WORLD METEOROLOGICAL ORGANIZATION

INFORMAL PLANNING MEETING ON THE VOLUNTARY CO-OPERATION PROGRAMME (VCP) AND RELATED TECHNICAL CO-OPERATION PROGRAMMES

Brasilia, Brazil, 10 - 13 March 2003

FINAL REPORT

GENERAL SUMMARY OF THE WORK OF THE MEETING

1. OPENING OF THE MEETING *(Agenda item 1)*

1.1 The 2003 Informal Planning Meeting (IPM) on the Voluntary Co-operation Programme (VCP) and related Technical Co-operation Programmes was held at the Instituto Nacional de Meteorología (INMET), Brasilia, Brazil, from 10 to 13 March 2003. The meeting was attended by 21 participants representing 13 WMO Members and two collaborating technical co-operation organizations. The list of participants is given in Annex I to this report.

1.2 The meeting was opened at 09:45 a.m. on 10 March 2003. Mr Augusto Athayde, Permanent Representative of Brazil with WMO and Director of INMET, welcomed all participants to the IPM. Mr Athayde thanked all the Meteorological and Hydrological Service Representatives for being present at the meeting in Brazil and stated the importance of projects for the development of meteorological activities and the society's welfare. During his speech, Mr Athayde took the opportunity to compliment the innumerable efforts made by the countries in technical co-operation, which have contributed immensely to the advancement of meteorology on a global scale. Mr Athayde informed that it was an honour for Brazil to be part of such an important project organized by WMO, as a collaborator, in assisting countries of South America and Africa in having better forecast capabilities and helping the world in its global weather studies.

1.3 On behalf of Prof. G.O.P. Obasi, Secretary-General of WMO, Mr H. Diallo, Director of the Technical Co-operation Department, welcomed the participants to the meeting and thanked Mr Athayde, Permanent Representative of Brazil with WMO, for inviting the meeting and for the excellent arrangements made and the hospitality extended to the participants. He especially welcomed new participants from Members and representatives of our collaborating technical co-operation organizations in South America who were attending this meeting for the first time. He highlighted the importance of the WMO VCP in the Technical Co-operation Programme and noted the valuable contributions that had been made by several Members during the past year. In referring to the successful implementation of projects supported under the VCP, he informed that the WMO Secretariat continued efforts towards the mobilization of resources from the Governments, the World Bank, regional development banks, other bilateral and multilateral funding agencies such as the European Commission, and the private sector, in order to complement the VCP support. As examples, he informed of the inauguration of the International Research Centre on El Niño Phenomenon (CIIFEN), Guayaquil, Ecuador, the progress of the RA III RMDCN project, and a project aiming at strengthening the operational capacity of the Institute of Meteorology of Brazil (INMET). He reiterated that despite these efforts and commendable support from donor Members, a large number of VCP projects for both equipment and fellowships remain unsatisfied each year. He informed the meeting of further development of the Secretariat strategy to the emergency and disaster situations and of the Emergency Assistance Response Team (EART) activities. With financial support from some donor Members, the VCP(F) and possibly the regular budget, he was confident that the WMO emergency assistance activities would be enhanced to ensure timely and co-ordinated support to affected NMHSs. He recalled that a VCP Brochure entitled "Working together – Partnerships in weather, climate and water for development" had been issued aimed at highlighting the success of the Programme and the advantages of participating in the VCP Programme. Inviting the meeting to address several priority issues, he finally expressed a wish that our partner technical co-operation organizations in the meeting would further strengthen their working relationship with WMO. He wished the meeting success.

2. ORGANIZATION OF THE MEETING *(Agenda item 2)*

2.1 Election of the chairman *(Agenda item 2.1)*

2.1.1 Due to the absence of Mr Bruce Angle (Canada) who was the interim chairman, Dr V. Tsui (Australia) was unanimously elected chairman of the meeting.

2.1.2 Dr Tsui informed the meeting that this was the first IPM following the official endorsement of the Terms of Reference by the 2002 Executive Council. He emphasized the importance of active participation in this meeting because the report will go directly to Congress XIV, as the EC Advisory Group of Experts on Technical Co-operation will not meet this year.

2.2 Adoption of the agenda *(Agenda item 2.2)*

2.2.1 The agenda adopted is given in Annex II to this report.

2.3 Working arrangements *(Agenda item 2.3)*

2.3.1 The meeting agreed on its working hours and to its work programme during the session.

3. EVALUATION OF THE VCP AND RELATED TECHNICAL CO-OPERATION ACTIVITIES IN 2002 *(Agenda item 3)*

3.1 Evaluation of VCP activities in 2002

Support to VCP projects

3.1.1 The meeting reviewed the Members' contributions to the VCP in 2002 given in Annex III and the evolution of the support to the VCP over the past 20 years given in Annex IV. It noted that the total contribution in 2002 was at almost the same level as in 2001.

3.1.2 The meeting noted that, in 2002, 71 VCP projects (excluding requests for fellowships) were newly circulated amongst donor Members and, out of about 380 valid outstanding projects, 64 VCP projects obtained partial or full support. The support received for these projects grouped by fields of co-operation during the period 1988-2001, and in 2002 is given in Annex V.

3.1.3 During 1988-2002, a total of 1,391 VCP projects was circulated amongst donors. About 49% of the VCP projects received support: VCP projects related to surface observing stations, upper-air observing stations, telecommunication systems, data processing systems, CLICOM and climatological activities, and meteorological applications activities (including Aeronautical Meteorology and Public Weather Services Programmes) have received a high level (45-64%) of support, while those for weather radar stations, research and training centre activities, and GAW activities received a lower level (7-22%) of support.

Support to education and training fellowships

3.1.4 The meeting was informed that during 2002, more than 900 requests for fellowships were received from Member countries, and 116 short-term and 35 long-term fellowships were newly awarded under the VCP. Noting that the VCP(F) allocation for group training activities, introduced for the first time during the year 2001, was most useful and was

appreciated by all concerned, the meeting considered that the allocation of VCP(F) funds to the group training activities should be maintained.

3.1.5 In spite of the substantial offers of support obtained every year, about 500 requests for fellowships remain unsatisfied. Noting that the VCP has become a major source in supporting WMO fellowships, the meeting encouraged donor Members to maintain or even increase their VCP contributions to education and training fellowships with emphasis on cost-effective programmes and preferably through RMTCs.

Effectiveness of the Voluntary Co-operation Programme

3.1.6 The meeting noted with appreciation that various efforts by the Secretariat continued to be made to ensure the cost-effective and efficient management of the VCP Programme through further enhancement of the use of TCO/VCP web pages for assisting Members in project request preparation, distribution of relevant information, and for publicity and resource mobilization. The meeting was pleased to note that the VCP/TCO web pages included full information on VCP project requests circulated in 2000, 2001 and 2002, as well as a PDF version of the VCP Brochure. In addition, a presentation material (MS-PowerPoint files) with regular update is accessible for use in publicity and resource mobilization activities by the Secretariat and Members.

3.1.7 The meeting welcomed, with appreciation for Australia and UK's support, the issuance of a VCP Brochure entitled "Working together - Partnerships in weather, climate and water for development" (English and French) aimed at highlighting the success of the Programme and the advantages of participating in the VCP Programme. The Brochure was distributed to the participants in the World Summit on Sustainable Development (WSSD) and to WMO Members and potential donor***s.***

3.1.8 With appreciation for the Secretariat efforts, in view of the usefulness of the on-line information and materials for publicity and resource mobilization, including the VCP Brochure and the PowerPoint presentation material, the meeting encouraged the Secretariat to continue to increase the availability of on-line information on the VCP.

Evaluation of VCP projects

3.1.9 As recommended by the 2002 IPM for strengthening the monitoring process, a simpler questionnaire requesting information on the completion, expected results, degree of satisfaction to the arrangements (for delivery and training), etc., was developed and sent to recipient countries for newly supported on-going projects in 2002. Replies were received from several countries giving updated useful information for monitoring and evaluating VCP projects.

3.1.10 The meeting further noted that following the evaluations in 1994, 1996, 1998 and 2000, the fifth biannual evaluation was carried out in July-December 2002 for VCP projects completed in the last five years, and the results are being analyzed for submission to Cg-XIV and EC-LV.

3.1.11 Considering the importance of the evaluation of VCP projects for obtaining funds from governments and funding institutions, and for better implementation of projects, the meeting felt that the number of replies to the evaluation questionnaire from the recipient countries should be increased. The direct contact by donor Members with the Permanent Representatives of recipient Member countries during Congress would assist in this process.

VCP co-ordinated programmes

3.1.12 The meeting was informed of the various activities of VCP co-ordinated programmes carried out during 2002 (as given in Annex VI). It noted, in particular, the progress in the development of several Climate Database Management Systems (CDMSs)

and expressed the view that responsibilities involved in installation, customization, documentation, training and software maintenance would be huge. Hence long-term arrangements for these activities must be put in place.

Utilization of the Voluntary Co-operation Fund (VCP(F))

3.1.13 The meeting was also informed of the provisional status of the VCP(F) at the end of 2002. In 2002, eight Members made cash contributions amounting to about US $257,000 to the VCP(F). The meeting noted with appreciation Republic of Korea's new contribution to the VCP(F). The expenditure and obligations for approved projects amounted to about US $332,000 during 2002. The funds were used mainly for expert services, short-term fellowships, TCDC activities, support to ACMAD activities, and high priority programmes, in particular for support to upper-air and surface observing stations, for the improvement of GTS, and operational hydrology activities, in accordance with the guidelines approved by EC-XLVIII.

WWW Implementation Support Revolving Fund

3.1.14 The meeting noted that since the establishment of the WWW Implementation Support Revolving Fund in 1985, 27 loans were granted to 21 countries for temporary assistance to purchase spare parts and consumables for continued operation of existing vital WWW key elements. In 2002 no Members utilized the Fund. It also noted that, through the utilization of the diplomatic channels and with assistance of Regional and Subregional Offices, five Members, Egypt, Malawi, Mozambique, United Republic of Tanzania and Uganda, took action for reimbursement of their loans in 2000-2001.

Funding of projects - resource mobilization for the VCP

3.1.15 The meeting noted that, following the publication of the VCP Brochure, a mission was carried out by VCP Senior Programme Manager to Denmark and Norway (NMHSs and Ministries of Foreign Affairs, and the Norwegian Agency for Development Co-operation (NORAD)) in 2002 for the promotion and resource mobilization for the VCP/TCO Programme. Following the mission, Denmark newly reported its VCP-related activities to the 2003 IPM, and Norway offered to support Yugoslavia for the Trust Fund project for the replacement of satellite receiving system for the Meteosat Second Generation (MSG) satellite. With a view to the usefulness of such a mission for the promotion of the Programme, the meeting requested the Secretariat to continue and expand the mission worldwide.

Highlights of donors' actions in 2002

3.1.16 The meeting was informed of highlights of donors' actions carried out in 2002. The information provided on the completed and on-going activities of the VCP donor Members, viz, Argentina; Australia; Brazil; Canada; Chile; China; Denmark, Finland; France; Germany; Hong Kong, China; Israel; Japan; the Netherlands; New Zealand; Portugal; Republic of Korea; Russian Federation; Spain; Switzerland, United Kingdom and USA is given in paragraphs 6.2.3 to 6.2.91 with details of their planned activities in 2003.

3.2 Review of other related technical co-operation activities in 2002

WMO Technical Co-operation Activities in 2002

3.2.1 The meeting was provided with a summary and the highlights of technical co-operation activities which were carried out in 2002 within the framework of Regular Budget co-operation activities, and other components of the Programme, such as Trust Funds, the United Nations Development Programme (UNDP), the Global Environment Facility (GEF),

the World Bank, regional development banks, and others. The meeting was also informed on the efforts that had been made to explore new sources of funding and to establish new linkages with various agencies and organizations as well as the private sector.

3.2.2 The meeting noted that technical assistance activities during 2002 amounted to US $19.08 million, of which US $7.34 million was from the Voluntary Co-operation Programme, US $3.20 million was from the United Nations Development Programme (UNDP), US $7.61 million was from trust funds and approximately US $0.93 million was from the WMO regular budget. The list of on-going UNDP and Trust Fund projects is given in Annex VII.

UNDP and related activities

3.2.3 The meeting was informed that despite the present situation of the UNDP in terms of funding capacity and areas of focus, WMO and some Members have continued to develop and implement national and regional projects in support of meteorological activities. Most of these projects are either Support for Policy and Programme Development (SPPD) projects or government 100% cost-shared projects. For example, an SPPD project entitled "Factoring of Climate Monitoring and Early Warning for Disaster Management" was being implemented in Kenya to develop recommendations for integrating climate information and products into the national planning process, including disaster management. Under a project to enhance the capability of the Libyan Meteorological Department, an integrated telecommunication system was installed and an automatic weather station network, an integrated terminal weather system for Tripoli airport and a calibration and maintenance workshop were being established. Major training activities related to these facilities have also been embarked upon.

3.2.4 The meeting also noted that UNDP projects continued to be implemented in Bahrain to strengthen meteorological services, mainly through the introduction of new facilities and manpower development, and in the United Arab Emirates to establish a numerical weather prediction facility for short- and medium-range forecasts (up to 120 hours). This will be achieved through the selection of an appropriate model, which will be modified to fit local requirements and conditions, and through training and study tours. In Maldives, the project to build human resources capacity in the Department of Meteorology continued through training activities.

Trust-fund projects, including bank funded projects

3.2.5 The meeting noted that several regional and national trust fund projects were being implemented in various regions, the components of which focus on human resources and the upgrading and modernizing of basic WWW facilities, especially observation stations, telecommunications and data processing facilities and climate related activities. In Region I, with the financial support provided by the Governments of Belgium and the USA, respectively, the Harare and Nairobi Drought Monitoring Centres provided early warning advisories for extreme climate events in eastern and southern Africa. They also conducted capacity-building workshops to enable staff of NMSs in the sub regions to upgrade their seasonal forecasting skills, and regular Climate Outlook Forums, during which consensus forecasts were developed for the 2002/2003 rainfall seasons in the respective regions. In West Africa, Phase II of the project "Early Warning and Agricultural Yield Forecasting", with a contribution from the Italian Government, continued to be implemented satisfactorily. In Chad and Mali, the Swiss Development Co-operation Department (SDC) contributed towards strengthening the application of agrometeorological information and advice for farmers. The SDC agreed to contribute to the implementation of the project "Strengthening and Extension of the Operational Meteorological Assistance to the Rural Committees in Mali" over the period 2000-2004. Furthermore, the SDC agreed to support the third phase of a project in Chad whose main objective is to strengthen operational activities of the NMS in order to enhance the application of agrometeorological information and to provide advice for agricultural and pastoral production.

3.2.6 The meeting noted that in Region II, Trust Fund projects were being implemented in the Islamic Republic of Iran Meteorological Organization for the establishment of a weather radar network, in Oman for the verification and maintenance of data processing systems and telecommunications, training of scientists and computer personnel, as well as improvement of the numerical wave model, and enhancement and maintenance of the software for the Oman Regional Model. Within the framework of the Saudi/WMO Trust Fund, a SADIS system for the Presidency of Meteorology and Environment of Saudi Arabia was procured.

3.2.7 The meeting was informed that most of the activities in Region III were essentially concentrated in Brazil where WMO and the national authorities have had a long-standing co-operation, with the support of the INMET which is hosting the WMO Project Office. Among the on-going active projects, the project "Support to the monitoring programme and hydrological georeference for hydro-electric power" (WMO/ANEEL (98-001)) was extended from April for a three-year period. Activities under the project "Environment and mining" were completed at the end of the year. The new project "Technological update of the hydrological monitoring and georeferencing systems and technical training for water resources management" (WMO/ANA/02/001) with the National Water Agency is a major effort of the Brazilian Government to integrate all the agencies and institutions dealing with water resources in Brazil. In addition, the meeting was updated on the establishment of the International Research Centre for El Niño Phenomenon in Guayaquil (CIIFEN) (see Annex VIII).

3.2.8 The meeting noted further that in Region IV, under the Inter-American Development Bank (IDB)/WMO feasibility study "Prediction of the Amelioration of Socio-economic Impacts of El Niño/Southern Oscillation (ENSO) in Latin America and the Caribbean", project proposals had been prepared for early warning systems for Colombia, Central America and Mexico. WMO provided assistance to the National Meteorological Office of the Dominican Republic in the rehabilitation and recovery of meteorological infrastructure damaged by hurricane Georges in 1998. This included preparation of technical specifications for equipment, evaluation of bidding, supervision during installation of stations, and training of staff. In Mexico, significant progress was made in the implementation of the Water Resources Management Project (PROMMA), funded by the World Bank and the Mexican Government. The activities related to the SIDS-Caribbean project, which are highly relevant to on-going and future VCP activities in the Caribbean countries, are detailed in Annex VIII.

Programme development activities

3.2.9 The meeting was made aware of the latest programme development activities which aim to assist NMHSs in having available, in a timely manner, development plans and related project proposals for submission to the governments and potential donors and funding agencies. In this regard, it was noted that in Region I, various initiatives were launched to obtain funding from the United States Agency for International Development (USAID) for project proposals to support the continued operations of the Nairobi and Harare Drought Monitoring Centres. A project developed for the CILSS countries in collaboration with the AGRHYMET Regional Centre was approved by the Italian Government for implementation over a period of three years in order to provide the countries with the appropriate tools to assess food security vulnerability and manage natural resources. Several project proposals were submitted for consideration within the framework of the UNDP's Support for Policy and Programme Development facility. Additionally, following negotiations with the Brazilian authorities, an agreement was concluded for the implementation of a project which aims at strengthening the operational capacity of the National Meteorological Institute of Brazil through specialized training and new equipment.

3.2.10 The meeting was informed that negotiations continued with the European Commission to develop further collaboration in areas of common interest, especially water resources, climate change and human resources development. It is foreseen that a

Memorandum of Understanding will be concluded in the near future and will lead to an exchange of information and the development of joint co-ordinated projects such as the Transport Corridor Europe-Caucasus-Asia Programme, the Integrated Project for a Monitoring and Information System for the Caspian Sea and a hydrological cycle observing system for the major European basins.

Regional collaboration

3.2.11 The meeting noted that WMO continued to promote regional collaboration through regional intergovernmental organizations such as the UN Economic and Social Commission for Asia and the Pacific (ESCAP), the Association of Caribbean States (ACS) and the Southern Africa Development Community (SADC). Through this collaboration, issues such as the prevention of natural disasters, climate change and its impacts and human resources development have been addressed by NMHSs concerned in a collective manner. In this connection, the meeting noted that some regional initiatives have been developed in Region VI, such as the South-East European Meteorological Radar Network project, with a view to integrating the radar networks of the participating South-East European countries.

3.2.12 The meeting was provided with highlights of the number of on-going projects, the activities of which were relevant to the IPM discussions. These are given in Annex VIII.

4. ASSESSMENT OF THE PRIORITY REQUIREMENTS FOR TECHNICAL ASSISTANCE IN SUPPORT OF WMO PROGRAMMES *(Agenda item 4)*

4.1 Priority VCP requirements in support of WMO Programmes for 2003

Generalities

4.1.1 The meeting was informed of the priorities for assistance required to implement the WMO Programmes in the fields of co-operation covered by the VCP as given in the VCP rules: the World Weather Watch Programme, the World Climate Programme, the Hydrology and Water Resources Programme, the Atmospheric Research and Environment Programme, the Education and Training Programme and the Applications of Meteorology Programme. A summary of the information is given in Annex IX.

World Weather Watch Programme

Integrated observing systems (IOS)

4.1.2 The meeting discussed several aspects related to a future, more optimal structure of the GOS and considered various approaches how best to assess the highest priority needs of developing countries in the light of the high cost associated with running observing stations. It recognized that several factors would in the future determine the composition of the GOS. On the one hand there are the emerging technological opportunities, such as the enhanced capabilities of the second-generation environmental satellites and the recent incorporation of the research and development environmental satellites into the GOS, as well as AMDAR, ASAP, ARGO floats, etc. On the other hand there are the diverse requirements for observational data, ranging from the needs of NWP on a global scale to local short-range weather forecasts and warnings, and the requirements of the climate monitoring.

4.1.3 It was noted that the future structure of the GOS was being studied as a matter of high priority by the CBS. Anticipating the pertinent recommendations and conclusion of CBS, the meeting agreed to place for the time being the highest priority on the assistance to surface and upper-air stations in support of GCOS, i.e., GSN and GUAN stations.

4.1.4 In this connection the meeting was informed of the outcome of two studies organized in 2002. One study, supported by the WMO, identified the surface and upper-air stations in Africa that needed assistance based on requirements of synoptic forecasting, NWP and GCOS. Another study, supported by the US NWS, gave priority to GCOS in identifying the stations and the corresponding support measures. In was clear from both studies and the WWW Monitoring Statistics that RA I and RA III were the regions that had the greatest deficiencies in GCOS coverage.

4.1.5 In summary, both studies suggested the following measures to improve observing stations in developing countries:

- Provision of equipment, including increased use of AWSs;
- Reactivation and/or strengthening of upper-air programmes;
- Strengthening of climatological stations;
- Facilitation of staff training;
- Support for possible AMDAR implementations;
- Support for maintenance of instruments and specialized equipment, through provision of spare parts;
- Support to country or sub-regional initiatives for production of consumables and related accessories.

4.1.6 The specific recommendations are given in Annex X. In summary, the meeting noted that the recommendations included the following measures and estimated cost, which would basically provide for a one-year reliable operation of selected priority GSN and GUAN stations in RA I and RA III:

- 7 silent or partially silent GUAN stations in RA I are to be brought into full operational mode;
- 19 silent GSN stations in RA I should be refurbished through the installation of AWS;
- A Technical Support Centre for the maintenance of the GCOS stations should be established in RA I;
- 16 silent or partially silent GUAN stations should be brought to the full observing programme in RA III;
- Consumables for one year;
- Total cost: US $2.7 million.

Information Systems and Services (ISS)

4.1.7 The meeting discussed the on-going project for the future RA III RMDCN. It recognized that the project is in an advanced stage, with the international tender concluded, the bids evaluated and the RA III Steering Group addressing in the very near future the final recommendation for the selection of the service provider and the subsequent framework contract. The US NWS representative presented to the meeting a possible option for extending the RA IV ISCS to Region III. In light of the pertinent resolution of the RA III (Quito, 2001) and the very advanced stage of the RMDCN project, it was felt that the extension of the RA IV ISCS could be considered in the next upgrade project of the RMDCN in RA III depending on a corresponding decision of the Regional Association.

Applications of Meteorology Programme

4.1.8 The priorities in the assistance required for the implementation of the Aeronautical Meteorology Programme, the Marine Meteorology and Oceanography Programme and the Public Weather Services Programme are given in paragraphs 1.5 to 1.7 of Annex IX, respectively.

4.1.9 The meeting stressed that high priorities in the implementation of the Aeronautical Meteorology Programme should be given to the installation of terminal

equipment in various countries to access the WAFS data and products, the replacement of the current STAR4 workstation by a new version, and to training staff who should be able to use the new workstations to provide flight documentation.

4.1.10 In the implementation of the Marine Meteorology and Oceanography Programme, high priorities should be given to the provision of instruments and equipment to carry out marine surface and oceanographic observations at Voluntary Observing Ships and to the provision of training for local technical personnel and for Port Meteorological Officers. The meeting noted that direct assistance to developing countries for the acquisition of Inmarsat C ship terminals will benefit the enhanced provision of maritime safety services.

4.1.11 Regarding the Public Weather Services (PWS) Programme, the meeting noted that high priorities should be focused on the provision to recipients of modern computing and communication systems (hardware and software) to improve data access and facilitate design and delivery of PWS, and training in the management, maintenance and use of the systems.

Tropical Cyclone Programme

4.1.12 Priority subjects of the Tropical Cyclone Programme are given in paragraph 1.8 of Annex IX. The meeting noted that high priority requirements for assistance were focused on the training of storm surge experts and provision of funding for the third biennial RA I Training Course on Tropical Cyclones planned for October-November 2003 at RSMC La Réunion Tropical Cyclone Centre.

World Climate Programme

Climate Computing (CLICOM) and Data Rescue (DARE) projects

4.1.13 The meeting noted that the final evaluation of the Climate Database Management Systems (CDMSs) offered by some Members took place in May 2002. The strategy retained is to combine parts of the data rescue and the Archival Climatic History Survey (ARCHISS) activities with the CDMS. The development of technology allows the use of scanners and/or digital cameras for data preservation and possibly digitizing. It is therefore expected that all new systems being offered to countries will include equipment for data rescue such as scanners, OCR software, etc. The meeting noted that a standard template was being prepared for Members to use in surveying their paper archives and setting their priorities for national DARE projects.

4.1.14 The meeting reviewed two project proposals to improve the capacity of African and Asian countries to rescue and manage their climate data and thus improve their ability to perform climate change analyses through the upgrading of hardware and software for the national climatic databases and archives; and the provision of advanced training to local staff in the use of national climate data for climate change analyses. The beneficiary countries for the first project in Region I will be: Cameroon, Congo, Gambia, Guinea Bissau, Madagascar, Rwanda, Sao Tome and Principe, Uganda, United Republic of Tanzania and Zambia. For the second project, the beneficiary countries (in Regions II and V) should be: Cambodia, Lao People´s Democratic Republic, Niue, Papua New Guinea, Samoa and Tonga. The meeting agreed that there was merit to further assist NMHSs in developing their CDMSs using available tools and products and encouraged donors to continue making efforts in providing support to CDMS and data rescue activities.

4.1.15 The meeting was informed that there is a need to consider sponsorship for upgrading the database management system in some of the Members in the Interstate Council for Hydrometeorology (ICH)/Newly Independent States (NIS), and to support CDMS systems in Central America and the Caribbean countries.

Climate Information and Prediction Services (CLIPS)

CLIPS Showcase Projects: Heat/Health Warning Systems

4.1.16 The meeting noted that WMO, in collaboration with a number of partner organizations in the Climate Agenda and national and municipal agencies, is collaborating in a series of showcase projects that begun in 1999 to demonstrate the application of climate information and weather forecasts to the reduction of human deaths related to extreme heat waves. Although the Rome and Shanghai projects are drawing heavily from the successful experiences of similar climate applications that were instituted in USA, they are also incorporating knowledge gained throughout the network of climate and health applications that are overseen by WMO Commission for Climatology (CCl).

4.1.17 The meeting further noted that the showcase projects are products of the CCl's priority on "Development of climate services in support of human health". The first phase of the projects which started in 1999, involves focused study and development of a warning algorithm specifically for individual cities - ideally, one in each region. This phase is still continuing and VCP support during 2003 could be used to provide for the travel of climatological experts and the travel of NMHS partners to assist in the development of the correlation and the warning algorithm, and to cover the costs of retrieving the archived meteorological data. The second phase, which started in 2001, will comprise the preparation of generalized guidance for NMHSs to use in developing similar systems. During this phase other climate/health relationships will be considered and appropriate applications developed. The meeting noted that VCP support was required for the development of generalized guidance and the conducting of a workshop on climate and health that would use the showcase project as its main example.

Training of CLIPS Focal Points

4.1.18 The meeting was informed that the CLIPS Project Office has initiated a programme to establish national CLIPS Focal Points and, in some cases, regional CLIPS Focal Points. These will be the contact points on matters related to CLIPS at national and regional levels. Training workshops have already been held for Focal Points from RA V and RA I (West Africa, Southern and Eastern Africa) and two workshops are planned to be held in RA III and RA VI in 2003. The meeting encouraged donors to contribute to the organization of these two workshops.

4.1.19 In addition, the meeting agreed that there was a need to support the establishment of Regional Climate Centres (RCCs) within regions, which will be, as far as possible, co-located with existing specialized centres such as the Drought Monitoring Centres in Africa.

Agricultural Meteorology Programme

4.1.20 The meeting noted that within the framework of the Agricultural Meteorology Programme, and as a result of several regional and inter-regional workshops on agrometeorological applications and practices, the concept of a World Agrometeorological Information System (WAMIS) was developed and is being implemented through the creation of a dedicated web server for distributing agrometeorological products and simple and effective training modules. WAMIS will also allow countries to place their agrometeorological bulletins and advisories and also obtain training modules to improve these products. The global web server is to be located in USA, with backup mirror servers to be located in the Republic of Korea and Italy. First-year funding for WAMIS has been provided by the National Weather Service of the United States.

4.1.21 The meeting therefore noted that additional support was needed for the maintenance and improvement of WAMIS for 2003, estimated at US $10,000 and for the organization of a number of training workshops in different regions in the use of improved

methodologies and tools available on WAMIS for the preparation of agrometeorological bulletins and advisories, estimated at US $10,000 per workshop.

Hydrology and Water Resources Programme

4.1.22 The meeting noted that under the Hydrology and Water Resources Programme, VCP support has been focused on the following areas:

- hydrological observing systems (in particular, automatic stations, satellite transmission equipment for automatic stations, gauging equipment), such as those provided by Canada and the USA to Central American countries;

- data acquisition and processing systems (software and hardware for data base management, with particular emphasis on those countries which still maintain, partly or totally, their data bank on paper support; Geographical Information System (GIS) and Remote Sensing (RS) application to hydrology);

- training in operational hydrology with emphasis at the technician level; and

- expert services for the project and programme development and feasibility studies.

4.1.23 The meeting noted with satisfaction that progress had been made in the hydrological data rescue pilot project in Africa with the support of the VCP(F) to convert the stored data from paper to electronic form. In 2002, the United Republic of Tanzania newly participated in the project, in addition to Chad, Eritrea, Gambia, Ghana, Kenya, Niger, Rwanda and Togo. Each participating country was provided with a PC, a software package for data processing and management (HYDATA and HYDROM software for English-speaking and French-speaking countries, respectively), a printer and a scanner, and training. The hydrological data rescue pilot project in Africa was successfully implemented and contributed to: strengthening the human and institutional capacity of the National Hydrological Services in nine African countries; strengthening the capacity of trainers in Africa; and the modernization of data archiving systems in the region. The impact of the project in the participating countries is being assessed by the Secretariat and another bigger project to cover other interested countries will be developed. The meeting also noted that in 2002, the data rescue project for the Russian Federation (for Valdai) was supported with the VCP(F) and computer equipment was provided by France to Mali for enhancing the hydrological data bank. The meeting agreed that VCP(F) could continue to be used for such activities. (ref. paragraph 4.1.14)

Atmospheric Research and Environment Programme

4.1.24 The meeting recalled that Thirteenth Congress in its Resolution 10 had requested WMO Members to give all possible support to the Atmospheric Research and Environment Programme, with a high priority to the Global Atmosphere Watch (GAW) and the World Weather Research Programme (WWRP). Congress agreed that measurements of the chemical composition and related physical characteristics of the atmosphere should be given similar attention to that received by classical meteorological parameters. In this connection, the following priority activities could be considered for VCP support:

(a) Enhancement of the GAW network of monitoring stations, through the provision of assistance and advice to the WMO Members-in-need for establishing new and upgrading existing GAW stations (especially in the Tropics, the Southern Hemisphere and in continental areas), for expanding measurement programmes in data-sparse regions (in particular, for ozone, aerosol, UV and CO);

(b) Support to improvements in quality of GAW data, through the facilitation of intercomparisons of measurement instruments (in particular, ozone and UV spectrophotometers) and to conduct calibration exercises;

(c) Further development of activities in the field of atmospheric urban environment, through the initiation of the new GURME (GAW Urban Research Meteorological Environment) pilot projects in various cities (in particular, where the air pollution problems are acute and urgent). Assistance will also be needed to provide training in air pollution modelling and forecasting and in developing national and regional strategies and capabilities to address urban environment problems; and

(d) Enhancement of GAW training opportunities, by establishing "twinning" relations between Members to provide assistance, advice and training and to facilitate participation of GAW stations personnel in the training sessions of the GAW Training and Education Centre (GAWTEC) in Germany.

Education and Training Programme

Education and training fellowships

4.1.25 The meeting noted that the WMO Executive Council acknowledged with appreciation the generous contributions of VCP donor Members and appealed to them to maintain and, if possible, to expand their contributions to the WMO fellowships programme. It noted in particular that the VCP(F) annual allocations for short-term fellowships and group training activities proved most useful during the year 2002 and satisfied urgent and pressing training needs of many developing WMO Member countries and agreed that such allocations should continue and possibly be increased for 2003.

4.1.26 The meeting acknowledged that the Secretariat continued the promotion of cost-sharing arrangements and the use, as far as possible and when available, of extra-budgetary funds for the fellowship programme. These measures should complement the traditional fellowship financial resources.

4.1.27 The meeting noted that at its 20th session, the EC Panel of Experts on Education and Training "encouraged the Secretariat to initiate a project to improve the connectivity of all RMTCs. The possibility of financing this small project through extra-budgetary sources such as VCP, bilateral or multilateral schemes was also considered". The meeting agreed that support for such a project would be useful, taking into account the potential offered for the development and organization of distance learning through electronic means.

Regional Programme

4.1.28 The meeting noted that a number of high priority needs have been identified by Members at sessions of Regional Associations, most of them centring around the needs for improving the basic WWW facilities, human resources development, improved services to decision makers and the user community and meeting challenges related to issues such as natural disaster reduction and climate change.

4.1.29 The identified priorities for each region are given in the Sixth WMO Long-term Plan.

4.2 Special items requiring urgent action under VCP

4.2.1 Future of WAFS/RMTN

4.2.1.1 The meeting noted that the final implementation phase of the WAFS is planned for 2004 when the London and Washington World Area Forecast Centres (WAFCs) will be able to provide all WAFS products (wind and temperatures and significant weather forecasts) as well as OPMET information (i.e., METAR and TAFs) to meet the requirements for flight documentation needed by airline crews. The WAFS information is transmitted globally via satellite broadcasts by London WAFC mainly over the Eastern Hemisphere (SADIS) and by Washington WAFC predominately over the Western Hemisphere (ISCS) and both will support the migration of WAFS data format to binary forms namely GRIB/BUFR coded WAFS products. These upgrades would necessitate the replacement of the current workstations in order to meet the target date of 2004 for the final phase of the WAFS.

4.2.1.2 Currently over 160 countries have installed around 200 Very Small Aperture Terminals (VSATs) and a similar number of workstations linked to these VSATs operated by various aeronautical meteorological service providers to access the WAFS products and OPMET information. It will be recalled that in the mid-1990s, following the start of WAFS broadcasts from London and Washington, a large number of Members received assistance though VCP projects for the acquisition and installation of WAFS workstations from the Met Office, UK, and the US National Weather Service (NWS) and other donors. As a result of the upgrade of the WAFS broadcasts and the need to replace the current workstations, Members are expected to submit VCP requests to WMO starting this year.

4.2.1.3 The meeting also noted that the telecommunication provider's contract for the present International Satellite Communication System (ISCS), which provides the satellite-based telecommunications (two-way) for the RA IV RMTN as well as for ICAO WAFS and OPMET information dissemination (receive-only) over the Atlantic and Pacific areas, will terminate in September 2003. The US NWS is implementing the transition to a successor ISCS. This transition will have a direct and potentially large impact, with an upgraded capacity, to all RA IV RMTN centres regarding the transmission and data processing systems. The new ISCS will use TCP/IP in place of X.25, and some hardware needs to be replaced in VSAT stations. For technical reasons the currently used data terminal/display equipment (STAR4) must be replaced. The upgrading of the telecommunication component is being undertaken by the US NWS, while the replacement of the data terminal/display equipment will fall into the purview of each RA IV Member concerned. Some RA III Members (Colombia, Guyana, French Guiana, Venezuela) are also concerned, being connected to the RA IV satellite-based RMTN.

4.2.1.4 The contract for the successor ISCS was awarded at the end of 2002 and it is envisaged that the transition to the new system will last about one year. Furthermore a three-month dual operation (X.25 and TCP/IP) is planned to ensure a smooth transition to the new ISCS in early 2004. It is imperative that the new ISCS workstations be operational before the end of the transition period (early 2004) in all the RA IV NMCs.

4.2.1.5 Most Caribbean countries will be supported through the SIDS-Caribbean project. Some countries will purchase their own ISCS workstations, and some other countries (mostly in Central America) probably will require external support. The WMO Secretariat has finalized the technical specifications for the purchase of the workstations part of the SIDS-Caribbean project and launched the tendering process.

4.2.1.6 The new ISCS is also expected to require the replacement of the data terminal/display equipment attached to the receive-only VSAT for the reception of ICAO WAFS and OPMET information. All NMHSs of RA III, and a significant number of NMHSs in RA V, are equipped with a WAFS/OPMET VSAT receiving station.

4.2.1.7 In this regard, the meeting was informed of the US plan of support to the ISCS transition as given in Annex XI.

4.2.1.8 The meeting stressed the importance of co-ordinating efforts in the STAR4 replacement process and encouraged Members to work jointly on this issue.

4.2.2 Implementation of the GCOS Regional Action Plans

4.2.2.1 The meeting noted that the Global Climate Observing System (GCOS) initiated a Regional Workshop Programme in mid-2000 to facilitate improvements in climate observing systems in developing countries. This programme was developed in response to Decision 5/CP.5 of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). Four of the ten regional workshops in the 10-workshop programme have now been completed, including those for (1) Pacific Island countries; (2) the countries of Eastern and Southern Africa; (3) the countries of Central America and the Caribbean; and (4) the countries of East and Southeast Asia. In addition, Regional Action Plans based on the priority needs identified in the workshops have been completed for the first two regions, and, as of November 2002, Regional Action Plans for the latter two regions are in the process of being developed. In 2003, it is expected to hold regional workshops and initiate the development of Regional Action Plans for the countries of West and Central Africa and for those of South America.

4.2.2.2 The meeting noted further that, as requested at COP7 (Marrakech, Morocco, November 2001), the GCOS Secretariat submitted the Regional Action Plans for the Pacific Islands and Eastern and Southern Africa to the 16th Session of the COP's Subsidiary Body for Scientific and Technological Advice (SBSTA16) (Bonn, June 2002). At that meeting, SBSTA "noted the urgency of moving these plans forward into implementation". SBSTA also encouraged the Parties, in co-operation with the GCOS Secretariat, "to explore the full range of funding options that might assist the implementation of the Plans, including the Global Environment Facility (GEF), donor support such as through partnership arrangements, and international aid programmes directed at capacity-building, technology transfer, education and training, and recommended the involvement of representatives of potential funding bodies in the development of the implementation plans".

4.2.2.3 The meeting also noted that recently, the COP and SBSTA addressed the GCOS Regional Workshop Programme and related Regional Action Plans at COP8 and SBSTA17 in New Delhi (October 2002). SBSTA noted that "regional workshops organized by the GCOS Secretariat on the implementation of decision 5/CP.5 are leading to specific proposals to address the deficiencies in global observing systems for climate in developing countries". SBSTA invited the Subsidiary Body for Implementation (SBI) to "take note of the need to fund those aspects of the proposals relating to the global observing system and to consider at future sessions possible financial implications of such needs". In the past year, the COP and SBSTA have continued to express their interest in GCOS Regional Workshops and in the Regional Action Plans that are initiated by them. The implementation of proposals contained in these plans is a priority both for COP and for GCOS. However, implementation remains problematic, as the resources required to implement projects have been limited. Some developed countries, among them the United States, have expressed a willingness to substantially increase their funding for improving observing systems in developing countries (especially for GSN, GUAN, and GAW networks).

4.2.2.4 The meeting therefore agreed that priority attention should be given to helping improve GSN, GUAN, and GAW networks in South America, Africa, and the South Pacific. In particular, special attention could be given in the three regions to the bulk purchase of radiosondes, the purchase of upper-air systems capable of using radiosondes from several different suppliers, installation of automated weather stations that contain fully integrated

synchronous satellite DCP capabilities and solar power options, and purchase of portable hydrogen generators.

4.2.2.5 In this connection, the meeting was pleased to note that the USA confirmed its support to GCOS through the President's Climate Change Research Initiative (CCRI), with an allocation during the 2003 fiscal year of US $4.0 million for international climate observing. The allocation will be directed towards two basic areas: US $1.5 million to establish climate observing sites in the Indo-Asia-Pacific region through the Atmosphere Brown Cloud (ABC) project; and US $2.5 million for the most critical needs and deficiencies of the three GCOS atmospheric networks (GUAN, GSN and GAW).

4.2.2.6 The meeting noted that activities already being carried out by the USA identify the high priority needs for the US $2.5 million that include, in addition to site specific support for the three GCOS atmosphere networks, supplies of expendables and data management activities at the GCOS Global Date Centre. The meeting was informed that a key US requirement for the release of the funds is to obtain matching funds from other sources. This condition is vital in order to allow the funds to be released to the GCOS Secretariat by the end of the current US fiscal year in September 2003.

4.2.2.7 The meeting also noted that the UK was providing support to this activity and intends to continue in the future. The meeting expressed its appreciation to the USA and the UK and encouraged other countries to participate in the support to GCOS.

4.2.2.8 The meeting was informed of on-going discussions on the possible establishment of a GCOS Donor Fund (GDF) which would allow donor agencies and other partners to contribute to such a fund. The rationale for the establishment of such a fund include among others the development of the critical mass of funding to support the achievement of sustained improvements in global observing systems for climate, a more efficient use of limited resources through maximizing synergies, avoiding duplication and optimizing distribution, training, procurement and other operational issues, and the encouragement for co-operative arrangement for co-financing between funding mechanisms, particularly in the area of capacity building. Several features of the fund are being discussed especially regarding the modalities of management and allocation of resources to specific projects. The meeting requested the WMO Secretariat to keep members of the IPM informed on the progress made in the establishment of such a fund.

4.2.3 Response to natural disasters and countries emerging from conflict

4.2.3.1 The meeting recalled that the WMO "Emergency Assistance Fund" (officially entitled "WMO Disaster Assistance Fund for Meteorological and Hydrological Services"), established in 1991 (and renamed in 1999), is an existing WMO emergency assistance mechanism to assist Members affected by disasters in the rehabilitation and restoration of observing network, data collection and processing facilities and in international data exchange in cases where disasters have destroyed or severely disabled the meteorological and/or hydrological infrastructure.

4.2.3.2 The meeting was pleased to note that during the period 1999-2002, the emergency assistance under this scheme has been provided through voluntary contributions, in cash or in kind, to the Democratic People's Republic of Korea, Mozambique, Solomon Islands, Sudan, Viet Nam and Yugoslavia, as well as countries in Central America and the Caribbean.

4.2.3.3 The meeting further noted the development of the Secretariat response strategy to the emergency and disaster situations. Through the discussions in the regularly-held EDRG meetings, a concept of an EDRG Disaster Situation Report was developed in 2002 to assist the decision making process with respect to calling meetings of the EDRG and setting

up an EDRT/EART, and the assessment of a disaster situation. The procedure of the EDRG Disaster Situation Report was reviewed in response to the storm damage in the north-western part of the Democratic Republic of the Congo in February 2003. The most updated information was gathered and integrated into a report by EDRG staff (a consultant and a Junior Professional Officer). The Chairman of the EDRG made a decision not to call an ***ad-hoc*** EDRG meeting based on the fact that there was no damage reported on the infrastructure of the NMHS in the Democratic Republic of the Congo. Emergency assistance response was therefore not considered.

4.2.3.4 The meeting was informed of the on-going emergency assistance through EART activities to Afghanistan. The Permanent Representative of Afghanistan with WMO visited the WMO Secretariat and the Met Office, UK in July 2002 to review the situation in the country and discuss possible approaches to restore and reactivate meteorological and hydrological services. The most urgent requirements (meteorological instruments, GTS connection through the Internet, telecommunication equipment, staff training, etc.) were assessed and informed by e-mail to potential donor Members for consideration of possible emergency support. China and UK provided meteorological instruments for surface observing stations, and a refresher training course by experts from Pakistan is scheduled for three months in March-May 2003. An EART expert mission to Kabul was planned in October 2002 and in February 2003 to assess the most urgent needs and requirements of the NMHS and to assist Afghanistan in the identification of medium- and long-term requirements and in the formulation of project proposals, however the mission was postponed due to security reasons.

4.2.3.5 In addition to the allocation of US $80,000 from the VCP(F) in 1999-2001 and some Members' contributions to EART activities (Australia, Japan and UK contributed US $20,000, US $20,000 and £20,000, respectively, in 2000-2001, and France allocated FF170,000 in 2000), a modest allocation for emergency assistance in the WMO Regular Budget is proposed to Cg-XIV for the fourteenth financial period.

4.2.3.6 For the implementation of EART activities, simplified procedures for the Emergency Assistance Fund and for the VCP will be applied. In 2003, NMHSs will be contacted to identify: points of contact at each NMHS in case of disaster; status of disaster preparedness activities and current capabilities; minimal requirements for observation and communication networks; and available experts to participate in EART for the assessment of requirements.

4.2.3.7 The meeting was also informed of the possible support to the Democratic Republic of Timor-Leste being considered by Australia, Indonesia and Portugal in developing its meteorology. The Australian representative indicated that A$10,000 would be donated to a WMO Trust Fund to enable a WMO Mission to be undertaken to the Democratic Republic of Timor-Leste, hopefully before Cg-XIV.

4.2.4 Other matters

4.2.4.1 The meeting noted that discussions were still on-going at the level of CBS and the WMO Executive Council on the support to AMDAR activities which will now be considered under the GOS framework. Support to the present AMDAR Panel will be considered under this new framework.

5. MAJOR TRENDS AND OPPORTUNITIES *(Agenda item 5)*

5.1 The meeting reviewed the information provided on major trends and opportunities for NMHSs which has been reviewed by several fora in WMO, especially the WMO Executive Council working groups on the Long Term Plan and on the Role and Operations of NMHSs. The relevant information can be found in appropriate EC and Congress

documents. The meeting noted that as a result of rapid technological developments and of globalization, NMHSs require continuous modernization processes to meet future challenges. In this regard, it emphasized that training and technical co-operation activities should be continued to assist NMHSs in various areas, especially mobilization of resources from non-traditional sources.

5.2 The meeting noted that particular efforts were made by the WMO Secretariat to enhance resources for technical co-operation activities and develop appropriate strategies to identify new sources of funding. These include the continued efforts to strengthen relationships with the World Bank, the Inter-American Development Bank, the African Development Bank, bilateral and multilateral funding agencies and the private sector, as well as efforts to establish partnerships with other UN programmes and specialized agencies and regional economic groupings, leading to the development and implementation of projects and programmes of common interest. In addition, partnerships between NMHSs of countries and the WMO Secretariat should be strengthened with the view to mobilizing more resources with national funding institutions and agencies within the countries.

5.3 The meeting reviewed various opportunities which exist to enhance resource mobilization for the NMHSs through several actions, among which:

· The preparation by NMHSs of multi-year development plans in accordance with the national environmental and sustainable development priorities, including those related to poverty eradication;

· The active participation of NMHSs in relevant activities of regional economic groupings in collaboration with WMO Regional and Subregional Offices;

· Increasing the availability of information on NMHSs and WMO activities on the Internet and in the local media (newspapers, radio and television); and

· The establishment of partnerships among NMHSs to accomplish some of the development goals contained in the development plans.

5.4 The meeting also noted that several useful suggestions and recommendations regarding resource mobilization had been made within the WMO Secretariat and by various experts commissioned by WMO on this subject. In this context, the meeting highlighted the following areas of relevance:

· The development of a co-ordination mechanism for resource mobilization to support WMO technical and scientific programmes;

· The enhancement of the relationships between NMHSs through improved partnerships;

· The utilization of foundations such as the WMO linked New Sun Foundation which needs to be reactivated;

· The relevance of projects and programmes prepared by NMHSs and WMO through various emerging issues such as natural disaster reduction, climate change, water resources management, poverty eradication, and El Niño awareness; and

· The enhancement of the quality of products being provided by NMHSs to the user community.

5.5 The meeting also encouraged the NMHSs to look into the possibility of tapping resources from the private sector, based on examples of successful attempts made by other Members. Furthermore, the meeting noted that there were useful examples of partnerships with the private sector being established by other organizations such as the IOC of UNESCO which could be used by WMO.

5.6 The meeting emphasized the importance of having current and new WMO Regional and Subregional Offices located where there were excellent communication facilities. The meeting also noted the important role WMO Regional and Subregional Offices had in initiating and co-ordinating technical co-operation activities (including the formulation of project proposals) in their respective areas, including maintaining up-to-date information on Members in the region and close contact with donors. The meeting felt that it would be useful if the updated database on Members´ contact details could be available on the WMO website.

6. OUTLOOK OF VCP AND OTHER RELATED TECHNICAL CO-OPERATION PROGRAMMES FOR 2003

6.1 VCP activities for 2003 with emphasis on the 2003 VCP theme, Observing systems for climate

Expected Members' support to the VCP in 2003

6.1.1 The lists of VCP project requests which have not yet received full support were presented to the meeting to invite donors' consideration of support. It noted that there are 262 VCP projects for equipment and services which still require support from donor Members.

6.1.2 The information on VCP donor Members' expected contributions to the VCP in 2003 is given in section 6.2 below. The meeting noted that the total contribution in 2003 is expected to be at almost the same level as in 2002.

Effectiveness of the Voluntary Co-operation Programme

Management of the VCP Programme

6.1.3 The meeting noted that, with the approval of Cg-XIV, the VCP Programme will continue to be implemented and managed in accordance with the established present Rules and Procedures.

6.1.4 The meeting was pleased to note that in 2003 the promotion of the VCP Programme will continue to be made through issuing regularly VCP-related publications to Members in print and through the Internet, the further enhancement of Internet TCO and VCP web pages, and the VCP Manager's mission to potential donor countries. The meeting was informed of the VCP Office's plan for the further improvement of TCO/VCP web pages, including the creation of new home pages for easier access to the necessary information; and the inclusion of information on the list of outstanding VCP projects (with regular updates) and the list of pipe-line technical co-operation projects with links to individual project briefs.

VCP requests and evaluation

6.1.5 Further to the discussions in the 2002 IPM, the VCP request form is being modified to include the information on the expected outcomes more clearly. In this regard, the meeting agreed with the suggestions of the IPM evaluation sub-group composed of representatives of France, UK, USA and WMO for the improvement of project formulation and evaluation, as follows:

(1) Evaluation should be integrated into the project planning process and have both qualitative and quantitative elements;

(2) All project proposals should contain the following structure:

- Project description (including title, recipient country, duration, point of contact);
- Overall goal(s) (related to WMO Long-term Plan);
- Project plan (activities, actions, steps or phases);
- Measurable indicators of success (objectively verifiable indicators - criteria that will be used to determine if the project met its goals);
- Means of verification (how the indicators will be measured, and the limits on these);
- Assumptions used in the project plan;
- Project budget; and
- Project partnerships, including additional funding sources;

(3) The evaluation report would then include:

- Summary of outcomes;
- Assessment (quantified if possible) of the means of verification;
- Unforeseen consequences; and
- Follow-up activities or projects for sustainability;

(4) The evaluation should be aligned with the proposal. Even the most straight-forward projects, such as distribution of consumables should have a plan for maintenance, education, and follow-up to ensure VCP funds are used for improving the overall management of a NMHS;

(5) Reporting will be the responsibility of the Project Focal Point and may be completed on-line to facilitate compiling statistics for the WMO Secretariat and transfer of information. All donor countries should receive copies of the evaluation form completed by the VCP funding recipient;

(6) In the evaluation report, Project Type will be indicated. Suggested project types are: Hydrological, Climatological, Forecasting, Technology and Training, Management, Communications, etc.; and

(7) Each project should be evaluated based on similar criteria. Assessment of the means of verification should be both quantitative (e.g., on a scale of 1 to 5 with an additional category of N/A (not applicable) and qualitative as a descriptive commentary. Preference will be given to projects that are more holistic and interdisciplinary in scope. The reporting process should help recipients to reflect on how to thoroughly integrate a project or training into the overall plan of their NMHS.

6.1.6 The meeting requested the sub-group to continue to work through e-mail to propose desirable VCP request and evaluation forms for the improvement of project formulation and evaluation, with reference to the Rules of the WMO VCP.

VCP co-ordinated programmes

6.1.7 Noting that various technical projects including training have satisfactorily been implemented under the currently approved VCP co-ordinated programmes by EC-LIV, and the priority areas are still valid, the meeting felt that it would be appropriate to maintain the list of VCP co-ordinated programmes during 2003.

Allocation of the Voluntary Co-operation Fund (VCP(F)) for 2003

6.1.8 The meeting reviewed the proposal for the allocation and adjustment of VCP(F) for 2003. New allocations and adjustments are proposed based on the projected contribution to the VCP(F) in 2003 (estimated to be about US $250,000), taking into account the expenditures over the past years and priorities in support (in view of the VCP theme for 2003 - "Observing systems for climate"), mainly for short-term fellowships; improvement of observing system of GOS and GCOS; upper-air stations in Central and Eastern Europe and Newly Independent States; TCDC activities; and ACMAD activities.

6.1.9 The meeting recommended some measures for the improvement in the delivery of approved project lines taking into consideration the urgent requirements assessed in collaboration with Regional and Subregional Offices and Technical Departments, including the possible review of the guidelines of the use of the VCP(F).

Funding of projects - Resource mobilization for the VCP Programme

6.1.10 The meeting was pleased to note that the necessary guidance and materials (annual VCP publications, web-page information, PowerPoint presentation materials and a VCP Brochure) were prepared to assist Members in the resource mobilization activities in terms of the VCP to explore possible support from other governmental institutions, non-governmental organizations and the private sector. Potential donor Members were invited to carry out their resource mobilization activities in the country with the materials available. In this regard, donor Members were encouraged to add a one-page additional paper describing country activities to the VCP Brochure for use in their resource mobilization activities.

6.1.11 The meeting noted that mission(s) by VCP Senior Programme Manager will continue to be carried out worldwide for the promotion of, and the resource mobilization for, the Programme. Several firms and non-governmental organizations will also continue to be contacted by the VCP Office for possible support to the Programme.

6.1.12 The meeting felt that sharing of information on donor sources is very important for resource mobilization which will benefit all WMO regions.

Co-operation with other funding/technical co-operation organizations

6.1.13 As agreed at the last IPM, representatives of several funding institutions and technical co-operation organizations based in South America were invited to the meeting in order to foster close co-operation with these agencies and exchange information on relevant activities. In this context, a special session was dedicated to presentations by the Brazilian Cooperation Agency (ABC) and the Inter-American Institute for Global Change Research (IAI).

6.1.14 The meeting was given a brief introduction by Mr Vinholes of its activities with an historical review, with emphasis on its possible collaboration with WMO Technical Co-operation Programme.

6.1.15 The Brazilian Cooperation Agency (ABC) is an organ of the Ministry of External Relations of Brazil and is responsible for co-ordinating and supervising Brazilian international technical co-operation programmes and projects which are implemented under bilateral and multilateral agreements signed between the Government of Brazil and its partners. ABC, on

behalf of the Brazilian Government, analyzes, approves and negotiates, technical co-operation programmes and projects with external counterparts, and also monitors the execution of technical co-operation projects by Brazilian institutions in Brazil and abroad (see web page: www.abc.mre.gov.br).

6.1.16 In the past three years, ABC has engaged itself in technical co-operation through "triangulation", and for that purpose documents have been signed allowing joint technical co-operation activities in developing countries in Africa, with JICA of Japan in Mozambique, and GTZ of Germany in Angola and Sao Tome and Principe. ABC is also engaged in South-South technical co-operation with countries in Latin America, the Caribbean, Africa (especially Portuguese-speaking countries) and East Timor and has focused on such areas as Health, Environment, Agriculture, Education and Industry.

6.1.17 ABC aims to contribute to the densification of relations between Brazil and developing countries, to enhance its interchanges for the generation, dissemination and use of technical knowledge, for the training of its human resources and for the strengthening of its institutions.

6.1.18 Dr G. Necco, the representative of the Inter-American Institute for Global Change Research (IAI), introduced the mission, structure and activities of the institution. The IAI is an intergovernmental organization supported, at present, by 19 countries in the Americas dedicated to pursuing the principles of scientific excellence, international co-operation, and the open exchange of scientific information to increase the understanding of global change phenomena and their socio-economic implications.

6.1.19 As a regional entity, one of the IAI major programmes is the Collaborative Research Network (CRN): 14 large-scale research projects on subjects related to the Institute's Science Agenda and comprising 14 Principal Investigators located in different countries; more than 170 co-investigators (the number grows each year) throughout the Americas; and about 150 participating institutions. This CRN programme has also a strong component of training and education. The IAI is willing to explore possible co-sponsoring or co-sharing of capacity building activities in areas of common interest (mainly related to WCRP and CLIPS).

6.1.20 The meeting expressed appreciation to the representatives of the above organizations for their valuable contributions and recommended that further dialogue be maintained with these institutions, including during future meetings, for further collaboration.

6.2 Perspectives of VCP donors' actions for 2003

6.2.1 The meeting was informed of the plans of donor Members to support some of these VCP projects in 2003 and beyond and expressed the views that these plans could not be considered as firm commitments on the part of the donor Members as conditions could change and result in re-adjustment of their plans.

6.2.2 The statements related to the co-operation activities in 2002 and outlook for 2003 of Argentina; Australia; Brazil; Canada; Chile; China; Denmark, Finland; France; Germany; Hong Kong, China; Israel; Japan; the Netherlands; New Zealand; Portugal; Republic of Korea; Russian Federation; Spain; Switzerland, United Kingdom; and USA, including their contributions to the VCP(ES) and VCP(F) and information on bilateral activities, are given in the following paragraphs.

Argentina

6.2.3 In 2002, Argentina continued its activities as a donor to the Spanish-speaking countries of Regions III and IV. However, Argentine contributions to the VCP were lower than their historical values, on account of general financial reductions. Financial restrictions brought about significant reductions in the over-all volume of support, particularly during the first half of the year.

6.2.4 The following co-operation activities were carried out, albeit with reductions:

· Internships and short- and medium-term courses at RMTC Buenos Aires;

· Granting to certain Members of RA III password-protected access to value-added products developed by the Regional Specialized Meteorological Centre (RSMC) Buenos Aires, which were published on the restricted-access Internet site of the National Meteorological Service (SMN);

· Missions by Argentine experts to other NMHSs.

However, standard calibration and repair of other Members' meteorological instruments by the Regional Instrument Centre (RIC) in Buenos Aires were not completed during 2002.

6.2.5 In 2002, 34 students from four RA III countries attended post-graduate courses offered by RMTC Buenos Aires (SMN component). This included participants from Brazil, Peru and Uruguay, for which the nominal cost of tuition was US $1,400. (For many years, WMO grant recipients have been exempted from payment of tuition fees.)

6.2.6 As in 2001, during 2002 Argentinean specialists from the SMN worked consecutively as advisers in operational meteorology at the National Water Commission (CNA) of Mexico. This was accomplished in the framework of the agreement concluded between the CNA and WMO. For this project, the SMN continued to pay the monthly salaries of the three Argentinean experts during their missions, while additional costs were covered by WMO with funds from the above-mentioned project. The estimated Argentine support to this activity was about US $8,000.

6.2.7 Throughout 2002, the restricted Internet site of SMN has included several value-added products from RSMC Buenos Aires. This information may be accessed using a password and an account. Accounts have been provided to several Members of RA III upon request. As in 2001, SMN has provided, on a medium-term loan basis, an electronic secondary reference barometer to another country of Region III.

6.2.8 In 2003, the outlook is as follows:

· Although standard calibration of Members´ instruments was not performed by Buenos Aires Regional Instrument Centre during 2002, this activity will be reinitiated in 2003. This will include Members´ barometer calibrations and a Dobson spectrophotometer calibration for the GAW stations of RA III (late in 2003);

· For 2003, contributions to VCP by Argentina should regain the level of 2001, following the 2002 low;

· New activities will include a beginner's course in meteorological radar interpretation (in Spanish) for RA III and RA IV;

· A facility for ozone sounding and other upper-air special observations has been established in Ushuaia (Tierra del Fuego) and this is being made available to Members wishing to carry out special observations (particularly ozone

measurements during the ozone-hole episodes). Only the consumables will be required for this. One Member has already indicated its interest in this activity;

· The regular courses at RMTC Buenos Aires are scheduled to continue as usual.

Australia

6.2.9 In 2002, Australia contributed US $30,000 to the VCP(F). In addition, it partially supported VCP project Niue TE/4/1/1 by providing three PCs with modems, at a cost of US $6,800, for EMWIN and WWW operations in Niue.

6.2.10 During 2002, Australia also participated in the following technical co-operation/training activities on a bilateral or multilateral basis, totalling US $174,990:

(a) Contribution to a WMO trust fund for Australia to follow up on implementation projects arising from the Needs Analysis for the SW Pacific: US $15,000;
(b) Contribution to AMDAR: US $12,500;
(c) Contributions to DBCP: US $13,500;
(d) Contributions to GCOS for ASEAN: US $7,500;
(e) Contribution to ACMAD resource mobilization initiative: US $2,500;
(f) Provision of rainfall data-loggers to Indonesia: US $2,900;
(g) Provision of PC to Viet Nam: US $750;
(h) Provision of PC to Solomon Islands: US $1,100;
(i) Provision of telecom equipment to Fiji: US $600;
(j) Provision of publications to Fiji: US $500;
(k) Fellowships to Swaziland, Vanuatu and Zimbabwe: US $42,000;
(l) In-kind contribution to Graduate Diploma in Meteorology Course in 2002 (including waiving of tuition fees): US $32,000;
(m) Contribution to international training workshops: US $33,490;
(n) Radar training for Fiji: US $2,050;
(o) Complimentary copies of the Australian Meteorological Magazine: US $8,600.

6.2.11 Bilateral co-operation was also carried out with a number of developing countries, including Indonesia and Viet Nam. The Australian Agency for International Development (AusAID) continued to contribute to the implementation of a third phase of a Sea Level and Climate Monitoring Project for the Pacific.

6.2.12 In 2003, fellowships will be awarded to a number of National Meteorological Services including Namibia, United Republic of Tanzania and Zambia to undertake the Graduate Diploma in Meteorology Course in Melbourne. The total VCP contribution will also be expected to increase in 2003, following the announcement by AusAID that a US $1.1 million project over three years on “Improving climate prediction in the Pacific” will be implemented from mid-2003.

Brazil

6.2.13 During 2002, the main contribution of Brazil to the Voluntary Co-operation Programme (VCP) was focused on training activities to support, in general, the NMSs in Region III, as follows:

(a) Organization of a Regional Training Seminar on Planning and Operation of the Automatic Meteorological Network for NMSs in RA III, with 10 meteorologists;

(b) Organization of an International Training Seminar on General Measurements in the Great River Basins;

(c) Software support in numerical wave modelling for hydrographers from Peru;

(d) An expert mission to Cape Verde to develop a modernization programme of the local NMS.

The total amount of the contribution to the above activities was US $55,870.

6.2.14 In 2003, the following activities will be developed:

(a) A Regional Training Seminar on Numerical Weather Prediction using an INMET high-resolution model (MBAR);

(b) Regional training activities in telemetric systems applied in hydrology;

(c) Regional training in telecommunication to support the new GTS network for Region III;

(d) Technical support to the NMSs of El Salvador and Cape Verde;

(e) Technical support to a regional training on operational weather radar;

(f) Technical support in telecommunications for Region III;

(g) Donation of the IVT software for the visualization of model output run by INMET to the NMHSs of RA III, and

(h) Support to training activities in numerical wave modelling for hydrographers from Peru.

Canada

6.2.15 In 2002, Canada addressed obligations under the United Nations Framework Convention on Climate Change (UNFCCC) through the Canadian Climate Change Development Fund (CCCDF). Through the Canada Fund for Climate Change in the Americas, the African Fund for Climate Change Initiatives, and the project “Adaptation to Climate Change in the Caribbean”, over US $2 million was provided as assistance to developing countries. A portion of this money went towards the assessment of climate change impacts (e.g., coastal zones, freshwater, sea level rise) and vulnerabilities (e.g., tourism, agriculture). The goals are to reduce the adverse effects and to strengthen private and public sector institutional capacities to respond to climate change. Members are urged to be aware of opportunities in their regions to mobilize these resources.

6.2.16 In October 2002, Canada entered into a MOU with the AGRHYMET Regional Centre, a specialized technical institution of CILSS (Permanent Interstate Committee for Drought Control in the Sahel) located in Niamey, Niger. Activities under this Agreement will strengthen capacity in addressing climate change, to conduct vulnerability assessments and develop adaptation strategies. This is the very beginning of a four-year project encompassing US $700,000. Approximately half of this money will be used to purchase equipment, the rest will be used for training. Canada helped fund developing country representatives to technical conferences on Agriculture (Ljubjana) and Data Processing and Forecasting Systems (Cairns) and for the Regional Workshop for Central America and the Caribbean on GCOS (San Jose). In addition, Canada transferred hydrological monitoring

equipment to Lebanon and funded the AMDAR Panel. The total disbursements for 2002 amounted to approximately US $570,000.

6.2.17 In 2003, Canada will concentrate its efforts on Observations Systems for Climate (VCP's Theme for 2003). We will continue to assist the AGRHYMET Centre with US $380,000, and a further US $235,000 in 2004. Canada will consider projects associated with the implementation of Regional Action Plans on GCOS. Special attention will be paid to the Pacific Islands and Central America and the Caribbean. Canada is also considering how it may invigorate efforts to improve the detection and early warning of natural disasters in the southern part of RA IV and in RA III as part of its commitments as mandated during the Summit of the Americas held in April 2001. CIDA is expected to continue its funding through the CCCDF through 2004.

Chile

6.2.18 During 2002, Chile provided training courses for professionals of the Meteorological Service of Uruguay: In June, four professionals were trained to be aware of the details of Modelling System MM5 and its applications to the operational work in the Meteorological Service of Chile, and in October one professional was trained in marketing of meteorological products, especially in the creation of an office of marketing, operational management, organizational structure, administrative operation and design of commercial strategies.

6.2.19 In 2003, Chile will continue to provide training courses for professionals of the Meteorological Services of Ecuador and Uruguay of Modelling System MM5 and its applications to the operational work in the Meteorological Service of Chile.

China

6.2.20 China contributed actively to the WMO VCP Programme and related technical co-operation activities in 2002. This included a study tour, fellowships and donation of instruments and equipment, as well as contributions to the VCP(F), GCOS and the IPCC Trust Fund.

Study Tour

6.2.21 A study tour was organized in August 2002. Ten Directors from African, Asian and European countries joined the event in Beijing. A seminar on the Development and Operation of the China Meteorological Administration (CMA) was organized on the first day of the tour. The tour also visited the relevant CMA departments in Beijing and various levels of the meteorological services, as well as the atmospheric background monitoring station in Heilongjiang province.

Fellowships

6.2.22 A training course on radar meteorology was held in RMTC Nanjing from 7 September to 13 October 2002. Long-term fellowships for two graduate students from Viet Nam and one graduate student from Yemen were provided.

Provision of instruments and equipment

6.2.23 Through WMO VCP projects and bilateral agreements, China provided 1,000 750g sounding balloons and 250 radiosondes to the Democratic People's Republic of Korea (OB/1/2/3), 1,500 sounding balloons to Kazakstan (OB/1/2/1), meteorological instruments for

surface synoptic stations to Tajikistan (OB/2/2/1), five PCs and two scanners to Togo (DP/1/2/2) and meteorological instruments for five synoptic observing stations to Zambia (OB/2/2/2) in 2002. The first project was completed and the others are underway. The AFDOS project in Bangladesh is on-going.

VCP(F) and others

6.2.24 Contributions of US $10,000 to VCP(F), US $10,000 to IPCC Trust Fund and US $5,000 to GCOS were made in 2002.

6.2.25 In 2003, China will continuously commit itself to the WMO VCP and related technical cooperation activities. The following activities are planned for 2003:

(a) Study Tour

One Study Tour in conjunction with the ISCC meeting for Directors of NMHSs for 10 days;

(b) Fellowships

- Training Course on the Use and Maintenance of Meteorological Instruments at the WMO RMTC Nanjing from 8 April to 7 July (three months);
- Short-term fellowship to one Russian trainee in Beijing (three months);
- Short-term fellowship to 2 to 3 trainees from Republic of Moldova on the use of soil moisture meter in Beijing (10 days);
- Long-term scholarships to two graduate students from Viet Nam;
- Long-term scholarship to one graduate student from Yemen;

(c) Instruments and equipment

Kazakstan (OB/1/2/1) - Provision of 1,500 sounding balloons;

Kyrgyz Republic (OB/1/2/3) - Provision of 730 pieces of 750g balloons;

Philippines (DP/4/2/3) - Provision of 4 PCs and UPSs 2 DVD- and CD-Writers and 2 printers;

DPR of Korea (OB/1/2/4) - Provision of 300 transponders and 10 PCs and 3 Laser printers;

Bangladesh (TE/4//2/1) - Provision of AFDOS software and hardware; and

Sao Tome and Principe - Provision of two surface weather stations.

Denmark

6.2.26 Since 1997, Denmark has provided expert services and equipment to support the improvement of the meteorological station network and data handling by the Ghana Meteorological Services Department (MSD).

6.2.27 By the end of this first phase of the project, scheduled for 31 December 2003, Ghana MSD should have a well-functioning meteorological network of approximately 300 surface stations of various categories.

6.2.28 During 2003, formulation of the next phase of the project will be carried out. It is envisaged that the focus will be on data handling and utilization.

Finland

6.2.29 During 2002, Finland provided expert services and equipment to support the reconstruction programme of the Mozambique Meteorological Service.

6.2.30 For 2003, Finland will continue to support the meteorological reconstruction programme of the Mozambique Meteorological Service. Furthermore, Finland, in collaboration with WMO, will continue to support the preparedness to climate variability and global change in Small Island Developing States, Caribbean region (the total budget of the project 2001-2003 amounts to US $3.4 million).

France

Support for VCP(ES) projects

6.2.31 In 2002, France continued its active policy of technical co-operation. A contribution of € 289,000 was paid in 2002 to WMO to fund the 2001 VCP(ES) projects sponsored by France.

Projects completed in 2002

- Democratic Republic of the Congo (DP/1/1/1): Provision of a PC-MIS Meteorological Information System;
- Guinea (TE/3/1/1): Provision of a PC and a printer to optimize the utilization of the Internet and RANET;
- Kyrgyz Republic (OB/1/2/3): Provision of upper-air consumables;
- Mali (HY/3/1/1): Provision of computer equipment for the hydrological data bank.

Projects almost completed (purchase order issued, work in progress)

- Armenia (OB/1/3/1): Provision of consumables for hydrogen generator;
- Côte d'Ivoire (TE/5/3/1): Provision of an internet connection;
- Dominica (OB/2/3/2): Provision an automatic station;
- Laos (WCP/2/1/1): Updating of CLICOM system;
- Lithuania (TE/6/3/2): Provision of a Wedis-Web server;
- The former Yugoslav Republic of Macedonia (OB/1/2/1): Provision of upper-air consumables;
- Madagascar (TE/1/2/1): Provision of spare parts for automatic stations;
- Mauritius (OB/1/2/2): Provision of 200 radiosondes;
- Solomon Island: Provision of emergency assistance.

Projects already supported which started in 2002

- RETIM2000 upgrade for the following countries: Algeria, Armenia, Bulgaria, Cyprus, Czech Republic, Egypt, Georgia, Hungary, Jordan, Lebanon, Lithuania, Republic of Moldova, Morocco, Poland, Romania, Slovakia, Syrian Arab Republic, Tunisia and Ukraine;

- RETIM2000 reception system with a new visualization terminal for the following countries: Albania, Belarus, Latvia and The former Yugoslav Republic of Macedonia.

Projects supported but not yet started for technical reasons

- Bolivia: Telecommunication system;
- Kenya: Telecommunication system;
- ACMAD: Synergie system;
- CRT Moscow area: Improvement of telecommunications (Armenia, Belarus, Georgia and Republic of Moldova).

Support of meetings and training events

6.2.32 In 2002, France supported several important events, in general by allocating funds for the participation of meteorologists from developing countries. The total of all these actions is about € 180,000.

- Rotterdam, July 2002: Training session for webmasters of Africa;
- Pretoria, September 2002: Planning meeting on operational NWP in Africa;
- Toulouse, October 2002: Workshop on meteorology and new technologies;
- Toulouse, December 2002: training session for forecasters.

Training, and common research actions

6.2.33 In 2002, France welcomed many trainees and scientists from foreign countries. The time spent in Météo-France by the trainees amounted to a total of 22 months, with 18 meteorologists from the following countries: Algeria, Armenia, Bulgaria, China, Congo, Czech Republic, Estonia, Hungary, Lao People's Democratic Republic, Libyan Arab Jamahiriya, Morocco, Palestine, Romania and Tunisia.

6.2.34 In addition, in the NWP, the ALADIN project continued. Fifteen countries from Europe and North Africa are members (Austria, Belgium, Bulgaria, Czech Republic, Croatia, France, Hungary, Republic of Moldova, Morocco, Poland, Portugal, Romania, Slovakia, Slovenia and Tunisia). For this project, 47 trainees or scientists spent a total of 69 months in Météo-France, in many cases with financial support from France.

Expert services

6.2.35 In 2002, experts from Météo-France carried out assistance missions in several developing countries, in some cases with financial support from WMO, as follows: ACMAD, Cuba, Dominica, Lao People's Democratic Republic, Morocco, the Netherlands, United Republic of Tanzania and Tunisia (webmaster training session).

Other items

6.2.36 In 2002, France supported the activities of the Subregional Office for Europe with a yearly contribution of € 22,000. France also offered a support for the extension of PUMA project towards North Africa (€ 150,000). Due to the delay of MSG implementation, and the telecommunication problems that this satellite has, the technical content of the project will be redefined in 2003. France also continued its support to ACMAD. This support includes a permanent expert who is part of ACMAD managing staff.

Plans for 2003

6.2.37 In 2003, the projects launched in the previous years will be continued and completed. In particular, the co-ordinated VCP project for RETIM2000 which involves many countries of Eastern Europe, North Africa and the Middle East will be completed, with a target date of end February 2003. France will maintain its support for many training actions and common research actions, in particular with the ALADIN project. France will also continue its support to RA VI Subregional Office activities, to PUMA in North Africa and to ACMAD at the same level as in 2002.

6.2.38 In addition, the following two new projects will be launched in Africa:

RETIM-Africa

A new and important project to be launched by Météo-France in 2003 will be the implementation of the new satellite distribution channel RETIM-Africa. This project is under definition. It will make a dramatic improvement in the GTS in Africa by allowing all NMSs to receive extensive data sets from the WWW Main Centre. It has been endorsed with enthusiastic support by the last RA I session (Mbabane, November 2002). France has already decided to partially fund a demonstration phase, including the implementation of the uplink and of a few receiving stations, and France is currently discussing with partners in order to transform this project into a larger European initiative towards Africa. Discussions are currently underway with UK, EUMETSAT and other partners.

Research Project on African Monsoon and Climatic Change in West Africa

Another important research project will be launched in 2003 by the French Ministry of Foreign Affairs aimed at supporting basic climate observation and research for West Africa. It will cover several years and the anticipated amount is up to € 3 million. This project will have a component of support and capacity building of the Meteorological Services of this area.

Germany

6.2.39 Germany has continued to provide assistance in education and training and fellowships, mostly on a bilateral basis, and especially for short-term fellowships on a cost-sharing basis in the field of research and development.

6.2.40 In connection with the tasks to which it is committed within the framework of WMO, Germany has again done much voluntary work, for example at the WMO RA VI Regional Dobson Calibration Centre in Hohenpeissenberg, in supporting the GAW Training and Education Centre, and by contributing a DWD (Deutscher Wetterdienst) satellite-based meteorological data distribution system FAX-E to Bosnia and Herzegovina.

6.2.41 In view of the importance of a Subregional Office for Europe in support of Members of RA VI, Germany pledged a voluntary financial contribution of € 40,000 towards the operation of the nucleus of a Subregional Office for Europe in 2002 and 2003.

6.2.42 In regard to training, Germany increased its efforts in the support of WMO-sponsored training courses. In 2002, the international seminar on the Design, Products and Operational Use of the NWP Model-chain of the DWD again took place. This workshop is part of the efforts of the DWD in its capacity as a WMO Regional Specialized Meteorological Centre (RSMC) to improve the relationship and the connections with actual (and potential) users and is especially envisaged to invite meteorologists from Central/Eastern European countries.

6.2.43 The DWD provided WMO with the use of the premises at its Meteorological Training and Conference Centre in Langen (near Frankfurt), plus personnel, free of charge, for the Training Seminar on the Management of Meteorological Training Institutions, designed for directors and principals in meteorological training institutions and their deputies.

6.2.44 In the area of Operational Hydrology, the International Postgraduate Course on Applied Hydrology and Information Systems for Water Management, at the IMTR in Nairobi, Kenya, was supported with a financial contribution of € 7,500, to be used for short-term fellowships in particular. This amount was paid into the Hydrology and Water Resources Trust Fund of WMO. Furthermore, a German expert, Dr A. Braxein, from the University of Siegen, joined this course for one week as a lecturer on coastal zone management and interactions of tide, inland water flow and GIS. His contribution was fully financed with € 2,500 by the German IHP/OHP National Committee. A similar financial and in-kind contribution for the course in Nairobi will be provided in 2003.

6.2.45 The International Conference on Low-Lying Coastal Areas – Hydrology and Integrated Coastal Zone Management took place in Bremerhaven from 9 to 12 September 2002. It was convened and organized by the German IHP/OHP National Committee together with, amongst others, the WMO. Apart from the costs for the realization of this conference, travel and accommodation expenses for five participants from Asia, Central and South America to the amount of € 10,000 were borne.

6.2.46 In 2003, Germany will continue to provide technical assistance, mostly on a bilateral basis, and taking into consideration the relevant recommendations of WMO bodies. In spite of the fact that legal restrictions make it difficult for the DWD to give equipment to other WMO Members, the DWD will be supplying Afghanistan and Guinea with computer and measuring equipment in 2003. In addition, emphasis will be placed on support to WWW System Support Activities by means of seconded experts, training, etc.

Hong Kong, China

6.2.47 In 2002, Hong Kong, China continued to contribute to VCP(ES) by organizing a training course on automated weather observing systems from 25 November to 13 December 2002. Training fellowships for attending the course were also provided to nine meteorologists from Egypt, Malaysia, Morocco, Philippines, Sri Lanka, Syrian Arab Republic, Uzbekistan, Viet Nam and Republic of Yemen. The three-week programme consisted of lectures, practical sessions and technical visits. It covered the design, construction, installation, operation and maintenance of automatic weather stations. Participants were expected to take a major role in the development of automated weather observing systems on return to their home countries. The contribution to VCP(ES) in monetary terms for this training programme was US $35,000.

6.2.48 In 2003, Hong Kong China will continue to contribute to VCP(ES) by offering a training programme on “Provision of Meteorological Services via the Internet” together with fellowships to Members.

Israel

6.2.49 In 2002, Israel provided support to the VCP(ES) with the following training activities:

· Four courses in Applied Meteorology, held at the RMTC, Bet-Dagan;
· Three courses on Agrometeorology, held in China, Kenya and Lithuania;

- Participation in a research project with Turkey on the Yield Response to Climate and Management; and
- A workshop on the Operational Aspects of Meteorological Services.

The total amount of the contribution to the VCP Training/Fellowship Programme was US $377,000.

Japan

6.2.50 In 2002, Japan contributed US $150,000 to the VCP(F) and supported training/fellowship activities as well as DBCP and SOOP activities to the value of US $260,000.

6.2.51 The training courses/workshops hosted and financially supported by Japan in 2002 were as follows:

(1) A four-month group training course in meteorology aimed at enhancement of capability of basic and operational meteorology was offered to 11 participants from 10 Member countries from 19 August to 21 December 2002.

(2) A training course for typhoon forecasters was offered to two female typhoon forecasters from the Philippines and the Republic of Korea from 16 to 25 July 2002.

(3) Workshop on Climate System Monitoring, Diagnosis and Prediction in the Asia-Pacific Region was organized from 2 to 6 December 2002 with the participation of 10 Member countries in the Asia-Pacific region.

6.2.52 The bilateral/multilateral technical co-operation activities carried out by Japan in 2002 and their prospects for 2003 are as follows:

(1) A three-year (2001-2004) technical co-operation project in Cambodia, aiming at improving weather forecast system and its application to agrometeorology, is being implemented with the financial support of the Japan International Cooperation Agency (JICA). In 2002, two long-term experts in the fields of meteorology and agrometeorology, and one short-term expert in the field of satellite data analysis were seconded to the Department of Meteorology in Cambodia (DOM) and two experts of DOM were invited to the four-month group training course described above. In addition, two AWSs were provided. Expert exchange and provision of instruments will be continued.

(2) A project to support a training programme conducted by the Fiji Meteorological Service (FMS) for the participants from the Pacific Meteorological Services is being implemented. This is a five-year (2001-2005) project of JICA and a Japanese expert is dispatched to the seminar which is held annually.

6.2.53 In 2003, Japan will continue to contribute to the VCP(F) and training/fellowship activities at the current level. With regard to a four-month group training course, Japan plans to enhance the training course to cover more practical aspects, i.e., application of GPVs from the NWP system, utilization of satellite data, and application of climate forecast and monitoring. In addition to on-the-job training for typhoon forecasters, Japan will begin in 2003 a training workshop on typhoon forecast and monitoring for the countries in the Asia-Pacific regions.

Netherlands

6.2.54 In 2002, the Netherlands made a financial contribution of US $19,000 to partially support a VCP project for the Russian Federation for the provision of an automatic weather station (AWS) in the Barentz Sea area. The installation of the AWS is expected to be implemented in 2003. In 2003, no financial contributions are foreseen from the Netherlands to the VCP and related Technical Co-operation Programmes.

New Zealand

6.2.55 New Zealand's assistance to developing NMSs is nearly all bilateral in nature. The necessary funding to provide this assistance is secured through both a supply contract with the New Zealand Government for "public good" services and through external agencies on a project basis. Outputs are defined and New Zealand does not have access to discretionary funding to provide assistance.

6.2.56 During 2002, New Zealand continued to advise and assist the Pacific countries of Cook Islands, Fiji, Kiribati, Niue, Samoa, Tokelau Islands, Tonga and Tuvalu.

6.2.57 Meteorologist Class I training was provided to two Fijian graduates. One graduate successfully completed the course and returned to Fiji in November. Assistance was provided to the Cook Islands to complete a Local Area Network and to resolve computer problems. An aviation cost-recovery programme was designed and implemented. This was a great success and included assistance with airline negotiations. Instruction and dynamic systems were provided to enable the Cook Islands to manage this activity.

6.2.58 The Automatic Weather Observing Station (AWOS) at Niue was repaired and transient protection increased with VCP/New Zealand funding collaboration. A technical check of meteorological equipment at Samoa was completed. The AWOS at Tokelau was repaired on two occasions, training was provided for village observers together with instruments, and the manual climate programme re-established.

6.2.59 New Zealand continued to manage the upper-air programmes at Tarawa, Funafuti and Penrhyn and provide some financial support. These programmes are primarily funded by the United Kingdom with support from VCP in the case of Penrhyn. A Local Area Network was completed at Funafuti, some computer support provided and a back-up solar power supply for the HF radio e-mail system previously designed and installed by MetService with financial support from the United Kingdom.

6.2.60 All countries, with the exception of Fiji, received on-going advice and assistance for computer and other operational problems, and an annual re-supply of meteorological forms. MetService continues to monitor surface observation reporting performance for the assisted countries and provides an e-mail gateway to the GTS.

6.2.61 New Zealand is funding the preparation and publication of the monthly "Island Climate Update" and is actively contributing to the Pacific GCOS.

6.2.62 New Zealand's assistance for 2003 in monetary terms is expected to be US $170,000 and provided through bilateral assistance.

Portugal

6.2.63 In 2002, Portugal's contribution to the VCP amounted to US $64,397 in the form of training and fellowships and financial contributions to CRIA actions and activities of the WMO Subregional Office for Europe. The details of the activities in 2002 are given below:

Training/Fellowships

(a) ***On-the-job training course on Sea State Numerical Forecast***

Continuation of an on-the-job training course on Sea State Numerical Forecast, which was attended by one meteorologist from Mozambique and one from Guinea Bissau (€ 5,387);

(b) ***Third Symposium of Climate and Applications in the Portuguese-speaking countries***

The Symposium was held in Évora, Portugal, integrated in the annual meeting of the organs of the CRIA Agency (€ 2,956);

(c) Three fellowships for a Master Degree in Climate and Atmospheric Environment (University of Évora, Portugal) for meteorologists from Cape Verde, Guinea Bissau and Sao Tome and Principe (€ 1,050);

(d) Short-term mission on Weather Forecast training in Sao Tome and Principe (€ 1,993);

(e) Short-term mission in Macao, China for installation of models for Sea State Numerical Forecast at open sea and near the coast (costs paid by Macao, China);

(f) Contribution to CRIA Agency for the development of the project MAPA (Meteosat Applications Programme for Africa) in the Portuguese-speaking African countries (€ 23,000);

(g) Second Technical Conference China-Macao-Portugal, Lisbon, 22-24 April 2002 (€ 2,526).

Cash contribution

(a) A contribution was offered by Portugal for actions to be implemented by CRIA in the Portuguese-speaking African countries (€ 22,446);

(b) Donation to the Subregional Office for Europe (€ 5,000).

6.2.64 In 2003, the following actions are expected to be accomplished:

(a) Continuation of the three fellowships for a Master Degree in Climate and Atmospheric Environment (University of Évora, Portugal) for meteorologists from Cape Verde, Guinea Bissau and Sao Tome and Principe. (€ 4,150);

(b) In 2003, the implementation of a programme for technical assistance to Mozambique is foreseen, involving short-term specialization courses on Numerical Weather Forecast; Instruments and Hydrometeorological Data, Climate, Environment and Agricultural Production and Radiation. The expected contribution of Portugal for this programme is approximately € 91,260;

(c) Contribution to CRIA Agency for the development of the project MAPA in the Portuguese-speaking African countries (€ 22,450).

Total contribution for 2003 is expected to be € 117,860.

Republic of Korea

6.2.65 In 2002, the Republic of Korea contributed US $5,000 to the VCP(F) as its first cash contribution to the VCP. Korea also supported VCP fellowship/training activities by organizing a four-week training workshop, "Weather Forecasting for Operational Meteorologists", in March 2002 to provide training opportunities for 20 participants from 12 WMO Member countries, and a one-week seminar in the form of a study tour entitled "Meteorological Technology and Policy: Capacity Building for NMSs" in October 2002 for the Directors and/or senior officials of NMSs. Both events were conducted under the sponsorship of the Korea International Cooperation Agency (KOICA). Also, a VCP training fellowship in the area of numerical weather prediction was provided to Mongolia as a three-month individual training from January to April 2002 in Korea (Mongolia DP/1/1/2). The contribution in monetary terms for the support to the above activities amounted to US $111,000.

6.2.66 In addition, a four-day "Training Workshop on Seasonal Monsoon Rain Prediction Schemes" for ASEAN meteorologists, which was initially proposed by the ASEAN Sub-Committee on Meteorology and Geophysics (ASCMG), was held in July 2002 in Jeju Island, Korea. Twenty climatologists from nine ASEAN countries were invited to attend the workshop, using the Republic of Korea-ASEAN Special Cooperation Fund amounting to US $79,400.

6.2.67 In 2003, the following VCP and related technical co-operation activities are expected to be implemented by the Republic of Korea:

- Cash contribution of US $5,000;
- Annual KOICA-funded four-week training workshop;
- Individual training fellowships to Bahrain and Malaysia (and Sri Lanka);
- Expert missions/roving seminars on NWP system using PC clusters;
- Provision of meteorological equipment to developing countries; and
- Establishment and operation of a CAgM mirror web site.

Russian Federation

6.2.68 In 2002, the contribution of the Russian Federation to the VCP was mainly in the form of expenditures for:

(a) Long-term fellowships - 34 VCP fellows from 14 countries of Africa and Asia within WMO Regional Meteorological Training Centre (RMTC);

(b) Short-term fellowships (one to two weeks) – 64 fellows from CIS and Mongolia within WMO RMTC; 15 fellows have been accepted additionally to the programme within the framework of the VCP; and

(c) Provision of TV-Inform-Meteo systems to Armenia (TE/1/1/4) and Kazakstan (TE/1/1/2).

6.2.69 In 2003, it is expected that the contribution of the Russian Federation to the WMO VCP will amount to approximately US $225,000. The specific voluntary co-operation projects that the Russian Federation intends to implement in 2003 will be communicated in greater detail in the near future.

Spain

6.2.70 The overall contribution of Spain to the VCP in 2002 was US $423,537, broken down as follows:

Education and training fellowships

This represented the most significant part, with long-term (21 months) and short-term courses (two months) and their corresponding fellowships amounting in 2002 to US $244,437. For 2003, the contribution of Spain is estimated at about US $236,800, for short- and long-term courses according to training goals of countries in several applied meteorology courses or courses in specific areas.

Multilateral co-operation activities

- Given the regional nature of the ACMAD project that Spain supports with obvious interest, a voluntary contribution of US $88,950 was made in 2002 and a similar amount is being considered for 2003. In view of the co-ordination/production of activities and services for NMSs of African countries by ACMAD in meteorology and connected domains as well as for other important social sectors such as health, food production, safety, etc., Spain will continue to support the development of the RANET programme which provides valuable support to the rural communities;

- The participation in IPCC of experts from developing countries is considered extremely important, and this will require a certain amount of support. For this reason, Spain earmarked a voluntary contribution to IPCC of US $90,150 in 2002 and is planning on making a similar contribution in 2003;

- Other bilateral co-operation activities are also being carried out by Spain in several countries.

Switzerland

6.2.71 In 2002, Switzerland supported Mount Kenya GAW station through the provision of equipment and personnel expenses (US $54,500) and contributed approximately US $510,000 to the WMO GAW Programme and IPCC activities. Switzerland engaged in the "Workshop for WMO RA VI (Europe) in Status and Trends of Global Atmosphere Watch", which took place in Riga, Latvia in May 2002. Following the recommendation of the Commission for Atmospheric Sciences (CAS) and the Commission for Instruments and Methods of Observation (CIMO) to install a Calibration Centre for Infrared Radiation in Davos (Switzerland), Switzerland has taken the necessary steps to ensure financing of this project. In November 2002, MeteoSwiss, in collaboration with the Kenya Meteorological Department (KMD), organized a training and maintenance course for staff involved with the WMO/GAW Ozone-Station.

6.2.72 In 2003, the Swiss contributions for the GAW Programme will be of the same order as for 2002.

United Kingdom

VCF (F)

6.2.73 In 2002 the UK contributed £35,000 (US $54,680) to the WMO VCP Fund. The level of contribution will remain the same in 2003.

VCP(ES)

6.2.74 In 2002, the UK contributed to the WMO VCP(ES) to the value of approximately £430,000 (US $695,000).

[In 2003/2004 the UK aims to continue long-term support for key observations from data-sparse areas, particularly GUAN stations. In addition capital upgrades to stations in the South Pacific will be undertaken.]

6.2.75 In 2003/2004, in terms of VCP(ES) support, and excluding the £35,000 for VCP(F), the level of contribution is planned to be approximately £350,000. The priorities will be focused on:

(1) Support for Meteosat Second Generation receiving and display systems for those countries which are within the useful footprint of the MSG satellite and are not covered by the PUMA project. This is expected to total £100,000, with a similar amount allocated in the year 2004/2005;

(2) Support for other satellite receiving systems including RETIM Africa and SADIS (£20,000);

(3) Support for data processing systems (archiving, next generation CDMS, DARE, etc) (£30,000);

(4) Support to improve NMHS profile through service provision enhancement (including media weather presentation systems). This we see as indirectly encouraging the local observation collection system and also for disaster mitigation - dissemination of warnings and advice. A second series of Simplified Media Weather Presentation systems for nine countries in Africa will be carried out early in 2003, and a third series is being considered for the Caribbean. A number of the existing sites will also be upgraded (£140,000);

(5) Observing equipment including AWS with GSM communications trial (£30,000);

(6) Miscellaneous small projects and EART activities (£30,000).

VCP Fellowships

6.2.76 In 2002, the UK supported fellowships to the value of £147,000 (US $236,000). The primary expenditure was on supporting:

- 10 students to attend the Statistics In Agricultural Climatology Course at IMTR Nairobi;
- 9 participants and expert fees for a workshop at Reading University to consider the future of the Statistics In Applied Climatology courses;
- Resource people for SIAC course at AGHYMET centre, Niger;
- Lecturers for training at PRESANOR and PRESAO workshops;
- 3 meteorology MSc students at the University of Reading;
- 5 students from Pacific Islands attended Class IV training at Nadi, Fiji;
- 1 student attending Postgraduate Course on Hydrology;
- 3 students from United Republic of Tanzania for Class III training at University of Pretoria;
- 5 students attending ICAO aviation forecast data workshop, Bangkok; and
- 1 student for an Environmental Health BSc at University of Strathclyde.

6.2.77 In financial year 2003/2004 the United Kingdom aims to support fellowships to the value of £200,000 (US $320,000). Planned activities include:

- The fourth Statistics in Applied Climatology Course to be held at the Kenya Met. Department, Institute for Meteorological Training and Research in Nairobi; also SIAC training at AGRHYMET centre, Niamey, Niger;
- Support for the first SIAC course in Oran, Algeria; and
- Meteorology MSc student(s) at Reading University, UK.

6.2.78 The United Kingdom will continue its policy of supporting short-term specialized courses and seminars. We will also continue to exploit the facilities at RMTCs for the delivery of training. This may mean a reduction in the amount spent on MSc training for individuals. Where support is requested for national training courses, the UK will be seeking expansion of the proposed training to include students from other countries in the region to ensure the most cost-effective use of the funds.

United States of America

6.2.79 The USA's annual contribution to the VCP was US $2.0 million in 2002 and would likely be the same in 2003. During 2002, the USA funded 16 fellowships at the International Desks at the National Centers for Environmental Prediction (NCEP). Training at the new Pacific Desk, located at the NWS Weather Forecast Office in Honolulu, Hawaii, began in March 2001. Five fellowships were provided for meteorologists from NMHSs in RA V that are members of the South Pacific Regional Environment Programme (SPREP). International Desks include the Tropical, South American, African Climate, and Pacific.

6.2.80 The USA continued to sponsor, co-sponsor or support attendance to the following workshops: APEC Workshop at AMS, Climate Applications (Oklahoma), Spanish language Web Master's training in RA IV, Met Research Applications Services (Nairobi), Sensitize Senior Government Officials to Meteorology (Tanzania), Southern Hemisphere Tropical Cyclone Course (Melbourne), Southern Hemisphere Meteorology Conference (Wassalia), DCS Direct Read-out User's Conference (Miami), Web Masters training for African States (Rotterdam), RAs III and IV Technical Co-operation Conference (Panama City), Women and Meteorology (Geneva), RA V Meetings (Philippines), Cooperative Institute for Research in the Atmosphere (CIRA), collaborative research in Regional Meteorological Training Centres (Costa Rica and Barbados), Climate Forums in South America, Fourth Climate Workshop (Oklahoma City), International Workshop at the AMS Annual Conference (Long Beach), GCOS Steering Committee (Geneva), National Research Council at the National Academy of the Sciences Symposium on Technical Data and Information (Washington, DC) and WMO Commission for Climatology Technical Conference (Geneva).

6.2.81 The USA remained active in data rescue activities in Africa (upper-air) funding projects in Kenya, Malawi, Mozambique, Niger, Senegal and Zambia. In Central America, data (surface/synoptic and hydrological) was rescued in Nicaragua and is soon to begin in Dominican Republic and Uruguay. Funds were also made available to VCP project Viet Nam WCP/4/1/1 for climatological data rescue.

6.2.82 A demonstration project in climate predication was funded to support collaboration and co-operation between the African Centre of Meteorological Applications for Development (ACMAD) and the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS). ACMAD was also given funding to support their activities in the region including RANET.

6.2.83 The National Geophysical Data Center's Solar-Terrestrial Physics Division was given funds to further the implementation of the programme to address ASEAN Regional Transboundary Smoke. These funds were to complete the prototype software model to integrate fire products from environmental satellite data, numerical weather prediction data, and an advanced aerosol transport model.

6.2.84 The USA continued to support AMDAR pilot projects in South Africa and Saudi Arabia. The USA will continue to support routine upper-air observations in the Caribbean. A three-year hydrogen generator replacement programme started in 2001, along with the upgrading of eight upper-air sites starting in early 2003.

6.2.85 The WAFS/STAR4 network with 90 sites will be upgraded in 2003. Anticipating changes to the WAFS data stream using binary codes, the USA has planned for the site transitions for the ground equipment upgrade and will facilitate countries in obtaining off-the-shelf, PC-based workstations to replace the existing STAR4 systems.

6.2.86 An Internet Training Course in Hydrology was designed using USA funds and will serve to support the upcoming hydrology training course in Oklahoma later in 2003.

6.2.87 In RA IV, the USA continued to support the following projects:

- Continued support of 55 low-cost automatic weather stations to amateur radio operators in the Caribbean and Central America to provide supplementary observations to local NMHSs and the RSMC Miami during tropical weather events;

- Regional maintenance to provide sustainability to observing systems in the Caribbean and Central America;

- Regional Internet connectivity to make increased use of the Internet for exchanging data and forecasts;

- A Regional National Disaster Fund to support RA IV emergency response in the region;

- An evaluation of the hurricane Mitch recovery efforts.

6.2.88 The USA maintained its on-going assistance through USAID with recovery efforts by NMHSs in Central America and the Caribbean which were affected by hurricanes Georges/Mitch in 1998 and Keith in 2000.

6.2.89 The USA gave support to WMO's efforts to strengthen the presentation and dissemination of improved agrometeorological products. In addition there were funds given to facilitate the activities needed to implement WMO RA I Strategy for Improvement of World Weather Watch Basic Systems.

6.2.90 Eastern Africa will be given support to use Ham radio communications to transmit routine, daily hydrometeorological data from field locations to NMHSs.

6.2.91 The USA VCP contribution in 2003 is expected to remain constant at US $2 million. The following are a list of primary projects that will likely be supported by the USA VCP fund in 2003. A four-year planning process for prioritizing future VCP funding will begin after the WMO Executive Council and Congress in Geneva in May 2003. USA funding priorities will be influenced by outcomes and planning of the US Permanent Representative and delegation.

Likely projects for VCP funds in 2003:

· ISCS system up-grade and STAR4 workstation replacements
· Training – via training desks and other courses in weather, water, and climate
· GCOS activities – regional maintenance, training, GUAN network, etc.
· Data Rescue efforts - DARE
· Strengthening Internet communications for NMHS through training and capacity building.

6.3 Other related technical co-operation activities for 2003

6.3.1 The meeting noted that at the request of Members and in collaboration with regional and subregional organizations, the WMO Secretariat has prepared draft project proposals (project briefs) in support of national and regional meteorological and hydrological activities linked to priority themes. The list of pipe-line technical co-operation projects and individual project briefs will be available on the TCO web page. WMO will continue assisting mobilizing resources for these projects.

6.3.2 The meeting also noted that there is a need to enhance technical co-operation activities in other regions in particular in Asia to support national initiatives. In this regard, the meeting agreed that presentations on the status of NMHSs in Asian countries should be made during future meetings.

7. PREPARATION FOR THE NEXT MEETING

7.1 Date and place of the next meeting

7.1.1 The meeting agreed that the Chairman-designate act between meetings to assist in preparation for the next meeting. It was agreed that Dr V. Tsui would act as Chairman-designate for the period up to the next meeting.

7.1.2 The meeting examined the merits of having IPMs held back-to-back with the meetings of the EC Advisory Group on Technical Co-operation, if re-established in the future. In this regard, the meeting requested the Secretariat to finalize the arrangements for the next meeting in consultation with the Chairman-designate taking into account the willingness of UK to host the next IPM in March 2004. The meeting also welcomed the offer of Japan to host the following IPM in 2005, subject to its formal decision.

7.1.3 The meeting was informed that donors require feedback information on the level of satisfaction by recipient countries, especially success stories, because these will attract further funding support. The meeting recommended that debriefing selected project leaders from recipient countries could be arranged at future meetings; their travel expenses could be covered by donor Members.

7.2 VCP theme for 2004

7.2.1 The meeting noted that the theme for World Meteorological Day 2004 would be “Weather, water and climate in the information age”. In this connection, the meeting proposed that the VCP theme for 2004 would be “Technical co-operation in weather, water and climate – bridging the gap in the information age”.

7.3 Topics to be taken up during the next meeting

7.3.1 The meeting agreed that the main items to be discussed during the next session will be as follows:

(a) Trends and development since the last IPM;

(b) Theme;

(c) Success stories; and

(d)
- Review of VCP requirements from Members;
- Review of areas/subjects which should be given special consideration;
- Review of on-going projects within the framework of WMO Technical Co-operation Programme; and
- Review of the requests and of the proposed support from donors and co-ordination among donors.

7.3.2 The meeting agreed that external organizations to be invited to the next IPM could include the Europe-based funding institutions and technical co-operation organizations, including the European Commission (EC) and the Intergovernmental Oceanographic Commission (IOC), UNESCO.

8. ADOPTION OF REPORT AND CLOSURE OF THE MEETING

8.1 The meeting reviewed the draft Report and requested the Chairman to approve the Final Report on its behalf.

8.2 The Chairman expressed appreciation on behalf of the meeting to the work done by the Secretariat staff and staff of the INMET in support of the meeting.

8.3 The meeting was closed at 16:00 on 13 March 2003.

ANNEX I

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HILLMAN, Mrs Jackie	Secretary, VCP/TCO

LOCAL SECRETARIAT

MELO, Ms Jusimeire

* Partial attendance at IPM Meeting

ANNEX II

AGENDA

1. OPENING OF THE MEETING

2. ORGANIZATION OF THE MEETING

   2.1 Election of the chairman
   2.2 Adoption of the agenda
   2.3 Working arrangements

3. EVALUATION OF THE VCP AND RELATED TECHNICAL CO-OPERATION ACTIVITIES IN 2002

   3.1 Evaluation of VCP activities in 2002
   3.2 Review of other related technical co-operation activities in 2002

4. ASSESSMENT OF THE PRIORITY REQUIREMENTS FOR TECHNICAL ASSISTANCE IN SUPPORT OF WMO PROGRAMMES

   4.1 Priority VCP requirements in support of WMO Programmes for 2003
   4.2 Special items requiring urgent action under VCP

      4.2.1 Future of WAFS/RMTN
      4.2.2 Implementation of the GCOS Regional Action Plans
      4.2.3 Response to natural disasters and countries emerging from conflict
      4.2.4 Other matters

5. MAJOR TRENDS AND OPPORTUNITIES

   5.1 Overview of national, global and regional opportunities for resource mobilization
   5.2 General perspectives on technical co-operation for 2003 and beyond

6. OUTLOOK OF VCP AND OTHER RELATED TECHNICAL CO-OPERATION PROGRAMMES FOR 2003

   6.1 VCP activities for 2003 with emphasis on the 2003 VCP theme, Observing systems for climate
   6.2 Perspectives of VCP donors' actions for 2003
   6.3 Other related technical co-operation activities for 2003

7. PREPARATION FOR THE NEXT MEETING

   7.1 Date and place of the next meeting
   7.2 VCP theme for 2004
   7.3 Topics to be taken up during the next meeting

8. ADOPTION OF REPORT AND CLOSURE OF THE MEETING

ANNEX III

Members' contributions to
the WMO Voluntary Co-operation Programme
in 2002

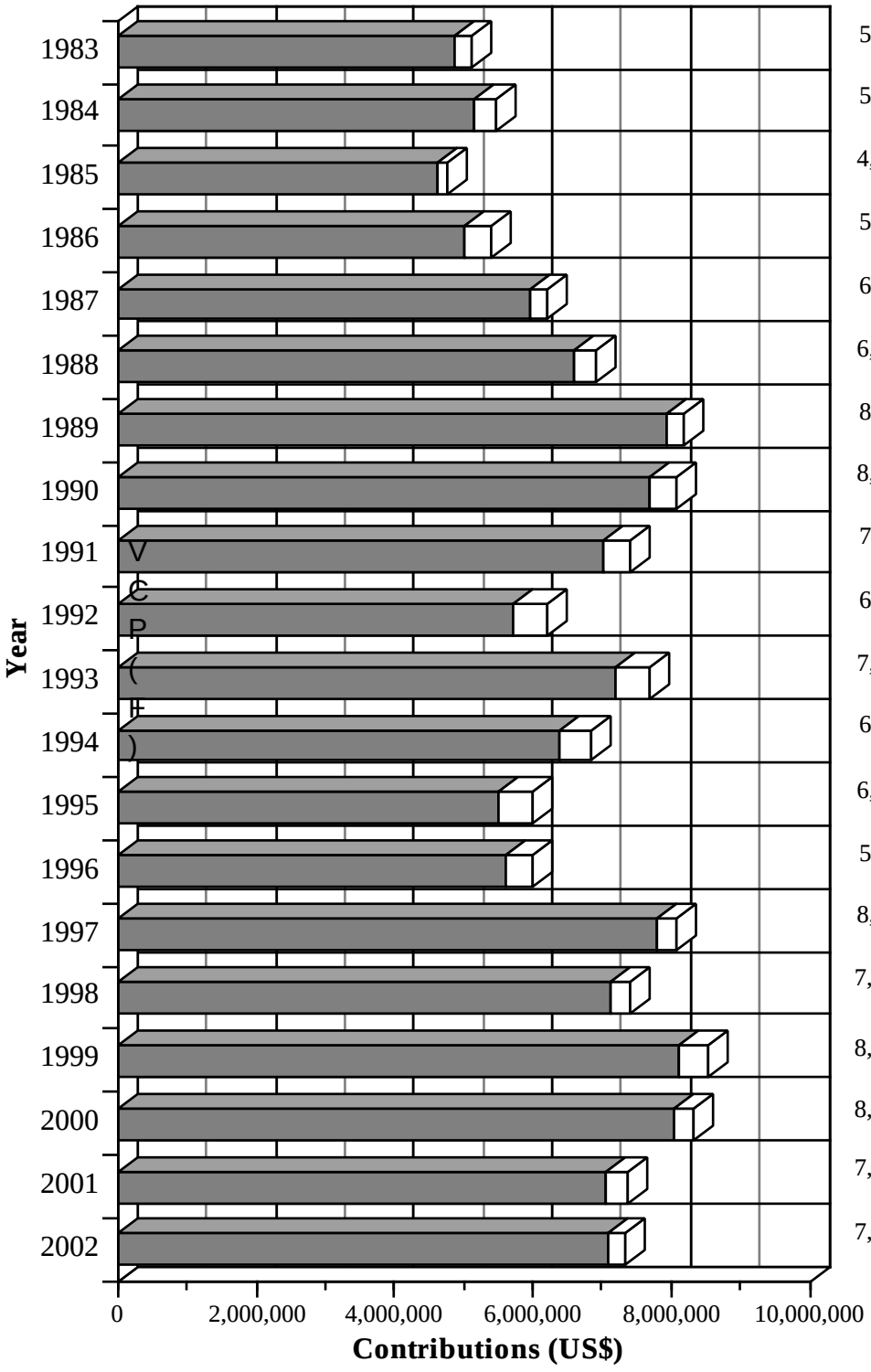
(US $)

Donor Member	VCP(F)	VCP(ES)*				Total Contribution
		Equipment and Services through WMO	Equipment and Services by bilateral arrangements	Training/ Fellowships	VCP(ES) including fellowships Sub-total	
	(US$)					(US$)
Argentina			8,000	1,400	9,400	9,400
Australia	30,000	6,800	56,850	118,140	181,790	211,790
Brazil			5,510	50,360	55,870	55,870
Canada		40,000	530,000		570,000	570,000
Chile				1,476	1,476	1,476
China	10,000	196,260		100,600	296,860	306,860
Denmark			245,000		245,000	245,000
Finland		65,300	216,400		281,700	281,700
France			30,000	430,000	460,000	460,000
Germany		52,700	52,000	60,400	165,100	165,100
Hong Kong, China				35,000	35,000	35,000
India				1,300	1,300	1,300
Iran, Islamic Republic of				7,901	7,901	7,901
Ireland	6,391					6,391
Israel				377,000	377,000	377,000
Japan	150,000	10,000		250,000	260,000	410,000
Mauritius	1,014					1,014
Netherlands		19,000			19,000	19,000
New Zealand			232,363		232,363	232,363
Portugal				64,397	64,397	64,397
Republic of Korea	5,000			190,400	190,400	195,400
Russian Federation		20,000		201,000	221,000	221,000
Spain		179,100		244,437	423,537	423,537
Switzerland			54,500		54,500	54,500
UK	54,680	695,000		236,000	931,000	985,680
USA		1,120,000	180,000	700,000	2,000,000	2,000,000
Total	257,085	2,404,160	1,610,623	3,069,811	7,084,594	7,341,679

* The data is based on the information provided by donor Members, as of 13 March 2003.

ANNEX IV

Evolution of Members' contributions to VCP(ES) and VCP(F) 1983-2002



	Total	VCP(ES)	VCP(F)
1983	5,114,086	4,883,400	230,686
1984	5,470,750	5,143,700	327,050
1985	4,773,319	4,603,820	169,499
1986	5,395,270	5,008,780	386,490
1987	6,198,385	5,956,468	241,917
1988	6,895,518	6,604,008	291,510
1989	8,191,805	7,944,969	246,836
1990	8,080,558	7,702,200	378,358
1991	7,408,845	7,021,500	387,345
1992	6,214,520	5,695,610	518,910
1993	7,692,204	7,178,600	513,604
1994	6,851,805	6,398,340	453,465
1995	6,003,186	5,518,675	484,511
1996	5,994,740	5,607,216	387,524
1997	8,078,506	7,802,276	276,230
1998	7,411,226	7,118,312	292,914
1999	8,539,730	8,122,382	417,348
2000	8,313,165	8,025,473	287,692
2001	7,366,264	7,055,297	310,967
2002	7,341,679	7,084,594	257,085

(US$)

ANNEX V

Statistics related to the support received for VCP projects circulated amongst donors during the period 1988-2001 and in 2002

(VCP requests related to fellowships excluded)

Fields of co-operation	Number of projects having received support during 1988-2001	Total number of projects having been circulated during 1988-2001	Percentage of projects having received support during 1988-2001	Number of projects having received support in 2002	Total number of projects having been circulated in 2002	Percentage of projects having received support during 1988-2002
Surface observing stations	74	153	48%	5	7	49%
Upper-air observing stations	145	269	54%	5	9	54%
Satellite receiving stations	37	95	39%	0	1	39%
Weather radar stations	4	18	22%	0	0	22%
Telecommunication systems	116	273	42%	41	27	52%
Data processing systems	33	72	46%	2	5	45%
Maintenance workshops	6	21	29%	0	0	29%
Research and training centre activities	5	21	24%	0	2	22%
CLICOM and climatological activities	79	139	57%	5	9	57%
Hydrological activities	23	73	32%	3	2	35%
GAW and environment protection activities	4	57	7%	0	0	7%
Meteorological applications activities	86	129	67%	3	9	64%
Total	612	1320	46%	64	71	49%

ANNEX VI

ACTIVITIES OF VCP CO-ORDINATED PROGRAMMES IN 2002

1. Improvement of the global network of upper-air stations with special emphasis on the GCOS upper-air network

1.1 During the intersessional period, Members concerned together with the Secretariat have accomplished VCP projects aiming to upgrade surface and upper-air stations, including GUAN and GSN in accordance with the recommendations given by EC, CBS and CIMO. In particular, several upper-air stations have been put in full operational mode in Democratic People's Republic of Korea, Mozambique and Russian Federation through the provision of spare parts and essential consumables. Armenia, Congo and Côte d'Ivoire had received required support to secure sustainable functioning of their synoptic stations. The above accomplishment was supported through substantial contributions provided by Australia, China, Finland and Japan. There are more than 20 on-going VCP projects related to rehabilitation and upgrading of the meteorological observing networks in Armenia, Cuba, Democratic Republic of the Congo, Dominica, Guinea, Kazakstan, Kyrgyz Republic, Lao People's Democratic Republic, Lesotho, Madagascar, Mauritius, Mongolia, Russian Federation, Sierra Leone, Swaziland, Tajikistan, The former Yugoslav Republic of Macedonia, Ukraine, Yugoslavia and Zambia. Implementation of projects in these countries has been supported through generous contributions provided by China, Egypt, Finland, France, Japan and the Netherlands. It should be also noted that some donors, among them the United States, have expressed a willingness to substantially increase their funding for improving observing networks in developing countries with particular emphasis to GCOS stations.

1.2 The concerted work of many CBS and CIMO experts generated numerous recommendations on operational improvements of GPS radiosondes. Practical advice on operating GPS radiosondes was circulated to users, flight testing of the systems continued with the manufacturers to identify the origins of production faults and inherent system problems, and technical improvements were developed and proposed to manufacturers. The result of a survey in 2001 showed a marked improvement in system performance, but operational problems still remained. The latest results of the WMO GPS Radiosonde Comparison in Brazil, May/June 2001, demonstrated that newer generation GPS radiosonde windfinding systems performed more reliably, and that the current operational problems with wind measurements should be reduced once the new designs become more widely available. However, it should be noted that some countries had avoided the problems with the GPS radiosondes by using modern radiotheodolite systems.

2. Improvement of the telecommunication systems, including common carrier technologies and the use of Internet technology, specifically for transmission of satellite data

2.1 In 2002, the implementation of computer-based systems for GTS/GDPS functions in WWW centres, supported by several expert missions, made important progress, in particular through the introduction of cost-effective PC-based data handling systems in several developing countries. Significant progress was also made in the implementation of RMTNs, but serious shortcomings are still existing in some Regions at the regional and national levels.

2.2 In Region I, despite serious economic difficulties, continuous efforts enabled some improvement of GTS circuits via leased lines, satellite-based telecommunications (in particular SATCOM)

or public data networks, including the Internet. Satellite-based data-distribution systems and data-collection system continue to play a crucial role. There are still serious shortcomings, in particular at the national level. The RA I strategy for enhancing WWW basic systems, in particular for meteorological data communications, was consolidated and endorsed by XIII-RA I, and projects are being developed. The PUMA project for the implementation of MSG receiving stations (funded by the European Commission) and the RETIM Africa system (planned by France for the first half of 2003), are essential contributions to the strategy.

2.3 In Region II, most of the GTS circuits are operating at medium or high speed, but there are still a number of low-speed connections. The RMTN in Region II, particularly in its eastern and southern parts, was being improved by the continued implementation of improved data communication services, including frame relay services, complemented by satellite-based distribution systems and the use of the Internet. An Implementation-Coordination Meeting on the GTS (South East), held in New Delhi, recommended further development and upgrades. A seminar on data communication techniques was also held at RTH Bangkok for adjacent GTS centres. A 64 Kbits/s circuit Bangkok - Vientiane has been implemented with the support of France, Japan and UK, and VCP(F). The replacement of HF broadcast systems by satellite distribution systems is being implemented by India.

2.4 In South America, the RA III RMDCN project enters its implementation phase. The technical specifications were finalized. As requested by RA III Members and authorized by the Secretary-General, the WMO Project Office located in Brasilia, with support of the Headquarters and technical support of INMET, has started the international tender process. Five telecommunication companies were invited to participate in the Invitation to Tender and the proposals will be opened on 10 February 2003. Despite the current economic difficulties, important efforts are made towards a progressive implementation, including upgraded interconnection between the three RTHs. All 13 NMCs were also equipped with systems receiving WAFS and OPMET information via the International Satellite Communication System (ISCS) operated by the United States.

2.5 In Region IV, the replacement of GTS/GDPS PC-based terminal equipment at NMCs is a high priority, in view of the planned upgrade as from August 2003 of the two-way satellite-based network RMTN integrated in the ISCS. The SIDS Project will support most of the Caribbean countries, and the technical preparation for the procurement was carried out. Some other RA IV countries may be expected to require assistance.

2.6 Significant progress was made in the Region V RMTN with the implementation of frame relay services, the inclusion of additional GTS circuits in the Pacific, and the expansion and planned upgrades of satellite-based communications, including the ISCS operated by the United States, the data collection system (DCS) of the GMS and GOES satellites and the GOES emergency managers weather information network (EMWIN). There was also an increasing use of the Internet, in particular for the collection of observational reports and for linking small nations in the Pacific.

2.7 The RA VI RMDCN, based on a shared managed network service managed by the ECMWF, is interconnecting 33 RTHs and NMCs, plus ECMWF and EUMETSAT. A project for the connection of NMC Damascus to the RMDCN via NMC Beirut is being implemented. The connection of the NMCs located in the zone of responsibility of RTH Moscow to the RMDCN still remains more expensive than the implementation of dedicated circuits. A project for the automation of NMCs Baku, Kishinev and Yerevan is being implemented. France implemented the upgrade of the RETIM satellite distribution system (RETIM2000), and is assisting the NMHSs concerned in upgrading their RETIM receiving systems.

Support to Internet capabilities at NMHSs

2.8 CBS recognized that, for several small NMHSs, the Internet was the only affordable telecommunication means for transmitting meteorological information, despite its possible shortcomings (availability, reliability, security). It developed guidelines on technical arrangements for e-mail and connections, with a view to minimizing operational and security risks. The support for implementation of Internet capabilities at NMHSs is frequently associated with the initial automation of NMCs. A rapidly increasing number of NMCs have access to the Internet through relatively low-cost equipment, at least for e-mail services and several NMHSs of developing countries are benefiting from the VCP support. Internet access facilitates the involvement of NMHSs in WMO activities, in particular WWW.

3. Improvement of the performance of NMCs

3.1 Automation of small NMCs using available, affordable and maintainable technologies based on PCs and TCP/IP protocols, using off-the-shelf hardware and software components, is now available from several manufacturers. Its implementation in several NMCs and some RTHs demonstrated its feasibility and performance, providing a considerable upgrade of GTS and basic GDPS operation.

3.2 Standard data-communication techniques, protocols and applications that are adopted for the GTS provide better opportunities for improving the cost effectiveness of GTS facilities and systems and taking benefit from new telecommunication means, services and equipment which are widely supported by telecommunication providers and manufacturers. These benefits equated to direct savings in financial and human resource to Members by reduced costs for communications equipment purchase and maintenance, as well as reduced software development work through the use of industry standard software systems.

4. Support to the Tropical Cyclone Programme (TCP)

4.1 The Tropical Cyclone Programme in 2002 accorded high priority to developing human resources and capacity building in keeping with its objective to facilitate the transfer of technology leading to the provision of better tropical cyclone, flood and storm surge forecasts and warnings by national meteorological and hydrological warning centres. In line with this endeavour, the programme provided valuable assistance in the attachment or further training of forecasters to advanced centres. Aside from this, two workshops and two training courses were held during the year. Special emphasis was given to the training of tropical cyclone forecasters of small island states in the Caribbean region and in Asia in support of sustainable development of Small Island Developing States (SIDS) and within the framework of the International Strategy for Disaster Reduction (ISDR) (post IDNDR).

4.2 Cognizant of the need to harmonize the activities of the Regional Specialized Meteorological Centres (RSMCs) with activity specialization in tropical cyclones, TCP organized the Fourth Tropical Cyclone RSMCs Technical Coordination Meeting. The meeting was held in Nadi, Fiji from 26 to 29 November 2002.

5. Support to public weather services (PWS) activities

5.1. Several Members sought and received assistance through the VCP in developing their national public weather services programmes, particularly in the area of presentation and dissemination of meteorological forecasts, warnings and information. The requests for VCP support and assistance were mainly for the following:

- Provision of equipment to facilitate the design and dissemination of forecasts and warnings by meteorologists to the public; and

- Provision of the relevant training to NMS staff in the use and maintenance of the equipment to support enhanced quality services.

Projects approved for circulation that have had no offer of support

5.2 Currently there are listed requests for assistance in acquiring Television/Media Presentation Systems from eight Members (with year of circulation in brackets) as follows: Cameroon (1997), Eritrea (1997), Georgia (2002), Guyana (1997), Lao PDR (1998), Mauritania (1999), Niger (2002) and Zimbabwe (2000, repeated in 2001 with a training component added).

5.3 The United Republic of Tanzania requested assistance (circulated in 2000) in replacing non-Y2K compliant computers for their TV weather presentation studio and Kenya sought assistance (circulated in 2001) in acquiring a non-linear video-editing system for their TV weather production studio. Also approved for circulation (2002) was the request by Uganda for support in acquiring meteorological instruments and a weather presentation facility for popularizing meteorology in schools.

Projects completed in late 2001

5.4 Projects for the following Members for the acquisition or upgrading of TV/Media Presentation Systems and which were fully supported by the United Kingdom were completed in late 2001, (and hence reported as on-going in the last PWSP report): Benin, Burkina Faso, Congo, Democratic Republic of Congo, Ethiopia, Ghana, Guinea, Lesotho, Mozambique, Rwanda, Sudan, Swaziland, Togo.

Projects completed in 2002

5.5 UK provided full support for the request from the United Republic of Tanzania for a TV/Media Presentation System and the project was completed on 3 April 2002. A similar request from Senegal that was circulated in 2000 and supported by the UK in 2001 was reported as complete in 2002.

On-going projects receiving full support

5.6 The UK has also provided full support to Gambia's request, circulated in February 2002, for upgrading its TV/Media Presentation System. The offer of assistance was made on 17 September 2002 and was received by the PR of Gambia on 23 September 2002.

6. Support to climate data management and CLIPS

Climate computing (CLICOM) project

6.1 The migration to CLICOM Version 3.1 is well underway in the NMHSs of the many WMO Members using CLICOM. The Thirteenth session of the Commission for Climatology (CCl-XIII) recommended that the English, French, and Russian versions of CLICOM 3.1 software continue to be supported by WMO.

6.2 The CLICOM Area Support Centres (ASCs) - ACMAD for RA I, Chile for RA III, the Caribbean Institute for Meteorology and Hydrology (CIMH) for RA IV, Malaysia for RA V and the Russian Federation for RA VI - had continued to actively assist in the maintenance of CLICOM systems and development of national capabilities through training seminars and on-site support. The CLICOM group mail list maintained by the Secretariat has proven beneficial to users, both when building their capabilities to use CLICOM and when experiencing technical problems. WMO will continue to support this mailing list.

Future Climate Database Management Systems (CDMSs)

6.3 The transition to more powerful client/server multi-tier database systems is a welcome innovation for the already successful CLICOM project and would enable NMHSs making the change to avail themselves of a wide range of flexible applications for climate data, and to enhance NMHS capabilities to employ tools such as GIS.

6.4 The following countries offered their systems for evaluation by an expert team: Australia, Czech Republic, France, Jordan, Russian Federation, Tunisia and Zimbabwe (please see WCDMP No. 50 (WMO-TD No. 1130) – “Report of the Climate Database Management Systems Evaluation Workshop”). As the Team’s evaluations are available on the WMO wcdmp web site, http://www.wmo.ch/web/wcp/wcdmp/html/wcdmp.html, Members may examine which of the systems might best meet their needs and, as necessary, seek funding through the WMO VCP. The Czech Republic system, CLIDATA is, through bilateral agreements, now operational in Ghana, The former Yugoslav Republic of Macedonia, Latvia and Lithuania. CLIDATA has been installed in CIMH (Barbados) for feasibility testing within the Finnish project entitled "Preparedness to Climate Variability and Global Change in Small Island Developing States, Caribbean Region (SIDS-Caribbean)" which is providing financial support to the Caribbean countries in upgrading their database management systems and implementing data rescue activities using scanners.

6.5 The Thirteenth session of the Commission for Climatology (CCl-XIII) recommended that work be accelerated to ensure availability of future WMO CDMS as a matter of some urgency for the benefit of countries in need.

Data Rescue (DARE) and ARCHISS

6.6 Many countries in East Asia (Cambodia, Lao PDR and Myanmar) are in real need of support to rescue data from paper archives. The VCP project, Viet Nam WCP/4/1/1, was initiated in December 2002 with funding from the USA.

6.7 The International Data Rescue Meeting held in Geneva in September 2001 has agreed that Data Rescue is:

> *An on-going process of preserving all data at risk of being lost due to deterioration of the medium, and the digitization of current and past data into computer compatible form for easy access.*

This definition implies that:

- Data should be stored as image files onto media that can be regularly renewed to prevent the deterioration of the medium (cartridges, CDs, DVDs, etc.);
- Data already in computer compatible media should be routinely migrated to storage facilities that conform to changing technologies; and
- Data should be key-entered in a form that can be used for analyses.

6.8 These rescued data combined with already available data will enable authorities to have access to better projections that can be used to mitigate loss due to natural disasters and will provide increased information for economic development. Two types of data need to be rescued: climatological paper archives and data on old computer media not readily readable. It is suggested that paper records be scanned and archived on CD-ROMs with two copies being kept in different locations. Nearly all WMO Member countries have climatological records in paper form that need to be preserved and accessed.

6.9 In the 1980's many countries began key-entering their climatological data, primarily through the WMO CLICOM project. These data were archived on media (magnetic tapes, IBM optical disk 3363, cartridges, etc.) that are obsolete today. These data must be migrated to CD-ROMs.

6.10 CCl-XIII recommended to combine the Archival Climatic History Survey (ARCHISS) and data rescue activities and welcomed the idea of extending the ARCHISS activities to other regions. The Commission recommended that more emphasis should be placed on the practical benefits of using ARCHISS data collections. Future activities under this combined effort should focus on locating and digitizing high priority climatological and hydrological data and accompanying metadata with the objective of adding these data to the existing climatological series for climate change and climate variability studies and their social and economic impacts.

Climate Information and Prediction Services (CLIPS)

6.11 In July 1999, a VCP request was received from China for the CLIPS Showcase Heat Watch/Warning System in Shanghai. The VCP project was formulated and circulated in September 1999 for climate data, decision-tree model, and expert services for a detailed project plan and system and software development, which was supported by the USA. A project team visited China (Shanghai, 8-10 October 1999) to develop with the CMA a detailed plan for the CLIPS Showcase Project: Heat/Health Warning System for Shanghai. A multidisciplinary team from Shanghai travelled in July 2000 to the Centre for Climatic Research in Delaware, USA, to complete the statistical manipulation of the health and mortality data. Testing was completed in 2001 and development of the public health intervention plan is underway.

7. Support to training and human resources development for meteorology and operational hydrology

7.1 One of the major VCP activities supporting training and human resources development in meteorology and operational hydrology is the award of short- and long-term fellowships. During 2002, more than 900 requests for fellowships were received from Member countries. Four hundred and thirty-three fellowships were awarded under all programmes including 151 VCP fellowships. However, about 500 requests for fellowships remain unsatisfied each year due to the reduction of available funds for fellowships, particularly under the UNDP and Trust Funds supported projects. The VCP has thus become one of the major sources in supporting WMO fellowships (refer to IPM/VCP/TCO(2003)/Doc. 3, paragraphs 1.3.1-1.3.3).

8. Support for ACMAD activities

8.1 In 2002, with the financial support of France, Italy, the Netherlands, Spain, UK, USA and UNDP, as well as the VCP(F), ACMAD continued to organize several regional fora of seasonal forecast and its applications for the benefit of the socio-economic development and welfare of the population. ACMAD also continued to organize several training sessions for capacity building in the field of climate prediction for climatologists, hydrologists and other users from food security and water resource management sectors. ACMAD continued to be involved in the organization of regional climate outlook fora and in the development through USAID funded projects of digital rural radio systems to enhance the distribution of meteorological information to the rural communities in Africa.

ANNEX VII

List of on-going projects

Technical Cooperation Projects *- ONGOING PROJECTS -*		
Country/Region	**Project Indicator**	**Project Title**
Eastern and Southern Africa (ESA)		
ESA UNDP		
Kenya	KEN/001/008 (sppd) (2000-2002)	Factoring of climate monitoring and early warning for disaster preparedness & management in Kenya
ESA Trust Fund		
SADC	SADC-HYCOS	SADC-HYCOS
Eastern Africa	USAID/DMCN FIT (1999-2002)	Regional Climate forecasting for the Greater Horn of Africa
Eastern Africa	USAID/RESDO DMC FIT (2002-2003)	Climate Monitoring, Prediction and Disaster Preparedness
SADC	SADC Project N AAA.6.02 (1998-2002)	Strengthening the capabilities of the Southern African Development Community (SADC) Drought Monitoring Centre in Harare
SADC	RAFK0698 (2000-2002)	Meteorological & Hydrological contributions to natural disaster preparedness & management in Southern Africa
Kenya	KEN/USAID/FIT (2001/2002)	Improving meteorological observations through utilization of HAM radio operators in Kenya
Central and Western Africa (CWA)		
CWA Trust Fund		
Chad	CHD/FIT/SUISSE	Application of agrometeorological information and advice to agricultural production in Chad
Mali	MLI/FIT/SUISSE	Extension of the operational meteorological assistance to the rural communities in Mali
CILSS	SHL/FIT/ITA (Early Warning Phase II)	Early warning and agricultural yield forecasting, Phase II (refer to: http://p-case.iata.fi.cnr.it/ap3a)
Arab States, Asia and Pacific (AAP)		
AAP UNDP		
Bahrain	BAH/98/002	Strengthening of Meteorological Services of Bahrain
Maldives	MDV/98/001	Human Resources Development in Meteorology of Maldives
United Arab Emirates	UAE/99/001	Strengthening of Meteorological Services of the UAE Armed Forces
United Arab Emirates	UAE/2000/003	Establishment and Operation of National Network for Weather Radars and Automatic Weather Observing Stations
Libyan Arab Jamahiriya	LIB/2000/003	Modernizing and Upgrading the Meteorological Services of Libyan Arab Jamahiriya

List of on-going projects

Technical Cooperation Projects *- ONGOING PROJECTS -*		
Country/Region	**Project Indicator**	**Project Title**
AAP Trust Fund		
Iran	WMO/IRIMO/FIT	Establishment of Weather Radar Network
Oman	OMAN/WMO/FIT-2002	Data Collection and Processing Systems and Related Training
Saudi Arabia	WMO/SAU/FIT/SACPEX-2	Study on physics with a possibility for rain enhancement in Saudi Arabia
Saudi Arabia	WMO/SAU/FIT/SADIS	Equipment for Meteorology and Environment Protection Administration (MEPA)
Saudi Arabia	NOAA/WMO/ARSAD	Implementation of Technical Assistance Projects
ASEAN countries	ESCAP/WMO/ASEAN HAZE	Support to the Implementation of the Regional Haze Action Plan of ASEAN Member Countries
Yemen	YEMEN/WMO/FIT	Equipment
Europe and Newly Independent States (ENI)		
ENI Trust Fund		
Czech Republic	Czech Republic (training)	Assistance in Meteorology, Hydrology and Air Pollution in developing countries
Northern and Central American Countries (NCAC)		
NCAC Trust Fund		
Mexico	Mexico PROMMA (1997-2003)	Water resources management project in Mexico
Latin America and the Caribbean	IDB/WMO ENSO Study ATN/JF-6579-RG (2000-2002)	Study on the prediction and amelioration of socio-economic impacts of El Niño Southern Oscillation (ENSO) in Latin America and the Caribbean
Caribbean Small Island Developing States	SIDS-CARIBBEAN (2000-2004)	Preparedness to Climate Variability and Global Change in Small Island Developing States of the Caribbean Region (SIDS-CARIBBEAN)
Dominican Republic	SNAMET (2001-2002)	Establishment of a Meteorological Early Warning System for Dominican Republic
South America		
South America Trust Fund		
Brazil	WMO/IBAMA (97-001)	Environmental and mining: River and Watershed Recovery
Brazil	WMO/ANEEL (98-001)	Monitoring Program and Hydrological Georeference for Energetical Purposes
Brazil	WMO/ANA/02/001	Program of Technological Update of the Hydrological Monitoring and Georeferenced Systems and Technical Training for Water Resources Management
Ecuador	ECU/FIT/IRCEN	Establishment, Operation and Development of the International Research Center for the El Niño Phenomenon in Guayaquil

ANNEX VIII

CIIFEN "International Research Centre on El Niño Phenomenon"

1. After several discussions and exchanges between the Government of Ecuador, WMO Secretariat and the ISDR Secretariat, it was decided to hold the First Stakeholders Meeting of the International Research Centre on El Niño Phenomenon (CIIFEN) and the inauguration ceremony of the Centre, in Guayaquil, on 9 and 10 January 2003. Invitations to this event were extended to Ministers of Foreign Affairs of WMO Member countries of RA III (South America) and RA IV (Central, North America and the Caribbean), relevant regional intergovernmental organizations, international organizations and potential partners for the Centre. The main purpose of this event is to share with all interested parties the concept and vision for the Centre and the benefits and added values for increased co-operation in the prevention of El Niño-related disasters.

Preparedness for climate variability and global change in Small Island Developing States in the Caribbean Region (SIDS-Caribbean)

2. Under this project, funded by Finland, 14 students commenced training at the Caribbean Institute for Meteorology and Hydrology (CIMH) in the basic instruction package for the meteorological technician programme. A similar training programme for three candidates from the Dominican Republic began at the University of Costa Rica in November. Both courses will last 18 months. Training courses for instrument technicians from Haiti were organized in collaboration with Météo-France in Toulouse.

3. WMO continued procurement of VSAT workstations to replace the STAR4 systems and started the procurement and installation of 28 automatic weather stations and conventional meteorological instruments for all participating countries. The database CLIDATA was tested for possible adoption as the database management system for climatological work in the region. The first Supervisory Board (SVB) and the second Steering Committee meetings were held in Trinidad and Tobago on 31 October and 1 November with the attendance of representatives of the Caribbean Meteorological Organization (CMO), the CIMH, National Meteorological Services of non-members of CMO, the Government of Finland, the Association of Caribbean States (ACS) and WMO.

4. The SVB was chaired by Prof. Norman Girvan, Secretary-General of the ACS. It reviewed the current status of project implementation and endorsed all the recommendations of the Steering Committee for the different project components. The SVB recognized the progress made in the implementation of the project, as well as the efforts made in the execution of project activities in accordance with the work plan. The SVB also reviewed the work plan for 2003, budgetary aspects and the terms of reference for the mid-term evaluation of the project.

ANNEX IX

SPECIFIC PROGRAMME NEEDS

1. World Weather Watch Programme

Integrated observing systems (IOS)

1.1 Following the decisions of Thirteenth Congress, technical co-operation projects related to the implementation of basic components of the WWW should be carried out as priority activities. The Extraordinary Session of CBS (Cairns, December 2002) (CBS-EXT(02)) noted that the recent sessions of RA II, RA III, RA IV, RA V and RA VI recommended that the highest priority be given to the realization of projects which would have the greatest impact on the WWW implementation on the regional and global scales. To follow up those decisions related to the GOS and also in accordance with the Strategic Plans adopted in RA I and RA II, the session agreed on the following guidelines for the allocation of the priorities for technical co-operation activities for the IOS:

(a) The highest priority should be given to the projects aimed at improving, restoring, replacing and building the upper-air observational capacities of the RBSNs. The activities should focus on the activation of silent upper-air observing stations comprised in the RBSNs;

(b) A high priority should be given to the activities related to the improvement of data quality and coverage of surface observations of the RBSNs. The activities should focus on activation of silent surface observing stations comprised in the RBSNs;

(c) A high priority should be given to projects related to the deployment and/or use of new and cost-effective observing systems like surface-based AWSs, AMDAR, ASAP and drifting buoys;

(d) A high priority should be given to the projects related to the improvement of the data quality and coverage provided by newly established RBCNs.

Information Systems and Services (ISS)

1.2 As regards technical co-operation activities for the ISS, CBS-EXT(02) agreed on the following guidelines for the allocation of the priorities:

(a) The highest priority should be given to the implementation of the connection of each NMC to the GTS for the exchange of observational data and processed information (at a minimum speed of 16 Kbits/s using TCP/IP procedures);

(b) The highest priority for the exchange of data between RTHs at a minimum speed of 64 Kbits/s using TCP/IP procedures;

(c) The highest priority for the implementation of the project for an improved MTN;

(d) The highest priority for the collection of data from RBSN stations at NMCs or centres with similar functions;

(e) A high priority for a backup connection of each WWW centre to the GTS, such as the reception of satellite distribution systems;

(f) A high priority for the implementation of virtual private network (VPN) connections via the Internet as a backup for the exchange of data, in particular for RTHs.

1.3 The WMO goals for Members equipped with meteorological satellite receiving equipment were 100 per cent for polar-orbiting satellite data receivers (either APT or HRPT) and 100 per cent for geostationary satellite data receivers (either WEFAX or HR). To date, the overall level of implementation was 87 per cent. With regard to each category, the WMO Regions had achieved an implementation of 90 per cent and 89 per cent for polar-orbiting and geostationary satellite receivers, respectively. The expected change from analogue to digital low resolution imagery coupled with improved capability to utilize satellite data within all WMO Members indicated that a strategy towards implementation of low and high resolution digital receivers should be pursued by WMO Members as well as through assistance programmes. The commencement of the new digital broadcast services was expected in 2003 with the first LRIT service. CBS-EXT(02) agreed on the following guidelines for the allocation of priorities:

(a) The highest priority for satellite receivers for those Members without any receiver;

(b) A high priority for satellite receivers for those Members without a polar-orbiting receiver or a geostationary receiver;

(c) A medium priority for satellite high resolution receivers for those Members with only low resolution polar-orbiting receiver or only low resolution geostationary receivers;

(d) A low priority for satellite receivers for those Members already exceeding the WWW goal.

Data-processing and Forecasting Systems (DPFS)

1.4 With regard to technical co-operation activities for DPFS, CBS-EXT(02) agreed on the following guidelines for the allocation of priorities:

(a) The highest priority for co-operation activities in establishing access, processing and forecasting functions of NMHSs for NWP and transport modelling, application of seasonal to interannual prediction and linkages with disaster management agencies to assure effective community response to severe weather forecasts and warnings;

(b) The highest priority for activities contributing to the improvement of the dissemination and application of weather and climate products;

(c) The highest priority for activities on capacity building facilities and use of Internet and implementation of related facilities in developing countries for the improvement of the access to forecast products and the exchange of meteorological and environmental information;

(d) The highest priority should be given to workshops on EPS, including the interpretation of probabilistic products and case studies that were relevant to the trainees and a high priority to co-operation for training in EPS for those who intended to make their own products and/or who would need more specific training on products or the methodology of the forecast;

(e) The highest priority in training on data processing, modelling, and applications support and development;

(f) A high priority in training activities on computer operation and maintenance;

(g) A high priority in setting up remote support, maintenance and distance training.

1.5 Aeronautical Meteorology Programme

1.5.1 The views of Thirteenth Congress regarding the World Area Forecast System (WAFS) satellite broadcasts were summarized in paragraph 3.4.3.4 of the Report of the work of the Congress session:

> "Congress expressed satisfaction with progress achieved on the implementation of the WAFS, particularly with the achievement of global satellite coverage of WAFS satellite broadcasts in 1996 and the installation of 165 WAFS satellite reception systems in 120 countries with further installation planned. Congress expressed its appreciation to Members, in particular the United Kingdom and United States for having provided other Members with very small aperture terminal (VSAT) equipment and STAR4 workstations to access and use the WAFS satellite broadcast data and products."

1.5.2 Although currently over 160 countries have installed around 200 very small aperture terminals (VSAT), to access the WAFS data and products, new developments related to WAFS implementation are expected to lead to a growing number of VCP requests to WMO starting in 2003.

1.5.3 New developments include the enhancement of the US International Satellite Communications System (ISCS) and the UK SADIS broadcasts of WAFS information and OPMET data. The ISCS for example will be upgraded to increase bandwidth and data handling capabilities requiring the inclusion of TCP/IP capability planned in the new ISCS contract and on site replacement of the interface equipment. Currently about 126 operational satellite broadcast terminals are receiving the two ISCS broadcasts. All Members receiving the ISCS and SADIS broadcasts will have to replace their current workstations to be able to process and display the GRIB/BUFR coded WAFS information and to accommodate the change-over from X.25 to TCP/IP protocols for the ISCS.

1.5.4 In this context, off-the-shelf workstation provider candidates are being considered by the US for the replacement of the current STAR4 workstation. The new workstation will enable forecasters to produce WAFS charts locally from the GRIB and BUFR coded WAFS information since Washington and London World Area Forecast Centres (WAFCs) will cease the preparation and broadcast of current WAFS charts in the final phase of the WAFS planned for 2004. In order to facilitate the transition from the current WAFS satellite broadcasts to the upgraded satellite broadcasts and the new workstations, both the London and Washington WAFCs have started co-operating with WMO and ICAO to train staff from various Member countries to use the new workstations to provide flight documentation.

1.6 Marine Meteorology and Oceanography Programme

In situ ocean observations

1.6.1 Large parts of the world's oceans and coastal waters are seriously data deficient, for both surface meteorological and oceanographic observations. Many of these data deficient sea areas (e.g., Indian Ocean, RA I waters, South Pacific Ocean) are adjacent to developing countries, which could thus contribute substantially to overcoming the deficiencies, but lack the technical means to do so. Specifically, their contributions would be directed towards satisfying requirements for marine surface data given in the WWW plan, for surface oceanographic data for global climate studies specified in the GOOS/GCOS Implementation Action Plan, and for local/regional marine services.

1.6.2 Detailed specifications for shipboard equipment (for the VOS and ships of opportunity) are given in the Guide to Marine Meteorological Services and the CIMO Guide. Specifications for coastal observing stations are also given in both guides, and have been further elaborated by JCOMM. The assistance required involves not just the equipment, but also training of local technical personnel in installation and maintenance. Steps towards such training have already been taken through the organization of three regional workshops for Port Meteorological Officers (PMOs). The training imparted through these workshops needs to be backed up now through the provision of appropriate shipboard equipment, which will serve to enhance the global availability of ship meteorological reports.

1.6.3 Upper ocean thermal structure is an important variable in ocean circulation and in seasonal to interannual climate variability. The JCOMM ship-of-opportunity programme (SOOP), co-ordinated through the SOOP Implementation Panel (SOOPIP), provides a network of ship lines deploying XBTs which is fully complementary to the new Argo programme of profiling sub-surface floats. SOOPIP works directly (in particular through its technical co-ordinator) with agencies in developing countries to facilitate their participation in the programme as well as in the application of the data generated. The VOS and SOOP, together with the ASAP Panel, now form the integrated JCOMM Ship Observations Team, which is supported by JCOMMOPS.

1.6.4 These in situ observations are crucial to global programmes such as the WWW, WCP, GOOS and GCOS, as well as to individual Members. They would benefit directly from VCP support in the provision of hardware, technical assistance and training. Such support would be most effective if directed through and co-ordinated by Ship Observations Team.

1.6.5 As a final comment, support for such observations has been listed as a high priority at several previous VCP meetings, and it is noted that there has been several requests for support for in situ marine observing stations, including VOS equipment and training, in recent years. It is therefore disappointing that in practice no support in this area has yet been provided by donors.

Inmarsat C ship terminals

1.6.6 Meteorological forecasts and warnings for shipping are now broadcast, within the context of the Global Maritime Distress and Safety System of IMO, primarily through the Inmarsat SafetyNET service, and received onboard ships with dedicated Inmarsat C terminals. Specifications for these broadcasts are given in the Manual on Marine Meteorological Services, WMO-No. 558, which is Annex VI to the Technical Regulations, with prime responsibility for ensuring correct broadcasts resting with the designated Issuing Services. Amongst their responsibilities, is one for the Issuing Services to monitor the broadcasts which they originate (see Manual, Volume I, Part I bis, para. 2.2.3.8.2).

1.6.7 A number of the designated Issuing Services are located in developing countries, and unfortunately do not have the resources to purchase the Inmarsat C terminals required to fulfil this formal monitoring requirement. Direct assistance to these countries for the acquisition of this equipment will thus directly benefit the enhanced provision of maritime safety services.

1.7 **Public Weather Services Programme**

1.7.1 The following is a summary of activities having the highest priorities within the PWS Programme and is compatible with information on outstanding requests for assistance.

1.7.2 VCP priorities in the PWS Programme are geared to support the need of WMO Members,

particularly those in small and developing countries, for assistance to acquire, replace or upgrade computing and communications systems in order to cater for the increased universal demand for high quality public weather services, as well as to keep up with the rapid advances in technology. These priorities include the following:

(a) TV/Media Presentation Systems comprising high performance computing and communications hardware, peripherals and software, video equipment for television production and assorted relevant accessories, as well as the requisite training of staff to use the systems for production;

(b) Computer systems at meteorological work stations that allow forecaster interaction and enable the creation of new or enhanced products; these will include systems to access satellite imagery (inputs) and the preparation of processed products (outputs) for users;

(c) Increased Internet access for NMSs so they can use it as a fundamental communications tool to improve their data access, as well as expand the dissemination methods of their public weather services, and promote the use of official consistent information;

(d) Fixed and mobile communications systems including modern telephone services preferably utilizing digital processes, mobile telephones, pagers/short message system (SMS) and fax-on-demand;

(e) VHF radios to provide simple radio broadcast and warnings alert systems; and

(f) Training related to national PWS plans; this includes training in media skills (writing and presentation), product design, and public education and awareness among other things.

1.7.3 The high priorities listed above can be succinctly integrated into the following two foci:

(a) Modern computing and communication systems (hardware and software) to improve data access and to facilitate design and delivery of public weather services;

(b) Requisite training in the management, maintenance and use of the systems and in support of the provision of efficient and effective public weather services.

1.8 **Tropical Cyclone Programme**

1.8.1 Emphasis will be placed on sustainable development on the following subjects:

(a) Training support for the attendance of the storm surge experts from Bangladesh, India, Myanmar and Pakistan as trainees and one storm surge specialist from India at the Second Workshop on South China Sea Storm Surge, Wave and Ocean Circulation Forecasting - *A Hands-on ocean forecast training laboratory for the South China Sea region* (Kuantan, Peninsular Malaysia, Malaysia, 7 to 11 July 2003) (US $8,000); and

(b) Installation of new PC-based telecommunication equipment for Hydrometeorological Services of Cambodia and Laos, with a view to helping to improve their effective tropical cyclone and flood warning dissemination systems (US$ 30,000). No GTS links between Bangkok and Phnom Penh, and Vientiane, are available at present.

1.8.2 The Third biennial RA I Training Course on Tropical Cyclones is planned for October-November 2003 at the RSMC La Réunion-Tropical Cyclone Centre, for English-speaking and French-speaking meteorologists of tropical cyclone forecasters in the South-West Indian Ocean. It is requested that VCP funds in the amount of US $11,000 be made available to supplement the amount allocated from the Regular Budget for this training course in order to be able to support more additional trainees from the Southern Part of African countries, i.e., Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, United Republic of Tanzania and Zimbabwe. The main purpose of this training is to assist the trainees of tropical cyclone forecasters in their efforts to improve national tropical cyclone warning systems and services.

2. World Climate Programme

2.1 Climate Computing (CLICOM) and Data Rescue (DARE) projects

2.1.1 The final evaluation of the offered Climate Database Management Systems (CDMSs) took place in May 2002. It is planned that each Member will be able to choose the database management system it prefers but it is anticipated that groups of countries in a particular region will choose the same CDMS. The strategy is to combine parts of the data rescue and the Archival Climatic History Survey (ARCHISS) activities with the CDMS. The development of technology allows the use of scanners and/or digital cameras for data preservation and possibly digitizing. It is therefore expected that all new systems being offered to countries will also include equipment for data rescue: scanners, OCR software, etc. The WCDMP is working with the CCl to prepare a standard template for Members to use in surveying their paper archives and setting their priorities for national DARE projects. Completed national DARE plans thus will aid the VCP process to identify high priority projects for DARE and CDMS.

2.1.2 Based on the success of the Drought Preparedness Project, two projects are presented that will improve the capacity of African and Asian countries to rescue and manage their climate data and thus improve their ability to perform climate change analyses. This should be accomplished through:

- The upgrading of hardware and software for the national climatic databases and archives;
- The provision of advanced training to local staff in the use of national climate data for climate change analyses.

The project will make use of modern computer technology by using scanners to produce digital images from paper, microfilm and/or microfiche.

2.1.3 Due to environmental conditions, it is recommended that the beneficiary countries for the first project in Region I should be: Cameroon, Congo, Gambia, Guinea Bissau, Sao Tome and Principe, Uganda, United Republic of Tanzania and Zambia. For the second project the beneficiary countries (in Regions II and V) should be: Cambodia, Lao PDR, Niue, Papua New Guinea and Tonga.

2.1.4 Noting the persistent multi-year drought in Central and Southwest Asia that has affected close to 60 million people, and the request of the Thirteenth session of the Commission for Climatology (CCl-XIII), it is suggested that a project for drought preparedness be considered for the following countries: Afghanistan, Islamic Republic of Iran, Pakistan, Tajikistan, Turkmenistan and Uzbekistan. The objective of this project will be to improve capacity for national climate data management and develop drought preparedness and management strategies.

2.1.5 These three drought preparedness projects should be considered with a high priority.

2.1.6 In addition to the above-listed projects other activities that need to be considered for sponsorship include:

- In Region VI, there is a need to upgrade the database management system in some of the Members in the Interstate Council for Hydrometeorology (ICH)/Newly Independent States (NIS);

- Many countries in the Caribbean will benefit from the "Preparedness to Climate Variability and Global Change in Small Island Developing States (SIDS-Caribbean)" project funded by Finland. The project will implement two Climate Database Management Systems (in Oracle and Microsoft Access) and undertake data rescue activities.

2.2 **Climate Information and Prediction Services (CLIPS)**

CLIPS Showcase Projects: Heat/Health Warning Systems

2.2.1 WMO, with a number of major partner organizations in the Climate Agenda and national and municipal agencies, is collaborating in a series of Showcase Projects that begun in 1999 to demonstrate the application of climate information and weather forecasts to the reduction of human deaths related to extreme heat waves. Although the Rome and Shanghai projects are drawing heavily from the successful experiences of similar climate applications that were instituted in USA, they are also incorporating knowledge gained throughout the network of climate and health applications that are overseen by the WMO's Commission for Climatology (CCl).

2.2.2 The identifying features of the projects are that they involve a multidisciplinary team from the outset, they depend on proven climate applications that correlate historical climate and health information with dangerous air masses, they result in an integrated warning system that gives city dwellers concrete information to mitigate the life-threatening effects of extreme heat waves, and the ongoing responsibility for the resulting system lies wholly within the local organizations.

2.2.3 The WMO's participation in the Showcase Projects is a product of the CCl's priority on "Development of climate services in support of human health". The projects follow guidelines that were proposed by a group of experts convened by the WMO, which met in Freiburg, Germany in 1997. The group included health and meteorology specialists from WMO, UNEP and WHO. The WMO activities are cross-co-ordinated through its CCl, Commission for Basic Systems (CBS), and Commission for Atmospheric Sciences (CAS).

2.2.4 The first phase of the projects which started in 1999 involves focused study and development of a warning algorithm specifically for individual cities - ideally, one in each region. This phase is still continuing and VCP support during 2003 could provide for the travel of climatological experts and the travel of NMHS partners to assist in the development of the correlation and the warning algorithm, and to cover the costs of retrieving the archived meteorological data.

2.2.5 The second phase started in 2001. It will comprise the preparation of generalized guidance for NMHSs to use in developing similar systems. During this phase other climate/health relationships will be considered and appropriate applications developed. VCP support will be sought for the development of generalized guidance and the conducting of a workshop on climate and health that would use the Showcase Project as its main example.

Training of CLIPS Focal Points

2.2.6 The CLIPS Project Office has initiated a programme to establish national CLIPS Focal Points and, in some cases, regional CLIPS Focal Points. These will be the contact points on matters related to CLIPS at national and regional levels. However for them to be able to carry out their responsibilities effectively there is a need to undergo training on matters related to CLIPS through workshops specifically planned for that purpose. Such workshops have already been held for Focal Points from RA V and RA I (West Africa, Southern and Eastern Africa). The experience gained from these workshops will be useful when holding workshops in other regions. It is planned to extend these workshops to other regions. Two workshops are planned to be held in RA III and RA VI in 2003. Therefore, in 2003 VCP will be required to support these two workshops.

2.2.7 The WMO EC has recommended the functions and procedure for establishing Regional Climate Centres (RCCs) within RAs. In some cases the setting up of these RCCs may require additional funding. Donors may consider to support some of these requirements.

2.3 **Agricultural Meteorology Programme**

2.3.1 In the Agricultural Meteorology Programme, the main priority activities, which should be considered for VCP support, are:

- World Agrometeorological Information System (WAMIS); and
- Training to NMHSs in the use of new methodologies and tools available on WAMIS.

2.3.2 There are increasing demands for timely and effective agrometeorological information for on-farm applications. The need for reorienting and recasting meteorological information, fine tuning of climatic analysis and presentation in forms suitable for agricultural decision making and insulation of marginal farmers with small holdings from the adverse impacts of weather vageries has become more pressing. Developments in communications and electronic media, in particular the ever-expanding cyberspace linkages through Internet and World Wide Web are changing the way people view information dissemination and exchange. The potential to enhance the international exchange of ideas, concepts, data and information at the global level is expanding rapidly. The enhanced computing power that is available today is making data manipulation much easier than ever before. Geographical Information Systems and other spatial modelling tools make it possible to integrate biological, physical and socio-economic factors in a holistic manner. Hence the opportunity exists, more than ever before, to obtain and provide information to users through a variety of sources. Also it is now possible to reach a larger audience using cost-effective means that were just not available even a few years ago.

2.3.3 In order to improve agrometeorological bulletins that are routinely supplied to the users, WMO organized an Inter-Regional Workshop on Improving Agrometeorological Bulletins in October 2001 in Bridgetown, Barbados. Participants developed the concept of a centralized web server for agrometeorological products. The Commission for Agricultural Meteorology recognized the need for improved access to agrometeorological products by Members and initiated a project to enhance the use of Internet technology. Further work on this project was undertaken by an Expert Group Meeting on Internet Applications for Agrometeorological Products organized by WMO in Washington, D.C. during May 2002 in co-operation with the National Oceanic and Atmospheric Administration (NOAA) and the United States Department of Agriculture (USDA). The primary purpose of the meeting was to develop and evaluate the required tasks to create a dedicated web server for distributing

agrometeorological products and simple and effective training modules.

2.3.4 Recommendations from this Expert Group Meeting on Internet Applications led to the development of the World AgroMeteorological Information Service (WAMIS). WAMIS incorporates a dedicated web server on which countries can place their agrometeorological bulletins and advisories and also obtain training modules to improve these products. The global web server is to be located in USA, with backup mirror servers to be located in South Korea and Italy. First-year funding for WAMIS has been provided by the National Weather Service of the United States.

2.3.5 VCP support is being requested for the maintenance and improvement of WAMIS for 2003, estimated at US $10,000. In addition, it is proposed to organize a number of training workshops in different regions to train the staff in NMHSs to use the improved methodologies and tools available on WAMIS for the preparation of agrometeorological bulletins and advisories. VCP support is being requested for the organization of the training workshops in different regions. Estimated funding needed is US $10,000 for each training seminar and potential donors are invited to indicate their preference for the region.

3. **Hydrology and Water Resources Programme**

3.1 In the Hydrology and Water Resources Programme, the main priority activities, which should be considered for VCP support, are:

- hydrological observing systems (in particular, automatic stations, satellite transmission equipment for automatic stations, gauging equipment);

- data acquisition and processing systems (software and hardware for data base management, with particular emphasis on those countries which still maintain, partly or totally, their data bank on paper support; Geographical Information System (GIS) and Remote Sensing (RS) application to hydrology);

- training in operational hydrology with emphasis at the technician level; and

- expert services for the formulation of technical assistance projects and feasibility studies.

3.2 Many requests for VCP support in hydrology have been received. It is possible that some projects have not been supported because of the high cost involved. In such cases it might be recommended that Members scale down their request to a maximum value of US $50,000.

3.3 Progress has been achieved in the hydrological data rescue pilot project in Africa with the support of the VCP(F) to convert the stored data from paper to electronic form. In 2002 the United Republic of Tanzania newly participated in the project, in addition to Chad, Eritrea, Gambia, Ghana, Kenya, Niger, Rwanda and Togo. Each participating country was provided with a PC, a software package for data processing and management (HYDATA and HYDROM software for English-speaking and French-speaking countries, respectively), a printer and a scanner, and training.

3.4 The hydrological data rescue pilot project in Africa was successfully implemented and contributed to: strengthening the human and institutional capacity of the National Hydrological Services in nine African countries; strengthening the capacity of trainers in Africa; and the modernization of data

archiving systems in the region. The impact of the project in the participating countries is being assessed by the Secretariat and another bigger project to cover other interested countries will be developed.

3.5 In 2002, the data rescue project for the Russian Federation (for Valdai) was supported with the VCP(F) and computer equipment was provided by France to Mali for enhancing the hydrological data bank.

4. Atmospheric Research and Environment Programme

4.1 Thirteenth Congress in its Resolution 10 had requested WMO Members to give all possible support to the Atmospheric Research and Environment Programme, with a high priority to the Global Atmosphere Watch (GAW) and the World Weather Research Programme (WWRP). Congress agreed that measurements of the chemical composition and related physical characteristics of the atmosphere should be given similar attention to that received by classical meteorological parameters.

4.2 Therefore, within the Global Atmosphere Watch Programme, the main priority activities which should be considered for VCP support are:

(a) Enhancement of the GAW network of monitoring stations

Assistance and advice should be provided to the WMO Members-in-need for establishing new and upgrading existing GAW stations (especially in the Tropics, the Southern Hemisphere and in continental areas), for expanding measurement programmes in data sparse regions (in particular, for ozone, aerosol, UV and CO);

(b) Support to improvements in quality of GAW data

Support is needed to facilitate the intercomparisons of measurement instruments (in particular ozone and UV spectrophotometers) and to conduct calibration exercises;

(c) Further development of activities in the field of atmospheric urban environment

WMO Members should be encouraged to initiate new GURME (GAW Urban Research Meteorological Environment) pilot projects in various cities (in particular where the air pollution problems are acute and urgent). Assistance will also be needed to provide training in air pollution modelling and forecasting and in developing national and regional strategies and capabilities to address urban environment problems;

(d) Enhancement of GAW training opportunities

WMO Members with more developed capabilities should be encouraged to establish "twinning" relations with less developed Members to provide assistance, advice and training and to facilitate participation of GAW stations personnel in the training sessions of the GAW Training and Education Centre (GAWTEC) in Germany.

5. Education and Training Programme

Education and training fellowships

5.1 In June 2001, the WMO Executive Council acknowledged with appreciation the generous contributions of VCP donor Members and appealed to them to maintain and, if possible to expand their contributions to the WMO fellowships programme.

5.2 The VCP(F) annual allocations for short-term fellowships and group training activities proved most useful during the year 2002 and satisfied urgent and pressing training needs of many developing WMO Member countries. The donor Members may therefore wish to consider maintaining, and possibly increasing, these annual allocations for 2003.

5.3 The Secretariat continued the promotion of cost-sharing arrangements and the use as far as possible and when available, of extra-budgetary funds for the fellowship programme. These measures should complement the traditional fellowship financial resources including the VCP fellowship funds.

5.4 In April 2002, at its 20th session, the EC Panel of Experts on Education and Training "encouraged the Secretariat to initiate a project to improve the connectivity of all RMTCs. The possibility of financing this small project through extra-budgetary sources such as VCP, bilateral or multilateral schemes was also considered". The donor Members may therefore wish to consider with priority the RA I network of eight RMTCs.

Priority activities

5.5 The main priority activities requiring VCP support are:

- Long-term fellowships;
- Introduction of modern teaching techniques and technologies at WMO RMTCs.

6. Regional Programme

6.1 A number of high priority needs have been identified by Members at sessions of Regional Associations. The identified priorities for each region are given in the following paragraphs.

Region I (Africa)

6.2 Regional Association I attaches the highest priority to the following actions, taking into account the WMO commitment to the United Nations Millennium Declaration for enhanced and innovative support to Africa's development efforts and the requirements by the New African Initiative Strategy and Action Plan for achieving sustainable development in Africa:

(a) Implementation and improvement of the WWW Basic Systems in Africa through a Strategy for:

- Enhancing the availability of weather, climate and environmental data and information for sustainable socio-economic development in Africa, through the implementation of automatic weather stations with appropriate communications to National Meteorological Centres (NMCs) and the promotion of marine observations, among others;

- Preparation, distribution and application of meteorological products required for sustainable socio-economic development of Africa, through the use of modern communication technologies and satellite-based dissemination systems, and strengthening the capacities of NMHSs and regional institutions to improve weather forecasts and seasonal and long-term climate predictions;

- Use of the Internet in Africa for improving the exchange of meteorological and environmental information through, among other things, the implementation of Web sites at NMHSs; and

- Development of procurement, manufacturing, maintenance, repair and calibration facilities within Africa for meteorological observing systems;

(b) Improvement of the visibility and the status of NMHSs through effective public information activities and assessment of the socio-economic benefits resulting from the understanding and application of water, climate and hydrology and related environmental issues;

(c) Enhancing the natural disaster prevention and mitigation programme in support of national, subregional and regional activities and programmes relating to poverty reduction, agriculture and food security, water and sanitation and environment protection;

(d) Enhancing a human resources development plan (education and training) to attain the appropriate technical and professional levels required to meet present and future needs, including improvement of regional climate modelling capacity, climate change impacts assessment studies and training on the use of information-communication technology;

(e) Strengthening active collaboration and joint interdisciplinary programmes with economic groupings and organizations such as CEMAC, ECOWAS, IGAD, SADC, ASECNA, NBA, COMESA, IOC and UMA and supporting regional institutions such as ACMAD, AGRHYMET and the DMCs;

(f) Preparation for the use of METEOSAT second generation (MSG) satellites and implementation of the African Monitoring of the Environment for Sustainable Development (AMESD) initiative;

(g) Promotion of the provision of timely and skillful tailored weather, water-related and climate information and prediction services to users;

(h) Mobilization of more resources, including through cost-recovery measures; and

(i) Emergency assistance to Members affected by natural disasters and disasters related to other causes including wars.

Region II (Asia)

6.3 Regional Association II attaches the highest priority to the following issues:

(a) Maintenance and further development of existing observing and telecommunications systems and data-processing facilities, as well as the development of an alternative data source such as AMDAR;

(b) Free and unrestricted international exchange of data and products among National Meteorological, Hydrological and related Services;

(c) Natural disaster mitigation and prevention through the implementation of improved detection, prediction and warning systems;

(d) Development of effective public weather services to ensure better understanding and appreciation of the value of, and increased benefit from, weather and climate information;

(e) Capacity building, including human resources development and the effective use of web technology, to bridge the gap between NMHSs of developing and developed countries;

(f) Planning and management of water resources;

(g) Climate monitoring, research and application, including regional climate prediction.

Region III (South America)

6.4 Regional Association III attaches the highest priorities to the following areas of activity:

(a) To strengthen all World Weather Watch components, especially through the modernization of the RA III telecommunications system and use of new, complementary technology such as Internet;

(b) To strengthen the water resources sector, with a view to incorporating meteorology and hydrology into the national planning process and environmental management;

(c) To promote professional education and training in meteorology and hydrology so that the next generation is qualified to work in these fields, and so as to ensure the continuity of projects and programmes and the ongoing quality of services;

(d) To enhance the image of the NMHSs and upgrade their ability to produce warnings and alerts that prevent or reduce the harmful effects of weather- or climate-related natural disasters such as floods, drought, forest fires, volcanic eruptions, landslides, mudslides, and other phenomena;

(e) To promote studies and research on climate variability and climate change and the ways in which they affect the region, including the socio-economic and environmental impact of the El Niño/Southern Oscillation phenomenon and other extreme events, with special emphasis on numerical modelling of the climate, and to further studies on the role played by polar regions in regional climate, all of which is to be achieved by injecting new scientific and research abilities into the NMHSs in the region;

(f) To upgrade the region's surface and upper-air climatological network, enabling it to provide timely and high-quality information for the purpose of monitoring climate variability and climate change in the region;

(g) To improve meteorological applications and services for the purposes of agriculture, air and maritime transport, and the protection of human life;

(h) To increase knowledge and the monitoring of the environmental indicators such as air and water quality, decrease of the ozone layer, and other factors;

(i) To strengthen the role played by meteorology and hydrology in the socio-economic development of countries insofar as these fields provide data information and knowledge, and to develop awareness of climate among planners, decision-makers and the general public;

(j) To foster participation in and co-ordination of WMO regional projects, and projects of other international agencies conducting operations and research in the region.

Region IV (North and Central America)

6.5 New major issues related to global environmental problems and sustainable development including climate change and natural disasters have been considered as vitally important for countries in the region. At the same time, Regional Association IV considered that the World Weather Watch remained the core activity of WMO supporting the internationally established operational weather and hydrological services.

6.6 The Association recognizes the importance of the following specific issues:

(a) Strengthening the role played by meteorology and hydrology in the socio-economic development of countries;

(b) Assistance to national Services, particularly in developing countries in the region, in the application of meteorological, hydrological and related data and services to various socio-economic sectors to rationalize and increase the effectiveness of these applications;

(c) Studying the meteorological and hydrological aspects of national planning and sound management of environmental resources;

(d) Co-operation among Members in the region in research and development of new technologies, and in the effective use of available resources through regional initiatives;

(e) Prevention and reduction of the effects of dangerous weather and climate phenomena;

(f) Addressing the problem of vulnerability of social and economic systems to climate change and variability, including the impacts of El Niño/Southern Oscillation and sea-level rise;

(g) Assessing the effects of the human activities on climate, the progress in the implementation of the UNFCCC and the development of appropriate responses to the requirements in Agenda 21;

(h) Environmental issues including air quality standards for cities, water pollution and its implication for water use and urban water supply, transport of pollution to polar areas, and influence of the polar areas on climate;

(i) Strengthening and promoting the principle of free and unrestricted exchange of meteorological, hydrological and related environmental data and products.

6.7 With respect to these issues, the NMHSs should give high priority to:

(a) Building a robust and integrated observing system for weather, water and climate;

(b) Development of their capacity to improve weather prediction over all time scales for the general public and for special user groups;

(c) Reinforcement of their basic climatological advisory services;

(d) Reduction of the technology gap, including training and transfer of technology from developed to developing countries in the southern part of the region;

(e) Mesoscale forecasting.

6.8 The deteriorating state of some regional meteorological services, in part related to global economic difficulties, caused concern regarding possible non-fulfillment of regional goals. It was suggested that this issue be examined with a view to finding ways to minimize the likelihood of this eventuality.

Region V (South-West Pacific)

6.9 Regional Association V attaches high priority to the following issues:

(a) Natural disaster reduction through the provision of more reliable and effective warning of tropical cyclones, monsoons depression and other extreme weather events, including associated storm surges and flash floods, as well as El Niño; technical support and advice to implement the Tropical Cyclone Operational Plan for the region; and through the organization of workshops such as on public weather services, to increase public awareness and response of disaster mitigation and related warnings;

(i) Improvement of the quality of data, products and services using more effective management, and making use of new information technology, in particular the Internet and regional Intranet, web sites and television presentations for the distribution of data and information to users and the general public;

(ii) Strengthening of the observation network of stations (including GCOS) and exerting best efforts so that key upper-air stations are maintained in operation, including through the establishment of special funding to cover spares and consumables as required;

(iii) Strengthening the role and services of the Regional Specialized Meteorological Centre and Nadi Tropical Cyclone Centre;

(iv) Development of reliable seasonal and inter-annual forecasting capability to ensure an effective drought warning system and application of forecasts to water resources management, agriculture and other key socio-economic sectors;

(b) Improved understanding of the nature of, and extent of potential threat from climate change and variability as well as extreme weather events in the region, especially with respect to the impact of the sea-level rise on low-lying islands and countries with extensive coastlines;

(i) Assistance to, and advice on, the implementation of the climate monitoring network and completion of a definitive historical climate data set for the region;

(ii) Strengthening of the regional component of GCOS and the Regional Climate Centres;

(iii) Assistance to fully implement the GAW stations in the region, including the global GAW station in Indonesia;

(iv) Provision of timely and reliable advice to governments on the state of the global and regional climate on various time scales;

(v) Enhancement of awareness and use of assessments of climate change, its impact

and options for response strategies, especially through the IPCC and participation in the activities of the UNFCCC;

(c) Enhanced capacity building and regional co-operation;

(i) Enhancement of the human resources development through relevant education and training activities with particular emphasis on continuing education and training;

(ii) Organization of regional seminars and/or technical conferences on environmental issues and sustainable development;

(iii) Effective application of meteorological and hydrological information and knowledge to achieve sustainable development, and capacity building actions in this area;

(iv) Promote the role and activities of WMO in the region and in the development of NMHSs by providing appropriate advice, guidance and support for resource mobilization such as through the Subregional Office for the South Pacific;

(v) Strengthening the collaboration with relevant regional bodies, especially SPREP, IOC-WESTPAC, ESCAP, ASEAN, the South Pacific Commission, South Pacific Forum, and the South Pacific Applied Geoscience Commission (SOPAC);

(vi) Full integration of all countries in the region, including new and potential Members, in the work of WMO;

(d) Implementation of operational hydrology activities in the region through:

(i) Introducing effective systems and technologies in safeguarding the limited amounts of groundwater resources, in particular of small island states (atolls);

(ii) Fostering the establishment of a Pacific HYCOS through external financial support from ADB, SPREP or United Nations Development Programme (UNDP) to prevent increasing scarcity, gradual destruction and increased pollution of freshwater resources;

(iii) Providing an additional venue for the exchange of information and experience among representatives of small island states outside the normal cycle of Regional Association V sessions and Working Group on Hydrology meetings to define and address their urgent needs.

Region VI (Europe)

6.10 Regional Association VI recognizes the importance of the following issues:

(a) Improvement and optimization of the global systems for observing, recording and reporting on the weather, water resources, ocean, climate and the related natural environment in the most effective and efficient manner, including the standardization of techniques for observing data and planning networks on a regional basis, with the emphasis on:

(i) The operational implementation of the Regional Basic Synoptic Network (RBSN) Plan and Regional Hydrological Cycle Observing Systems (HYCOS);

(ii) The promotion of the introduction and performance assessment of appropriate

observing technology, taking account of new systems and their suitability;

(iii) The full implementation of the Regional Meteorological Data Communication Network (RMDCN) to provide a high level of service throughout the region;

(iv) The development and implementation of end-to-end real-time monitoring of the operation and performance of the WWW and, in particular, of availability and quality of data;

(v) Development and implementation of hydrological observing systems for real time flood forecasting applications and water resources assessments;

(vi) The enhancement of an implementation of transition from traditional character data representation and exchange to binary data representation and exchange;

(vii) The implementation, where appropriate, of the concepts of joint operation, joint funding and burden sharing in the context of the WWW to assist Members in achieving the most effective and efficient implementation and sustainable operation of WWW system components;

(b) Improvement of the accuracy and reliability of the analysis, forecasts, warnings and risk assessments of natural hazards such as floods, strong winds, droughts, forest fires, severe storms, avalanches, pollution events and periods of intense relative heat and cold. This should include improving seasonal and longer-term predictions of changes in the timing, severity or frequency of such severe events;

(c) Enhancement of capacity building, especially for the developing countries and those whose countries are in transition. In this connection:

(i) Capacity building should particularly address the required basic meteorological and supporting infrastructure and equipment, specially in the areas of telecommunication and upper-air sounding, as well as the education and training of staff;

(ii) Technical co-operation should ensure optimal benefits and take into account the overall situation of countries to be assisted;

(iii) Sustainable capacity building should be aimed for, and not just ad hoc palliative measures;

(iv) To realize capacity building, areas of strategic co-operation, including regional/subregional collaboration, should be explored.

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ANNEX X

Recommendation for strengthening the GUAN in RA I:

- Bulk purchase of radiosondes and balloons for Nairobi, Pointe Noire, Windhoek, Addis Abba, Fort Dauphin; US $200,000

- Installation of a new GUAN station in Luanda, Kinshasa and Dar-es-Salaam; about US $250,000/station => US $750,000

- Installation of a new hydrogen generator in Nairobi, Windhoek, Kinshasa, Luanda, Dar-es-Salaam; about US $55,000/station => US $275,000

Recommendation for strengthening the GSN in RA I:

- Installation of AWSs at selected GSN stations: Angola (3), Democratic Republic of the Congo (3), Ethiopia (3), Mozambique (4), Madagascar (3) and Namibia (3); about US $30,000/station => US $570,000

- Establishment of an African Support Centre to achieve sustainable operations; about US $250,000 per year

Recommendation for strengthening the GUAN in RA III:

- Bulk purchase of radiosondes and balloons for selected stations: Argentina; Brazil; Chile; Ecuador; Peru; of about 5,500 radiosondes and balloons => US $650,000

Annex XI

International Satellite Communication System (ISCS) Transition

(1) General description of ISCS

The ISCS is composed of two systems for data delivery via satellite communications. The first system is the World Area Forecast System (WAFS) in support of the International Civil Aviation Organization (ICAO) programme for aviation data distribution. The WAFS broadcast makes globally available to aviation users the centrally produced aviation model forecast products of a World Area Forecast Center (WAFC) in global gridded binary form (WMO GRIB code), alpha-numeric text, facsimile graphics (T4-FAX format), and satellite imagery (GIF format) data types. T4 FAX will be replaced by binary graphics (BUFR) data format in 2004.

The second part of the ISCS is the Region IV Meteorological Telecommunications Network (**RMTN**) satellite system, which replaced the two WMO Region IV GTS regional communication networks of the Antilles Meteorological (**ANMET**) and Central America Meteorological (**CEMET**). The RMTN supports WMO GRIB, alpha-numeric text, and T4-FAX data types. T4 FAX will be replaced by binary graphics (BUFR) data format in 2004. All RMTN sites will uplink their data at 2.4 Kbps, using TCP/IP network protocol, to the NWSTG (via the WorldCom Andover facility) for inclusion as part of the collective that is broadcast to all ISCS RMTN sites.

The United States will continue to support ICAO/WMO requirements (as a servicing World Area Forecast Center - WAFC) with the **ISCS**. The global coverage will continue to span approximately from 105 degrees east longitude to 65 degrees east longitude (covering the Pacific Ocean, Atlantic Ocean, North America, Central America, South America and the Caribbean). The remainder of the world coverage will continue to be supported by the WAFC located in the United Kingdom through their satellite broadcast system SADIS (which primarily covers the European, Asian, and African continents as well as the Indian Ocean).

(2) Important dates

- MCI Worldcom contract signed - December 2002
- Countries should submit VCP requests for workstations – January-March 2003
- NOAA NWS shall transition VSAT equipment - April-September 2003
- Transmission of X.25 – Today-January 2004
- Transmission of TCP/IP – 15 September 2003 - Future
- STAR 4 Workstations function – Today - January 2004
- Installation of new workstations
    - Preferred April-1 December 2003
    - Must be completed by 15 December 2003

NOAA's NWS has a web page (www.nws.noaa.gov/iscs) where up-to-date details of the transition schedule can be found. Listings of workstation venders and NOAA contacts may also be found here. Each site will be given a date for the ground equipment upgrade. Non-compliance with the schedule will result in a significant delay and costs of implementation.

(3) Funding for the space segment of two-way workstations

The new contract for the space segment was signed in December 2002 between NOAA´s NWS and MCI Worldcom. It reduces costs for each user in the RMTN and will now include maintenance. The US will continue to pay 50% of the annual costs for the RMTN space segment regardless of the number of countries participating. If RA III should decide to create a RMTN then the USA would agree to consider funding 50% of the space segment. If RA III and RA IV agree to use the two-way system for data relay, it would further reduce costs for everyone by creating a RMTM that divides the costs of a single space segment.

(4) Benefits to a two-way system

All new workstations have the built-in capacity to send and receive data. If countries have the two-way capacity, there are increased opportunities to form partnerships and exchange data. In addition, to share the space segment will reduce the costs for each country´s share of the space segment.

(5) ISCS deployment goals

NOAA's NWS will replace X.25 network protocol with TCP/IP network protocol. All site owned VSAT equipment will remain the same and additional interface equipment will be added to the ground stations at registered sites. Downtime will be limited during the transition – currently estimated at three hours per site. A period of dual operation of both the current and successor networks will reduce the impact on users. The new system will include a technology refresh programme to incorporate technology advancements for enhanced performance capabilities.