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**REPORT OF THE SIXTH MEETING OF THE
GCOS COOPERATION MECHANISM BOARD**

(GENEVA, 27 September 2010)

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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

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Sixth Meeting of the GCOS Cooperation Mechanism Board

WMO Headquarters, Geneva, Switzerland

27 September 2010

SUMMARY

1. Welcome and Introductions

The Sixth Meeting of the GCOS Cooperation Mechanism (GCM) Board was held on 27 September 2011 at WMO Headquarters in Geneva, Switzerland. The meeting took place the day before the start of the Eighteenth Session of the GCOS Steering Committee (SC). Scheduling the meeting back-to-back with the SC Session this year 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 then introduced Mr. Wim Monna of the Royal Netherlands Meteorological Institute (KNMI), who had agreed to chair the 2010 GCM Board meeting. In his opening remarks, Mr. Monna noted that there is no doubt that through the GCOS Cooperation Mechanism substantial improvements have been realized in the past year and before, and we are grateful for all contributions. More must be done, however. He hoped that in this meeting of the GCM Board we would identify additional ways and specific actions for support. After his brief opening remarks, and after the participants had introduced themselves, the Director of the GCOS Secretariat, Dr. Carolin Richter reviewed the functioning of the GCM.

2. A Review of the Function of the GCM

Dr. Richter noted that the development of “shopping lists” for atmospheric domain projects that potential donor countries could consider for support helps the GCM fulfill its objectives. However, she believed that the list could be extended to the oceanic and terrestrial domains. Significantly, the GCOS Secretariat only has a limited implementation capability, and in order to address items on a substantially longer shopping list, the Secretariat would need more people like Mr. Dick Thigpen, its current Implementation Programme Manager. She suggested that projects on future shopping lists could be derived from, or linked to, the 2010 update of the *Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC* and its requirements and perhaps also to the GCOS Regional Action Plans.

Dr. Richter noted that it is difficult to find organizations willing to fund observation improvements and, consequently, a greater public relations campaign may be appropriate. She identified the principal countries currently active in supporting observation needs as the United States, Switzerland, the Netherlands, Spain, Germany, the United Kingdom, and Canada and suggested that the Secretariat perhaps needs to develop one or more “recipes” that could lead to expanded donor support.

Mr. Howard Diamond from the National Oceanic and Atmospheric Administration (NOAA) offered some sobering thoughts on the likelihood of donor support given the current global economic situation. He asserted that it is becoming more and more difficult to depend on countries. In the case of the United States, he expects the economic situation to lead to cutbacks in his budget, and he expects similar cutbacks in other countries. He suggests that while future funding from traditional sources is likely to be difficult, there may be opportunities to mobilize resources from such non-traditional sources as the Gates Foundation, the Clinton Foundation, and other non-governmental funds. Dr. Richter agreed

with this suggestion noted that it may be necessary to use a different type of language to effectively communicate with these types of institutions. She noted that it would be useful to identify and attend key meetings in which such groups participate and where there may be opportunities to discuss and promote the GCOS mission. The Chair stressed the need for concrete actions, including the hiring of more staff. Mr. Steve Palmer of the UK Met Office suggested that it would be very useful to make clear to potential donors the consequences of *not* maintaining observing systems. David Rogers suggested that entities such as the World Bank will want to know what observations are necessary to help them secure their investments in infrastructure, etc.

The SC Chairman suggested that an endowment fund, as proposed by Mr. Diamond, would be useful, especially since we are interested in sustaining networks over the long term. Before taking some of these actions, however, he stated that we first need to decide on what types of observations we really want to support and then to develop a proper plan for how to do so.

3. Status of Actions and Recommendations from the Last Meeting

Dr. William Westermeyer of the GCOS Secretariat briefly reviewed the actions and recommendations resulting from the Fifth Meeting of the GCM Board (June 2009). Action 1 requested the participants to closely follow, and to try to influence, the formulation of observation issues in the Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) text. While information is unavailable on what specific actions participants may have taken, Dr. Westermeyer noted that the latest version of the AWG-LCA negotiating document does contain text related to needed improvements in systematic observation.

Action 2 simply asks the GCOS SC to decide on the date for (this) 2010 GCM Board meeting. While the meeting was initially expected to be held in association with SBSTA 32, observations were not on the agenda at that SBSTA meeting. Although the decision to hold this year's meeting in conjunction with the SC session was something of an experiment, it probably attracted more participants than it would have had it been held in association with SBSTA 32. Action 3 was to invite a UNFCCC representative to the 2010 Board meeting. Ms. Rocio Lichte represented the UNFCCC Secretariat.

Action 4 asks the GCOS Secretariat to explore inviting other organizations, e.g. donor organizations, to next GCM Board meeting. The Secretariat did explore the possibility of inviting other types of organizations and, in fact, asked several if they could send a representative. The Secretariat did not succeed in attracting new organizations to the meeting. However, one option that may be considered in the future is to organize a "get to know GCOS" meeting for local institutions and mission staff.

Action 5 asks participants to contact their respective national focal points of the four GCOS Sponsoring Organizations (WMO, IOC of UNESCO, UNEP, ICSU) to brief them on the need to increase basic support for the GCOS Secretariat. No information is available on this action, but it is unlikely this action has been implemented by more than a handful of countries.

Action 6 asks the GCOS Secretariat to produce a "shopping list" of possible projects for the atmospheric, oceanic, and terrestrial domains. The Secretariat accomplished this for the atmospheric domain (see Annex 3). The Panel Chairs for the terrestrial and oceanic domains considered preparing their own shopping lists for the first time this year. See sections 13 and 14 of this report. And Action 7 asks GCOS National Coordinators to further enhance their overview and coordination of needs in all three domains of GCOS. This action was directed primarily at those present at the meeting. However, it is still the case that only

a minority of countries has designated GCOS national coordinators, and only a subset of these was at the meeting.

The Fifth GCM Board meeting also made two recommendations. First, the SC was asked to consider an appropriate process for developing a list of priority projects for all three domains for each region. Representatives of the domains did introduce priority projects at the Sixth GCM Board meeting. However, the SC itself must still consider an appropriate process for developing lists. Second, the Board recommended the appointment of regional GCOS coordinators to facilitate consideration of regional level needs. It also proposed that the GCOS Secretariat try to participate in WMO Regional Association (RA) sessions on a more regular basis. (It should be noted that the Secretariat itself has no control over the appointment of regional coordinators. It has been difficult in the past for the Secretariat to attend RA meetings, but the Secretariat believes a strong case can be made for doing so.)

4. Activity Reports by Participating Donor Representatives

Representatives of five 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 included Finland, Australia, Switzerland, the United Kingdom, and the Netherlands.

4.1 Finland

Mr. Jaakko Nuottokari, Head of International Projects for the Finnish Meteorological Institute (FMI), provided a summary of FMI's cooperation activities. FMI is interested in providing climate services and, to this end, recognizes the importance of supporting observation systems. It wishes to build the capacity of National Meteorological and Hydrological Services (NMHSs) in developing countries through Overseas Development Assistance ODA projects. Direct funding from the Finnish Ministry for Foreign Affairs is available for small-scale, 1-3 year projects. Existing FMI experts are used to implement twinning-type technical projects addressing the priority areas that have been specified in Finnish development policy.

Current activities include feasibility studies for various Pacific Island countries, southern Africa, the Caribbean, and Nepal. An aviation quality management system is being implemented in the Pacific; the calibration laboratory is being improved in Barbados; automatic weather products are being created in Trinidad & Tobago and Jamaica; weather radar products are being created and an Automatic Weather Station (AWS) network is being maintained in Vietnam; an AWS network is being installed in Nepal; the institutional capacity of SENAMHI Peru is being developed in various thematic areas, such as AWS, NWP, and calibration; urban air quality research is being funded in India; and, through EU twinning, Macedonia is receiving help with air quality legislation and monitoring.

Future work in which FMI is involved includes lightning sensors and an AWS network for the Southern Africa Development Community (SADC) region; socioeconomic impact studies, a regional early warning system, and an upgrade of observations networks for some of the Pacific Small Island Developing States (SIDS); and a regional multi-hazard early warning system (MHEWS) for Caribbean SIDS. FMI cooperates with other governments on larger projects.

4.2 Australia

Dr. Sue Barrell, representing her country, reported on Australia's GCM-related activities. Dr. Barrell stated that most of Australia's cooperation funding goes to Pacific Island countries. She noted that some of the available funding is allocated for improving observations but that

more is allocated for supporting the provision of services. Three overarching activities were mentioned: the Pacific Islands Climate Prediction Project (PI-CPP), the International Climate Change Adaptation Initiative (ICCAI), and the Pacific Climate Change Science Program (PCCSP).

Under the PI-CPP, observation equipment was provided to Papua New Guinea (PNG) and Solomon Islands in early 2010. Among other things, this project has also helped to improve the effectiveness of communication networks among Pacific NHMSs, the Australian Bureau of Meteorology, and various clients. Under the ICCAI, Australia has invested some \$A150 million to meet high priority climate adaptation needs in vulnerable countries in the Asia-Pacific region. Some of the funding available under the PCCSP is targeted for research on data rehabilitation, management, documentation, dissemination; understanding climate drivers, impacts, and responses; climate projections for the region; and ocean processes, sea-level, and acidification.

Dr. Barrell also noted that Australia is a co-lead on the GEO Forest Carbon Task, which involves developing national systems for forest carbon tracking; demonstrating that coordinated Earth observations can support monitoring, reporting, and verification of forest carbon; and satellite observations and integration with *in situ* data.

4.3 Switzerland

Dr. Gabriela Seiz, Head of the Swiss GCOS Office at the Federal Office of Meteorology and Climatology MeteoSwiss, provided a brief overview of Swiss GCOS activities outside Switzerland. She pointed out that Swiss activities related to ozone, trace gases, and glaciers have been summarized in the report "National Climate Observing System (GCOS Switzerland)" (Seiz and Foppa, 2007). She also noted that Switzerland (i.e., the Swiss Agency for Development and Cooperation (SDC)) supported a project in 2008-2009 for the reactivation of two silent GCOS Upper Air Network (GUAN) stations in Africa, one in Dar es Salaam, Tanzania and one in Harare, Zimbabwe. A follow up project, funded through the SDC, has been approved for the 2010-2011 period.

In support of these projects, the Swiss GCOS Office undertakes regular data monitoring of these reactivated GUAN stations in Africa. The data monitoring is based on the monthly data monitoring reports sent out by the GCOS Secretariat to GCOS national focal points.

4.4 United Kingdom

Mr. Steve Palmer of the UK Met Office discussed UK interests in the GCM. He noted that the Met Office is interested in the Global Framework for Climate Services (GFCS). He also noted that the UK's Department for International Development (DFID) is supporting the Climate for Development in Africa Programme (ClimDev Africa).

Working through the WMO Voluntary Cooperation Programme (VCP), the UK Met Office coordinates with other donor NMHSs to assist the NMHSs of developing countries. [Note that the GCOS Secretariat also coordinates with the VCP]. Funding for the UK's VCP activities comes from the UK Public Weather Services programme. The Met Office also manages project funding from other sources. In particular, the Met Office provides long-term funding support for key observations from small islands. It also provides installation, training, and advice for stations and observers. Key GUAN stations supported include Tarawa, Funafuti, Raratonga, Gough, St. Helena, and the Seychelles. Of note is that the U.S. Air Force is planning to leave Ascension Island. This will create a problem that needs to be addressed.

Finally, Mr. Palmer noted that the Met Office has developed a “Public Weather Service Adviser” role, which allows effective use of warnings of high-impact weather. It is now developing training materials to generalize that role for use in developing countries.

4.5 The Netherlands

Mr. Wim Monna, speaking for the Netherlands, stated that his country has been donating approximately \$200,000 per year since 2007 for observation improvements in developing countries. However, he remarked that he expects 2010 will be the last year that such contributions will be possible, at least for the next few years. Some funds are being used to digitize old climate observations in Indonesia and to support and build the capacity of the Suriname Meteorological Service.

5. The Clinton Climate Initiative and Thoughts on Generating Funding for Observing System Improvements

It was not possible for Dr. James Baker to attend the GMC meeting. However, Dr. Baker did prepare a short discussion paper titled “On Mobilizing Funding for Observing System Improvement in Developing Countries.” The paper makes the case that lessons can be learned through what is being done for forest monitoring that may be applicable for GCOS. In particular, forest monitoring provides an example of the type of “user pull” that is bringing in new funding for developing countries. In essence, Dr. Baker recommends that GCOS focus on opportunities and identify those areas where user pull exists. In the forest sector he observes that where a regulatory regime requires compliance and where compliance with the regime requires countries and industries to buy or sell carbon credits, an income source is possible. Such an income source attracts attention and generates user pull. Because there can be a direct economic benefit to improved land surface monitoring, many forested developing countries are looking for ways to include forest carbon sequestration and monitoring in their overall development plans.

Dr. Baker suggests that the GCOS community should take full advantage of this forest opportunity to help to facilitate the satellite and *in situ* observations needed to monitor forest carbon. He also notes that the agriculture sector provides a similar opportunity for monitoring carbon sources and sinks and for GCOS to obtain support from an economically-relevant sector.

In discussion following the brief introduction to Dr. Baker’s paper Dr. Barrell noted that the forest example is a good one and that the more we can get governments to understand that monitoring systems need to be in place to undertake activities important to them, the better it is. She understood the principal message from Dr. Baker’s paper to be less on forest monitoring *per se* than on the need to take advantage of the opportunities that arise. Mr. Steve Palmer noted that the key is to find those things in which the people with money are interested. Disaster mitigation was mentioned as one possibility, the Millennium Development Goals another.

Ms. Rocio Lichte of the UNFCCC Secretariat mentioned that National Adaptation Programmes of Action (NAPAs) may be an example of a user pull opportunity. She proposed that a systematic review of these could be done to determine potential collaboration possibilities. Where observations are addressed, collaboration may be possible. In such cases, it may also be possible to make a link with the relevant Regional Action Plan.

Dr. David Rogers stressed that it is important to know what others are doing. Thus, where GCOS is concerned with observations, others are concerned with climate services. If we look at things from a societal needs point of view rather than from a technical point of view, it

may be easier to engage users of climate information and to partner with them to advance GCOS goals. Dr. Rogers noted, for example, that there is actually a substantial amount of money available from the World Bank for certain regions, e.g., something like \$40 million to spend on climate in Central Asia, but doubts that GCOS was even consulted on climate observing needs.

Dr. Barrell suggested that the GCOS Secretariat prepare a new brochure that would focus on the importance of climate observations for “big picture” issues like adaptation and food security. Such a brochure could be sent to NMHSs so that they could then go to their governments and make the case for improving observations from a societal needs perspective. Dr. Simmons, the GCOS SC Chair, concluded that while our focus is on monitoring, we need to make sure others understand why this is so important, e.g., so that predictions can be made.

Some suggested actions include:

Action 1. Undertake a systematic review of NAPAs looking for opportunities to collaborate with countries on improving climate observations.

Action 2. Develop a GCOS brochure focusing on why observations are important for addressing important societal needs; distribute this brochure to NMHSs so they can use it when making the case to their governments for improved observation networks.

Action 3. Collaborate with David Rogers to strengthen the link between the GCOS Secretariat and the World Bank Global Facility for Disaster Reduction and Recovery (GFDRR).

Action 4. Strengthen links between GCOS and selected regional climate organizations, e.g., ACMAD, and regional climate centers (RCCs) with a view to facilitating follow-up activities related to Regional Action Plans.

6. GCM as a Possible Platform to Coordinate Funding from Fast Start Finance

Mr. Stefan Rösner briefed the GCM Board on the potential to support climate observing needs by accessing funds from the Fast Start Financing (FSF) mechanism agreed in the Copenhagen Accord. This agreement specified that developed countries would make \$30 billion available to developing countries for the 2010-2012 period. (In addition, the Copenhagen Accord commits developed countries to mobilize \$100 billion per year by 2020 to address the needs of developing countries (see <http://www.faststartfinance.org/>)). Mr. Rösner noted, however, that very little of the \$30 billion that is to be made available represents new money. He also noted that a request for FSF must be initiated by a developing country. The GCOS Secretariat could not directly apply for funds.

Mr. Rösner then proposed several options for a future role for the GCM, both in the FSF mechanism and more broadly. One option would be for the GCM to serve as an implementing body for FSF funds. However, for a variety of reasons, this option was seen as impractical. Option 2, which Mr. Rösner favoured, is for the GCM Board to serve as an Advisory Body to the FSF mechanism. In this case, the GCM Board would advise national governments, multilateral and international funding agencies, and GCOS Sponsors on climate observing funding priorities. Mr. Rösner notes that the GCOS SC, Panels, and Secretariat have the requisite scientific and administrative expertise and are able to transparently identify priorities. A third option was proposed by Mr. Howard Diamond. He suggested creating an Advisory Body that would also have an active role in managing a fund. This could be a recurring fund administered by the GCM Board but directed at needs

that could be addressed at a regional or local level. Mr. Monna stated that the idea is to encourage local agencies to express their needs and to identify priorities.

In recommending an advisory function for the GCM, Mr. Rösner proposed that GCOS encourage national agencies responsible for observing systems to document their gaps and requirements to fill these gaps, make the gaps known to governments, and develop proposals on how to close those gaps. Dr. Barrell suggested that a priority for GCOS should be on advising Sponsors and others on how they should spend available funds, i.e., by specifying what is needed. Mr. Thigpen wished to see the creation of an endowed fund so that long-term and recurring needs could be addressed. If such a fund could be created, he suggested, the GCM Board would have a role as a priority-setting group.

The Director of the GCOS Secretariat, Dr. Richter, noted that we need to think about how GCOS and the GCM Board can be presented on a regional scale. It was suggested that the GCOS Secretariat doesn't have to attend all Regional Associations meetings directly. It could still have someone represent it, perhaps a GCOS National Coordinator from a prominent country in the region or the regional coordinator if one exists. The following action was proposed:

Action 5. For each WMO Regional Association meeting, the CGOS Secretariat should consider identifying and designating from the pool of National Coordinators a representative to attend the meeting on behalf of GCOS in the case that representation from the Secretariat or Steering Committee is not possible. This should be discussed at the proposed National Coordinators meeting in 2011 if funding for this meeting is approved.

7. The Potential Role of GEO in the GCM

Dr. Rob Koopman began his presentation with an overview of the Group on Earth Observations (GEO), proudly noting that GEO now has 82 members and 58 participating organizations (of which GCOS and its four Sponsors—WMO, UNEP, IOC, and ICSU—are five). He emphasized that it is important for the credibility of both GCOS and GEO that their respective messages be consistent and that such consistent messages would literally “pay off.”

Dr. Koopman noted that the GEO 10-Year Plan represents the consensus of its members and participating organisations on the way forward in Global Earth Observations. The Global Earth Observing System of Systems (GEOSS) is effectively built from in-kind contributions from its members and participating organisations, which are aligned with the common objectives of the 10-Year Plan. This alignment is facilitated by a matrix of concerted actions and associated targets, i.e., the GEO Work Plan, to focus international collaboration and harmonisation. Significantly, he noted that the objectives of the 10-Year Plan and the tasks in the Work Plan are used as requirements for *funded* government tenders (e.g., as in the European Commission's 7th Framework Programme). GEO has high political leverage and is a tool worth using when searching for resources. Working within the GEO Work Plan also provides benefits in terms of cross-cutting support functions (such as data sharing, data management, and quality assurance) and the creation of broad platforms, as suggested by the plans to integrate carbon observations, the Carbon Community of Practice, and the Forest Carbon Tracking Initiative. The next GEO Work Plan will be for the 2012-2015 period, and Dr. Koopman stressed again that communicating a consistent message is the way forward.

As for opportunities for GEO and GCM to work together, Dr. Koopman suggested that it would be useful to “open up” the GCOS Capacity Building Task (CL-09-01b), e.g., by inviting a Sponsor to adopt this task and by generalizing the scope of tasks so as to be inviting to potential new donors. It would also help to demonstrate how this task can contribute to the

strategic targets. He also recommended that GCOS interact more with the GEO Capacity Building Committee. There are various opportunities in which GCOS and GEO can interact in Africa, and ClimDev Africa was given as one example.

Dr. Barrell noted that there is some misunderstanding about GEOSS, that is, some see it as a system of tasks, not of systems. The goal of GEO, she stated, is to help people use observations—it is a means to an end that is bigger than just observations. Accomplishing tasks is a way to contribute, and observations underlie the tasks. Dr. Barrell also noted that when GCOS issues come up on the floor of the GEO Plenary, few people ever speak up for GCOS. This needs to change.

Cooperation will be important both in optimizing the next Work Plan and in capacity building tasks. For example, one participant suggested that IP-10 Actions might be reformulated in a way that they could be taken up in the GEO Work Plan.

8. The Climate for Development in Africa Programme (ClimDev Africa) and Potential Linkages to GCOS and the GCM

This presentation was given by Dr. Mohammed Kadi, the Secretary-General of the African Centre of Meteorological Applications for Development (ACMAD) and a member of the GCOS SC. Dr. Kadi first reviewed the ClimDev Africa Programme, noting that it is a joint initiative of the African Development Bank (AfDB), the African Union Commission (AUC), and the United Nations Economic Commission for Africa (UNECA), but also that its roots can be traced back to the GCOS Regional Workshop Programme. [Two weeks after the GCM meeting, ClimDev Africa was formally launched in Addis Ababa, Ethiopia by these three African institutions]. ClimDev Africa, he stated, addresses three main challenges related to Africa's efforts to reduce its vulnerability to climate change. These are: 1) a limited amount of reliable scientifically-based climate information; 2) poor access to suitable climate information; and 3) a weak capacity to integrate such information into development planning processes.

The first challenge is clearly expressed in the facts that Africa needs, at minimum, eight times the current number of meteorological stations to provide adequate climate services to effectively support development. Also, currently operating stations face such challenges as personnel constraints, obsolete equipment, and often an inability to generate quality data and reports as required.

The AfDB is playing a leading role in addressing climate issues in Africa, and it has contributed some \$30 million so far to build the capacities of four of Africa's climate centres to tackle ClimDev Africa-related activities. ACMAD will be the executing agency for these funds and will play a coordinating role. The Bank also intends to raise additional funds (hopefully more than \$100 million) for ClimDev Africa through a donors pledging conference.

Kadi notes that the AfDB is implementing several flagship projects that have incorporated climate change and through which collaborations have been established with relevant regional and national climate centres for the provision of relevant climate services. These include the Lake Chad project and the Kandadji Ecosystems Regeneration and Niger Valley Development Project.

The potential linkages of the ClimDev Africa project, and of ACMAD, to GCOS could be many. Dr. Kadi noted that a meeting of financial ministers takes place every year for Africa and wonders if GCOS could take part in that. Also, strong links could be developed with African regional organizations, for example through Memoranda of Understanding (MOUs). Noting the importance of the WMO Regional Association I sessions, Dr. Kadi advocated that GCOS participate in these meetings. [The GCOS Secretariat did send a representative to

the RA I meeting that took place roughly one month after the GCM meeting]. GCOS might also wish to follow up on initial contacts it has had with the AfDB, and ACMAD has also invited GCOS to participate in its board meetings.

Dr. Kadi observed that ClimDev Africa is more focused on improving regional climate centers at the moment than on improving networks. However, this will change. Although not specifically part of ClimDev Africa, he noted that the Economic Commission of the West African States (ECOWAS) has endorsed a project to relaunch some 20 silent stations in West Africa.

9. A Potential GCM Link with the “Weather Information for All” Project and Other Thoughts

Dr. David Rogers, Executive Director of the Health and Climate Foundation, began his presentation by emphasizing that funding for observations is much more likely if observations can be linked to user needs, societal priorities, and disaster risk reduction. It should be clear that observing systems are usually considered of low priority relative to other needs. Given this fact, Dr. Rogers is in the process of trying to develop a better business model to sustain climate services, including observing networks. One approach he advocates is looking at public-private partnerships where these may be appropriate.

As a consultant to the World Bank, Dr. Rogers noted that the Bank’s investment priorities focus on infrastructure, including the modernization of NMHSs. He noted that the World Bank has committed to improving NMHSs in order to support development needs. The Bank is interested in a role in developing a global “weather enterprise” to target its assistance to weather, climate, and hydrological service delivery in client countries. The Bank, however, is not a “cash machine.” Unlike the AfDB, it loans money. Private foundations, he suggests, can assist with developing strategies for long-term support and provide seed funds. There is a need for coherence, as it appears that donors are falling over each other in some countries while ignoring others. Dr. Rogers suggested that there may be a role for GCOS in facilitating donor coherence.

The second element of Dr. Rogers’s presentation addressed the Weather Information for All (WIFA) project that he leads. The goal of WIFA is to fill identified gaps in meteorological observing networks in Africa. The project is currently active in east Africa, with support pending from the AfDB, Sweden, Norway, and the Gates and Rockefeller foundations. The needs of farmers and fishermen for meteorological information, in particular, are being addressed. Dr. Rogers notes that there is an opportunity for WIFA to collaborate with GCOS on the climate component of the project, as both has similar goals: improving the basic terrestrial climate observing networks throughout Africa, demonstrating the application of new services to specific sectors, and implementing sustainable practices for the maintenance of the observing networks.

In answer to a question about what he would like to see from GCOS, Dr. Rogers suggested that WIFA needs to be aligned with GCOS. He said the fundraising efforts of WIFA should be consistent with what GCOS needs. He needs to be aware of GCOS needs because every potential sponsor of WIFA is also a potential sponsor of GCOS. For example, he would like to get more “traction” with the Gates Foundation.

Action 6. GCOS and WIFA should explore the potential for cooperation to advance the similar goals of each entity.

10. Potential Renovation Projects in the Atmospheric Domain

Mr. Dick Thigpen, the GCOS Implementation Programme Manager, presented his shopping list to the GCM Board of atmospheric domain projects. This list is appended to this report as Annex 3. Mr. Thigpen stated that the project list has been prioritized by the Atmospheric Observations Panel for Climate (AOPC). Donors, he noted, are free to decide which project(s) they would like to fund. Once a project is selected, Mr. Thigpen works one-on-one with a contact person to iron out the details. The WMO procurement process can be one constraint, in particular, because it requires competition. Also, the in-house 13-member contract review board requires unanimity before a contract can be granted. Mr. Thigpen also noted that WMO has no means for obtaining sources for the things purchased. Thus, he must identify sources who would likely bid on the things to be purchased.

Mr. Thigpen informed the Board that the bids for the Technical Support Project (TSP) for Africa were not deemed high enough, so at the moment there is no TSP in Africa. There is, however, one person on a special service agreement who provides technical support, and this arrangement seems to be working reasonably well.

The Chair, Mr. Monna, concurred with Mr. Thigpen that although priorities are set by AOPC, the donors themselves often have their own preferences. The important thing is to coordinate. A suggested action is the following:

Action 7: If possible, the shopping list of projects should be circulated to Board members several weeks prior to the meeting. In the future, this list should also include projects from the terrestrial and ocean domains. It may be useful to circulate this list several times a year.

11. Some Priorities in the Ocean Domain

Dr. Eric Lindstrom, the Chair of the Ocean Observations Panel for Climate (OOPC), began his presentation by citing general priorities for the ocean domain as discussed at the OceanObs'09 Conference. These are to provide routine and sustained global information on the marine environment. Such information must be sufficient to meet society's needs for useful hindcasts, nowcasts, and forecasts of marine variability (including physical, biogeochemical, ecosystem, and living marine resources), weather, seasonal-to-decadal climate variability, sustainable management of living marine resources, and assessment of longer term trends. It should be suitable for scientific research with further processing and calibration. In scope, this should be a multi-national and multi-organizational effort, should be sustained, and the data should be accessible, free, and easily used.

Key issues for the oceans include data quality control, continuity of missions, consistency of measurements, *in situ* deployment and maintenance, and international data sharing. Dr. Lindstrom noted that 62 percent of *in situ* networks are now in place but that the pace of implementation has slowed significantly. The system, originally expected to be in place by 2012, is not now expected to be fully implemented until at least 2015. He stated that OOPC will periodically review the status of the ocean observing system, including with respect to its compliance with climate observing requirements, integration of space and *in situ* components, and the possible addition of new elements. Some specific priorities include deep ocean observations, ocean reference stations, biogeochemical observations for carbon uptake and ecosystems, and gap filling related to observing systems in the Exclusive Economic Zones (EEZs) of developing countries.

Dr. Lindstrom offered two specific ideas for inclusion on an ocean domain shopping list for the GCM Board. The first is to fill a major gap in the Indian Ocean GOOS (IndOOS) by installing five moored buoys in the Western Indian Ocean. These are needed for a variety of reasons, including for real-time ocean observation to calibrate/validate both models and satellites and

for understanding the evolution of surface pressure over the East African coast, which would help improve forecasting in the region. The second is to provide for the regular maintenance of fifteen tide gauges in Africa. Funds are needed to hire two technicians who, on a regular basis, would provide assistance to sustain the African part of the IOC/GLOSS tide gauge network. These technicians would also support the ongoing purchases of spare parts, work with communities to broaden the user base and applications, and facilitate network and project coordination. Dr. Lindstrom noted that with time, he could identify five or six more projects in need of support.

12. Some Priorities in the Terrestrial Domain

Dr. Han Dolman, the Chair of the Terrestrial Observation Panel for Climate (TOPC), assessed progress in the terrestrial domain. He noted that there has been significant progress in defining internationally accepted standards for the terrestrial ECVs, and, in particular, a move toward ISO standardization. He noted that progress in establishing institutional support for *in situ* networks has been slow and that the objective of creating a comprehensive and well coordinated reference network for *in situ* observations of the fullest possible range of terrestrial ECVs is a continuing, yet still a largely unmet challenge. Ownership for an ECV is essential. Observations made for purposes other than climate are often not available. The establishment of several Global Terrestrial Networks (GTNs) in a number of areas (e.g., hydrology, glaciers, and permafrost), where data collection takes place largely through *in situ* measurements, has significantly improved the coordination and global coverage of these observations.

Good progress has been made in guaranteeing short-term continuity in the availability of high-resolution optical observations from satellites. The increasing commitment of space agencies to produce fundamental climate data records from existing systems has led to improved availability of global datasets, such as burned area and land cover. And, the analysis of historical records, both *in situ* and satellite-based, has been progressing slowly and needs the urgent consideration by space agencies and potential users.

Dr. Dolman specifically mentioned Action T-12 of IP-10, the development of a Global Terrestrial Network for Soil Moisture. He noted that the technique for measuring soil moisture is mature. He also stated that while there exist a number of satellite ECV products like albedo, Fapar etc., their validation is generally poor, and that we need to find a mechanism to establish the proposed network of 35 global reference sites (see IP-10 Action T3).

Dr. Dolman introduced several items in need of donor support. One would be to set up adequate coordination mechanisms, e.g. a fluxnet centre. A second would be to enhance networks for soil moisture, Leaf Area Index (LAI), and Fapar. A third is to maintain river discharge network stations and improve the availability of discharge data from the GRDC. And a fourth is to contribute to the maintenance of *in situ* networks for soil carbon, biomass, etc.

13. Summary of Actions and Recommendations

The Chair briefly summarized some of the key points he saw emerging from the meeting. Written up in somewhat more detail following the meeting, these points are included as Annex 4 to this report. This Annex was also used in reporting to the GCOS SC later in the week.

Mr. Monna asked if any of the meeting participants had thoughts about who should chair next year's meeting. He wondered whether the chairmanship of the meeting should be undertaken on a less *ad hoc* basis, but also indicated that he would be open to chairing it

again next year. In future activities reports, Mr. Thigpen proposed that unilateral actions by donors also be included, as this would serve to give a broader picture of what is being done.

Mr. Monna thanked the Board for their participation and formally closed the meeting.

SUMMARY OF ACTIONS

Action 1. Undertake a systematic review of NAPAs looking for opportunities to collaborate with countries on improve climate observations.

Action 2. Develop a GCOS brochure focusing on why observations are important for addressing important societal needs; distribute this brochure to NMHSs so they can use it when making the case to their governments for improved observation networks.

Action 3. Collaborate with David Rogers to strengthen the link between the GCOS Secretariat and the World Bank Global Facility for Disaster Reduction and Recovery (GFDRR).

Action 4. Strengthen links between GCOS and selected regional climate organizations, e.g., ACMAD, and regional climate centers (RCCs) with a view to facilitating follow-up activities related to Regional Action Plans.

Action 5. For each WMO Regional Association meeting, the CGOS Secretariat should consider identifying and designating from the pool of National Coordinators a representative to attend the meeting on behalf of GCOS in the case that representation from the Secretariat or Steering Committee is not possible. This should be discussed at the proposed National Coordinators meeting in 2011 if funding for this meeting is approved.

Action 6. GCOS and WIFA should explore the potential for cooperation to advance the similar goals of each entity.

Action 7: If possible, the shopping list of projects should be circulated to Board members several weeks prior to the meeting. In the future, this list should also include projects from the terrestrial and ocean domains. It may be useful to circulate this list several times a year.

Sixth Meeting of the GCOS Cooperation Mechanism Board

WMO Headquarters, Geneva, Switzerland
27 September 2010

Chairman: Wim Monna, The Netherlands

Agenda

1. Welcome and Introductions—Adrian Simmons and Wim Monna
 2. A review of the functioning of the GCOS Cooperation Mechanism—Carolin Richter
 3. Status of actions and recommendations from last meeting—William Westermeyer
 4. Short activity reports by participating donor representatives
(10 minute limit, maximum of 5 slides per presentation)
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Break

5. The Clinton Climate Initiative and thoughts on generating funding for observing system improvements—D. James Baker
6. GCM as a possible platform to coordinate funding from Fast Start Finance—Stefan Rösner

Lunch

7. The Potential Role of GEO in the GCM—GEO Secretariat
 8. The Climate for Development in Africa Programme and potential linkages to GCOS and the GCM—AfDB and/or Mohammed Kadi
 9. A potential GCM link with the Weather Information for All project and other thoughts—David Rogers
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Break

10. Potential renovation projects in the atmospheric domain—Dick Thigpen
11. Some priorities in the ocean domain—Eric Lindstrom
12. Some priorities in the terrestrial domain—Han Dolman
13. Summary of actions and recommendations—Wim Monna

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Sixth Meeting of the GCOS Cooperation Mechanism (GCM-VI) Donor Board

PARTICIPANTS

| | |
|--|---|
| Mr Wim A. MONNA (CHAIR) Climate Research and Seismology Department Royal Netherlands Meteorological Institute (KNMI) P.O. Box 201 3730 AE DE BILT The Netherlands | Tel.: +31 302206457 Fax: +31 302210407 E-mail: Wim.Monna@knmi.nl |
| Dr Sue BARRELL Vice-president of CBS Bureau of Meteorology G.P.O. Box 1289 MELBOURNE, VIC 3001 Australia | Tel.: +1 613 9669 4222 Fax: + 613 9669 4168 E-mail: s.barrell@bom.gov.au |
| Mr Howard J. DIAMOND US GCOS Program Manager Director, World Data Center for Meteorology, Asheville NOAA/National Climatic Data Center 1100 Wayne Avenue, suite 1202 SLVER 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 |
| Prof. Han DOLMAN Faculteit der Aard-en Levenswetenschappen Vrije Universiteit Amsterdam De Boelelaan 1085 081 HV AMSTERDAM Netherlands | Tel: +31 20 59 87 358 Fax: +31 20 59 89 940 E-mail: han.dolman@falw.vu.nl |
| Dr Mohammed KADI Secretary General, ACMAD 85, Avenue des Ministères BP 13 184 NIAMEY Niger | Tel.: +227 20 73 49 92 Fax: +227 20 72 36 27 E-mail: Mohamed_kadi@acmad.ne Kadi_metdz@yahoo.com |
| Dr Robert KOOPMAN Scientific and Technical Officer GEO Secretariat c/o World Meteorological Organization P.O. Box 2300, 1211 GENEVA 2 Switzerland | Tel: +41 22 730 8799 Fax: +41 22 730 8520 E-mail: rkoopman@geosec.org |
| Ms Rocio LICHTÉ Programme officer Adaptation, Technology and Science Programme Climate Change Secretariat, UNFCCC Haus Carstanjen, Martin-Luther-King-Strasse 8 P.O. Box 260 124 53153 BONN Germany | Tel.: +49 228 815 1619 Fax: +49 228 815 1499 Email: RLichte@unfccc.int |

| | |
|--|--|
| <p>Dr Eric J. LINDSTROM Physical Oceanography Program Scientist Earth Science Division, Room 3D74 Science Mission Directorate, NASA Headquarters Mail Suite 3B74, 300 E Street W WASHINGTON DC 20546 USA</p> | <p>Tel.: +1 202 358 45 40 Fax. +1 202 358 27 70 E-mail: eric.j.lindstrom@nasa.gov</p> |
| <p>Mr. Jaakko NUOTTOKARI Head of International Projects Finnish Meteorological Institute P.O. Box 503 00101 Helsinki Finland</p> | <p>Tel: +358505895820 E-mail: jaakko.nuottokari@fmi.fi</p> |
| <p>Mr Kazutoshi ONOGI Numerical Prediction Division Japan Meteorological Agency 1-3-4 Ote-machi, Chiyoda-ku TOKYO 100-8122 Japan</p> | <p>Tel.: +81 3 3212 8341 Fax: +81 3 3211 8407 E-mail: konogi@met.kishou.go.jp</p> |
| <p>Mr. Steve PALMER Technical Co-operation Programme Manager Met Office FitzRoy Road Exeter EX1 3PB United Kingdom</p> | <p>Tel: +44 (0)1392 886915 Mobile: +44 (0)7771 808531 Fax: +44 (0)1392 885681 E-mail: steve.palmer@metoffice.gov.uk</p> |
| <p>Mr Stefan RÖSNER Deutscher Wetterdienst Keiserleistrasse 29/35 63067 OFFENBACH AM MAIN Germany</p> | <p>Tel.: +49 69 8062 4306 Fax: +4969 80624130 E-mail: Stefan.roesner@dwd.de</p> |
| <p>Dr David ROGERS Executive Director Health and Climate Foundation Champ Courtet Marchissy 1261 Switzerland</p> | <p>Tel.: +41 22 368 2103 Fax: +41 22 368 2104 Email: drogers@hc-foundation.org</p> |
| <p>Mr Klaus-Jürgen SCHREIBER Deutscher Wetterdienst Head, Climate Monitoring Department GCOS German Coordinator Frankfurter Strasse 135 Kaiserleistrasse 29/35 63097 OFFENBACH Germany</p> | <p>Tel: +49 69 8062 4306 Fax: +49 69 8008 63003 +49 69 80624130 E-mail: klaus-juergen.schreiber@dwd.de</p> |
| <p>Dr Gabriela SEIZ Head of Staff Office, Climate Division Federal Office of Meteorology and Climatology MeteoSwiss Kraehbuehlstrasse 58, PO Box 514 CH-8044 ZURICH Switzerland</p> | <p>Tel: +41 44 256 9539 Fax: +41 44 256 9278 E-mail: Gabriela.Seiz@meteoswiss.ch</p> |

| | |
|--|---|
| <p>Dr Adrian SIMMONS Chair, GCOS SC ECMWF Shinfield Park READING RG2 9AX United Kingdom</p> | <p>Tel: +44 118 949 9700 Fax: +44 118 986 9450 E-mail: Adrian.Simmons@ecmwf.int</p> |
| <p>GCOS Secretariat World Meteorological Organization P.O. Box 2300, 1211 GENEVA 2 Switzerland</p> | |
| <p>Dr Carolin RICHTER Director GCOS Secretariat</p> | <p>Tel.: + 41 22 730 8275 Fax: + 41 22 730 8052 E-mail: CRichter@wmo.int</p> |
| <p>Dr William WESTERMEYER Senior Scientific Officer GCOS Secretariat</p> | <p>Tel.: + 41 22 730 8083 Fax: + 41 22 730 8052 E-mail: WWestermeyer@wmo.int</p> |
| <p>Mr Richard THIGPEN GCOS Implementation Officer GCOS Secretariat</p> | <p>Tel.. +41 22 730 8068 Fax: +41 22 730 8052 E-mail: Rthigpen@wmo.int</p> |

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**GCM Project Candidates for 2010
(Atmospheric Domain)**

€250K Luanda, Angola (GUAN addition)

Renovation of the upper air station at Luanda. The station 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 government has constructed a new building that is reported to be ready. This is the highest AOPC priority for additional GUAN.

€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.

€100K Renovation of Democratic Republic of Congo (DRC) GSN

This is the first phase of the project to renovate the three GSN stations in DRC. A technical support mission will be needed and likely some telecommunications equipment. There are possible 20 AWS in DRC, many of which are not working and further the country's telecommunications are not working. Possible after the initial phase, additional support or renovation may be needed.

€70K 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.

€50K Telecommunications up grade for Zambia

The telecommunications systems used to communicate between observing stations and the headquarters where the CLIMAT reports are prepared in Zambia is old and unreliable. The proposed replacement is based on HF SSB radio.

€300-1000K Additional radiosondes

Several GUAN stations routinely require support with radiosondes and balloons. Stations such as Costa Rica, Mauritius, Maldives, Zimbabwe, Galapagos, Yerevan, Bauerfield, Tanzania, PNG, and others will need radiosondes. (About €50K/year per supported station)

€40K CBS lead Centers for GCOS Coordination Meeting/Workshop

The 9 CBS lead Centers for GCOS should meet every two years. The next meeting scheduled for 2011 will be held in Germany. These Lead Centers and their activities have lead to substantial improvement in the operation of the GSN and GUAN.

€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.

€150K Khartoum, Sudan (GUAN addition)

Renovation of the upper air station at Khartoum, Sudan to improve GUAN coverage. One of the AOPC high priority additions. The station was operational until a few years ago. Generator is supposedly working.

€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 Coordination meeting of GCOS Focal Points and Lead Center

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

GCOS Cooperation Mechanism Meeting, Geneva, 27 September 2010

**Impression of Findings
(excluding donor reports and system improvements)**

Wim Monna, Sept 30, 2010

Views on the GCM (1)

- GCM may play a combination of advisory and management role
- Advertise for GCOS in WMO Regional Associations to help establish GCOS regional coordinators
- GCOS regional coordinators can spread the word to local organizations
- Encourage local organizations to express needs and priorities; user-pull important
- Use opportunities to focus
- Coordination needed in receiving countries; avoid duplications

Views on the GCM (2), Actions Secretariat

- Consider review of NAPA's and Regional Action Plans in view of cooperation (NAPA: National Adaptation Programs of Action (in Climate Negotiations))
- Improve links with RCC's and regional organizations (e.g., ACMAD in view of follow-up of GCOS regional action plans)
- Develop GCOS brochure on socio-economic aspects of observations

Views on the GCM (3), Other Actions

- Secretariat and David Rogers: Strengthen link with GFDRR, banks, financial resources (GFDRR: Global Facility for Disaster Reduction and Recovery)
- All: Encourage national delegations to the Climate negotiations (CoP16, etc.) to include Systematic Observation in a long-term climate change agreement, in view of structural financing of observations

GCM and GEO

- Mutual consistency essential, e.g., on communication on the way forward, opportunity is the 2012-2015 Work Plan
- Coordinate on capacity building tasks
- Interact with regional GEO activities in Africa, combine workshops
- Question for Steering Committee: could some GCOS IP actions be reformulated to show the link with GEO?

Climate for Development of Africa

- Improvements of observations supported by a bank (African Development Bank)
- Clim Dev Africa actually aims on centers that increasingly learn to use data
- Cooperation between ClimDev Africa and GCOS important for observations
- GCOS should participate at yearly meetings of African Ministers

Project Weather Information for All

- Banks play a role
 - Banks do not give away money
 - Investments must be justified
 - Cost/benefit ratio of information important

- Sustainability
- On observations
 - GCOS can explain what money is needed and help optimize the program
 - Observations on all scales, not always in compliance with Climate Monitoring Principles

Observation Panels for Climate (Atmosphere, Ocean, Terrestrial)

- “Shopping lists” available, including priorities
- Priorities Ocean: moorings Western Indian Ocean, tide gauges around Africa
- Priorities Terrestrial: soil moisture, satellite reference sites
- Probably general remarks:
 - Use also observations not dedicated to climate
 - Ownership per ECV can be essential
- Action Implementation Project Manager: integrate domain priorities in one list, communicate list to GCM members

Actions Secretariat for next GCM meeting

- Invite (again) UNFCCC expert
- Invite more possible donors, e.g. GEF, Implementation Agencies
- Include all sorts of contributions, also e.g., unilateral ones, in future national presentations; make available contributions from countries that cannot participate
- Distribute integrated “shopping list” two weeks before GCM meeting