Atmospheric Observation Panel for Climate Advisory Group on GSN/GUAN (AOPC AGG) at its meeting on 23 April 2007, in conjunction with AOPC-XIII.

**Action: When deciding on supporting projects and activities in the interest of GCOS, the GCM should aim at maximum synergy among all relevant priorities, in collaboration with all partners.**

## 3. Opportunities

### 3.1. Climate for Development in Africa (ClimDev Africa)

William Westermeyer (GCOS Secretariat) briefed the Board on the status of the Climate for Development in Africa Programme (ClimDev Africa)<sup>3</sup>. This Programme aims at 'mainstreaming' climate information into development decisions in Africa. It has been developed in partnership with the UK Department for International Development (DfID), the United Nations Economic Commission for Africa (UNECA), the International Research Institute for Climate and Society (IRI) and WMO. The Programme recognizes that good climate observations and services are fundamental for climate risk management, and therefore vital for achieving the Millennium Development Goals (MDG). Conceived as a three-phased project over roughly 10 years, four target areas have been defined in ClimDev Africa:

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<sup>1</sup> *Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC* (GCOS-92, October 2004)

<sup>2</sup> Completed between 2000 and 2005 in the following regions : Pacific Islands, Eastern and Southern Africa, Western and Central Africa, Mediterranean Basin, South and Southwest Asia, East and Southeast Asia, Central Asia, Central America and the Caribbean, South America, Central and Eastern Europe. See the GCOS website for full reference : <http://www.wmo.int/pages/prog/gcos>

<sup>3</sup> *Climate Information for Development Needs: An Action Plan for Africa* (GCOS-108, November 2006)

- Policy: improved political engagement of all African countries in climate risk management to assist delivery of the MDGs and adaptation to climate change,
- Practice: improved management of resources in all African countries through better climate risk management practices;
- Services: adequate climate information services for the full range of climate risk management practices;
- Data: strengthened climate observation networks and improved data management for monitoring climate variability, detecting climate change, and use in sectoral climate risk management.

In consequence, ClimDev Africa should result in better food security, better protection from malaria and other climate-sensitive diseases, improved management of water resources, better disaster risk management, more judicious use of energy resources, and improved environmental sustainability.

Having gained political momentum by the 2005 G-8 Gleneagles Plan of Action, and since its initiation at the April 2006 Addis Ababa workshop, ClimDev Africa has received considerable attention by the African Union Heads of State and Ministers of Finance, the UNECA, the African Development Bank, and by the UN Security Council at its debate on the impacts of climate change on 17 April 2007.

Initial funding for ClimDev Africa, whose total budget is estimated at USD250m, has been pledged by DfID (USD10m), the Government of Ireland (USD100k), the Netherlands (USD1m). Westermeyer stressed that further sources of funding are needed, such as by G-8 countries other than the UK, the European Commission (possibly through the EU-ACP (Africa-Caribbean-Pacific) partnership), the World Bank (contacts have been made), and the Group on Earth Observations (GEO).

Westermeyer also raised the point of starting a process similar to ClimDev Africa in Asia, following his participation in the UNFCCC SBSTA workshop on adaptation to climate change in Beijing, China. The Board stressed that the potential for such an initiative should be explored in partnership with existing institutions and mechanisms in the region, such as the Economic and Social Commission for Asia and the Pacific (ESCAP) and the Asian Development Bank. Possibly, groups of countries with special needs, such as small island development states, should be seen as nuclei for action.

## **Discussion**

The discussion revolved around the mechanisms for raising funds with institutions and agencies that do not have natural links to meteorology/climatology and observations for climate. These include development and aid agencies, and foreign offices.

Richard Thigpen informed the Board that he maintained a list of GCM project candidates with very short project outlines and rough cost estimates ('shopping list'), which were partly taken from project descriptions in the GCOS Regional Action Plans, partly based on advice from the AGG. This list was used to raise initial interest on the part of donors. In case donor funds were designated, GCOS Secretariat, in collaboration with the donor, worked out the project details, and later reported back to the donor (see also section 4).

Stefan Rösner (DWD) highlighted that many potential donors, for example the German Federal Ministry for Economic Cooperation and Development (BMZ), required relatively well-developed project proposals for their consideration. Such proposals needed to follow institution-dependent formal standards and in many cases required considerable resources to develop. In this connection, he was confident that the European Commission (DG Development in particular) continued its interest in funding ClimDev Africa, but demanded similar formal requirements on project proposals.

Steve Palmer (UK MetOffice) commented that the advantage of approaching development institutions for funding support was the relatively large budgets at their disposal, however, the focus of these institutions was generally not on supporting GCOS-related observations per se. This was experienced all along in the run-up to the G-8 Gleneagles summit, as well as in the ClimDev Africa process. Foreign offices as potential donors tended to be less critical about immediate societal benefits of observations. He expected that getting the European Commission on board for funding ClimDev Africa would be a laborious and time-consuming task.

Penehuro Lefale (New Zealand Met Service) informed the Board of the successful project proposal RESCUE-PAC (REStoring aging weather, Climate and Upper air Equipment in PACific Islands) approved through the UK High Commissioner (UK Foreign and Commonwealth Office) in Wellington. As a consequence, the New Zealand government has shown its intention to follow up.

Cathy Johnson (UK Department for Environment, Food and Rural Affairs (DEFRA)) stressed that development institutions were particularly interested in 'demand-led' projects, i.e., these projects should be defined by the (developing) country based on its needs, being led by the country, and the project outcome should be used by the country.

Howard Diamond said that the US development agency USAID has been informed about the ClimDev Africa Programme.

Wim Monna noted that in the context of the African Monsoon Multidisciplinary Analysis Programme (AMMA) funded by the European Commission 6<sup>th</sup> Framework Programme for Research, observations are needed that are also essential according to the GCOS needs in Africa. If elements of AMMA were selected for sustained support that suited both needs, this would improve the synergy between AMMA and GCOS. Some of the Dutch support to the GCM was earmarked for this purpose.

In order to raise additional interest by potential donors, John Zillman suggested picking a dozen project outlines from the GCOS Regional Action Plans that were self-evidently of broad societal benefit, expand them further and re-cost them.

In the SBSTA "Nairobi work programme on impacts, vulnerability and adaptation to climate change", observations for climate feature prominently in the need for systematic observations. Regarding the UNFCCC special adaptation fund, to be established under this work programme, Rösner raised the possibility of GCOS-related support out of this fund. The Board could not clarify the status of this fund.

**Action: The GCM Board, in collaboration with the GCOS Implementation Manager and the GCOS Secretariat, to re-visit the list of project candidates for possible donor support established by the GCOS Implementation Manager, and to expand individual project proposals according to the needs of potential donors.**

### **3.2. G-8, GEO/GEOSS and Societal Benefits**

Further opportunities to raise more interest and, ultimately, support by donors to the GCM were the G-8 Gleneagles statement in 2005<sup>4</sup> and the recognition of GCOS as the climate component of the evolving Global Earth Observing System of Systems (GEOSS).

Johnson confirmed that, following the G-8 Gleneagles statement, no further expressions of interest by other G-8 members had been received so far. Palmer highlighted the additional political momentum to be expected from the 2007 G-8 summit in Heiligendamm, Germany, which has climate change as one of its areas for discussion. The 2008 G-8 will be hosted by Japan and foresees re-visiting the Gleneagles declaration and an assessment of achievements.

Diamond stressed that the GCM was in need of facts, figures and possibly promotional material to demonstrate the link of observations for climate to societal benefits. Elements from the WMO Conference "Secure and Sustainable Living: Societal Benefits of Weather, Climate and Water Services" (Madrid, Spain, March 2007) should be used, for example estimates of the economic value of information and services.

**Action: All Board members to collect information that, where possible in quantitative terms, demonstrates the economic and societal benefit of climate observations and services. This information could be used to support GCM-related project proposals.**

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<sup>4</sup> Gleneagles Plan of Action (2005), p. 9: "[The G-8 will]...support efforts to help developing countries and regions obtain full benefit from GEOSS, including from the Global Climate Observing System (GCOS) such as placement of observational systems to fill data gaps, developing of in-country and regional capacity for analyzing and interpreting observational data..."

## 4. GCOS System Improvement

### 4.1. Programme Activities

Richard Thigpen gave an overview of the GCOS system improvement programme. He reported on revitalization activities in support of the GUAN and GSN networks and highlighted successes as well as challenges in the programme. He also listed current and possible future priorities for funding through the GCM.

The main performance metrics for GSN and GUAN are the number of silent stations, and the number of stations reporting CLIMAT/CLIMAT TEMP messages, respectively. Improvement activities for GUAN have resulted in reducing the number of silent stations down to one (from around 20 in 2003). In October 2006, for the first time, all African GUAN stations reported data to international data centres. In the GSN, over 50% out of all stations producing CLIMAT reports actually reported data. Only 31 GSN stations (out of 1016) were considered completely silent; data receipt from many apparently silent stations could be considerably improved simply by correcting station lists and routing tables within the Global Telecommunication System (GTS).

In the near term, GUAN revitalization will address Lima (Peru), Honiara (Solomon Islands) and Bauerfield (Vanuatu). Luanda (Angola) is likely to be covered in the mid-term, since it would fill an important gap in data coverage in Southern Africa. As to the GSN, refurbishment of the station at Bjelasnica (Bosnia-Herzegovina) is currently a focus of activity, and the revitalization of Madagascar stations another priority.

Regarding effort to rescue and make available historical climate data, 8 countries submitted additional historical data, and 8 countries submitted historical data for the first time, some over more than 100 years worth of data.

System improvement not only encompasses the improvement of infrastructure (supply of consumables and instruments), but includes also training workshops, for example on the generation and use of CLIMAT/CLIMAT TEMP messages, and Technical Support Projects (TSP). The latter include site visits, monitoring of station reports, calibration and training exercises. Special emphasis should be placed on the safety of station operations, since malfunctioning or ill-maintained hydrogen generators have caused damage to life and property. Site visits have proven a precondition for the kick-off of any revitalization project.

Thigpen also reported on the considerable progress being made in the establishment of new CBS Lead Centres for GCOS data, bringing the current total number to nine (Australia, Chile, Germany, Iran, Morocco, Japan, Mozambique, UK, USA). These Centres provide a mechanism to directly contact countries in case of any problems related to the availability of GSN and GUAN data, thereby sharing resources between all partners involved. The current distribution of Centres covers all WMO Regions and is expected to further improve GCOS network performance.

In the discussion, Howard Diamond stressed that the approximately USD4M spent in the last 4 years on GCOS system improvement had had a considerable impact, and had led to substantial and quantifiable improvement of networks.

Another item of discussion was the degree to which GCOS funding mechanisms should fund training activities (e.g., vis-à-vis WMO activities in this field). For example, Angola had requested training of its operational staff before the deployment of radiosonde equipment.

**Action: Ensure that training of GUAN station operators fully meets their needs, e.g. by using cartoon-style maintenance and safety instructions for the handling of station equipment, in particular hydrogen generators.**

**Action: All Board members to collect information that, where possible in quantitative terms, demonstrates and illustrates the effect of the GCOS System Improvement programme on network performance, data availability, etc., including figures. This information should be used to support GCM-related project proposals.**

## **4.2. Priorities by the AOPC Advisory Group on GSN/GUAN (AGG)**

Phil Jones (Chair of AGG) introduced the work of the AGG to the Board, and presented the group's priorities for GCOS system improvement. Based on scientific evidence, the AGG provides advice to AOPC and the GCOS System Improvement Programme as to priorities for revitalization of stations, historical data rescue, and training activities. Network performances are evaluated based on monitoring results by ECMWF (GUAN TEMP), GSNMC (DWD, JMA) and the GSN and GUAN Analysis Centre (NCDC). AGG also examines offers by countries to add stations to the GSN and GUAN networks.

Jones reiterated the priorities mentioned before (see section 4.1). These were, for GUAN, Luanda (Angola), Khartoum (Sudan) and Rarotonga (Cook Islands); for GSN, all African stations are considered a priority, especially in Angola, Namibia, Zambia and Malawi.

Further gaps in the GSN were identified on the Indonesian part of Borneo, in Peru, Yemen, Greenland and the Tibetan Plateau. The need for observations in the Southern Ocean, possibly on Falkland Islands or South Georgia was also stressed, as well as the need to re-approach Denmark regarding historical climate data from Greenland. Since one of the perhaps four most important surface stations was located in Portugal (Ponta Delgada (Acores), the others being Darwin (Australia), Tahiti, and Stikkisholm (Iceland)), the establishment of a GCOS National Focal Point in Portugal, missing to date, was highlighted as a matter of urgency.

AGG expressed some reservations as to the supply of automatic weather stations (AWS) to developing countries - if these are installed there should be adequate overlap between the new and conventional equipment.

### **Discussion**

Regarding a question on the overall trend of the climate record, Jones confirmed that the declining trend in available monthly surface data prevalent throughout the 1990s had been turned around, at least partly thanks to the GCOS System Improvement programme. Furthermore, the IPCC would not have been able to report on extremes without availability of additional long-term historical data. On the upper-air data from GUAN, the number of silent stations had been reduced from 15-20 down to 1.

Howard Diamond stressed that networks improvements should be better linked to scientific results, part of which find entry into IPCC assessments. It was generally questioned whether the science community at large, especially outside National Meteorological Services (NMS), understood and recognized the value of the GCOS networks.

The recently-finalized concept for a GCOS Reference Upper-Air Network (GRUAN) was briefly discussed. Generally, GRUAN was designed to address the growing emphasis on reference observations for multiple purposes, e.g. the calibration and validation of satellite datasets. Future GRUAN sites were foreseen largely, but not necessarily, identical to existing GUAN sites.

## **5. National Reports**

### **5.1. New Zealand**

Penehuro Lefale (NZ Met Service) briefed the Board on GCM-related activities in New Zealand. He pointed out the value of bilateral agreements with the UK and the US, and their effectiveness in leveraging New Zealand government funding. Activities cover the Pacific Islands region and include the restoration of surface and upper-air stations, the installation of early-warning systems, the rescue of historical data, and targeted capacity building. He also pointed out the need to demonstrate the socio-economic benefits of observations for climate.

## **5.2. United Kingdom (Met Office)**

Steve Palmer (UK Met Office) described the contributions of the UK VCP to international activities. These funds had been in the past able to catalyze matching funds in New Zealand, South Africa and other places, and vice versa. He presented the different themes to which funding has been allocated, which all address the overall need for the provision of sustainable public weather services by NMSs all around the world, e.g. for the protection of life and property of British citizens. Palmer informed the Board on the shift in priority within the UK Met Office to numerical weather prediction, seasonal forecasts and the use of satellite data. However, climate change issues were also addressed with increasing interest, but funding came more and more from other sources. Given the decline in funding in the coming years, additional national sources are being explored for GCM-related activities, such as from DfID, DEFRA and the UK Foreign Office.

Palmer suggested treating stations with long-term climate data records as a global public good, possibly categorizing them as UNESCO-type 'World Heritage Sites'. This designation would solve some of the justification problems that upper-air observations (or, for example, the CO<sub>2</sub> concentration time series at Mauna Loa, Hawaii) are having with respect to their immediate local utility. It would strengthen the aspect of international solidarity in the maintenance of observations, and possibly lead to increased co-sponsorship of operations by several NMSs. It was generally recognized that funding long-term observations was difficult to reconcile with short-term project-based funding mechanisms.

## **5.3. United Kingdom (DEFRA)**

Cathy Johnson (UK DEFRA) informed the Board about DEFRA's role in supporting GCM-related activities. The Department has the UK government policy lead on climate change issues, and a research budget to support related activities nationally and internationally. Support to the GCOS Secretariat for its interaction with the UNFCCC process was one strand of activity, support for ClimDev Africa another one. DEFRA was looking into the possibility of funding a full-time meteorologist, based in Africa, to take forward activities in the framework of ClimDev Africa. Terms of reference for such an activity have been drafted. The Board strongly welcomed this initiative and recognized that it would bear the prospect of achieving better participation by Africa NMSs in ClimDev Africa.

## **5.4. Germany**

Stefan Rösner (DWD) briefed the Board on progress made in getting BMZ involved in GCM-related activities. BMZ had indicated their willingness to support projects even in the longer-term, but required well-developed project proposals to be able to commit and release resources. Rösner was going to match a list of countries with which Germany has bilateral agreements against the GCOS priorities and, based on that analysis, carry the interaction with development agencies further. He also mentioned Germany's consideration of in-kind support by delivering instruments to countries in need.

## **5.5. The Netherlands**

Wim Monna (KNMI) informed the Board that KNMI supports various international global observational programmes, as many countries do. However, KNMI has no programme to support the improvement of observations internationally in developing countries. The ad-hoc contribution to the GCM (USD 1m over 4 years) has been pledged by two different Dutch ministries. For the process of raising this additional funding, the European agreement was essential that deeds had to follow previous verbal commitments, given that COP-12 took place in Nairobi (Kenya) and the commitment by some other EU countries. A part of this contribution is going to be used to support long-term observation elements of the African Monsoon Multidisciplinary Analysis Programme (AMMA). He mentioned the development of a KNMI strategy for climate observations, and the development of a national implementation plan which demonstrates the need for, and the benefits of observations.

## 5.6. Spain

Jorge Martinez Chamorro (Spanish Climate Change Office, Ministry of the Environment) described the Spanish priorities for GCM-related funding. These include the supporting of climate observations in Latin America, support for the annual all-American NMS directors' meeting, and funding for the all-American network of climate change offices (RIOCC).

In this connection, Howard Diamond pointed out the ongoing collaboration in Latin America between NOAA and the World Bank, which supported 1-2 climate observation sites in high altitudes.

## 5.7. Australia

John Zillman, on behalf of David Walland (Bureau of Meteorology), reported on the Australian contribution of AUD35k for the Pacific Islands GCOS programme for upgrading their IT and data dissemination infrastructure. Substantial support by Australia in that region has been leveraged through bilateral support from the US.

## 5.8. United States

Howard Diamond described the US GCOS programme, which since 2003 has received USD3.7m of support through the US Climate Change Research Initiative. The programme addresses international, regional and bilateral aspects, and has supported not only the GCOS System Improvement programme (see section 4), but also the Global Observing System Information Centre (GOSIC) web portal (<http://gosic.org>), which recently went fully operational at the National Climatic Data Centre in Asheville, NC.

After substantial budget constraints in 2006, this year's funding situation allows for approximately USD100K above and beyond the support already provided to support the GCOS Implementation Manager position (with travel and related support that amounts to approximately USD125K per year) to support GCM-related activities. Future priorities in US GCOS will be on reference networks, such as the GRUAN, and it is hoped that support to reference networks will also have fall-out for GSN and GUAN.

Diamond recalled the recurring need for convincing justification for how improvements in observations have a bearing on socio-economic benefits (e.g., adaptation agenda, IPCC). John Zillman remarked the importance of close collaboration with all institutions that maintain observing networks, for example research institutions or the Smithsonian Foundation.

**Action: All members of the Board, and other actual or potential donor countries, to complete a list of their activities in support of the GCM, with particular emphasis on the wider socio-economic benefit of these activities, especially on the adaptation agenda of the UNFCCC (see Appendix 4). This list should include the national reports given here, and complement them where necessary.**

## 6. Outlook

The final roundtable discussion mainly addressed GCM-related preparations for WMO 15<sup>th</sup> Congress (May 2007), the GEO Summit in South Africa (November 2007) and the UNFCCC 13<sup>th</sup> Session of the Conference of the Parties (COP-13) in Bali (Indonesia) in December 2007.

Wim Monna suggested to pursue a strategy for getting commitments by Parties similar to the process ahead of COP-12 in Nairobi, and agreed to raise this point with the EU delegation under the agenda item 'Research and Systematic Observation' at COP-13 in December 2007. Stefan Rösner placed emphasis on the quality of the GCOS submission (due 21 September 2007) to the UNFCCC on the role of climate observations in the SBSTA "Nairobi work programme on impacts, vulnerability and adaptation to climate change". He suggested that a statement be made by GCOS at WMO Congress which called Members to act and commit now, since all planning documents were available (e.g.,

GCOS Implementation Plan, GCOS Regional Action Plans) and initial action had been taken through ClimDev Africa. NMSs should also be encouraged to participate more in the GEO process.

David Goodrich suggested building on the existing Regional Action Plans for the Asian regions in all fora, noting that there have been commitments to other plans, and that interest had been expressed by some WMO Permanent Representatives, such as from China and India. Howard Diamond suggested exploring the possibility of organizing a PI-GCOS side event at COP-13.

There was general agreement that the workshop "Future Climate Change Research and Observations: GCOS and WCRP Learning from the IPCC Fourth Assessment Report", planned in Sydney (Australia) on 4-6 October 2007 was a good opportunity to highlight gaps in observations and research on the assessment by the IPCC.

The meeting adjourned at 16.00.

**Action: The Board to explore the possibility of organizing a PI-GCOS side event at UNFCCC COP-13 in Bali (Indonesia) in December 2007.**

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## Agenda

### Third Meeting of the GCOS Cooperation Mechanism Donor Board (GCM-III)

Hosted by the GCOS Secretariat  
World Meteorological Organization  
7 bis, Ave. de la Paix  
CP2300, CH-1211 Geneva 2 Switzerland  
7<sup>th</sup> Floor, Lake Conference Room

Friday, 27 April 2007

#### Meeting Goal: *Leveraging the GCM Process for Making Progress in GCOS*

- 0900 Welcoming Remarks and Introductions - David Goodrich, GCOS Secretariat
- Designation of a Chairperson and Rapporteur for the Board meeting
  - Agreement on the agenda
- 0915 Introduction and objectives – Howard Diamond, U.S. GCOS Manager (Interim Chair)
- Brief Review of the 1<sup>st</sup> two GCM Board Meetings in London and Montreal
  - Review of the GCM Terms of Reference
- 0930 Discussion of the Priorities from the GCOS Implementation Plan and the GCOS Science Panels – David Goodrich, GCOS Secretariat
- 0945 Opportunities to leverage on other activities to benefit GCOS – William Westermeyer, GCOS Secretariat
- ClimDev Africa and GCOS Regional Action Plans
  - GEOSS, G-8 statements of 2005 and 2007
- 1015 Coffee Break
- 1045 Review of the GCOS Improvement Programme – Richard Thigpen, GCOS Secretariat
- Progress made to date
  - Present commitments
  - Upcoming plans
- 1115 Roundtable Discussion on Moving the GCM Process Forward – Stefan Rösner/ Wim Monna/ David Goodrich
- Potential use of GCM as mechanism for leveraging funding opportunities
  - Current funding opportunities in Europe
  - How should the GCM process move towards making real progress
  - Governance of the process (e.g., who should lead to maintain momentum)
  - Continued coordination (e.g., next meetings, other activities)
- 1230 Lunch

- 1330 Optimal Application of Resources to Benefit the Requirements of GCOS – Phil Jones, Chair, AOPC Advisory Group on GSN/GUAN (AGG)
- 1430 Continuation of Roundtable Discussion on Moving the GCM Process Forward – Stefan Rösner/ Wim Monna/ David Goodrich
- 1645 Wrap-up, Final Remarks
- 1700 Adjourn

## List of Participants

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## **GCOS Cooperation Mechanism Terms of Reference (August 2004)**

The GCOS (Global Climate Observing System) Cooperation Mechanism (GCM) is established through the common action of a number of donor countries with the endorsement of the GCOS Steering Committee and is implemented under the GCOS Memorandum of Understanding.

The purpose of this mechanism is to identify and make the most effective use of resources available for improving global observing systems for climate in developing countries, particularly in order "to enable them to collect, exchange, and utilize data on a continuing basis in pursuance of the UNFCCC"<sup>5</sup>. In particular, the GCOS Cooperation Board is established to facilitate cooperation amongst donor countries, between donor and recipient countries, and amongst countries and existing funding and implementation mechanisms, in addressing high-priority needs for the improvement of global observing systems for climate in developing countries. It aims to ensure the most effective use of voluntary contributions for meeting such needs.

This mechanism will address priority improvements in atmospheric, oceanic, and terrestrial observing systems for climate and is intended to complement and work in cooperation with other funding and implementation mechanisms, many of which deal with GCOS-related activities and, particularly, capacity building. The requirement for improved global observations for climate recognizes that capacity building is an essential component but that it does not address the full scope of needs for sustained observations. Accordingly, the GCOS Cooperation Mechanism is established specifically to ensure that this broad spectrum of needs, for system improvement and sustained operations as well as capacity building, in support of global observing systems for climate are addressed as effectively as possible.

The GCOS Cooperation Mechanism provides for a coordinated multi-governmental approach to address the high-priority needs for stable long-term funding for key elements of global observing systems for climate in support of the requirements of the UNFCCC and other GCOS clients, especially those needs in developing countries, taking into account the special needs and situations of least developed countries and small island developing States.

The mechanism is governed by a GCOS Cooperation Board, which aims to facilitate cooperation amongst donor and recipient countries and funding agencies in addressing the high-priority needs. In addition, the Board functions as the primary means to establish and direct improvement projects resourced through voluntary contributions, both in-kind and financial, to a GCOS Cooperation Fund, which aggregates voluntary financial contributions from multiple donors into a common trust fund.

The mechanism provides the ability to facilitate, develop, fund and implement crosscutting approaches relevant to all climate disciplines/regimes, including addressing data management and data exchange.

Participation in the mechanism is open to all donors that support, through financial or in-kind contributions, improvements in global observing systems for climate in developing countries. There is no requirement to move funds from existing mechanisms or to commit new funds through the GCOS Cooperation Fund.

### **A. GCOS Cooperation Board**

The GCOS Cooperation Board is established to facilitate cooperation amongst donor countries, between donor and recipient countries, and amongst countries and existing funding and

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<sup>5</sup> UNFCCC Decision 5/CP.5

implementation mechanisms, in addressing high-priority needs for the improvement of global observing systems for climate in developing countries. It aims to ensure the most effective use of voluntary contributions for meeting such needs. The Board will provide advice to potential donors on the high priority funding needs and will direct the operation of the GCOS Cooperation Fund, in light of existing international and national support activities and in accordance with the specific priorities of some donors. Features of the GCOS Cooperation Board include:

- All donors are invited to be Board members, whether their contributions are financial or in-kind, and whether they are contributed directly through the GCOS Cooperation Fund or through any other bilateral or multilateral mechanism;
- Attendance at meetings is self-funded;
- The Board will operate by consensus;
- The Board will elect its Chairperson and convene as agreed, nominally on an annual basis;
- The GCOS Steering Committee, using the resources of the GCOS Science Panels (atmospheric, oceanic, terrestrial), will provide scientific advice to the Board;
- The GCOS Secretariat will provide appropriate secretariat support to the Board.

**The responsibilities of the Cooperation Board are to:**

Maintain and review a register of the activities supported by members with the express purpose of improving global observing systems for climate in developing countries;

Agree on the high priority funding needs for improvements in the global observing systems for climate (including data management elements) in developing countries based on scientific and programmatic advice from the GCOS Steering Committee;

Assess ways to address these needs through cooperative approaches, building upon existing national activities and the activities of regional and international funding mechanisms, including through the use of the GCOS Cooperation Fund;

Monitor the implementation of activities and the expenditures from the GCOS Cooperation Fund through a set of agreed guidelines;

Agree to and monitor appropriate procedures for cooperating with other funding and implementation mechanisms;

Provide an Annual Report for the GCOS Steering Committee and sponsoring agencies;

Review and modify, as appropriate, these TOR to match the common objectives of the Board.

**B. GCOS Cooperation Fund**

The GCOS Cooperation Fund is established to support the implementation of priority activities as determined by the GCOS Cooperation Board through the aggregated voluntary financial contributions from multiple donors. The fund is configured as a component of the existing Climate Observing System Fund (COSF), with separate accounting.

**The characteristics and operation of the Cooperation Fund are as follows:**

Contributions to the GCOS Cooperation Fund can be made in several ways:

1. Financial contributions whose specific purpose is unspecified. These funds would be allocated according to the expressed priorities of the Cooperation Board;
2. Financial contributions for specified purposes. These funds would be used consistent with the intent of the donor within the overall priorities identified by the Cooperation Board.

The Fund may be used to support all types of funding requirements for global climate observations in developing countries, including system improvement, sustained operations and capacity building. This

would require ongoing investment and replenishment of the fund.

The Fund may be used in concert with, and seek co-financing from, other funding mechanisms, particularly in respect of capacity building.

### **C. In-Kind Contributions**

Donor contributions may also be made via in-kind contributions for projects in developing countries. These contributions may be implemented directly with the recipient country or in coordination with other funding from the GCOS Cooperation Fund to address the priorities for improved global observing systems for climate.

For the purposes of accounting and reporting, in-kind contributions will be treated as equivalent to financial contributions for specified purposes.

### **D. Implementation of the GCOS Cooperation Board**

The GCOS Director will be the responsible officer for managing the fund and for secretariat support to the Cooperation Board.

The GCOS Director will report annually and as required to the Cooperation Board on expenditures from the Cooperation Fund.

Necessary project office support will be agreed and supported by the Cooperation Board.

Functions of the project office will include implementation actions to improve systems and to sustain the operation of key stations and systems.

Existing mechanisms will be utilized for implementing the actions of the Cooperation Board whenever appropriate, including, for example:

- WMO/Voluntary Cooperation Program (VCP) for implementing projects related to GUAN, and GSN stations; IOC for ocean projects, where appropriate;
- Regional approaches – e.g. SPREP or SOPAC for coordination of implementation in the Pacific;
- National agencies – e.g. national meteorological and oceanic services.

Recipients of funds will be asked to agree to the normal requirements of the WMO/VCP for use and operation of any systems supported by the GCOS Cooperation Board. The Board may impose standards and guidelines for the accountability of awarded resources.

Funding will be subject to agreement by the recipient to make all associated data available in a timely fashion to the appropriate world data center.

**D. Appendix – List of Participating Donor Countries**

Australia

Canada

China

European Commission

India

New Zealand

Switzerland

United States of America

United Kingdom

## List of donor activities in the GCOS Cooperation Mechanism

[N.B. The following questionnaire was drafted in 2005 as an earlier attempt to make a systematic inventory of all donor activities related to GCOS and the GCM. At the time, this sheet was felt too detailed and complex to fill in. However, it may help guide you in your contribution.]

Donor name
Donor address/website
General profile and activities of donor
Eligible funding sectors of donor related to climate and environment
Are climate observations part of the donor's funding in these sectors?
Priority regions/countries
Past activities/funded projects related to climate observations (use attached project sheet, if possible)
Total funds available with donor
Total funds available in eligible sectors related to climate and environment
Total funds spent in 2004 and 2005 related to climate observations
Eligibility requirements and application procedures
Contact person with donor
Contact details

## List of Actions from the Meeting

No	Action	Who	Deadline
1	GCOS Collaboration Board to meet regularly, at least once a year, preferably on the margins of UNFCCC SBSTA spring sessions (currently in Bonn, Germany).	All	Ongoing
2	For its 2008 session, GCOS Collaboration Board, in collaboration with the GCOS Secretariat to secure participation of at least 20 potential or actual donor countries, including India and China, with a wider spectrum of participants (political level, development institutions).	All	May 2008
3	When deciding on supporting projects and activities in the interest of GCOS, the GCM should aim at maximum synergy among all relevant priorities, in collaboration with all partners.	All	Ongoing
4	The Board, in collaboration with the GCOS Implementation Manager and the GCOS Secretariat, to re-visit the list of project candidates for possible donor support established by the GCOS Implementation Manager, and to expand individual project proposals according to the needs of potential donors.	All, Richard Thigpen	?
5	Ensure that training of GUAN station operators fully meets their needs, e.g. by using cartoon-style maintenance and safety instructions for the handling of station equipment, in particular hydrogen generators.	Richard Thigpen?	?
6	All Board members to collect information that, where possible in quantitative terms, demonstrates and illustrates the effect of the GCOS System Improvement programme on network performance, data availability, etc., including figures. This information should be used to support GCM-related project proposals.	All, AGG?	?
7	All members of the Board, and other actual or potential donor countries, to complete a list of their activities in support of the GCM, with particular emphasis on the wider socio-economic benefit of these activities and especially on the adaptation agenda of the UNFCCC (see Appendix 4). This list should include the national reports given here, and complement them where necessary.	All, additional donors	?
8	All Board members to collect information that, where possible in quantitative terms, demonstrates the economic and societal benefit of climate observations and services. This information could be used to support GCM-related project proposals.	All	?
9	The Board to explore the possibility of organizing a PI-GCOS side event at UNFCCC COP-13 in Bali (Indonesia) in December 2007.	All	September 2007

## **LIST OF GCOS PUBLICATIONS\***

- GCOS-1**  
(WMO/TD-No. 493) Report of the first session of the Joint Scientific and Technical Committee for GCOS (Geneva, Switzerland, April 13-15, 1992)
- GCOS-2**  
(WMO/TD-No. 551) Report of the second session of the Joint Scientific and Technical Committee for GCOS (Washington DC, USA, January 11-14, 1993)
- GCOS-3**  
(WMO/TD-No. 590) Report of the third session of the Joint Scientific and Technical Committee for GCOS (Abingdon, UK, November 1-3, 1993)
- GCOS-4**  
(WMO/TD-No. 637) Report of the fourth session of the Joint Scientific and Technical Committee for GCOS (Hamburg, Germany, September 19-22, 1994)
- GCOS-5**  
(WMO/TD-No. 639) Report of the GCOS Data System Task Group (Offenbach, Germany, March 22-25, 1994)
- GCOS-6**  
(WMO/TD-No. 640) Report of the GCOS Atmospheric Observation Panel, first session (Hamburg, Germany, April 25-28, 1994)
- GCOS-7**  
(WMO/TD No. 641) Report of the GCOS Space-based Observation Task Group (Darmstadt, Germany, May 3-6, 1994)
- GCOS-8**  
(WMO/TD No. 642)  
(UNEP/EAP.MR/94-9) Report of the GCOS/GTOS Terrestrial Observation Panel, first session (Arlington, VA, USA, June 28-30, 1994)
- GCOS-9**  
(WMO/TD-No. 643) Report of the GCOS Working Group on Socio-economic Benefits, first session (Washington DC, USA, August 1-3, 1994)
- GCOS-10**  
(WMO/TD-No. 666) Summary of the GCOS Plan, Version 1.0, April 1995
- GCOS-11**  
(WMO/TD-No. 673) Report of the GCOS Data and Information Management Panel, first session (Washington DC, USA, February 7-10, 1995)
- GCOS-12**  
(WMO/TD-No. 674) The Socio-economic Benefits of Climate Forecasts: Literature Review and Recommendations (Report prepared by the GCOS Working Group on Socio-economic Benefits), April 1995
- GCOS-13**  
(WMO/TD-No. 677) GCOS Data and Information Management Plan, Version 1.0, April 1995
- GCOS-14**  
(WMO/TD-No. 681) Plan for the Global Climate Observing System (GCOS), Version 1.0, May 1995
- GCOS-15**  
(WMO/TD-No. 684) GCOS Plan for Space-based Observations, Version 1.0, June 1995
- GCOS-16**  
(WMO/TD-No. 685) GCOS Guide to Satellite Instruments for Climate, June 1995
- GCOS-17**  
(WMO/TD-No. 696) Report of the GCOS Atmospheric Observation Panel, second session (Tokyo, Japan, March 20-23, 1995)

\*GCOS publications may be accessed through the GCOS website at:  
<http://www.wmo.int/pages/prog/gcos>

- GCOS-18**  
(WMO/TD-No. 697)  
(UNEP/EAP.MR/95-10) Report of the GCOS/GTOS Terrestrial Observation Panel, second session (London, UK, April 19-21, 1995)
- GCOS-19**  
(WMO/TD-No. 709) Report of the GCOS Data Centre Implementation/Co-ordination Meeting (Offenbach, Germany, June 27-29, 1995)
- GCOS-20**  
(WMO/TD-No. 720) GCOS Observation Programme for Atmospheric Constituents: Background, Status and Action Plan, September 1995
- GCOS-21**  
(WMO/TD-No. 721)  
(UNEP/EAP.TR/95-07) GCOS/GTOS Plan for Terrestrial Climate-related Observations, version 1.0, November 1995
- GCOS-22**  
(WMO/TD-No. 722) Report of the fifth session of the Joint Scientific and Technical Committee for GCOS (Hakone, Japan, October 16-19, 1995)
- GCOS-23**  
(WMO/TD-No. 754)  
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(FAO GTOS-1) Report of the GCOS/GTOS Terrestrial Observation Panel for Climate, third session (Cape Town, South Africa, March 19-22, 1996)
- GCOS-24**  
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(UNESCO/IOC) Report of the Joint GCOS/GOOS/WCRP Ocean Observations Panel for Climate, first session (Miami, Florida, USA, March 25-27, 1996)
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- GCOS-27**  
(WMO/TD-No. 772)  
(UNEP/DEIA/MR.96-7) Report of the Expert Meeting on Hydrological Data for Global Observing Systems (Geneva, Switzerland, April 29-May 1, 1996)
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(UNEP/DEIA/MR.97-3) *In Situ* Observations for the Global Observing Systems (Geneva, Switzerland, September 10-13, 1996)
- GCOS-29**  
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(UNEP/DEIA/MR.97-4) Report of the Global Observing Systems Space Panel, second session (Geneva, Switzerland, October 16-18, 1996)
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(WMO/TD-No. 795) Report of the sixth session of the Joint Scientific and Technical Committee for GCOS (Victoria, British Columbia, Canada, October 28-November 1, 1996)
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(WMO/TD-No. 803) Proceedings of the fifth meeting of the TAO Implementation Panel (TIP-5) (Goa, India, November 18-21, 1996)

- GCOS-32**  
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- GCOS-33**  
(WMO/TD-No. 798) GHOST - Global Hierarchical Observing Strategy, March 1997
- GCOS-34**  
(WMO/TD-No. 799) Initial Selection of a GCOS Surface Network, February 1997
- GCOS-35**  
(WMO/TD-No. 839) Report of the second Joint CCI/CBS Meeting on the GCOS Surface Network (De Bilt, The Netherlands, June 25-27, 1997)
- GCOS-36**  
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- GCOS-38**  
(WMO/TD-846)  
(GTOS-10) Report of the Meeting of Experts on Ecological Networks (Guernica, Spain, June 17-20, 1997)
- GCOS-39**  
(WMO/TD-No. 847)  
(GOOS-11) & (GTOS-11)  
(UNEP/DEIA/MR.97-8) Report of the GCOS/GOOS/GTOS Joint Data and Information Management Panel, third session (Tokyo, Japan, July 15-18, 1997)
- GCOS-40**  
(WMO/TD-No. 848) Report of the GCOS/WCRP Atmospheric Observation Panel for Climate, third session (Reading, UK, August 19-22, 1997)
- GCOS-41**  
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33) MD, USA, March 18-20, 1997) Report of the Joint GCOS/GOOS/WCRP Ocean Observations Panel for Climate (OOPC) Ocean Climate Time-Series Workshop, (Baltimore, (GOOS-33) MD, USA, March 18-20, 1997)
- GCOS-42**  
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- GCOS-43a**  
(GOOS-36) TAO Implementation Panel, sixth session (Reading, U.K., November 4-6, 1997)
- GCOS-43b**  
(GOOS-55) International Sea Level Workshop (Honolulu, Hawaii, USA, June 10-11, 1997)
- GCOS-44**  
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- GCOS-45**  
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(GOOS-58) & (GTOS-16)  
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- GCOS-46**  
(GTOS-15) Report of the GCOS/GTOS Terrestrial Observation Panel for Climate, fourth session (Corvallis, USA, May 26-29, 1998)
- GCOS-47**  
(WMO/TD-No. 941)  
(GOOS-67) (GTOS-20) Report of the Global Observing Systems Space Panel, fourth session, (College Park, Maryland, USA, October 22-23, 1998)
- GCOS-48** Report on the Adequacy of the Global Climate Observing Systems (United Nations Framework Convention on Climate Change, November 2-13 1998, Buenos Aires, Argentina)
- GCOS-49**  
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- GCOS-51**  
(GOOS-66) Global Ocean Observations for GOOS/GCOS: An Action Plan for Existing Bodies and Mechanisms
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- GCOS-55** Report of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC), fifth session (Silver Spring, MD, USA, April 20-23, 1999)
- GCOS-56**  
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- GCOS-58**  
(GOOS-71) Report of the sixth session of the IOC Group of Experts on the Global Sea Level Climate Observing System (GLOSS)
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(GOOS-70) GCOS/GOOS/GTOS Joint Data and Information Management Plan, Version 1.0, May 2000

- GCOS-61**  
(WMO/TD-No. 1031) Report of the ninth session of the WMO-IOC-UNEP-ICSU Steering Committee for GCOS (Beijing, China, September 12-14, 2000)
- GCOS-62**  
(WMO/TD-No. 1038) Report of the Pacific Islands Regional Implementation Workshop on Improving Global Climate Observing Systems (Apia, Samoa, August 14-15, 2000)
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(WMO/TD-No. 1055) Report of the sixth session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC) (Geneva, Switzerland, April 10-13, 2000)
- GCOS-66**  
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- GCOS-72**  
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- GCOS-73**  
(WMO/TD-No. 1106) Manual on the GCOS Surface and Upper-Air Networks: GSN and GUAN, April 2002
- GCOS-74**  
(WMO/TD-No. 1109) Report of the GCOS Regional Workshop for Eastern and Southern Africa on Improving Observing Systems for Climate, Kisumu, Kenya, October 3-5, 2001
- GCOS-75**  
(WMO/TD-No. 1124) Summary Report of the tenth session of the WMO-IOC-UNEP-ICSU Steering Committee for GCOS, Farnham, UK, April 15-19, 2002
- GCOS-76**  
(WMO/TD-No. 1125) Report of the eighth session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC), Wokingham, UK, May 20-24, 2002

- GCOS-77**  
(GOOS-122) International Workshop for Review of the Tropical Moored Buoy Network, September 10-12, 2001, Seattle, Washington, USA. Workshop Report
- GCOS-78**  
(WMO/TD-No. 1126) Report of the GCOS Regional Workshop for Central America and the Caribbean. "Observing Climate from Weather Extremes to Coral Reefs", San José, Costa Rica, March 19-21, 2002 (disponible también en español)
- GCOS-79**  
(WMO/TD-No. 1133) Interim Report to the sixteenth session of the Subsidiary Body for Scientific and Technological Advice of the UNFCCC by the Global Climate Observing System, Bonn, Germany, June 5-14, 2002
- GCOS-80**  
(WMO/TD-No.1140) Report of the GCOS Regional Workshop for East and Southeast Asia on Improving Observing Systems for Climate, Singapore, September 16-18, 2002
- GCOS-81**  
(GOOS-124) Seventh session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Kiel, Germany, June 5-8, 2002
- GCOS-82**  
(WMO/TD-No.1143) Second Report on the Adequacy of the Global Observing Systems for Climate in Support of the UNFCCC
- GCOS-82 (ES)**  
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- GCOS-83**  
(WMO/TD-No.1155)  
(GTOS-33) Report of the Global Terrestrial Network - Hydrology (GTN-H) Coordination Panel Meeting, Toronto, Canada, November 21-22, 2002
- GCOS-84**  
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(GTOS-32) Report of the GCOS/GTOS/HWRP Expert Meeting on Hydrological Data for Global Studies, Toronto, Canada, November 18-20, 2002
- GCOS-85**  
(WMO/TD-No.1167) Report of the GCOS Regional Workshop for Western and Central Africa on Improving Observing Systems for Climate, Niamey, Niger, March 27-29, 2003 (disponible en français)
- GCOS-86**  
(WMO/TD-No.1183) Report of the GCOS Regional Workshop for South America on Improving Observing Systems for Climate, Santiago, Chile, October 14-16, 2003 (disponible también en español)
- GCOS-87**  
(WMO/TD-No.1189) Summary Report of the eleventh session of the WMO-IOC-UNEP-ICSU Steering Committee for GCOS, Melbourne, Australia, April 7-10, 2003
- GCOS-88**  
(WMO/TD-No. 1190) Conclusions from the ninth session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC), Asheville, NC, USA, June 23-27, 2003
- GCOS-89**  
(GOOS-140) Report of the Eighth session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Ottawa, Canada, September 3-6, 2003
- GCOS-90**  
(GOOS-141) IOC Group of Experts on the Global Sea Level Observing System (GLOSS), eighth session, Paris, France, October 13 and 16-17, 2003

- GCOS-90bis** Report of the GCOS/GTOS Terrestrial Observation Panel for Climate (TOPC), seventh session, Rome, Italy, December 16-18, 2003.
- GCOS-91**  
(WMO/TD-No.1221) Summary Report of the twelfth session of the WMO-IOC-UNEP-ICSU Steering Committee for GCOS, Geneva, Switzerland, March 15-19, 2004
- GCOS-91bis** Conclusions from the tenth session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC), Geneva, Switzerland, April 19-23, 2004
- GCOS-92**  
(WMO/TD-No.1219) Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC
- GCOS-92 (ES)**  
(WMO/TD-No.1244) Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC – Executive Summary
- GCOS-93**  
(WMO/TD-No.1238)  
GTOS-35 Summary Report of the eighth session of the GTOS/GCOS Terrestrial Observation Panel for Climate, Ispra, Italy, April 6-7, 2004
- GCOS-94**  
(WMO/TD-No.1248) Report of the GCOS Regional Workshop for Central Asia on Improving Observing Systems for Climate, Almaty, Kazakhstan, May 24-26, 2004 (имеется также на русском языке)
- GCOS-95**  
(GOOS-143) Report of the ninth session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Southampton, UK, June 7-10, 2004
- GCOS-96**  
(WMO/TD-No. 1255) Analysis of Data Exchange Problems in Global Atmospheric and Hydrological Networks
- GCOS-97**  
(WMO/TD-No. 1259) Report of the GCOS Regional Workshop for South and Southwest Asia on Improving Observing Systems for Climate, New Delhi, India, October 11-13, 2004
- GCOS-98**  
(GOOS-146) Progress with the Initial Ocean Climate Observing System: A Report to the UNFCCC – April 2005
- GCOS-99**  
(GOOS-149) IOC Group of Experts on the Global Sea Level Observing System (GLOSS), ninth session, Paris, France, February 24-25, 2005
- GCOS-100**  
(WMO/TD-No. 1283) Report of the GCOS Regional Workshop for Eastern and Central Europe on Improving Observing Systems for Climate, Leipzig, Germany, April 26-28, 2005
- GCOS-101**  
(WMO/TD-No. 1298)  
(GTOS-37) Report of the 2nd Meeting of the GTN-H Coordination Panel, Koblenz, Germany, July 4-5, 2005
- GCOS-102** Conclusions from the eleventh session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC), Geneva, Switzerland, April 11-15, 2005
- GCOS-103**  
(WMO/TDN-No 1341) Summary report of the thirteenth session of the WMO-IOC-UNEP-ICSU Steering Committee for GCOS, St Petersburg, Russian Federation, 5-8 October 2005

- GCOS-104** Report of the tenth session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate Tenth, Geneva, Switzerland, May 9-12, 2005  
(GOOS-150) Session Final Report
- GCOS-105** Summary Report of the Thirteenth Session of the GCOS/WCRP Atmospheric Observation Panel for Climate (AOPC), Geneva, Switzerland, April 3-7, 2006  
(WMO/TD-No. 1374)
- GCOS-106** Report of the GCOS Regional Workshop for the Mediterranean Basin, Marrakech, Morocco, November 22-24, 2005  
(WMO/TD-No. 1337)
- GCOS-107** Systematic Observation Requirements for Satellite-Based Products for Climate  
(WMO/TD-No. 1338)
- GCOS-108** Climate Information for Development Needs an Action Plan for Africa, Report and Implementation Strategy, Addis Ababa, Ethiopia, 18-21 April 2006  
(WMO/TD-No. 1358)
- GCOS-109** Summary report of the fourteenth session of the WMO-IOC-UNEP-ICSU Steering Committee for GCOS, Geneva, Switzerland 10-12 October 2006  
(WMO/TD-No 1363)
- GCOS-110** Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Eleventh Session, Tokyo, Japan 16-20 May 2006  
(WMO/TD-No. 1370)  
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- GCOS-111** Summary Report of the ninth session of the GTOS/GCOS Terrestrial Observation Panel for Climate, Ispra, Italy 28-29 March 2006  
(WMO/TD-No. 1371)  
(GTOS No. 43)
- GCOS-112** GCOS Reference Upper-Air Network (GRUAN): Justification, requirements, siting and instrumentation options  
(WMO/TD-No. 1379)
- GCOS-113** Report of the Third Meeting of the GCOS Cooperation Board (Geneva, Switzerland, 27 April 2007)  
(WMO/TD-No. 1396)

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