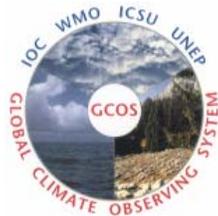


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**WORLD METEOROLOGICAL
ORGANIZATION**

**INTERGOVERNMENTAL
OCEANOGRAPHIC COMMISSION**



**FINAL REPORT OF THE
GCOS REGIONAL WORKSHOP PROGRAMME**

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FINAL REPORT OF THE GCOS REGIONAL WORKSHOP PROGRAMME

Executive Summary

One of the major thrusts of the Global Climate Observing System Secretariat in the last five years has been the realization of its Regional Workshop Programme. This Programme, launched in 2000 following an invitation from the Conference of the Parties to the UN Framework Convention on Climate Change in November 1999, comprised workshops and follow-up meetings in ten developing regions.

The central goal of the GCOS Regional Workshop Programme was to initiate processes in developing regions that would lead to real, substantial, and lasting improvements in global climate observing systems. The specific objectives for each workshop were to assess the contribution of each region to GCOS baseline networks; to help participants understand guidelines for reporting on systematic observations to the UNFCCC; to identify national and regional needs and deficiencies for climate data, including needs for assessing climate impacts, conducting vulnerability analyses, and undertaking adaptation studies; and to initiate the development of a Regional Action Plan for improving climate observing systems.

GCOS has now completed all ten regional workshops in the Programme and all associated Action Plan development meetings. Action Plans have also been developed for all regions (the Pacific Islands, Eastern and Southern Africa, Central America and the Caribbean, East and Southeast Asia, Western and Central Africa, South America, Central Asia, South and Southwest Asia, Eastern and Central Europe, and the Mediterranean Basin), representing a significant achievement. In all, representatives of some 180 countries took part in the Programme, and over 115 priority projects were proposed. Common needs include sustaining and improving operational observing networks; recovering historical data; improving national and regional co-ordination; education, training, and capacity building; and national planning and reporting.

Some implementation progress has been made in most regions, with greater progress generally in those regions in which the earliest workshops were held. However, much remains to be done. Constraints to continued progress are the need for donor engagement in project funding and for sustaining committed leadership at the regional level. With all Action Plans now completed, the focus of follow-up activities for both GCOS and for the regions needs to be on implementation. The Pacific Islands region has progressed further than any other in implementing its Action Plan and perhaps best illustrates the importance of donor engagement and partnership. However, "one size does not fit all," and each region has special characteristics and ways of interacting with its members that will require it to find its unique way forward.

If implementation of the Regional Action Plans is to be successful, then GCOS, the regions, and the international community each need to recognize special responsibilities. For the GCOS Secretariat, with its small staff and global mission, the focus needs to be on facilitating and promoting the relevant activities of others, including assisting the regions to identify sources of funding. For the regions, it will be important to take ownership of the Action Plans, thus assuming the primary responsibility for seeing that the Plans and their individual projects are implemented. The international community, for its part, will need to assist by doing more to provide the resources that developing regions have so much difficulty contributing themselves. The international community must recognize that improving observing systems in developing countries not only benefits those countries but also benefits developed countries as well.

If anything, the need for high-quality climate observations has become even more important in recent years as their utility for designing prudent adaptation strategies, and for sustainable

development generally, has become more obvious. Although the Regional Workshop Programme has now formally ended, it is important that continued attention be given to implementing the Regional Action Plans. Continued support by the Conference of the Parties, for example through the Global Environment Facility, will be important not only as a much-needed contribution but also as a clear signal of support for future progress.

1. Introduction

The Global Climate Observing System (GCOS) Secretariat initiated its Regional Workshop Programme, formally titled "Capacity Building for Observing Systems for Climate Change," following an invitation¹ in November 1999 by the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). The COP asked GCOS to organize regional workshops addressing the capacity building needs of developing countries "related to participation in systematic observation." In extending its invitation, the COP was following through on Decision 14/CP.4 of the previous year, in which it noted the inadequacy of the global observing systems for climate for the work of the UNFCCC and urged Parties to: 1) actively support capacity-building in developing countries to enable them to collect, exchange, and utilize data to meet local, regional, and international needs; 2) actively support national atmospheric, oceanic, and terrestrial observing systems in order to ensure that the stations identified as elements of GCOS networks are fully operational and use best practices; and 3) strengthen international and intergovernmental programmes assisting countries to acquire and use climate information. Decision 14/CP.4 cited the (first) Report on the Adequacy of the Global Climate Observing Systems,² which concluded not only that most observing networks were inadequate for climate needs but that in many developing regions, the number and quality of observations was declining.

GCOS applied for, and received support from, the Global Environment Facility (GEF) to fund 60 percent of the costs of the Regional Workshop Programme. It developed the Programme in close consultation with the United Nations Development Programme (UNDP), one of the three GEF implementing agencies. UNDP proposed several improvements in the original programme, including a proposal to help each region develop a Regional Action Plan (RAP). The Programme was divided into a pilot phase, consisting of the first two workshops and Action Plan development meetings, and a full project phase, consisting of eight additional workshops and associated Action Plan meetings. Lessons learned in the first phase of the programme helped in the design of the full project. Indeed, with each workshop after the pilot phase, GCOS gained additional experience, allowing it to refine subsequent workshops and Action Plan development meetings.

2. Goals and Objectives of the Programme

The central goal of the GCOS Regional Workshop Programme was to initiate processes in developing regions that would lead to real and substantial improvements in global climate observing systems. An associated goal was to build national capacity in developing countries to report on systematic observation in accordance with UNFCCC guidelines. The specific objectives for each workshop were to assess the contribution of each region to GCOS baseline networks; to help participants understand guidelines for reporting on systematic observations to the UNFCCC; to identify national and regional needs and deficiencies for climate data, including needs for assessing climate impacts, conducting vulnerability analyses, and undertaking adaptation studies; and to initiate the development of a Regional Action Plan for improving climate observing systems. These objectives were implemented by undertaking the following activities, as detailed in the Project Document establishing the programme:

¹ The invitation was contained in Decision 5/CP.5.

² GCOS, (First) Report on the Adequacy of the Global Climate Observing Systems, GCOS-48, October 1998. Report to COP4.

- Coordinating with regional partner(s) to organize workshops;
- Preparation of workshop materials (e.g., Framework Action Plans);
- Facilitating compilation of information on systematic observation for inclusion in National Communications, consistent with UNFCCC reporting guidelines;
- Providing training for the preparation of national reports on systematic observations;
- Providing training for assessing the status of national and regional observing systems;
- Facilitating interaction among stakeholders;
- Providing workshop participants with a better understanding of opportunities and constraints for improving observing systems;
- Developing workshop resolutions;
- Initiating the development of Regional Action Plans;
- Finalizing the Action Plans;
- Implementing one Regional Action Plan as a pilot (the Pacific Islands Action Plan); and
- Identifying non-GEF funding sources for implementation of Action Plans.

3. The Process

As noted above, the GCOS Regional Workshop Programme consisted of 10 regional workshops and 10 smaller Action Plan development meetings. The complete schedule and location of the workshops and meetings is shown in Table 1. The workshops were designed to bring together the directors of national meteorological and hydrological services (NMHSs) and national climate change coordinators in each region for policy-level discussions. One important aim was to help forge stronger links between NMHSs and the concerns of the UNFCCC.

Table 1. Regional Workshop Programme Schedule				
Region	Location of Regional Workshop	Date	Location of Action Plan Meeting	Date
Pacific Islands	Apia, Samoa	August 2000	Honolulu, Hawaii	October 2001
Eastern and Southern Africa	Kisumu, Kenya	October 2001	Nairobi, Kenya	January 2002
Central America and the Caribbean	San José, Costa Rica	March 2002	Bridgetown, Barbados	May 2002
East and Southeast Asia	Singapore, Singapore	September 2002	Beijing, China	March 2003
Western and Central Africa	Niamey, Niger	March 2003	Dakar, Senegal	September 2003
South America	Santiago, Chile	October 2003	Buenos Aires, Argentina	April 2004
Central Asia	Almaty, Kazakhstan	May 2004	Yerevan, Armenia	September 2004
South and Southwest Asia	New Delhi, India	October 2004	Isfahan, Iran	May 2005
Eastern and Central Europe	Leipzig, Germany	April 2005	Ljubljana, Slovenia	September 2005
Mediterranean Basin	Marrakech, Morocco	November 2005	Tunis, Tunisia	May 2006

The GCOS Secretariat initiated planning for each meeting by identifying a partner within the region with which to work. It sought to work with motivated regional organizations or NMHSs, which, after completion of each Regional Action Plan, could then provide regional leadership to implement the Plan.

Preparation of the workshop constituted the first phase of the GCOS strategy in each region. Once a regional partner had been selected, this involved development of the agenda for the meeting, selection of participants, and preparation of workshop documents. Agendas were especially tailored for each region, in consultation with regional experts, and consisted of a combination of core topics addressing standard GCOS priorities (e.g., the GCOS Surface Network, UNFCCC reporting guidelines) and topics of special interest to individual regions (e.g., glacier observations in South America, but coral reef observations in Central America and the Caribbean).

In addition to the NMHS directors and national climate change coordinators that were the target participants, GCOS invited a number of observing system experts to the workshops. Experts were asked to describe the status of the atmospheric, oceanic, and terrestrial observing systems in their respective regions, with particular emphasis on gaps, deficiencies, and needs, and to propose one or more actions that could help reduce deficiencies. Experts were also asked to prepare short written summaries of their presentations for later inclusion in the workshop report.

During the pilot phase of the workshop programme, GCOS experimented with the best ways to organize and conduct meetings so that regional consensus could be reached on priorities to be addressed in a subsequent Action Plan. By the fourth workshop, GCOS had developed the concept of introducing a "Framework Action Plan" as a principal background document to promote discussion. The Framework Action Plan provided an overview of the status of climate observing issues important to the region. Throughout the text, GCOS embedded questions to provoke discussion. The idea, which worked quite well, was that the framework document would eventually evolve into a complete Regional Action Plan as the questions embedded in the text were answered and as projects addressing priority needs were added in the subsequent Action Plan development meeting.

The second phase of the strategy was the workshop itself. After the first pilot workshop, which was a 2½-day meeting, all subsequent workshops were 3-day events. With each workshop GCOS made small adjustments in the agenda and/or workshop documentation to improve workshop effectiveness, facilitate consensus on priorities, and/or address special local needs. In designing each workshop, GCOS and its regional partner(s) also considered the uniqueness of the region, not only in terms of observing system needs, but also in terms of how countries within a region typically interacted with each other, who the more advanced countries were, which were the most likely external "donor countries" who could support implementation of elements of the Action Plan, etc.

The third phase of the strategy for each region was the development of the Regional Action Plan. As noted, the Action Plan was based on the priorities identified by the workshop participants and, for the last six workshops, on the Framework Action Plan introduced at the Regional Workshop. Action Plan meetings were smaller than Regional Workshops, averaging about 15 people. In selecting participants, GCOS sought the most qualified experts to draft short "project briefs" addressing the priority needs that had been identified in the Regional Workshop. Usually, these were either experts, directors of NMHSs, or national climate change coordinators who had attended the associated workshop. To assist those preparing project briefs, GCOS developed a proposed format, which consisted of short sections on background, objectives, location, duration, project design, implementation, expected outcomes, risk and sustainability, and indicative budget. Action Plan meetings typically lasted three days, at the end of which project authors were usually given extra time

to finalize their documents. Most Plans contain between 10 and 15 projects. All are posted on the GCOS website (<http://www.wmo.ch/web/gcos/gcoshome.html>) under "Regional Workshops."

The Action Plans are strategic, agenda setting documents reflecting a regional consensus on the most important observing system gaps within the region and how to address them. Although most project briefs contain considerable detail, they are not (and were not intended to be) fully developed proposals. The cost estimates contained in the Plans are only approximate. Most project briefs would thus require considerable work to meet the various specific proposal requirements of any given funding agency. Their value lies in the fact that they: 1) are consensus documents reflecting the most important observing system needs of the region as a whole, 2) can be used to help seek funding for individual projects and/or for the Plan in its entirety, 3) indicate a substantial amount of necessary initial thinking on preparing a detailed project proposal and seeking funding for it, and 4) have given participants an opportunity to think about regional, as opposed to national, needs and thus to focus on regional collaboration.

Implementation of the Action Plans is the all-important fourth phase of the GCOS strategy. The implementation status of the Action Plans will be addressed in more detail in Section 6 below. However, two points are important to highlight. First, as specified in the Project Document, implementation is beyond the scope of the Regional Workshop Programme *per se*. Second, the goal of the Regional Workshop Programme has been to *facilitate* the development of Regional Action Plans addressing climate-observing needs. The Plans themselves, however, have been drafted by and for the regions, and it is more accurate to think of them as regional plans addressing GCOS issues rather than GCOS plans addressing regional issues. The owners of the Action Plans, the regions themselves, have the lead role and responsibility for implementing them. As part of its broader strategy to promote improvements in observing systems, GCOS recognizes that it has a key role to play in assisting developing regions to find the resources to elaborate and implement their Action Plans. In particular, GCOS is working to establish or improve linkages with potential donor countries and to influence the funding decisions of international organizations. It is worth noting that COP has on several occasions encouraged the Parties to the UNFCCC to identify the means to implement Action Plans and otherwise assist developing countries improve their observing systems.

4. Interactions with the UNFCCC, the WMO Executive Council, and the Commission on Sustainable Development

GCOS reported on a regular basis to SBSTA and COP about progress on the Regional Workshop Programme. GCOS also held several Side Events at COP and SBSTA meetings at which representatives of most of the 10 regions in which workshops were organized had the opportunity to introduce their Action Plans. Over the course of the Programme, COP and/or SBSTA drafted a number of decisions and conclusions related to the Regional Workshop Programme and Regional Action Plans. These are shown in Table 2.

GCOS also provided regular updates on the Regional Workshop Programme to the Executive Council of the World Meteorological Organization (WMO). At a number of these annual meetings, GCOS scheduled Side Events to highlight Programme developments and introduce recently completed Action Plans. Table 3 shows statements related to the Programme made by the WMO Executive Council and WMO Congress between June 2000 and June 2006.

Table 2. Principal COP Decisions & SBSTA Conclusions Related to the Regional Workshop Programme and/or Regional Action Plans

Date	Meeting	Key Decision or Conclusion
November 1999	COP5 (Decision 5)	Recognized the need to identify the priority capacity-building needs related to the participation of developing countries in systematic observation, invited the GCOS Secretariat to organize regional workshops on the issue, and urged Parties to actively support and participate in the regional workshops.
July 2001	SBSTA 14	SBSTA noted that support is needed for regional workshops planned in 2002 for Asia and for Central America and the Caribbean.
June 2002	SBSTA 16	SBSTA noted the progress made in the Regional Workshop Programme, welcomed the submission of Action Plans emanating from the Regional Workshops, and noted the urgency of implementing these plans.
October 2002	SBSTA 17	SBSTA noted that regional workshops are leading to specific proposals to address deficiencies in global observing systems for climate in developing countries and invited the SBI to take note of the need to fund those proposals and to provide guidance to the financial mechanism of the Convention.
December 2003	COP 9 (Decision 4)	Invites the Global Environment Facility to give appropriate consideration to addressing the priority needs identified by developing countries in their Regional Action Plans and notes the existence of other bilateral and multilateral agencies that support global climate observing systems.
December 2003	COP 9 (Decision 11)	Urged Annex 1 Parties to support priority needs of developing countries identified in Regional Action Plans, especially those of the least developed countries and small island developing states, in particular by contributing to the GCOS Cooperation Mechanism.
June 2004	SBSTA 20	SBSTA welcomed progress made in the Regional Workshop Programme and encourages Parties to continue to pursue implementation of elements of the Regional Action Plans developed under this programme.
December 2004	SBSTA 21	SBSTA welcomed the progress made in the Regional Workshop Programme and encourages Parties to continue pursuing the implementation of priority elements identified in the GCOS Implementation Plan and referred to in Decision 4/CP.9
December 2004	COP 10 (Decision 5)	Encouraged Parties to strengthen their efforts to implement the priority elements in the Regional Action Plans identified by Parties not included in Annex I to the Convention.
December 2005	SBSTA 23	SBSTA noted the Regional Workshop Programme will be completed in early 2006 and invites the GCOS Secretariat, in cooperation with the Regional Workshop Advisory Committee, to report on the results of the Programme at its 25 th session.
December 2005	COP 11 (Decision 2)	Five-Year Programme of Action on Impacts, Vulnerability, and Adaptation to Climate Change included a section on "improving collection, management, exchange, access to, and use of observational data and other relevant information on current and historical climate and its impacts...", work which is relevant to GCOS and its Regional Workshop Programme.

In May 2006, following its last regional workshop, GCOS organized a Side Event at the 14th Session of the Commission for Sustainable Development in New York. One of the principal themes of this meeting dealt with linkages between climate change and sustainable development. Thus, the Side Event gave GCOS an opportunity to report on its recently completed implementation strategy meeting for Africa held in Addis Ababa, Ethiopia. This event (see page 13) was organized by GCOS and the UN Economic Commission for Africa to bring together African stakeholders and potential donors to discuss how to implement the African Action Plans and to develop a strategy for mainstreaming climate into development.

Table 3. Principal WMO Congress and Executive Council Statements Related to the Regional Workshop Programme (RWP) and Regional Action Plans (RAPs)		
Date	Meeting	Summary of Statement
June 2000	EC LII	The Council strongly endorsed the organization of regional workshops to identify the capacity-building needs of developing countries and urged continued consultations with relevant international bodies to find resources to hold the meetings.
June 2001	EC LIII	The Council expressed strong support for the RWP and welcomes progress to date, including successful completion of the first workshop. It expressed appreciation to WMO Members who have provided support so far.
June 2002	EC LIV	The Council reiterated its strong support for the RWP and notes that the programme has helped increase the visibility of observing system issues. It also noted the need for the RWP to maintain momentum and for the RAPs to lead to concrete results.
June 2003	Congress XIV	Congress expressed its strong support for the RWP. It notes that 5 of 10 planned workshops had been completed and that RAPs had been or were being developed for the 5 regions in which workshops had been held. It noted that implementation of the RAPs was required on an urgent basis. And it welcomed the financial support for the programme given by the GEF.
June 2003	EC-LV	The Council noted with appreciation the activities being carried out by GCOS, including implementation of the RWP. It welcomed increasing emphasis on resource mobilization.
June 2004	EC-LVI	The Council reiterated strong support for the RWP and expresses satisfaction that two additional workshops have been completed and development of RAPs under way. It encouraged Members to support the remaining workshops.
June 2005	EC-LVII	The Council recognized the difficulty in mobilizing resources to implement RAPs and urges Members to consider ways to do so. It noted with appreciation the substantial resources contributed by various Members to support the workshops.
June 2006	EC-LVIII	The Council welcomed the completion of the GCOS Regional Workshop Programme (RWP) and the associated Regional Action Plans. It strongly endorsed efforts being made by GCOS to generate support for implementation of the RAPs and welcomed the positive results achieved at the workshop on climate information for development needs organized by GCOS in Addis Ababa, Ethiopia to seek donor support for implementation of the two African RAPs.

5. Key Accomplishments

Representatives of more than 180 countries, for an average of 18 countries per workshop, participated in the GCOS Regional Workshop Programme. At the most basic level of accomplishment, GCOS completed all 20 meetings at the rate of roughly two Regional Workshops and two Action Plan development meetings per year. As required, GCOS raised funds amounting to 40 percent of the cost of the Programme from individual donor countries and organizations to match the 60 percent share contributed by UNDP/GEF.

GCOS facilitated the drafting of Regional Action Plans by providing the “framework” for each Plan. However, the individual projects in the RAPs were the work of regional experts. The Plans were based on the priorities identified in the Regional Workshops. The existence of the Action Plans is important for several reasons. First, they represent a catalog of the priorities for improving climate observing systems and related data management as identified by key representatives of the countries comprising each region. Second, they are strategic, agenda-setting documents that have been developed at the regional level and represent a first-order consensus for action at the regional level. They have established an excellent base from which to move forward. Third, the development of the RAPs has given some the opportunity to get involved in a joint project and has in itself been a capacity-building exercise in developing a regional plan. Thus, as participants in both the Regional Workshops and Action Plan meetings have interacted, these meetings have helped to strengthen contacts among countries in each region. Fourth, the Plans are valuable because experts in development and environment can use them to see where observing system issues overlap with their particular concerns. For example, it is apparent that good observations are the foundation for mainstreaming climate considerations into development and for addressing a variety of needs related to adaptation to climate variability and change.

One of the most important accomplishments of the Regional Workshop Programme has been the increased visibility that the Programme has given to climate observing issues. This increased visibility is evident in several ways. First, the workshop participants, who are generally influential people in their respective countries, have gained valuable knowledge and insight about observing system issues by attending a workshop. This insight includes a better appreciation of the importance of climate observations at global, regional, and national levels and a better appreciation of the reasons for and value of reporting on the status of observing systems to the UNFCCC. Second, this improved understanding has enabled workshop participants to more effectively promote observing system improvements in their respective countries and to help national decision-makers to understand better the value of sound observing system programmes at the national level. Third, by putting a spotlight on observing system issues and on how improvements at the national level simultaneously enable improvements at regional and global levels (which in turn also benefit individual countries), the workshop programme has helped promote opportunities for cooperation among countries and within countries (e.g., between meteorological services and national climate change coordinators). Fourth, at the international level, the Regional Workshop Programme is responsible for at least some of the greater visibility that the topic of systematic observation has achieved at meetings of the Conference of the Parties to the UNFCCC in recent years. Regular reporting on the Programme, as well as GCOS-organized Side Events publicizing Regional Action Plans at SBSTA meetings, has helped in this regard. Partly as a result of this publicity, the Parties have now recognized the importance of improved observing systems to adaptation to climate change and, more generally, to sustainable development. The recognized importance of climate observations to sustainable development underscores the need to ensure that regional and national observing systems are as healthy as possible.

Ultimately, the success of the Regional Workshop Programme will be measured by the tangible improvements in observing systems and in related data management systems, capacity building, and climate product development that are made as a result of Programme activities. A review of specific accomplishments to date in implementing the Regional Action Plans is undertaken in the next section. Here, it is appropriate to indicate that progress has been (or will be) made in several ways. Some actions have been undertaken as a direct consequence of a proposal in a Regional Action Plan (e.g., elements of project proposals that have been funded). Others have been made on the basis of a recommendation that appeared in an Action Plan (e.g., reporting to the UNFCCC or pursuing greater regional collaboration). In some cases, it is difficult to determine the precise effect the Regional Workshop Programme *per se* has had on an improvement, as GCOS and others are pursuing improvements through other means at the same time, for example improvements more closely identified with the GCOS Implementation Plan. Nevertheless, the Regional Workshop Programme has helped to give a boost to some of these related efforts even if, in some cases, the precise contribution is difficult to measure.

6. Implementation Status

Implementation of Action Plan projects, although the ultimate aim of the process launched at each regional workshop, is explicitly beyond the scope of the Regional Workshop Programme *per se*. Nevertheless, a core element of the GCOS mission is to promote improvements in climate observing systems in developing regions, and one means for doing this has been through the Regional Workshop Programme. With regard to the Programme, GCOS has defined its role as helping to create the conditions in which regions are better able to help themselves. As the programme was conceived, the objective was to help each region develop its own plan to address priority observing system needs. GCOS expected that each region would assume ownership of its plan and the principal responsibility for implementing it. To assist the regions in implementing their plans, GCOS has identified its main role as helping to establish or improve linkages with potential donor countries and to influence the funding decisions of international organizations.

Implementation of Regional Action Plans has not proceeded as rapidly or as smoothly as desired. The most important reasons for this are the inherent difficulty of mobilizing resources and the shortage of regional champions to promote Action Plans and to undertake the work of fleshing out individual project briefs so as to provide additional detail for potential donors. Nevertheless, some progress in implementing projects or parts of projects has been made in each of the ten regions. GCOS surveyed this progress by means of a questionnaire sent to key representatives in each region. As well as providing a summary of the progress made to date, the survey results provide information from which some useful lessons can be drawn. Progress to date is, in general, related to the publication date of each Action Plan. Implementation is, broadly speaking, most advanced for those Action Plans that were completed at earlier dates and least advanced for those Plans that have only recently been finalized. The degree of progress is, however, somewhat uneven, reflecting various regional and other factors that either complicated or facilitated implementation in particular regions. Detailed information on progress achieved to date in each of the ten regions is shown in the Appendix. The following paragraphs briefly summarize the implementation status of the individual Action Plans, as reported by principal contributors within each region:

- Pacific Islands: The Pacific Islands Regional Action Plan, completed in March 2002, was the first in the series to be completed. This Plan is by far the most advanced in its implementation. Substantial progress has been made in implementing the Plan's projects and initiatives. A solid management structure has been established, and a full-time technical coordinator is in place. Many significant projects and activities have either been completed or are at advanced stages of implementation, addressing priorities such as capacity building; enhanced operation of GUAN, GSN, and tide gauge stations; definition

of user requirements; climate prediction; and improved telecommunications and data rescue.

- Eastern and Southern Africa: The Action Plan for this region has already led to improvements in GUAN stations, notably at Nairobi, Addis Ababa, Dar-es-Salaam, Windhoek, Harare, Antananarivo, and Mauritius. Ozone monitoring has been expanded to locations in the Antarctic³ and Botswana. Action has been initiated on carbon cycle monitoring in the tropics, along with strengthened capacity building efforts and increased emphasis on ocean and water monitoring.
- Central America and the Caribbean: In this region, GSN and GUAN stations and regional telecommunications are being or have been improved. The Caribbean tide gauge network is being enhanced in phase with the development of a tsunami warning system. A Caribbean climate change project involving water resource assessment is being undertaken, and data rescue and data warehousing initiatives are also underway.
- East and Southeast Asia: Coordination of GCOS programmes is being pursued under the umbrella of ASEAN, and an upgrade of GUAN stations is underway. A project has been initiated to establish a “Southeast Asia Center for Atmospheric and Marine Prediction” (SEACAMP). Inventory and rehabilitation of hydrological stations has commenced, and work has also started on data rescue and digitization of existing paper records from GSN and GUAN stations.
- Western and Central Africa: Several GUAN stations have been upgraded. Replacement hydrogen generators have been provided for the GUAN stations at Douala, Dakar, and Abidjan. Moreover, the AMMA⁴ experiment has led to rehabilitation of atmospheric measurement programmes and some telecommunications upgrades. It is not clear, however, if these improvements will be sustained beyond the end of the AMMA experiment.
- South America: Several GUAN stations have been upgraded. Some funding has been obtained to support upper air observations, and further funding is being sought for consumables and capacity building. The UV-B Radiation Network in South America has been improved. Six countries have agreed to establish a regional climate database, and a proposal for funding for a database management system is nearing approval. Access to data from military weather radars is being pursued, and studies are underway on applications of remote sensing to greenhouse gas and particulate matter measurements.
- Central Asia: Action is underway to improve the GSN and GUAN stations, rescue historical data from GCOS stations, re-design atmospheric observation networks, and obtain funding to strengthen the Global Atmosphere Watch network. Upper air equipment has been upgraded at the Yerevan GUAN station. Some resources have been obtained to improve the hydrological observation network on major rivers, especially on the Tibetan plateau and along the Yangtze River; establish an observation network on large lakes; and expand glacier monitoring on the Qinghai-Xizang Plateau and Tian Shan Mountains. Permafrost monitoring is also receiving support with the addition of new data loggers, establishment of a few new permafrost thermal state observation sites, and plans for additional monitoring along the Qinghai-Xizang Railway.

³ At South Africa's research station in Antarctica.

⁴ African Monsoon Multidisciplinary Analysis (AMMA) is an international project to improve our knowledge and understanding of the West African monsoon (WAM) and its variability, with an emphasis on daily-to-interannual timescales.

- South and Southwest Asia: Some funding has been obtained to improve the GSN and GUAN networks, enhance the availability and use of hydrological data, and pursue data rescue and database management priorities. Action has also been initiated to build regional capacity for satellite applications for climate and development in Pakistan.
- Eastern and Central Europe: Preliminary discussions have taken place aimed at establishing a Cooperative Mechanism (EuroGCOS) to direct and coordinate implementation of Regional GCOS Action Plan initiatives. In an encouraging development, the Directors of NMHSs in the Southeastern European countries have recently identified implementation of the Regional Action Plan as a high priority. To date, a few capacity building initiatives have been undertaken. In particular, training workshops on instrument calibration and on homogenization and quality control of climate data bases were held earlier this year, and regional workshops have been scheduled on the use of the PRECIS model to develop regional climate scenarios; on the communication of weather, climate, and climate change science to the general public; and on the use of satellite data for climate applications. Development of a proposal for a Drought Monitoring Center in Southeastern Europe is underway.
- Mediterranean Basin: This Action Plan was being finalized at the time of writing; thus, implementation is at a very early stage. A workshop has, however, been held in Casablanca on how to correctly prepare CLIMAT and CLIMAT TEMP reports from GSN and GUAN stations. Initial work on data and metadata rescue has commenced. This is aimed at locating and obtaining permission to access DARE 1 data for North African countries and at building support for data rescue among NMHSs across the region. A workshop is also being planned to define priority actions to enhance GAW aerosol monitoring across the Basin. Funding is being sought to strengthen and expand existing national programmes related to the application of climate information for the control of locusts and the management of water consumption on irrigated lands. Finally, the Observatory for the Sahara and the Sahel has expressed strong interest in providing the needed leadership to ensure that the Action Plan is advanced in the region.

It should be stressed that the above-mentioned indications of progress do not necessarily imply that a specific project appearing in a Regional Action Plan has sought and received funding. The fact that deficiencies and needs were brought to the attention of regional stakeholders and/or potential donors via a RAP, however, has almost certainly given a boost to direct or indirect initiatives associated with RAP project proposals. It should also be stressed that such progress as has been achieved to date represents only a small fraction of the total needs as expressed in most of the Regional Action Plans. Finally, some regions have more observing system deficiencies and/or will require more assistance than others. Of particular note are the two African regions.

The Regional Action Plan that is most advanced in its implementation is the Pacific Islands Plan. The implementation of this Plan provides an instructive example that may be helpful in achieving successful implementation of the other Regional GCOS Action Plans completed later in the Programme. An analysis of factors that have either assisted or retarded the implementation of the Pacific Island Regional Action Plan indicates the following elements as keys to regional GCOS success:

- The availability of a focused regional organization willing to take up the mantle of advancing GCOS in the region: In the Pacific region, the Secretariat of the Pacific Regional Environment Programme (SPREP) was a particularly good match to be a regional focus for GCOS. The ability of SPREP to hire a full-time regional programme officer devoted to GCOS issues has proven essential to implementing a robust and sustainable regional program in the Pacific (see <http://pi-gcos.org>). Naturally, funding

for such a dedicated position is required. It is hoped that, as the U.S. has done with SPREP, developed countries linked to other regions will partner with organizations in those regions to ensure that an actively engaged focal point is in place to promote regional GCOS coordination and implementation of Regional Action Plan projects;

- A solid and consolidated planning mechanism to advance projects in the region;
- Identification of partners and donors willing to participate in regional projects and/or to contribute resources;
- The ability to leverage existing bi-lateral and multi-lateral agreements that can incorporate GCOS projects. (In the Pacific Islands region this included the US/New Zealand Climate Change Partnership, the US/Australia Climate Action Partnership, and another regional bilateral partnership between New Zealand and Australia);
- Some kind of sustained regional steering or leadership group, especially one that maintains communication with the GCOS Secretariat and the GCOS Steering Committee;
- An ability to monitor the progress of projects and to participate in fund raising;
- Responsibility for GCOS issues by people interested in advancing GCOS in the region rather than simply through national representation;
- Broadly-based membership, including partners from both inside and outside the meteorological community (as GCOS encompasses more than just meteorology); and
- Interaction between users of climate information and providers of climate information, especially at the grassroots level.

A recurring challenge identified by participants at all of the Regional GCOS Workshops was the need for funding, not only for capacity building and improvements in infrastructure but, most importantly, to sustain the operations of important GCOS observational programs over the longer term. In response to the need for an external source of funding for RAP projects and other GCOS initiatives (e.g., those associated with the GCOS Implementation Plan), the GCOS Cooperation Mechanism (GCM) was established in late 2003 by a number of donor countries. The purpose of this Mechanism is to identify and make the most effective use of resources available for improving global observing systems for climate in developing countries, complementing and working in cooperation with other funding and implementation mechanisms. The GCOS Cooperation Mechanism was established to ensure that the broad spectrum of needs for system improvement and sustained operations are addressed as effectively as possible, in addition to supporting capacity building related to global observing systems for climate. Although not yet fully operational, the GCM provides a coordinated multi-governmental approach to addressing the high-priority needs for stable long-term funding for key elements of global observing systems for climate in support of the requirements of the UNFCCC and other GCOS clients. Particular emphasis is given to the needs of developing countries generally and to the special needs of least developed countries and small island developing States in particular.

A comprehensive and objective *external* assessment of progress achieved and issues faced in implementing the various Regional GCOS Action Plans will be the subject of a future UNDP evaluation, as mandated in the original Project Document.

7. Initial Follow-Up Activities

After the ninth workshop in the Regional Workshop Programme, UNDP arranged for a preliminary evaluation of the Programme. With the Programme nearing completion, the principal purpose of this evaluation was to determine what follow-up actions might be needed to stimulate continuing progress in improving climate observing systems. Not surprisingly, the evaluation determined that follow-up activities would need to focus on implementation. It suggested that the way to do this was to hold strategy meetings for key players and to convert the Action Plans into implementation plans. At the core of any implementation plan should be a funding strategy, and such a strategy would need the active participation of potential donors. The evaluation also stressed the importance of working with users of climate information to ensure that their needs were being met. Although the regional workshops had involved national climate change coordinators, the evaluation suggested that more needed to be done to ensure user needs were being met.

Another recommendation was to establish and fund a programme manager to focus on Regional Action Plan implementation in each region. The constraint to implementing this recommendation, as indicated earlier, is securing a continuing source of funds with which to support a programme officer. Also, the evaluation recommended that GCOS and the proposed regional managers monitor and report regularly on the progress of Action Plan implementation and, by this means and others, give Regional Action Plans as much visibility as possible.

The initial response of GCOS to these recommendations—and its first post Regional Workshop Programme follow-up activity—has been to organize a meeting in Addis Ababa, Ethiopia in April 2006, a meeting hosted by the UN Economic Commission for Africa. The overarching purpose of this meeting was to help the developing countries of Africa secure the resources they would need to begin implementing projects contained in the Regional Action Plans for Eastern & Southern Africa and Western & Central Africa. The meeting was organized following the commitment that G8 countries made at their July 2005 summit in Gleneagles, Scotland. The summit, which drew special attention to climate change and Africa, produced the Gleneagles Plan of Action, which underscored a previous commitment to strengthen international cooperation on global Earth observations. The G8 countries also indicated their intent to support developing countries in “placement of observational systems to fill data gaps, developing of in-country and regional capacity for analyzing and interpreting observational data, and development of decision-support systems and tools relevant to local needs.” The communiqué indicated, in particular, the desire of G8 countries to “work to strengthen the existing climate institutions in Africa, through GCOS, with a view to developing fully operational climate centers” there.

It was essential that potential donor countries be engaged if the Addis Ababa meeting was to lead to a successful outcome, that is, to mobilization of resources for implementing Action Plan projects. The United Kingdom, as host of the Gleneagles meeting, led the way, through its Department for International Development (DFID), in both providing resources to hold the meeting and mobilizing other development agencies to participate. However, DFID also insisted, appropriately, that the meeting provide an opportunity to sectoral users of climate information to express their views on the priorities contained in the Action Plans and then for users and providers (e.g., the national meteorological and hydrological services) of climate information to reach consensus on the broad outline of a strategy for implementing priority needs.

The programme that emerged from the 4-day meeting, “Climate Information for Development Needs” (or ClimDev Africa), is multi-phased and covers a broader spectrum of climate-related needs than the core concerns of GCOS. To be sure, one key element of the programme addresses observational needs, in particular as identified in the two African

Regional Action Plans. However, ClimDev Africa is an end-to-end programme that also encompasses development of improved climate services, climate risk management, and policy needs, all with a view to mainstreaming climate into development. Thus, it addresses the needs of both users and providers of climate information in an integrated fashion. The 3-year first phase of the 10-year programme will be supported by DFID. Phases two and three of the programme will require additional support, which GCOS and its partners are actively seeking.

8. Next Steps and Afterword

In completing all 20 meetings proposed for its Regional Workshop Programme and facilitating the development of Action Plans for ten developing regions, GCOS has fulfilled the fundamental obligations as set out in the Programme's Project Document. Facilitating the implementation of the Action Plans is now the key to further progress and one that is wholly in line with the core mission of GCOS.

The Action Plans have established an excellent base from which to pursue implementation actions that address priority climate observing system needs in developing countries. However, implementation is a fundamentally different activity than organizing workshops. Significantly, the ten Action Plans identify needs that will cost on the order of hundreds of millions of dollars to address and require the efforts of a large number of talented people in all regions. Fundraising, capacity building, and proposal writing and technical skills will all be important as implementation proceeds. The GCOS role related to implementation is an important but bounded one. With its limited resources and global mission, the GCOS Secretariat will need to center its efforts on facilitating and promoting the relevant activities of others.

If GCOS can claim a measure of success in helping to raise funds to address observing system needs in Africa as a result of its Addis Ababa meeting, it must be stressed that implementation, even in one region, requires a substantial and continuing effort. To initiate the Addis Ababa meeting, GCOS first needed to raise funds to support the participants, as funds remaining in the Regional Workshop Programme were insufficient to cover the costs of the meeting. Convincing potential donors to participate also took time and effort, but, without potential donors, meetings such as the one in Addis Ababa would not be worth organizing. The hard work begins after identifying programme funds with which to get started and reaching consensus among multiple partners (in the case of Africa, these included the UN Economic Commission for Africa, the African Union, the International Research Institute for Climate and Society, and DFID) on what to do. Any implementation programme requires, among other things, a well-defined structure, with roles and responsibilities of the participating partners clearly delineated; it requires a management team; and it requires continuing involvement of multiple stakeholders at both policy and technical levels. The greater involvement of the regional bodies of the international organizations sponsoring GCOS,⁵ especially the WMO Regional Associations, would also benefit implementation. Implementation of ClimDev Africa is now in its planning phase. The programme will be formally launched at the beginning of 2007 and, with hard work, initial projects should begin to produce results during the second half of 2007.

Although recognizing the complexity and cost of organizing implementation strategy meetings, it is nevertheless the intention of GCOS (assuming funding sources can be identified) to organize at least two more such meetings in the next two years in different developing regions. GCOS will proceed with seeking funding; however, support from the Conference of the Parties, for example through the Global Environment Facility, will be important not only as a much-needed contribution but also as a clear signal of support for

⁵ The World Meteorological Organization, the United Nations Environment Programme, the Intergovernmental Oceanographic Commission of UNESCO, and the International Council for Science sponsor GCOS.

future progress. As with its Africa meeting, the goal will be to bring together key regional and extra-regional stakeholders, including potential donors from developed countries, to consider the applicable Regional Action Plan(s), launch development of an implementation programme, and commit appropriate resources to achieving the programme. GCOS hopes to be able to organize at least one meeting in Latin America and one in Asia.

In recent years the Conference of the Parties to the UNFCCC has begun to devote more and more attention to the question of adaptation to climate change. It is clear that adaptation provides one additional motive for ensuring that climate observing systems are able to provide the appropriate density of high-quality, long-term observations. In order to design sound adaptation policies, systematic observation needs to be improved in developing countries, not only to address global needs but to address regional and national ones as well. The GCOS Regional Action Plans have identified the priority needs. What remains is to find the means to implement the Plans.

APPENDIX

REGIONAL RESPONSES TO A RECENT SURVEY OF PROGRESS IN IMPLEMENTING REGIONAL ACTION PLANS

Regional Action Plan for the Pacific Islands					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Establish PI GCOS manager	High	Yes	Yes; All	Position established and filled.	
Establish PI GCOS focal points	High	No	No	Yes. Mike Coughlan, National Climate Centre, was selected as PI GCOS focal point for Australia.	
PI GCOS demonstration project	High	Yes.	In progress	Workshop by NZ.	Work to commence early 2004.
Define end-user requirements	High	Yes	Yes, refer to item 7	Yes. Under Pacific Island Climate Prediction Project (PI-CPP), end-user needs were identified in 9 PICs through in-country workshops (Cook Islands, Fiji, Niue, Samoa, Tonga, Kiribati, Tuvalu, Vanuatu and Solomon Islands).	Phase II of the project, to commence in January 2007, will include Papua New Guinea. Similar workshop will take place in PNG in early 2007.
Expand climate predictions	High	Yes	Yes, AUD2M for Phase I from AusAid	Yes. Under PI-CPP, NMSs and clients in 9 PICs received training on prudent use of climate prediction information. NMSs were supplied with the PC-based climate prediction model (SCOPIIC). Further training was provided through pilot schemes on water management (Vanuatu and Solomon Islands) and sugarcane (Fiji).	Phase II of the project will provide similar training in PNG. Further training will be provided to NMS personnel and their clients through pilot schemes on water resources, crops, health and renewable energy. SCOPIIC will be modified further to produce some user-specified products.
Restore upper air network	High	Yes	Yes	Several GUAN stations renovated. Penrhyn, Cook Islands Upper air Stn. revitalized and now operational. During 2005-06 Australia supported Papua New Guinea's GUAN station at Port Moresby, through the supply of radiosondes.	Revitalization of Honiara GUAN station, Solomon Islands in progress. New hydrogen generators aquired for Bauerfield, Vanuatu Port Moresby, Papua new Guinea. Upper air equipment upgrades underway.
Restore upper air network (contd.)	High	Yes	VCP/WMO	Yes	Mauritius GUAN Station Upgraded

Establish regional climate centers	High	Yes	No	RA V Task Team held several meetings.	
Remote Sensing	High	Yes	Yes Eumetsat and EU	Yes MSG/Eumetsat Training	To continue training (Ref AMESD)
Pacific regional climate bulletin	High	Yes	Yes	Sub-regional bulletins by PEAC (No. Pacific), NIWA (Island Climate Update – So. Pac) and BoM So. Pac. Reference Material. NIWA Island Climate update - Bureau National Climate Centre contributes to this publication through a South-Pacific-wide teleconference, hosted once a month by NIWA. Seasonal Outlook Reference Material - NCC produces comprehensive guidance/briefing material, including a summary of current ENSO conditions and a discussion of seasonal and longer-scale model outlooks for equatorial SST and South Pacific Rainfall. This has been produced monthly since May 2000 and distributed via email to 40-50 recipients in PI NMSs.	All three bulletins will continue into the foreseeable future
Provide historical GSN & GUAN data	High	Yes	Yes; some	Yes; APN Data Management Workshop and BoM Climate Prediction Workshop The National Climate Centre provided PI-GCOS with recommendations regarding low-cost expenditures for climate record preservation and undertook a data rescue scoping study for the Samoa Meteorological Service. In 2005-06, the NCC carried out “data rescue” work (to safeguard paper climate records) in five Pacific island countries – Fiji, Kiribati, Vanuatu, PNG, Solomon Is. Funding was through Australian Greenhouse Office (see www.bom.gov.au/climate/pi-cdr/index.shtml)	Workshop and climate prediction activities will be opportunities to provide such data. Continuing.
Regional Pacific Intranet	High			Related activity: Establishment of RANET infrastructure in Pacific (see additional comments at end)	

Improvement Telecoms	High	Yes	Funding EU, Meteo France	MSG, VSAT Installed Synergie Station	Upgrading Synergie and MSG
Provision of DCPs and AWSs	High	Yes	No	Discussed extensively at SPREP's 9RSMD meeting	Workshop planned
Provide climate data resources	Medium	Yes	Some	APN Workshop in Auckland, December 2003	Output from Dec 03 workshop. Continuing.
Sea level and climate monitoring	Medium	Yes	Yes	Ongoing long-term project, funded by AusAid, and implemented by the Australian National Tidal Centre (run by the Bureau since 2003). The project monitors sea level at 12 sites in the Pacific between PNG and the Cook Islands (see http://www.bom.gov.au/oceanography/projects/spslcmp/spslcmp.shtml)	Project currently in its fourth five-year phase.
Ocean Obs in WIO	High	Yes, for Tsunami monitoring	From IOC/Hawaii upgrading tide gauge stations. More funding for new stations and DART System	Yes. IOC Mauritius Meteorological Services/National Coast Guard Indian Navy	Argo Floats deployed. Funds for new moored wave buoy required
Technical maintenance support	Medium	Yes	Yes	Technical Support Project established and contract awarded to NZ Met Service	
Climatology training	Medium	Yes	Yes, refer to item 7	Under PI-CPP, basic to some advanced climatology (mainly on seasonal forecasting) training of NMS personnel took place in 9 PICs. Also, the Bureau of Meteorology Research Centre hosted a fifth Asia-Pacific Network workshop on climate extremes in Melbourne in March 2004. Representatives from 16 countries across southeast Asia and the western Pacific Ocean attended the workshop. Climate extremes were analysed using consistent methods of quality control and trend analysis.	Similar training will be provided to PNG NMS personnel in early 2007. A regional training workshop for 10 participating NMS will be held in Suva, Fiji in early 2007.
Modeling and Climate Change Training	High	Yes	Yes UNEP	Preparation of INC/Stocktaking and other reports NCSA	Preparation of Second National Communications

Modelling of Climate Change	High	-	-	Limited activities locally	Device local area model Monitor climate parameters in SWIO
Climate data management training	Medium	Yes	Yes	A WMO RA V Data Management Training Workshop, aimed at PIC NMS reps, was hosted by the National Climate Centre in Melbourne in Dec. 2004. In 2005-06, Australia carried out work in five Pacific countries to safeguard paper climate records, and provided training in effective records management.	Further work in securing data and effective records management is planned for 2006-07; and also follow-up training in the use of climate data management software (see also Project 26).
Database Management	High	Yes	Training received from WMO, IOC/ China Met Agency	DBMS improved	-
Pacific regional database	Medium	Yes Yes	Some Some	Development of Pacific Data Portal as part of the Global Observing System Info Center. NIWA Subregional climate data archive Initial training for PIC NMS staff in the use of a climate data management system suitable for PICs (ClimSoft) was carried out in 2005 by WMO.	Design data portal in concert with new regional GCOS Program Officer. Continue NIWA Subregional climate data archive. Australia has secured funding to provide backup training and support for ClimSoft, including the preparation of an easy-to-use Users' Guide, and assistance in transferring data from existing systems.
Parallel observation equipment	Low	Yes	No	Discussed extensively with AWSs at SPREP's 9RSMD meeting	AWS Workshop planned which will include discussions of parallel observations Date: TBD

Additional comments from the region:

Establishment of a CBS Lead Centre for GCOS, Covering Pacific Island Countries

Following Australia-United States climate action partnership bilateral discussions in late July 2005, Australian and US officials agreed to "explore the potential for establishing a GCOS regional centre for the Pacific". Further exploration of the idea led to the Australian Bureau of Meteorology accepting a request made in September 2005 by the WMO to assume responsibilities as a CBS Lead Centre for GCOS data. Mr Phil Alford of the National Climate Centre was appointed as the contact person for this Lead Centre. A meeting of all CBS Lead Centre contacts in Geneva in late March 2006 clarified the area of responsibility as the WMO RA V area apart from Malaysia, the Philippines, Singapore and the Hawaiian Islands (thus including southwest Pacific islands, Australia, New Zealand, PNG and Indonesia).

Key roles identified so far for CBS Lead Centre contacts include:

- Monitoring and evaluation of the performance reports from the GCOS Monitoring and Analysis Centres and the listings of data held by the US NCDC, in conjunction with reference to WMO weather station and communication routing catalogues, in order to diagnose the quality, availability, and success or otherwise of communication, of climate data from the GSN and GUAN stations in the GCOS Lead Centre area of responsibility;
- Coordination of activities with other CBS Lead Centres for GCOS as appropriate (through periodic face-to-face meetings as well as more frequent regular telephone conference calls and group e-mails);
- Liaison with nominated GCOS Focal Points in order to address issues identified with the availability and quality of climate data and its communication through the GTS; and
- Six-monthly reporting (e.g. end-September; end-March) to the GCOS Secretariat on actions taken and progress achieved in addressing GCOS data availability, quality and communication issues.

Support for Improved Tsunami Warnings for Pacific Island Countries

A component of the Australian Tsunami Warning System project is focused on improving tsunami warning services for the SW Pacific region. The project will improve both seismic and sea level monitoring networks, by upgrading existing stations as well as installing new stations. A particular feature of the support will be improved communications links to ensure availability of data in real time from both existing and additional monitoring sites. The real time data will be made directly available to the Pacific Tsunami Warning Centre in Hawaii, thereby enabling that centre to provide an improved tsunami warning service to the region.

ClimSoft

The climate data management system, ClimSoft, has great potential to become the generic system for meeting climate data management requirements across the Pacific, but to date it has been under-supported, and use of the system is foundering for a variety of reasons. The project activities described under Project (26) will assist, but the Australian Bureau really needs support from other organizations and countries. Therefore, Australia will be endeavoring to enlist the help of NIWA and NOAA in these activities.

Development of RANET (RAdio InterNET) Pilot Sites in the South Pacific

This project provides inexpensive, reliable communications capability (complementing the existing relatively unreliable systems), through an integrated hybrid combination of Satellite, Internet and High Frequency Radio, to Pacific Island National Meteorological Services and remote communities in particular (e.g. Kiribati, Tuvalu, Vanuatu, Niue and Tokelau). For GCOS, the project has enabled the establishment of inexpensive HF e-mail networks, both for transmission of synoptic and climate observations and for communications seeking technical advice or assistance. Such infrastructure provides enormous assistance for many remote sites, which previously sent monthly climate reports by unreliable mail services. Further, the infrastructure also enables the relay back to remote stations of warnings on natural hazards and related data, and information on disaster management and mitigation. In general, the installation of these systems in a regional context enables the meteorological services to further enhance their regional programs.

The initial phase of the project was an AusAid-funded feasibility study to recommend the most suitable approach for introducing the RANET concept to the Pacific islands region.

The project is currently (June 2006) in its second phase of implementation. A proposal for a third phase, mainly to do with training aspects, is currently under funding consideration by AusAid. The US National Weather Service and the New Zealand Met Service Ltd. continue to collaborate with the Bureau on this project.

Regional Action Plan for Eastern and Southern Africa					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Improving GSN & GUAN	High	Yes	Yes. GCOS, USAID	See comments ** below for additional updated information.	
Improving GAW Measurements	High	Yes	1. Norwegian Donor Funding 2. WMO funds	YES - Ozone Profile Measurements 1. Ozone monitoring commenced at SA Base in Antarctic in 2002 2. SAWS and Botswana team implemented Ozone monitoring equipment at Maun in September 2003	1. Extend ozone monitoring on board Antarctic supply ship for SADC meteorologists (capacity building) 2. Ozone station to be operated by Botswana NMHS
Glaciers (Tropical Mts.)	High	Yes	None	No	
Carbon Cycle	High	Yes	USAID	US/SA Bilateral Project for Carbon Cycle monitoring within tropics together with capacity building for SADC scientists.	Project proposal submitted to US on 1 st October 2003
Hydrological observations	High	Yes	None	Yes - IGAD HYCOS Project Proposal.	Project Proposal to be submitted to EU-ACP Water Facility within the next one week for funding request
Urban Observing	High	Yes	None	No	
Inland Lakes	High	Yes - LVEMP	None	No	
Ocean Obs. In Western Indian Ocean	High	Yes	International Buoy Project for I.Ocean. (I.B.P.I.O.)	SA Weather Service and SA Navy organizes deployment of drifting buoys in W Indian Ocean.	9 buoys deployed in 2003
Remote Sensing	High	Yes	Some	Yes - PUMA Project (MSG Training)	

Database Management	High	Yes	Partial support from Norwegian Funding.	New data capture system (MetCap) developed by SA Weather Service to be available for ESA countries (e.g., for AWS stations supplied to Tanzania).	Implement in SA late 2003. Training taking place for implementation in Namibia & Lesotho.
Improving Telecommunications	High	Yes	Some	Yes VSAT being installed.	
Climate Change Training	High	No	None	Meteorological Training in Climate Change courses at Cape Town and Pretoria Universities.	
Downscaling Climate Chg Scenarios	High	Yes	None	(Inter seasonal climate variability research and operational use at SA Weather Service in conjunction with DMC – Harare).	
Modeling of Climate Change	High	Yes	None	(Modeling for climate variability – as above – teamwork at SA Weather Service).	
General Comments from Survey Respondents	<p>** - We have upgraded a number of GUAN stations. We re-established the operations at Dar es Salaam, Windhoek, and Harare. That means a new generator, upper air equipment and consumables. We upgraded the upper air equipment at Addis Ababa and Nairobi. We provided consumables to many stations in Africa and provided replacement generators for Nairobi, Mauritius, Antananarivo, and Addis Ababa. Ethiopia received new instruments for its 4 GSN stations.</p> <p>We also established and operated a Regional Technical Support project in SADC. This regional TSP provides direct technical support, training, site inspection, calibration, and some consumables to GCOS stations in the region.</p> <p>- November 2003 meeting held on regional infrastructure in Africa. GCOS contributed 15 K CHF.</p>				

Regional Action Plan for Central America and the Caribbean					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Enhance GSN and GUAN	High	Yes	Yes	Yes. GUAN consultant hired and working. GSN in Carib. upgraded through SIDS Carib. project.	
Replace telecom equipment	High	Yes	Yes. Full	Yes. Telecom updated in all countries	Completed
Establish regional air quality station	Medium	No	No	No	
Sustain regional technical support center	High	Yes	Partial	Yes. Support from U.S.	Formal plan to be developed.
Consolidate tide gauge network	High	Yes	Yes. Partial	Yes. GEF project will upgrade 18 existing stations. (See comment 2)	Will be coordinated with tsunami warning system
Implement IOCARIBE-GOOS	High	Yes	Yes. Partial	USAID implementing some activities.	Request formal plan from USAID
Assess surface and groundwater networks	High	Yes	Yes. Partial	Caribbean implementing climate change project involving water resource assessment.	Project plan development.
Monitor natural ecosystems	Medium	No	No	No	No
Monitor land cover change	Medium	Yes	Yes. Partial	Cntr.America. implementing project funded by US EPA and NASA	Try to extend activity into Caribbean
Recover historical data	High	Yes	Yes	SIDS Caribbean undertook data rescue.	Request results from project
Establish regional data warehouse	High	Yes	Yes. Partial	CIMH undertakes for English speaking Carib. Project in Cntrl.America underway as part of estab. of RCC.	
Coordinate GCOS activities	High	No	No	See Annex	Invite existing institutions to apply for task.
Awareness building workshops	High	No	No	No	Identify someone to plan and develop proposal.

<p>General Comments from Survey Respondents</p>	<p>1. - In this respect, WMO has signed a contract with Internet, Inc of Sarasota, Florida and their representatives have been visiting the different countries of CAC region and Mexico to make an inventory assessment of the GCOS observing networks and to identify possible ways of assistance.</p> <p>2. - The MACC Project will rehabilitate several of the 18 tide gauges installed in the Caribbean through the CPACC project. Discussions are still underway to determine the exact number, extent of upgrade and incorporation with a multi-hazard warning system.</p> <p>3. - A Regional Technical Support project has been established in the Caribbean. This TSP provides direct technical support, training, site inspection, calibration, and some consumables to GCOS stations in the region. This "capacity building" spreads beyond just GCOS stations even though its primary focus is on GCOS.</p>
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Regional Action Plan for East and Southeast Asia					
Project	Priority	Further proposal development undertaken?	Funding received?	Activities initiated?	Next steps anticipated?
Enhance GSN and GUAN	High	Yes	Assistance from WMO	Yes/upgrading of GUAN station	GUAN stations increased to at least 5
Support for GAW stations	Medium	No (Note: Pls. consult with Klima)	None	No	None
Support for operational oceanography	Medium	Yes, through GRAND-II proposal to EC and IOC/WESTPAC	Some from IOC	Yes/initiate jumpstarting the project Southeast Asia Center for Atmospheric and Marine Prediction (SEACAMP) through implementation of a website to access marine and oceanographic information	1. Real time sea level observing network 2. New generation SST observing system
Audit hydrological observing networks	High	Yes	None	Yes, inventory repair and rehabilitation	Include stations under community-based initiatives
Rescue GSN and GUAN data	High	Yes	None	Yes/inventory of existing paper records	Scan and digitize old paper records
Rescue hydrometric data					
Data management training	High	Yes	None	Yes/ training on data analysis	Yes, proposed training on use of updated ASEAN data and software
Coordinate GCOS programs via ASEAN SCMG	High	Yes	No	Yes/SCMG in its 26th Meeting discussed the recommendations made by Malaysia in a paper entitled "Coordination of GCOS Regional Action Plan"	Yes, consideration of SCMG as GCOS coordinating body for East and Southeast Asia in identifying national and regional needs

General Comments from Survey Respondents	<ul style="list-style-type: none">- Note that Thailand has continued to develop meteorological network of the country, especially early warning systems in the vulnerable areas to flood and other natural disasters. Data from the systems are used within the country and contributed to the WMO network regularly. The Tsunami effects also generated many developments, including the establishment of National Disaster Warning Center, which has further enhanced the relevant climatic and oceanic information system in the country and the network of the region.- Thailand participated in GAME-T (GEWEX Asian Monsoon Experiment) project. - We would also like to add that in the matter of data rescue, we would recommend that countries that have historical weather records or other countries which have lost their records due to unavoidable circumstances (e.g., files, observations were made by other institutions which no longer serve as the weather bureaus, etc.) should volunteer to share these records.
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Regional Action Plan for Western & Central Africa					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Upgrading GUAN Stations	High	Yes	Some	Yes - see comments below.	
Upgrading GSN Stations					
Reinforcing Telecom Network					
Improving Ocean Observations					
Hydrological Observations					
Information Partnership					
Data Rescue- Climate & Hydrological					
Improving Database Management					
Cap Bldg for Application of Satellite Data					
Climate & Health Partnership					
General Comments from Survey Respondents	- We have upgraded a number of GUAN stations and provided consumables to many stations. Replacement generators have been provided for Douala, Dakar, and Abidjan (will be shipped when the building is completed).				

Regional Action Plan for South America					
Project	Priority	Further proposal development undertaken?	Funding received?	Activities initiated?	Next steps anticipated?
Enhance GUAN Network in Central SA	High		None	See comments below.	
Survey Surface & Upper Air Networks	High	Yes	Some for consumables for GUAN CRV	Yes SMN upgraded 3 GUAN Stations for new sondes generation	Request funding for consumables and capacity building in application area Review in next RA-III meeting in September
Consolidate Greenhouse Gas Network	High	Yes	No	No	
Enhance UV-B Radiation Network	High High	No Yes	None No	Yes, SMN acquires two new biometers and install new sites	No
Enhance Surface & Subsurface Obs in Western South Atlantic	High	No	None	No	
Assess Hydrological Observing Systems	Medium		None	No	
Establish Cryosphere Observing System	Low		None	No	
Improve Database Management	High	A proposal was submitted to IDB by CIIFEN and 6 South American countries. It will contribute in this field and is almost approved.	Requested, and it is expected to receive funds on late 2006	Yes, there is an agreement to start the implementation of a regional data base of Western South American countries	A proposal has been submitted to get funding for implement a QC'd climate database, and establish the equipment to host it.
Rescue & Share Historical Data	High	A proposal was submitted to IDB by CIIFEN and 6 South American countries, it will contribute in this field and is almost approved.	Requested, and it is expected to receive funds on late 2006	No yet, but it will start at the end of this year	A proposal has been submitted to get funding for implement a QC'd climate database, and establish the equipment to host it.

Develop and Apply Remote Sensing Capabilities	High	No	None	Yes, studying how to apply actual RS capabilities to extend the cover area of GG and PM measurements	Capacity building on the application area.
	High	Only few actions without any funding	None	Air Force Radar integration and recording	Contact with Argentina and Paraguay for radar integration database.
Examine Socioeconomic Implications of Extreme Precipitation	High		None	No	
General Comments from Survey Respondents	<p>- We are trying to implement our project but with only few resources, for instance, in the end of June we will start a satellite course application focusing in MSG, for South America, sponsored by EUMETSAT. We are working , without any specific funding, on the integration of weather radar in Brazil, however, we need financial support to make the project continuous following a schedule as defined in the Project.</p> <p>- Not covered by the last GCOS South America Action Plan, the SMN is running actually Regional Calibration Centers for total and surface Ozone, and UV-B radiation. Global Solar Radiation calibration facilities are available.</p> <p>- A workshop was held in South America on correct upper air observing techniques.</p> <p>- A workshop is planned for Buenos Aires in October to teach operators how to correctly prepare CLIMAT and CLIMAT TEMP reports.</p>				

Regional Action Plan for Central Asia					
Project	Priority?	Further proposal development undertaken?	Funding received?	Activities initiated?	Next steps anticipated?
Improve GCOS Surface & Upper Air networks	High	Yes	Some	Yes, A new network project of China climate observation stations is under designing	As a first priority of GCOS network in China, CMA is now designing climate observation system in key observation areas of CCOS
Rescue historical data from GCOS stations	High	Yes	Some	Yes, To rescue the historical observation data for GCOS project	
Strengthen GAW network in Central Asia	High	Yes ¹	Requested ²	Yes, A project is now undergoing for more observation sites.	Funding
Improve hydrological network on major rivers: --high mountain --lowland --data rescue --public relation	High	Yes	Some	Yes, Some projects have been initiated. especially in Tibetan plateau And along the Yangtze river basin.	
Organize network of large lake observations in Central Asia	Low	Yes	Some	Yes. Some projects have initiated. specially in Tai lake, Cao lake, and Dian lake.	Water resources Real-Time Monitoring and allocation Systems are going to be designed.
Glacier monitoring	Medium	Yes	Some	Yes	Adding monitoring sites on the Qinghai-Xizang Plateau and Tianshan
Improve satellite products for climate applications in Central Asia	High	Yes	Some	Yes	By using satellite information to deduct aerosol, vegetation snow cover for climate diagnosis

Permafrost monitoring	High	Yes	Some*	<p>Yes. In 2006 some old equipment was changed with new data loggers and a few new sites for the permafrost thermal state observations were established.</p> <p>Yes</p>	<p>The developed proposal will be submitted to other foundations (e.g. NSF)</p> <p>Adding monitoring sites along Qinghai-Xizang Railway</p>
General Comments from Survey Respondents	<ul style="list-style-type: none"> - 1a) In the Russian Federation (RF), precipitation chemistry data delivered to the World Data Centre was renewed. - 1b) In RF, candidate sites for a GAW global station were selected and agreed with the WMO Secretariat. - 2) Funding was requested to organize a GAW global station in Northern Caucasus, RF. - * Scientific staff members of Kazakhstan alpine permafrost laboratory received five HOBO U12 4-ext channels and twenty Hobo U22 TemperPro V2 (single sensor) data loggers for alpine permafrost temperature monitoring in the Tien Shan Mountains. The University of Alaska Fairbanks funded purchase of the data loggers. - Enhance the connection of the overall design scheme of the China Climate System Monitoring Network with the Global Climate Observing System (GCOS). Pay equal attention to the surface observation system and the satellite observation system; gradually realize the point-surface combination of the surface observation system with the satellite observation system; design the optimized ground-space observation system. - It is also a key technical problem to design the China Climate System Monitoring Network, based on the existing conventional observation network, which can describe the characteristics of various underlying surfaces and their multi-sphere interaction (air-land, air-sea, air-ecology and environment-air processes). As a first priority of GCOS network in China, China is going to design climate observation system in key observation areas in CCOS. - The upper air equipment at Yerevan (Armenia) GUAN station has been upgraded. 				

Regional Action Plan for South & Southwest Asia					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Improve GCOS Surface & Upper Air networks	High	Yes	Some	Yes	To build support & potential Donors To activate & start more stations
Establish GAW aerosol monitoring in the region	High	Yes	None	Yes	To build support & potential Donors
Establish an Indian Ocean observing system for climate	High	Yes	None (all provided by INCO)	Yes	To build support & potential Donors
Enhance availability and use of hydrological data	High	Yes	Some	Yes	Matters taken up for further funding to add more stations
Monitor glaciers for water resources	High	Yes	None	Yes	To build support & potential Donors
Improve understanding of carbon cycle: FLUXNET	High	Yes	None	Yes	Final approval of proposed project
Data rescue & database management	High High	Yes Yes	Some	Yes Yes	To build support & potential Donors Based on Donors meeting results Telecommunication System Development
Build regional capacity for satellite applications for climate & development	High High	Yes Yes	By INCO & ROPME	Yes Yes From Government agency (Pak. Met. Dept.)	To build support & potential Donors Global algorithms refining & Calibration

<p>General Comments from Survey Respondents</p>	<p>- Efforts are being made for establishing more stations in the region because of water scarcity in the region and also generation of hydropower & for mitigation of floods & droughts over the region. Efforts are also underway to use of satellite observations for monitoring the climate change pattern which governs the availability and non-availability of water and drought prone zones.</p> <p>- Regarding the Data rescue & database management project, there was no initiative for any implementing steps and I think most of the proposed projects are waiting for the the results of UNDP/GEF meeting.</p> <p>- <u>The following comments apply to the corresponding projects in the above table:</u></p> <p>3- Measurement of physical and chemical parameters of Gulf of Oman in Chabahar, including wave, current surface water variation and so on.</p> <p>4- According to article 2.K, I. R. of Iran has taken initial steps toward establishing regional hydrological forecasting center.</p> <p>5- The following studies have been carried out in Iran. Field working and investigation on permanent snowy zones. Study on the hydrology of river basins that are fed by Glaciers, Using satellite images for investigation about glaciers.</p> <p>6- It should be taken in to account that the Indicative Budget for Fluxnet project is estimated based on the availability of necessary infrastructures, such as electricity etc and it is expected that governments of the countries in the region fully cooperate with flux net teams by providing them with transportation, accommodation and subsistence costs and security measures.</p> <p>7- An integrated national marine database are going to be developed in INCO and of the next step the telecommunication data transfer system will be established</p> <p>8- Two regional and national workshops were held in the two last year in co-operation of ROPME in marine RS & satellite oceanography, Tsunami, running the wave model for Oman Sea. Installation moored buoy in Oman Sea.</p>
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Regional Action Plan for Eastern & Central Europe					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Establish Cooperative Mechanism: EuroGCOS	Low	Yes: some discussion at COP11 with other European GCOS coordinators; results see under next steps.	Not requested/ needed	No	Discuss proposal with international affairs managers of NMHSs in RA VI.
Improve GCOS Surface & Upper Air networks					
Assess GAW needs for global & regional stations in ECE					
Training workshop for instrument calibration	High	Yes	Some	Successful training workshop for instrument calibration held in Ljubljana.	
Inventory oceanographic observing needs for Black, Adriatic, & Baltic Seas					
Establish metadata database for hydrological data					
Data management training workshops	High	Yes	Yes	WMO supported 5 th Seminar on homogenization and quality control in climatological databases (Budapest, 29 May-02 June 2006). COST Action proposal on homogenization (has a good ranking)	Next steps: 1.WG on Climate-related Matters at the beginning of October. 2.Publication of the proceedings 3.Establishment an RCC on Homogenization
Data rescue in ECE region					
Using satellite data for climate monitoring based on the SAF					

Capacity building in regional downscaling & modeling	High	Yes. The project is further elaborated to hold two separate one-week Workshops: one International PRECIS Workshop from 13-17 November 2006, and the other one-week International Workshop on the results and limitations of AOGCMs/ RCMs, and uncertainties in climate scenarios which will be held in the first half of 2007.	None. Request was submitted to WMO to obtain funds for the participation of the Representatives of NMHSs from Central and Eastern Europe in the PRECIS Workshop ,Belgrade, 13-17, November 2006	Yes. An implementation plan has been drafted that envisages holding two separate one-week International Workshops in Belgrade at the Hydrometeorological Service of Serbia: The First one week International PRECIS Workshop will be held from 13 to 17 November 2006; the Second International Workshop on the results obtained using the PRECIS and other RCMs, limitations of AOGCMs and RCMs, as well as uncertainties in climate scenarios planned for the first half of 2007.	Provision of funds in the amount of \$60,000 for organizing two one-week workshops, (first one by the end of 2006 and second in the first half of 2007).
Drought monitoring	High	Yes	Yes	Proposal for Drought Monitoring Centre in South Eastern Europe (UNFCC and WMO initiative and finance). At least 4 proposals for the host (Romania, Slovenia, Turkey and Hungary).	Steps: 1.WG on Climate-related Matters at the beginning of October. 2.Questionnaire within RA VI. 3.Cooperation with the Water scarcity WG at the Water Directors. 4.Connection with the JRC. 5.Connection with GMES.
Mass media communication: awareness raising	High	Yes	Some	Yes. There will be a workshop in Ljubljana in Cankarjev Dom in September 2006 during the 6th ECAC conference. On 7 September there will be a Workshop on how to communicate weather, climate and climate change science to general public.	See comments below

<p>General Comments from Survey Respondents</p>	<p>- After the meeting held in Ljubljana last September there was some progress regarding Project 12 - Mass Media Communication: Awareness Raising. I would like to point out two events:</p> <p>1- The Commission for Climatology (CCI) agreed at CCI-XIV with a proposal from the floor during the session in Beijing (3-10 November 2005) on communications skills for climatologists. It was suggested that CCI work on guidelines and training proposals for effectively communicating meteorological and especially climatological information to the media and decision makers - to be modeled after the excellent work done in PWS on media training for meteorologists. The wording of the appropriate paragraph is below:</p> <p>6.8.6 The Commission noted the need for capacity building on communication skills to assure the better use and understanding of climatological information within the community of decision makers, the general public and other end users. This aim could be largely achieved by conveying the information through the media and in direct communication with policy makers. There is a need for guidelines and for training workshops on communication skills, tailored specifically to meet the needs of climatologists, especially with respect to the issues of climate variability, change and extremes. The Commission noted that in RA VI, these activities are already foreseen in the GCOS Action Plan for Eastern and Central Europe. The Commission agreed to work in partnership with the CBS/PWS, WMO CPA and other relevant partners to develop guidelines and training proposals for effectively communicating meteorological and climatological information to the media and decision makers.</p> <p>2- There will be a workshop in Ljubljana in Cankarjev Dom in September 2006 during the 6th ECAC conference. On 7 September in the afternoon there will be a Workshop on how to communicate weather, climate and climate change science to general public. Several invited speakers will take part at the workshop. There will be interventions of science journalists, climatologists, weather presenters, bulletin editors, public relations officer and representatives of EU Reporting Service. They will illustrate how various weather, climate and climate change information can be efficiently brought closer to general public. The purpose of this workshop is to share experience on how to make the best use of the media including some useful tips.</p> <p>- I'm sure that you already know that there has been a very successful training workshop held in Ljubljana for instrument calibration.</p> <p>- Our opinion is that all the projects and Workshops proposed within the framework of GCOS Regional Action Plan for Eastern & Central Europe are of high priority for NMHSs of this Region. Also, we think that a key condition for the implementation of the project RAP, whose implementation is the obligation of developing countries and countries in transition, is timely provision of financial support. With regard to this issue, our opinion is that the role of UNFCCC, GEF and UNDP is crucial.</p>
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Regional Action Plan for the Mediterranean Basin					
Project	Priority? (high, medium, low)	Further proposal development undertaken? (yes/no)	Funding received? (none, some, all requested)	Activities initiated? (yes/no) (if yes, which?)	Next steps anticipated?
Improving GSN & GUAN					
Data & Metadata Rescue	I would say High	Yes	None	Yes. 1. Locating and getting permission for accessing to DARE 1 data over Northern African countries through involving the Spanish WMO PR in an official request through WMO to ACMAD 2. Further involving other NMSs across the region	1. Defining the climatic records to be recovered by the currently involved organizations. 2. Locating new sources of historical climate data on a country-by-country basis.
Improving Hydrological Observations					
Improving GAW, with an emphasis on aerosols	High	No. It depends on a Mediterranean Basin GAW workshop.	Some. National funds for GAW stations in operation.	Yes. There are some regional and global GAW stations in operation.	Yes
Extension of MedGLOSS to North African countries					
Consolidation of MOON core services					
Locust control	High High	Yes Yes	All requested Some	The climatic conditions of the region are favourable for locust activity and the multiplication of populations. Yes. The Center already exists. Project: for 40 stations in south Algeria and receipt of a system satellite.	Installation of: -A preventive control system for the migratory locust.. -A meteorological observation network on the activity of the locust. Anticipated
Enlarging the ROSELT ecological network					

Extending drought monitoring					
Improving instrument calibration					
Hosting a PRECIS training workshop					
Improving ocean obs. in deep water and straits					
Establish a coordination mechanism for the region					
Controlling water consumption on irrigated lands using climate data	High	No	No	Yes	No
Awareness raising on climate change	High	No	No	Yes	No
Improving measurement of isotopes in precipitation	Medium	No	No	Yes	No
General Comments from Survey Respondents	<p>- It seems important to try to connect, as much as possible, all the projects, or at least those that can have clear relationships, in order to make the whole RAP more consistent. It would be useful for ensuring projects' funding and the success of the Mediterranean RAP, to make it known to different kinds of national and international organizations. I am particularly thinking of sending it to the different Mediterranean countries' National Research Councils (at least to the developed Med. countries) to encourage them to adopt/prioritize the different research subjects addressed by the RAP to their national scientific programs and priorities. It would also be very useful if the RAP and its research subjects could be sent to GEO and GEOSS staffs to encourage them to pursue the need for developing such projects and would suggest, for instance, to the European Community to adopt them in the FP7.</p> <p>- The implementation of the locust project is definitely necessary because this curse has caused severe losses in the agricultural sector since time immemorial, along with great disruption of the finances of the affected countries. This latter involves an imbalance in the socio-economic sector, since the affected countries bear great expenses that draw money from the budget accounts previously programmed for other activities. Indeed, the expenses of these countries add up to hundreds of millions of committed dollars that are diverted to dealing with the migratory locust. Consequently, investment in the establishment of a watch and early warning system against invasions by locusts would enable all countries of the Mediterranean basin to contribute to preventing multiplication of locusts and predicting their activity in time and space and will encourage them to participate in this project that will enable them to achieve lasting food security.</p> <p>- Project No. 14: Some countries have initiated activities (e.g., Tunisia, where farmers, national structures have participated as well as local authorities. Good results were obtained.</p> <p>- Project No. 15: Tunisia (INM) has already initiated a project - integration in secondary school programs of some lectures related to meteorology and climate change.</p> <p>- Project No. 16: Actual measurements of isotopes are currently carried out by meteorological services, and the observations are sent to Austria for analysis. Regional collection and analysis are required.</p> <p>- A workshop was held in Casablanca to teach operators how to correctly prepare CLIMAT and CLIMAT TEMP reports.</p>				