WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

REPORT OF THE EIGHTH MEETING OF THE

GCOS COOPERATION MECHANISM BOARD

(GENEVA, 3 September 2012)

GCOS – 163

UNITED NATIONS ENVIRONMENT PROGRAMME

INTERNATIONAL COUNCIL FOR SCIENCE

Chairperson, Publications Board
World Meteorological Organization (WMO)
7 *bis*, avenue de la Paix
P.O. Box No. 2300
CH-1211 Geneva 2, Switzerland

Tel.: +41 (0)22 730 84 03
Fax: +41 (0)22 730 80 40
E-mail: Publications@wmo.int

Eighth Meeting of the GCOS Cooperation Mechanism Board

WMO Headquarters, Geneva, Switzerland

3 September 2012

SUMMARY

1. Welcome and Introductions

The Eighth Meeting of the GCOS Cooperation Mechanism (GCM) Board was held on 3 September 2012 at WMO Headquarters in Geneva, Switzerland. The meeting took place the day before the start of the Twentieth Session of the GCOS Steering Committee (SC). Scheduling the meeting back-to-back with the SC Session enabled the non-SC members participating in the GCM meeting to attend the SC Session as observers if they so wished.

Dr. Adrian Simmons, the Chairman of the GCOS SC, welcomed participants to the meeting and introduced Mr. Howard Diamond, who agreed to chair this year's GCM Board meeting. Mr. Diamond is US GCOS Program Manager within the US National Oceanic and Atmospheric Administration (NOAA).

In his opening remarks, Mr. Diamond stated that he would like to see more resources generated for GCM projects. However, he noted that in these fiscal times it is difficult to be able to get governments to provide sufficient resources to fund sustained environmental observation programs. It may be necessary to "think out of the box" in order to energize the GCM. After these brief opening remarks, the participants introduced themselves.

Given that a number of people, in particular several from the Geneva missions to the UN, were attending their first GCM meeting, the Director of the GCOS Secretariat, Dr. Carolin Richter, gave an overview presentation about GCOS and reviewed the functioning of the GCM.

2. A Review of the Mission of GCOS and of the GCOS Cooperation Mechanism

Dr. Richter observed that the application of funds to projects undertaken under the GCM is one of the most visible things that the GCOS Secretariat is doing to facilitate improvements in climate observing systems in developing countries. Her presentation introduced the concept and scope of the Global Climate Observing System and of the GCOS Programme. She also discussed the functioning of the GCM, noting that its purpose is to revitalise key stations in baseline networks, using donations made by interested countries.

She noted that there has been progress in implementing the GCOS since the 2004 GCOS Implementation Plan (IP) was published. However, of the 131 actions specified in the IP only about one quarter could be considered to have made good or better progress. About 10 percent had seen low progress or no progress at all. Hence, there is still a need for resources for necessary climate observing improvements. This need was illustrated in a slide that showed, among other things, that developing countries required an additional $600 million per year for enhancements in their observing systems. It was noted by the Chair that this sum is relatively modest in comparison to the combined gross domestic products of the G-20 countries.

Dr. Richter noted that the GCM Board has been meeting since 2004 and that some 3 million Swiss francs have been contributed to GCM projects so far. The main contributors have

been Canada, Germany, Japan, the Netherlands, Spain, Switzerland, the United Kingdom, and the United States. She noted that the majority of the projects undertaken to date have addressed needs in the atmospheric domain but that it is important that the annual "shopping list" of projects contain projects in the oceans and terrestrial domains as well.

3. Past Successes in Implementing Projects through the GCM

Mr. Richard Thigpen, the GCOS Implementation Project Manager, gave a presentation on what the GCOS Cooperation Mechanism has accomplished since its inception. He began by indicating some distinctive features of the GCM, noting in particular that it has a dedicated implementation manager, that this manager works for the donors and provides detailed reports of his activities, and that in implementing projects, the manager can use the procurement procedures of the WMO and thus benefit from the good reputation that WMO has with donors and private enterprises.

The Implementation Manager then provided an overview of improvements to the GCOS Upper Air Network (GUAN) and GCOS Surface Network (GSN), the networks to which he has devoted most of his attention to date. The biggest problems with GUAN stations have been operating costs and aging equipment. Improvements to GUAN stations have been made in almost 20 sites around the world and have included replacement of hydrogen generators and replenishment of radiosondes and balloons. It was noted that the price of radiosondes has come down, in large part because the Implementation Manager has been able to introduce competition for contracts. One problem, however, is that a few countries have plenty of money—they would just prefer not to spend it on radiosondes.

The biggest problems at GSN stations have been lack of monthly CLIMAT reports and the use of old, uncalibrated equipment. Examples were given of improvements made in the Democratic Republic of the Congo and Bosnia and Herzegovina. Of note was the remark that it takes more time to renovate a smaller surface station than an upper air station.

Another activity in which the Implementation Manager engages is the organization of technical workshops in which quality observing techniques are taught. These include teaching upper air observing techniques and preparing CLIMAT messages. In addition to this activity, the Implementation Manager has established CBS Lead Centers for GCOS in a number of different regions around the world. The Lead Center managers help to identify and fix problems at GUAN and GSN stations in their designated regions. Regional Technical Support Projects (RTSPs), which have been established in the Pacific, the Caribbean, the Americas, and Africa, also provide support. The RTSPs make it possible for site visits by qualified personnel to assist in the resolution of station problems.

It was noted that sustaining operations is one of the biggest problems faced by station operators, as there is little funding available for maintenance when things break down. The Implementation Manager has been less successful in obtaining funds to keep stations running. Costs can often be higher in developing countries, and the bureaucracy can be frustrating. In some cases, the Implementation Manager has been able to save money by cutting out the middleman. A comment was made that networks might benefit by taking advantage of the greater availability of human resources in developing countries, rather than rely on Automatic Weather Stations (AWSs). On a similar point, the World Bank representative pointed out that it seeks to make sustainable investments. Hence, central governments must be willing to commit sufficient annual resources to Meteorological Services for sustainable operations and maintenance when the World Bank invests in projects. This can be difficult, and is sometimes a "show-stopper."

4. Activity Reports by Participating Donor Representatives

Representatives of five individual countries provided short reports of activities to improve observing systems that their countries had undertaken or were planning to undertake. In order of presentation these were the United Kingdom, the United States, Germany, Japan, and Switzerland.

4.1 United Kingdom

Ms. Karen McCourt, the Voluntary Cooperation Programme (VCP) Manager for the UK Met Office, provided a brief report on the UK's VCP. Although not falling directly under the GCM, this programme has supported the improvement of GCOS networks. After introducing VCP project themes, one of which is observations, Ms. McCourt highlighted UK funding provided through the VCP for key observations from remote islands. These include St. Helena, Gough, the Seychelles, Funafuti, and Tarawa. She noted that approximately £160,000 is contributed to a 'Pacific Fund' each year. The fund, managed by MetService New Zealand, provides technical support to several GUAN stations and to the GSN station on Pitcairn Island. She noted that the GUAN station on Ascension Island in the mid Atlantic Ocean is currently silent but that negotiations with NOAA are now underway to see what can be done to reactivate the station.

Special attention was given to the GCOS-funded Madagascar AWS project, which is being funded by the Netherlands and managed by the UK Met Office. The aim of this project is to deliver equipment for 11 Automatic Weather Station (AWS) sites, training on AWS installation and maintenance, and a central server to pass data to the Global Telecommunications System (GTS). The project is currently in progress and efforts are now focussed on identifying and testing a suitable telecommunications solution. Consideration is being given to organizing an AWS workshop on the value of observation data once installations are complete.

Finally, a project to provide mobile weather alerts to fishermen on Lake Victoria in Uganda was introduced. As part of this WMO-managed project the UK VCP has implemented a high resolution model (4km) over the Lake Victoria Region. The UK VCP is now working with the Uganda Department of Meteorology and a boat company, Earthwise, to install an AWS on at least one boat on Lake Victoria to enhance observations (including surface temperature) on the lake. This should further enhance modelling and, ultimately, forecasting.

4.2 United States

Mr. Howard Diamond, the U.S. GCOS Program Manager, updated the GCM Board on activities of the U.S. GCOS Programme. He noted that the U.S. GCOS Home Page is hosted by the Global Observing Systems Information Center (GOSIC) and provided an overview of the information accessible through the GOSIC web site. He introduced the U.S. Climate Reference Network (http://www.ncdc.noaa.gov/crn) and remarked that it is a U.S. vision eventually to extend this network internationally.

The Pacific Region is the focus of most of the activities of the U.S. GCOS Program. Highlighted in the presentation was the U.S. GCOS-NZ MetService Technical Support Project for Pacific Islands (TSP), the goal of which is to provide technical support and program management to ensure the GUAN stations operated in Pacific Island States are effective. Mr. Diamond noted, however, that there is no GCOS coordinator in the Pacific at this time and that the Pacific Island GCOS Action Plan is rapidly becoming out of date.

Mr. Diamond spoke of the mid- and long-term plans for the U.S. GCOS Programme, noting that he will continue to seek resources to support the GCM. Also, attention will be given to

resurrecting the GUAN station at Ascension Island, to co-locating Global Atmosphere Watch (GAW) stations with U.S. Climate Reference Network stations (e.g., Barrow and Mauna Loa), to expanding data management activities and documenting data flows with data hot links for all climate observing systems, and to providing regional and Bi-Lateral Support, in particular through expanding partnerships in the Pacific and building on existing work with NZ and Australia.

Finally, Mr. Diamond noted some of the challenges he faces, including:

- Installing new equipment,
- Working to have observers trained and operating,
- Monitoring and Data Management,
- Maintenance and Calibration,
- Data availability and related science and applications, and
- Convincing people that we need sustainable and robust observing resources to support climate science.

These challenges are more or less universal and all cost money.

4.3 Germany

Mr. Stefan Rösner, deputy German GCOS Coordinator, began his presentation by reviewing several GCOS-related projects for developing countries that are being undertaken by various German agencies, including the Deutscher Wetterdienst. These included the Trilateral Cooperation Programme with Brazil, Mozambique, and Germany; sustainable water management in the province of Tungurahua, Ecuador; the Regional Research Network "Water in Central Asia" (CAWA) Project; development of a database to manage climate adaptation information (DATACLIM) in Indonesia; establishment of Regional Science Service Centres (RSSCs) in western and southern Africa; and a planned project on climate monitoring and early warning in Zambia.

The RSSC is composed of two regional components. The West African Science Service Center on Climate Change and Adapted Land Use (WASCAL) addresses needs in Bénin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Mali, Niger, Nigeria, Senegal, and Togo, while the Southern African Science Service Centre for Climate Change and Adaptive Land Use (SASSCAL) serves Angola, Botswana, Namibia, South Africa, and Zambia. There will also be observing system and data management elements in the programme. Germany will contribute approximately 100 million euros to the RSSCs over the 5 year period between 2012 and 2017 with additional funding coming from African partner countries.

Mr. Stefan Roesner also discussed direct German contributions in support of GCOS. Of special note is the fact that Germany has supported several Junior Professional Officers in the GCOS Secretariat, one of whom is currently at the Secretariat. He also noted that Germany makes an annual contribution to the GCOS Programme. In 2011, Germany contributed 30,000 euros. He noted that Germany intended to upgrade the Baseline Surface Radiation Network (BSRN) station at Ilorin, Nigeria, but that due to the political situation this has not been done, and a new activity is to be selected.

4.4 Japan

Dr. Kazutoshi Onogi on behalf of Dr. Junichi Hirosawa, the Japanese National Coordinator for GCOS, gave a brief overview of Japanese activities in support of the Global Climate Observing System. He indicated that in FY2010 Japan supplied radiosondes to Rarotonga in the Cook Islands and renovated two GSN stations there. In FY2011, radiosondes were again supplied to Rarotonga. They were also supplied to Yerevan, Armenia and to Khartoum, Sudan, both of whom have indicated that they will provide their own radiosondes

after this year. Japan also contributes to improving climate observations through the WMO Voluntary Cooperation Programme.

Dr. Onogi noted that the Tokyo Climate Center (TCC) in the Japan Meteorological Agency (JMA) has been approved as a WMO Regional Climate Center and that it has run training seminars on long-range forecasting, climate monitoring, and other topics. He also noted a long-running training course in meteorology conducted by the Japan International Cooperation Agency (JICA) with the support of JMA. Training includes the production of climate information.

4.5 Switzerland

Dr. Gabriela Seiz, Head of the International Affairs Division and the Swiss GCOS Office at the Federal Office of Meteorology and Climatology MeteoSwiss, provided a brief overview of Swiss GCOS activities outside Switzerland. One important activity has been to reactivate GUAN stations in Harare, Zimbabwe, Dar es Salaam, Tanzania, and Khartoum, Sudan.

A second is the Swiss Agency for Development Cooperation (SDC)-sponsored activity Capacity Building and Twinning for Climate Observing Systems (CATCOS). This project addresses, as appropriate, greenhouse and reactive gases (CO2, CH4, CO), aerosol optical properties, and glacier mass balance in Colombia, Ecuador, Chile, Kyrgyzstan, Indonesia, Kenya, and Vietnam. Funds for the GCOS South America Workshop, held in Guayaquil, Ecuador in March 2012, were also provided through this project.

Another SDC-sponsored activity is the project 'Servicios CLIMáticos con énfasis en los ANdes en apoyo a las Decisiones (CLIMANDES)'. Coordination is provided by WMO, MétéoSwiss, and the Peruvian Meteorological Service (SENAMHI). Module 1 will provide support to the WMO Regional Training Centre (RTC) in Lima, Peru, while Module 2 will implement a pilot project for the Global Framework for Climate Services (GFCS). Finally, Dr. Seiz mentioned the MeteoSwiss collaboration with the World Bank on a programme called Weather and Climate Information and Decision-Support Systems (WCIDS), which is part of the Global Facility for Disaster Reduction and Recovery (GFDRR) and which aims to strengthen the use of weather and climate information in decision support in developing countries. This program has now been renamed "GFDRR Hydromet."

5. A Review and Discussion of European Union Funding Possibilities

A special presentation was given by Dr. Alan Belward, Head of the Land Resource Management Unit at the European Commission's Joint Research Centre and a GCOS Steering Committee Member. Dr. Belward reviewed EU funding possibilities for climate observations. He noted that the need for climate observations and climate information was implicit in a number of EU policy documents linked 1) to Horizon 2020, the programme covering the next 7-year funding cycle for innovation, research, and technological development, 2) to the EU's flagship 2020 proposals, and 3) to key elements of development assistance programming, including funding at the European level via the European Development Fund (as well as the European Commission's own budgetary lines). However, GCOS as a specific entity is not so well positioned and is still something of an unknown quantity. He therefore recommended that the GCOS Chair and/or Director visit Brussels to begin (and/or deepen) making the necessary contacts. In particular, they could pass the message concerning what GCOS does and what its mandate is in terms of the implementation of the UNFCCC. He pointed out that at Rio+20 participants came to formal agreement that "combating climate change requires urgent and ambitious action, in accordance with the principles and provisions of the United Nations Framework Convention on Climate Change" and noted that this conclusion can be used to help make the case for funding to improve climate observations.

Dr. Belward mentioned that the European Development Fund (EDF) has allocated to it 30 billion euros for the 2014-2020 period. The EDF funds development-assistance projects in the African, Caribbean, and Pacific Group of States (ACP) in the context of the Cotonou Agreement between the ACP and the European Union (including the European Commission and the individual EU Member States). Dr. Belward therefore recommended that the GCOS Secretariat and Chair work to sensitize the ACP Secretariat to the importance of the needs to improve observations in the ACP regions.

Whilst the EDF is outside the main budget of the European Commission, there is an internal EC budget line of relevance. This is the Development Cooperation Instrument (DCI). Dr. Belward indicated that the purposes of this instrument include the objective to strengthen "environmental governance and supporting international policy development, including also by working for coherence between the environmental and the other pillars of international governance for sustainable development, by assisting regional and international environmental monitoring and assessment, and by promoting effective compliance and enforcement measures for multilateral environmental agreements. He noted that one of the foci for this Instrument is Africa and that observing system needs should be eligible under the DCI. Still another hook that might be explored is the European Union's Global Climate Change Alliance (GCCA), which is intended to enhance European support on climate change to poor developing countries.

Climate observations, especially space-based ones, have an important position in the European Union's Global Monitoring for Environment and Security (GMES) Programme, which has an ambition to provide information products that meet the GCOS goals. Dr. Belward noted, however, that GMES funding as proposed by the European Commission in the context of the next Multi Annual Financial Framework is still a subject of discussion. Within the current financial framework (which runs until the end of 2013) GMES has made a commitment to climate services based on observations. This includes strong links with the European Space Agency's Climate Change Initiative, as well as a longer term commitment to a climate service as GMES matures. He also noted that the GCOS Secretariat should keep an eye on the connection between GEOSS and the EC, as the Group on Earth Observations and its GEOSS is both a topic in the current 7th Framework Programme and also receives attention in the forthcoming Horizon 2020 programme.

Dr. Belward provided some additional detail on Horizon 2020, noting that 3.573 billion euros have been earmarked for climate action. The activities covered address many topics where GCOS is implicitly included, but GCOS is not specifically mentioned, whereas GEOSS, IPCC, and GMES are.

In conclusion, Dr. Belward noted that the GCOS Secretariat should:

- Deepen dialogue with the EC, using the formal WMO / EU bilateral discussions as a framework,
- Open new dialogue with the Global Climate Change Alliance (info@gcca.eu),
- Open/sustain dialogue with ACP Secretariat (info@acp.int),
- Examine the Development Cooperation Instrument's Programme on Global Public Goods and Challenges http://ec.europa.eu/europeaid/how/finance/mff/financial_framework_news_en.htm,
- Keep the link between GCOS and GMES open (including on climate services), and
- Develop coordination with the DG RTD Climate Change and Natural Hazards Unit.

The GCOS Steering Committee chair noted that GCOS wants needs as seen by EC to be taken into account in the next adequacy report.

6. Resource Mobilization and GCOS

Mr. Wayne Elliott, representing the WMO Resource Mobilization Office, offered some thoughts on how the GCOS Secretariat might tap into potential sources of funding and build a long-term resource mobilization strategy. He suggested that there is a need to identify key messages and to use these to 'market' GCOS so as to make it more visible to potential funders. He also stressed that these funders are often more focused on end user beneficial services and need to see the link between observations and these services. This may be difficult for an observation programme like GCOS. It is essential to promote the importance of observations in climate change adaptation and resilience, disaster risk reduction, and in sectors, such as water, health, and agriculture, all users of climate observations. Demonstrating the socio-economic value of the outputs through case studies could also be useful. To this end, he suggested that GCOS could work together with WMO and communications specialists to develop a communications strategy. A related suggestion from the Chair was that employing a specialist in proposal writing and/or marketing could be useful.

Mr. Elliott gave a brief overview of the status of the Adaptation Fund and the Green Climate Fund and suggested that the GCOS Secretariat try to tap into these and other multilateral and regional funding mechanisms, e.g., the Global Environment Facility and the Africa Development Fund and its Regional Window. He further suggested that GCOS seek strategic partnerships with private entities, foundations, and other bilateral agencies that have interest in GCOS, albeit noting the difficulties in working with these entities.

Dr. David Rogers, in commenting on this presentation, noted that Nepal is benefiting from the Pilot Program for Climate Resilience (PPCR) supported by the World Bank, one component of which addresses climate observations. The key is that this programme was sold on a complete transformation of the system which would deliver climate services. This needs to be done as a package, even though observation needs is the most costly element. One can't sell things as a compartmentalized component. Sustainability requires development of an overall package.

7. Potential Renovation Projects

Mr. Dick Thigpen, the GCOS Implementation Manager, provided an overview of his current list of potential renovation projects. This list is provided in its entirety as Annex 3 to this report. During the discussion following introduction of the list, the World Bank representative, Mr. Daniel Kull, noted that coordination is needed among different organizations so that funding of projects is complementary. Coordination is a government function, but if government funded recipients are not in a position to coordinate, the funding agencies need to coordinate among themselves.

8. Review of Activities Proposed in the Observations Annex of the Global Framework for Climate Services Implementation Plan

Dr. William Westermeyer of the GCOS Secretariat presented a brief overview of the WMO-led initiative to develop a Global Framework for Climate Services. Focusing on the activities that have been proposed in the Observations and Monitoring Annex of the GFCS Implementation Plan (GFCS IP), he noted that GCOS had an important role in helping to prepare this Annex. The Annex, which is some 85 pages in length, contains about 35 pages of tables, most of which introduce proposed activities.

Although the authors of the Annex took the view that all improvements in climate observing systems can be considered as contributing at least indirectly to improvements in climate

services, the focus of the Annex, and of the GFCS Implementation Plan itself, was on activities that could contribute directly to the provision of services in four sectors—agriculture, health, water resources, and disaster risk management. As such, the Annex provides descriptions of a number of initial implementation activities to address the observing system needs of these sectors. It also specifies a more comprehensive list of activities considered relevant to the GFCS for implementation in developing countries over a longer time period.

Dr. Westermeyer noted that GCOS was bringing these projects to the attention of the GCM Board because there is no guarantee that any will be funded through mechanisms established by the GFCS. In the presumed best case, direct GFCS funding in the next five years is likely to be available for only a few of the initial implementation activities described in the Annex. Hence, there are many needs for observational improvements identified in this document that are unlikely to be funded through the GFCS and that the GCOS Secretariat hopes could be considered for funding by countries supporting the GCM. Annex 4 of this report shows the table of Initial Implementation Activities included in the Observations and Monitoring Annex to the GFCS IP.

9. A Discussion on How to Energize the GCOS Cooperation Mechanism

This session consisted of an open discussion led by the Chair. Among the ideas to consider were the following:

- Beef up outreach activities and public relations;
- Give someone the task to draft a proposal to a funding agency, and consider the possibility of hiring someone for this purpose;
- Try partnering with the United Nations Development Programme (UNDP) again—it is a natural partner and helped fund the GCOS Regional Workshop Programme; it may also be possible to secure project development funds through UNDP;
- Consider endowing a trust fund;
- Work more closely with GEO and/or when seeking funds identify proposals as GEO supported;
- Consider large, rather than small projects, as this is often where the main interest for funding agencies lies;
- Identify where we really need the funds and then, in line with the point above, build a large 5-7 year project proposal around this need;
- Encourage developing countries to include an observing system component when developing their National Adaptation Plans (NAPs);
- Consider seeking support through the Pilot Program for Climate Resilience (PPCR), a targeted program of the Strategic Climate Fund (SCF), one of two funds within the framework of the Climate Investment Funds (CIF) that is being supported by the World Bank Group and regional development banks;
- Exchange information on relevant activities with the World Bank so that each is aware of activities where partnership may be mutually beneficial; also, consider participating in relevant World Bank meetings and missions;
- Build a consortium with other organizations with mutual interests;
- Undertake a strength and weakness analysis; and
- Consider the possibilities of obtaining funding through such foundations or organizations as the Gates Foundation, the Clinton Global Initiative, and the World Economic Forum.

10. Summary

Several closing points were made by the Chair. He reiterated the desirability of implementing an earlier suggestion, that of hiring someone on a contract basis to develop project proposals and/or of helping the GCOS Secretariat to communicate. This, in his view would enable the Secretariat to take better advantage of the UNFCCC, GFCS, EC, GEO, and other mechanisms. A participant stressed that we should appeal to all Parties to the UNFCCC to take up their responsibilities, e.g., by establishing GCOS National Coordinators where this had not already been done.

After the meeting provisionally decided to hold the next meeting in association with the June 2013 meeting of the Subsidiary Body for Scientific and Technological Advice (SBSTA) in Bonn, the Chair closed the meeting.

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Annex 1

Eighth Session of the GCOS Cooperation Mechanism Board

WMO Headquarters, Geneva, Switzerland
3 September 2012

Chairman: Howard Diamond, USA

Agenda

1000 – 1015	1. Welcome and Introductions—Simmons and Diamond
1015 – 1045	2. A review of the mission of GCOS and of the GCOS Cooperation Mechanism—Richter
1045 – 1115	3. Past successes implementing projects through the GCM—Thigpen
1115 – 1215	4. Activity Reports United Kingdom United States Germany Japan
1215 – 1330	Lunch
1330 – 1400	5. A review and discussion of EU funding possibilities—Belward
1430 – 1500	6. Resource Mobilization and GCOS — Elliott
1500 – 1530	7. Potential renovation projects—Thigpen
1530 – 1600	Coffee Break
1600 – 1630	8. Review of activities proposed in the Observations Annex of the GFCS Implementation Plan—Westermeyer
1630 -- 1700	9. Activity Reports (continued) Switzerland
1700 – 1730	10. A discussion on how to energize the GCM--Diamond
1730 – 1745	11. Summary of actions and recommendations—Diamond

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Annex 2

Eighth Meeting of the GCOS Cooperation Mechanism (GCM-VIII) Donor Board (Press Room, WMO Headquarters, Geneva, Switzerland, 3 September 2012)

List of Participants

Mr Howard DIAMOND (Chair) US GCOS Program Manager Director, World Data Center for Meteorology, Asheville NOAA/National Climatic Data Center 1100 Wayne Avenue, Suite 1202 Silver Spring, MD 20910-5642 USA	Tel.: +1 301 427 2475 Fax: +1 301 427 0033 Cell: +1 301 801 4855 E-mail: howard.diamond@noaa.gov
Mr Maurizio BIASINI Scientific Attachè Permanent Mission of Italy to the International Organizations in Geneva Chemin de l'Impératrice 10 1292 Pregny	Tel: +41 22 9180834 Mobile: +41 78 792 22 68 E-mail: maurizio.biasini@esteri.it
Mr Wayne ELLIOTT Chief - Project Coordination Unit Resource Mobilization Office World Meteorological Organization 7bis, Avenue de la Paix, Case postale No. 2300, CH-1211 Geneva 2 Switzerland	Tel.: +41 22 730 8378 Fax: +41 22 730 8181 E-mail: Welliot@wmo.int
Mr Pieter L. GOOREN Counsellor for Agriculture, Nature and food Quality Permanent Represenof the Kingdom of the Netherlands Avenue Giuseppe-Motta 31-33 1202 Geneva Switzerland	Tel.: +41 22 7481822 Fax: +41 22 7481828 Mobile: +41 793501603 E-amil: pieter.gooren@minbuza.nl
Mr Alex HARVEY Climate Change Advisor Africa Regional Department Department for International Development (DFID) 1 Palace Street London UK SW1E 5HE United Kingdom	Tel: + 44 (0) 207 023 0056 Fax: +44 (0) 13 5584 3713 Email: a-harvey@dfid.gov.uk
Dr Cathy JOHNSON Head, Research Co-ordination and Business Support DECC CESA (Climate and Energy, Science and Analysis) 6th floor, Zone D3 Whitehall Place London SW1A 2HD United Kingdom	Tel.: 0300 068 5584 Mob.: 07788 640125 E-mail: Cathy.Johnson@decc.gsi.gov.uk
Mr Daniel KULL Senior Disaster Risk Management Specialist Global Facility for Disaster Reduction and Recovery (GFDRR) The World Bank, 3 Ch. Louis-Dunant, C.P. 66, CH-1211 Geneva 20 Switzerland	Tel: +41 22 748 1015 Fax: +41 22 748 1030 Mobile: +41 76 585 5098 E-mail: dkull@worldbank.org Skype: daniel.kull Web: www.gfdrr.org

Mrs Karen McCOURT VCP Manager Met Office FitzRoy Road, Exeter, EX1 3PB United Kingdom	Tel: +44 1392 886784 Mob: +44 7717488460 E-mail: karen.mccourt@metoffice.gov.uk
Dr Kazutoshi ONOGI Climate Prediction Division Japan Meteorological Agency 1-3-4 Ote-machi, Chiyoda-ku Tokyo 100-8122 Japan	Tel.: +81 3 3212 8341 Fax: +81 3 3211 8406 E-mail: konogi@met.kishou.go.jp
Mr Stefan RÖSNER Deutscher Wetterdienst Keiserleistrasse 29/35 63067 Offenbach am Main Germany	Tel.: +49 69 8062 4306 Fax: +4969 80624130 E-mail: Stefan.roesner@dwd.de
Dr David ROGERS President Health and Climate Foundation In USA: 1425 K St NW Suite 350 Washington, DC 20005, USA In Europe: Champ Courtet, Marchissy 261 Switzerland	Tel. +1 202 587 5658, Fax. +1 202 587 5601 Tel. +41 22 368 21 03, Fax. +41 22 368 21 04 E-mail: drogers@bluewin.ch
Dr Gabriela SEIZ Head of International Affairs Division Swiss GCOS Office Federal Office of Meteorology and Climatology MeteoSwiss Kraehbuehlstrasse 58, PO Box 514 CH-8044 Zurich Switzerland	Tel: +41 44 256 9539 Fax: +41 44 256 9278 E-mail: Gabriela.Seiz@meteoswiss.ch
Dr Adrian SIMMONS ECMWF Shinfield Park Reading RG2 9AX United Kingdom	Tel: +44 118 949 9700 Fax: +44 118 986 9450 E-mail: Adrian.Simmons@ecmwf.int
GCOS Secretariat **c/o WMO, P.O. Box 2300, CH-1211 GENEVA 2** **Switzerland**	
Dr Carolin RICHTER Director GCOS Secretariat	Tel.: + 41 22 730 8275 Fax: + 41 22 730 8052 E-mail: CRichter@wmo.int
Mr Richard THIGPEN GCOS Implementation Officer GCOS Secretariat	Tel.. +41 22 730 8068 Fax: +41 22 730 8052 E-mail: Rthigpen@wmo.int
Dr William WESTERMEYER Consultant GCOS Secretariat	Tel: +41 22 730 8083 Fax: +41 22 730 8052 E-mail: WWestermeyer@wmo.int
Ms Anna Christina MIKALSEN Junior Professional Officer GCOS Secretariat	Tel.: +41 22 730 8272 Fax: +41 22 730 8052 E-mail: AMikalsen@wmo.int

Annex 3

GCM Project Candidates 2012

€50K Complete the Telecommunications up grade for Zambia
Replacement of the SSB radio system used to communicate between the observing stations and the headquarters office. Eleven radio sets are needed in order to re establish this communication. The initial contract was for the main system and interfaces for only two stations. The additional interfaces and installations are needed.

€35K CBS Lead Center Coordination Workshop 2013
The CBS Lead Centers for GCOS meet every two years and next time Chile has offered to host the meeting. The meetings are important to the success of centers in improving the receipt and quality of the GUAN and GSN data.

€50K Technical Support Person in Africa
It is important to have an actual person in Africa to be our contact person and to work with countries to resolve problems. It is also much less expensive than issuing a purchase order each time assistance is needed. We have tried this direct hire on an interim basis and it seems to work well. This would provide one person for one year.

€30K Additional Instruments for Cuba
The first phase of support to the Cuban GSN stations did not address all needed instruments. Additional replacements are needed.

€200-1000K ? Additional Radiosondes for GUAN Stations
Several GUAN stations routinely require support with radiosondes and balloons. Stations such as Gan, Mauritius, Zimbabwe, Raratonga, and others will need radiosondes. (About €50K/year per supported station)

€200K/ Each Additional Upper Air Stations (Add to GUAN)
Several counties have requested assistance with support to establish additional upper air stations that would likely be added to the GUAN.

In South America, Colombia, Ecuador, and Peru have requested assistance.

Sri Lanka has also requested. The current upper air station at Colombo has gone silent as radiosondes furnished during a recent project have been consumed. The PR prefers a location on the east side of the island.

Mozambique asks for assistance to renovate Nampula upper air.

€60K Data rescue Project for Yemen
An important amount of historical data for stations in Yemen has been found in the library at the UKMO. Staff from Yemen would assist in the project. This project would provide for the rescue of that data.

€40K Data rescue Project for Cuba
The Met Institute of Cuba has a good amount of historical data in paper form that should be rescued. The staff of INSMET could do the work but some equipment and support are needed

€50K (25K) Coordination meeting of GCOS Focal Points in South America
One of the CBS lead Centers would host on a trial basis, a coordination meeting of the GCOS Focal Points within the region. This has been suggested at the CBS lead Center

Meeting and would likely be held in South America**.** This could possibly be coupled with the scheduled 2013 Lead Center meeting and thus reduce cost.

€180K **Renovation of GSN stations in DRC**

Replacement of 4 GSN stations with AWS units with associated radio communication equipment. Further a replacement of the Automatic Message Switching System (AMSS) for GTS connection is needed. They currently use e-mail to send reports and their data is missing most of the times on GTS.

€200K **Central African Republic**

-Replacement of 3 AWS with associated radio communication equipment for data transmission for the 3 GSN stations. Also replace the Automatic Message Switching System (AMSS) for GTS connection. They currently use AFTN but most of the time their data is and CLIMAT reports are missing.

€50K **CLIMAT/CLIREP Workshop in Pacific**

Three of these workshops have been held so far. Based on the performance of stations, the countries in the Pacific will be addressed next. This workshop was scheduled last year but cancelled because of lack of funds.

€50K **Upgrading Kishinev equipment for monitoring ultraviolet radiation and total column ozone content**

This is for the up grade of the Institute's ground-based station with the state-of-the-art radiometric instrumentation. Radiometric instrumentation will be used for spectral and broadband UV-visible solar radiation measurements at the ground-based station in the course of the long-term observations.

€1.5M **Enhancing the GLOSS network**

Repair of existing stations and installation of addition tide gauges and co located continuous GPS equipment. GLOSS consists of 300 stations, only 60% are operational. Traveling technician support to the network for 5 years.

€1M **In-Situ Western Indian Ocean Met/Ocean Observing Network**

Establishment of a network of 5 climate/ocean mooring along the African east coast. The needed five moorings would cost around 600K and support around 200K/year for 2 years.

€250K **PIRATA Southeast Extension**

Technical support for 3 years including training of technician to support the deep ocean mooring at 6°S 8°E. This is a network of 17 deep ocean moorings with this critical 18th mooring currently not operational.

€250K **Luanda, Angola (GUAN addition)**

Renovation of the upper air station at Luanda. It needs a new hydrogen generator, upper air equipment, and consumables for at least one year. The actual observing building is no longer useable and the Angolan Met Service has repaired one building but needs to construct a new balloon inflation building. This is the highest AOPC priority for additional GUAN. Currently on hold as projects in Angola are very difficult to manage.

€50K **Solar power system for BSRN station at Ilorin, Nigeria.**

The baseline solar radiation station at Ilorin, Nigeria needs a solar power generating equipment to provide reliable power. The University of Ilorin would continue to operate the station and the Met Service of Nigeria would assist in the installation. Currently on hold pending confirmation of support from the Met Service.

Annex 4. Initial Implementation Activities as Specified in the Observations and Monitoring Annex of the GFCS Implementation Plan

	ACTIVITY	PRIORITY SECTOR(S)	IMPLEMENTATION PRIORITY(IES)	GEOGRAPHIC SCOPE	LEAD ORGANIZATIONS	OTHER ORGANIZATIONS	COST USDxM
1	**Rolling consultations with users, in particular to better understand data and product needs from the GFCS priority sectors and other sectors**.	All Sectors	1.1. Establish a formal mechanism for consultations with users. 1.2. Assess the role of observations in adaptation to climate variability and change.	Global, Regional, National	WMO	All stakeholders	0.1M 0.2M
2	**1) Translate data and product needs from GFCS users/ sectors into specific observational requirements and incorporate them into near- to long-term observing baselines** **2) Sustain, fill gaps, and generally expand the comprehensive atmospheric, oceanic, and terrestrial surface-based networks, including air quality and cryospheric networks, and increase the frequency of observations.**	All Sectors	2.1. Rehabilitation of silent stations and key stations in data poor areas, including GSN and GUAN stations 2.2 Consider inputs from RRR consultations and coordinate with stakeholders to design the *in situ* and space-based components of baseline networks. 2.3. Set-up Trust Fund to support operation of regional baseline networks in LDCs and SIDS 2.4. Improve ground-based and space-based networks for measurement of precipitation 2.5. Develop guidelines for creation of Discovery Metadata (ISO19115) for registering climate observations and products in WIS and develop the WMO Data Model to enable the representation and exchange of additional climate observations and products, including historical metadata to facilitate homogeneity adjustments. 2.6. Enhance regional scale chemical measurements relevant for air quality impacts and climate forcing 2.7. Establish best practices for air quality observations and monitoring in urban environments	Global, Regional, National	WMO, IOC, FAO, Space agencies	All stakeholders, Funding agencies	5M 1.5M 0.5M 30M 0.7M 0.35M 0.35M

3	**Large scale data recovery and digitization, with the integration of data from community observation networks.**	All sectors	3. Strengthening the existing global and regional data rescue projects; Development of an International Climate Assessment and Data set initiative (ICA&D) for delivering high- quality climate data sets.	National	WMO	RAs, RCCs ACMAD, CLIMDEV UNFCC UNEP, ACRE Nairobi Work Programme	1.0M/y
4	**Fully implement HYCOS in key shared international river basins to provide information for sustainable water resources development and management.**	Water	4. HYCOS initiatives in ten priority basins/regions of water scarcity.	Regional	WMO	NMHSs, NHSs, UNESCO	15M
5	**Monitor coastal regions to understand vulnerabilities and in support of adaptation**	All sectors	5. Prioritized national and regional plans.	Regional, National	IOC	WMO	8.0M/y
6	**Climate and Food Security**	Agriculture	6. Establish a coordination mechanism for collection, management, and exchange of climate and related food security data	Global	FAO, CFS	WMO	0.1M
7	**Develop and fully implement architecture for climate monitoring from space**.	All sectors	7. Establish coordination mechanism for Space-based Architecture for Climate Monitoring.	Global	CEOS, CGMS, WMO Space Programme	All stakeholders, GEO	1M