



**SPREP**

South Pacific Regional Environment Programme

*Report  
of the  
Sixth SPREP  
Meeting of Regional  
Meteorological Service  
Directors (RMSD)*

*Tahiti, French Polynesia  
28 - 30 July 1999*

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SPREP's Climate Change  
and Integrated Coastal  
Management Programme

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## EXECUTIVE SUMMARY AND RECOMMENDATIONS

Having met in Tahiti, French Polynesia from 28 to 30 July, 1999, participants of the Sixth SPREP Meeting of Regional Meteorological Service Directors (RMSD) have agreed on the following specific summary and recommendations which are directed towards government decision makers and relevant organisations.

In 1993, the SPREP Secretariat organised the first SPREP Meeting of Regional Meteorological Service Directors in Port Vila, Vanuatu. The SPREP RMSD originated from a recommendation contained in the report "Changing Climate in Paradise" prepared by the Bureau of Meteorology of Australia for the World Meteorological Organization (WMO) in 1991. The aim of the meeting, is to provide a forum for Directors of Meteorological Services from SPREP member countries, to share and exchange views on their climate activities, and to promote the development of regional initiatives to assist members in the formulation and implementation of cooperation programmes.

At the fifth SPREP Meeting of RMSD held in Honolulu, Hawaii, in November 1998, the meeting recognised the importance of providing an integrated programme, of forecast and information services which addresses the continuum from weather to climate, including issues related to hydrology and water. The Honolulu meeting noted the critical role SPREP played in supplementing WMO and national efforts in the area of weather and climate. The fifth RMSD encouraged SPREP to continue to provide a forum for National Meteorological Services (NMSs) in Pacific island countries (PICs) to identify critical issues, promote collaboration in the development of shared solutions to common problems, enhance awareness of weather and climate issues, and programmes at the appropriate levels of government then identify opportunities to improve regional capacity to forecast, understand and address the impacts of weather and climate.

Specifically, the meeting unanimously agreed for the SPREP Secretariat to broaden its scope of work to cover meteorology and climate matters in addition to its climate change programmes. In this regard, the meeting urged SPREP to develop a long term strategic plan, for the development of meteorology in the Pacific region,

taking into account the WMO Fifth Long Term Plan and the priority areas agreed to at the WMO Regional Association V (WMO RA V) meeting held on September 1998 in Bali, Indonesia.

The main objective of the sixth RMSD, is to review and consider the draft Strategic Action Plan for the Development of Meteorology in the Pacific region (SDMP) prepared by the SPREP Secretariat.

Opening remarks were made by the French High Commissioner to French Polynesia, the Honorable Jean Aribaud; Director of Meteo France, Dr Jean-Pierre Beysson; Dr Michael Harrison, Chief of the WMO-CLIPS project representing Professor Obasi; (Secretary General of WMO); and the Director of SPREP, Mr Tamari'i Tutangata. Mr Tutangata set the scene for the meeting by highlighting a number of key issues. These included the special assets of Pacific island jurisdictions as exemplified by the beauty of the host island, Tahiti, the vulnerability of the Pacific islands to weather and climate, and the indispensable role of the National Meteorological and Hydrological Services (NMHSs), in helping these countries address, current and future challenges in critical areas, like climate variability and change, natural disaster reduction, water resource management, and sustainable development. This is recognition of the continued and growing role that the Pacific islands are playing in WMO programmes and deliberations; along with emerging opportunities to address pressing problems facing the region. Mr Tutangata's opening remarks are reproduced as Annex I to this report.

The following is a summary of discussions and recommendations:

1. Participants of the Sixth SPREP Meeting of Regional Meteorological Service Directors (RMSD), received the report by the SPREP Secretariat. It outlined follow-up actions to implement recommendations of the Fifth SPREP Meeting of RMSD. The meeting noted the significant progress which the Secretariat had made in addressing the recommendations and outstanding issues identified during past meetings.

2. A special presentation was made by Dr Bill Clements, Program Manager, United States of America Department of Energy Atmospheric Radiation Measurement (DOE-ARM) Program for the Tropical Western Pacific (TWP), to SPREP. The appreciation plaque was accepted by Mr Tutangata in recognition of the outstanding contributions by SPREP to the implementation of the DOE-ARM program in the TWP region.

3. The meeting considered the report prepared by the SPREP Secretariat, on the status of matters arising from the Fifth RMSD meeting held in Honolulu, Hawaii in November, 1998. The meeting congratulated the SPREP Secretariat for the excellent and detailed report. It noted most of the projects recommended in previous meetings, were successfully implemented. With minor changes offered by participants during discussion, the report was adopted in full.

4. The meeting reinforced the importance to the region, of providing an integrated programme of forecast and information services, that addresses the continuum from weather to climate and issues related to hydrology and water. In this context, the meeting acknowledged the significant progress made by the SPREP Secretariat in the development of a long-term strategic plan for the Pacific region. It takes into account the WMO Fifth Long Term Plan, and the priority areas agreed to at the WMO RA V meeting on September 1998 in Bali, Indonesia. The meeting reviewed the draft Pacific Regional Meteorological Strategy prepared by the SPREP Secretariat and provided a number of specific suggestions to improve the document. A summary of the discussion is reproduced as Annex III to this report. The meeting strongly endorsed the concept of preparing an integrated regional strategy, which effectively reflected the collective expertise and assets of all countries, regional organisations and collaborating partners engaged in addressing critical meteorological and climate issues in the region. Particular note was made of the importance of basing this Strategy on a comprehensive analysis of national and regional needs. A draft Terms of Reference (TOR) for a Needs Analysis, prepared and reviewed by the meeting participants was unanimously adopted by the meeting. The draft TOR for the Needs Analysis adopted by the meeting is reproduced as Annex IV to this report.

5. The meeting took note of the progress which has been made by the SPREP Secretariat in the establishment of a Special Purpose Fund (SPF) for meteorological services, to respond to critical needs in the region. Delegates expressed appreciation for the contributions of the United States National Weather Service and the New Zealand Official Development Assistance (NZODA) who provided initial support for the fund. The meeting strongly urged other donors to contribute to the fund, to assist the SPREP Secretariat implement on-going programmes in the region while the Needs Analysis is being carried out.

6. The meeting welcomed the reports of a number of participants on the results of the recently-concluded Thirteenth WMO Congress and noted the important contributions of representatives of Pacific island National Meteorological Hydrological Services (NMHSs) during Congress deliberations. Special note was made of Congress discussions related to: the Climate Information and Prediction Service (CLIPS) project ; the need to effectively articulate and address the special needs and circumstances of the Pacific islands within WMO RA V; the importance of regional representation to enhanced understanding of the special concerns and challenges of the Pacific islands, related to the World Climate Programme (WCP). Issues included water resources, disaster mitigation, climate change, and the importance of continued efforts to support and justify the role of the new WMO Sub-Regional Office for the South West Pacific located within the SPREP Secretariat.

7. The meeting noted the opening of the WMO Sub-regional Office for the South West Pacific in April 1999 and offered their congratulations and welcomed Mr Henry Taiki who recently assumed the position of Programme Officer. The meeting noted Mr Taiki's remarks related to the importance of collaboration with other regional organisations such as SPREP and the South Pacific Applied Geoscience Commission (SOPAC); the importance of direct support for NMHS Directors in the region as a measure of success for the Sub-regional Office; and the commitment of the Sub-regional office to working in the context of the emerging regional Strategic Action Plan, for the development of meteorology in the Pacific region prepared by SPREP.

8. The meeting welcomed the report prepared by Mr Garry Clarke (Meteorological Services of New Zealand Ltd and consultant to SPREP), regarding progress towards implementation of the recommendations from the WMO/SPREP/US NOAA NWS Year 2000 (Y2K) workshop held in conjunction with the Fifth RMSD meeting in November 1998. The meeting acknowledged the important contributions of the Meteorological Services of New Zealand Ltd and specifically Mr Clarke in assisting a number of individual NMHSs in the region to address their Y2K needs. The meeting reinforced the importance of each country identifying the hardware and software needs associated with becoming Y2K compliant. It underlined the need to form a task team, to assist NMHSs of Pacific island countries (PICs) to ensure all meteorological equipment is fully compliant by December 1999. The meeting took note of Y2K contingency plans recently adopted by WMO, which calls on the Melbourne and Washington DC centres to put essential data on the Internet. The meeting designates the Melbourne centre as a "Y2K situation centre" with responsibilities to cover members of WMO in RA V.

9. The meeting welcomed the report of the WMO/SPREP CLIPS Workshop held on 26-27 July 1999 in Tahiti. It took note of the resolution prepared by the participants, who unanimously adopted a revised version of a CLIPS Workshop Resolution, reproduced as Annex V to this report, which reflected some specific additional concerns.

10. As a part of its contribution to strengthening NMSs of SPREP member states, Mr Richard Hagemeyer, Director of the United States of America National Oceanic Atmospheric Administration National Weather Service (NOAA NWS) Pacific region announced a new initiative by his government in the area of capacity building. Mr Hagemeyer informed the meeting that the US government is prepared to sponsor, on a continuing basis, a training programme for staff members of the NMSs at the National Weather Service's Honolulu Forecast Office. While the details need to be defined in discussions with SPREP and the WMO RA V Sub-regional office, it is envisioned that the programme would consist of a two to four month assignment to the Forecast Office. During the assignment participants would work with the forecasters on ways to use the available tools and data more

effectively, improve current forecast products and services, and developing new ones as required. The equipment and data used in the programme would be tailored to each trainee, so the skills learned and products generated from the training, could be put to immediate use on their return to their NMS. The co-location of the forecast office with the Department of Meteorology of the University of Hawaii can also provide an opportunity for academic study. The contribution of the NMSs to the programme would be the time and salary of their participating staff. The United States National Weather Service would provide all other costs. The meeting unanimously welcomed and fully endorsed this new initiative. It called on SPREP, WMO Sub-regional office for the South West Pacific and US NOAA NWS to finalise the programme so it could start officially in the year 2000.

11. During the second day of deliberations, the meeting welcomed and noted a number of presentations, ongoing programmes and emerging opportunities of interest, to NMSs directors and the Pacific region. Highlights of these presentations and subsequent discussions include:

- a presentation by Mr Neville Koop, Project Coordinator of the Forum Secretariat European Union (EU) funded Cyclone Warning System Upgrade Project (CWSUP) which provided further assistance to the strengthening of the NMSs for the 10 African Caribbean Pacific (ACP) participating countries ( Fiji, French Polynesia, Kiribati, New Caledonia, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu). The meeting took note of accomplishments to date; reinforced their support for the project and encouraged PICs throughout the region to continue to identify opportunities for equipment upgrades, training and capacity-building through this project. According to Mr Koop, the principal remaining task involves the procurement and installation of automated weather stations at participating sites. Acknowledging the continuing need for ongoing equipment maintenance and training, the meeting noted that funding under the first phase of the project will come to an end in 2000, and expressed concern about the status of project continuation or follow-on activities. The meeting participants expressed their appreciation to the EU for supporting this project and gratefully acknowledged the individual contributions of Mr Koop as Project Coordinator.

- a presentation by Ms Joanne Laurence representing AusAID. She acknowledged the importance of effective meteorological services in critical areas like agriculture, tourism, and disaster preparedness. She underlined AusAID's continuing commitment to support National Meteorological Services in the Pacific region, the importance of working closely with regional organisations and integrating AusAID efforts within regional priorities. In this latter context, she took specific note of the valuable nature of the Needs Analysis.
- presentation by Dr Russell Howarth of SOPAC, highlighted some aspects of SOPAC's Work Programme of interest to NMSs directors, including: a Pacific-Global Ocean Monitoring System (GOOS) initiative for which SOPAC is the secretariat; activities of the Disaster Management Unit including the next phase of the United Nations Development Programme (UNDP) regional programme, the South Pacific Disaster Reduction Project Phase two; activities of the Water Resources Unit; and the Hazards Assessment Unit, including the Pacific Cities Project; and the Information Technology Unit, including the support to countries in the development of information systems, communication networks and Global Information System (GIS)/Remote Sensing. He also reminded the meeting, of the workshop to be held 19-23 October in Nadi, before the SOPAC Governing Council Meeting which would bring together managers from the meteorology services, water resources, and disaster management sectors, to discuss the economic and social impacts of the 1997-1998 El Nino Southern Oscillation (ENSO) events. Discussions following Dr Howarth's presentation, focused on the importance of developing effective mechanisms for co-ordination among collaborating organisations to address shared concerns, and ensure the perspectives of the NMS Directors are effectively incorporated. In this context, the meeting noted the integrated strategy for meteorological services in the Pacific, would provide an essential framework for planning, organising and implementing the programmes of all collaborating organisations.
- a progress report provided by Dr Bill Clements on the US DOE-ARM project with details on recent DOE-ARM activities in the Tropical Western Pacific. Dr Clement's presentation confirmed the installation of the second ARM-TWP site on Nauru and highlighted the Nauru '99 field campaign. The meeting was pleased to learn of the progress being made in response to requests at previous meetings encouraging the ARM program and those countries involved, to work together to ensure that valuable meteorological data taken, is made available on the Global Telecommunication System (GTS), and in real time to all interested parties. In addition, the meeting acknowledged the important contributions of the DOE-ARM program to enhancing critical meteorological and climate observations in the region, and their support for other regional efforts of interest to NMS Directors with specific acknowledgements from the governments of Nauru, Papua New Guinea, Samoa, and the SPREP Secretariat.
- an overview by Ms Candyce Clark of activities of the US NOAA Office of Global Programs related to climate prediction, applications and assessment. Their focus is supporting an effective "knowledge bridge," that brings the information derived from scientific programmes to bear in addressing societal needs and practical decision making. The meeting took note of NOAA Office of Global Programs support for Pacific ENSO Application Center (PEAC). And their support for the participation of NMS Directors, water resource managers, and disaster managers in the upcoming Fiji Workshop on ENSO and water resources. Ms Clark confirmed a commitment to future work in collaboration with SPREP and the Pacific region NMSs' directors.
- a brief demonstration by Mr Richard Hagemeyer of the capabilities of a computer-based tsunami data integration, and visualisation tool, which could be supplemented to support Pacific regional needs. Several participants expressed interest in the system, including SOPAC which offered to help provide additional data for incorporation into the system.
- an encouraging presentation by Dr Raino Heino, announcing the Finnish Meteorological Institute's interest in support of Pacific meteorological programmes as part of an emerging effort, focused on small island developing states. Dr Heino noted plans for a mission to the region in the coming year, and highlighted global warming and its consequences for small island states, as a particular area of interest and potential support, as well as broad capacity building in meteorological and climate programmes.
- the welcome announcement by Dr Martin Fischer, ISAO-CNR, of their commitment to provide support for Pacific regional climate prediction, and information activities.

This would include support for a monthly climate Bulletin, training, research on regional down scaling techniques and the development of regional climate information products. The meeting was delighted to learn that first-year funding has been approved, so production of the Bulletin can begin soon. Subsequent discussion highlighted the need to incorporate this new effort into the regional strategy including consideration of appropriate mechanisms, for sustained support of this new effort as part of an integrated regional programme.

- Mr Rob Purkiss and Mr Michael Brews, provided the meeting with a brief overview of the capabilities of NETSYS International, in the area of high-tech meteorological observations, communications and data integration, and visualisation systems, including an interesting presentation on the NETSYS Flightman system, designed to support aviation weather needs.
- Dr Susan Postawko provided a summary and progress report on the Schools of the Pacific Rainfall Climate Experiment (SPARCE) programme, noting the programme now includes over 140 rainfall measurement systems throughout the region, supplemented with climate educational materials tailored for Pacific jurisdictions. Of particular note, was the exciting opportunity for the NMS directors in the region, to assume responsibility as the focal point for SPARCE data collection. Thereby facilitating the availability of SPARCE data to support operational requirements, and addressing quality control issues, while providing the directors with an opportunity to identify priorities for future sites, and supporting them in their efforts, to expand public awareness and understanding of local weather and climate issues.
- Dr Neil Ericksen provided an overview of climate and global change activities of the International Global Change Institute (IGCI) at the University of Waikato. He highlighted their strong programmes in technical assistance, capacity-building and infrastructure development. Included were training material and courses; the development and application of integrated assessment capabilities in the area of climate vulnerability and adaptation; the PACCLIM programme; and research on the human dimensions of global change. Dr Ericksen's presentation and subsequent discussion highlighted IGCI's commitment to continued collaboration with SPREP, and other regional partners in these areas. He suggested a number of opportunities to enhance the role of national meteorological services, in efforts to help their governments understand and build resilience to the impacts of climate.
- a summary and progress report by Mr Chip Guard on weather, climate and hydrological research activities at the University of Guam. This included tropical cyclone research, ENSO related activities including PEAC and related rainfall catchment modeling studies, calibration for the NASA TRMM satellite mission; global change education programmes in support of NASA's Mission to Planet Earth; rainfall modeling and distribution analyses for the USGS and US EPA; and education and training programmes. In addition, meeting participants were delighted to hear of the completion of efforts to adapt the Saffir-Simpson Tropical Cyclone Scale, for use in tropical regions. Participants recognised the applicability of this new tool, for providing decision makers in PICs with useful information regarding the potential impacts of tropical cyclones on communities, businesses and infrastructure in the Pacific region. Mr Guard encouraged SPREP and sponsoring organisations to find the resources required to ensure broad dissemination of this important new manual.
- an overview of the status and key findings of the South Pacific Sea Level and Climate Monitoring Project, provided by Dr Wolfgang Scherer, Director of the National Tidal Facility located at Flinders University, Australia. He emphasised issues related to system capabilities and data quality; the need to provide long-term records to document or detect any sea level rise trends related to climate change; and the importance of recognising and addressing the significant variations in sea level associated with ENSO. Subsequent discussion included issues related to the addition of a real time display capability and the possibility of inclusion of a site on Niue. AusAID and the US NWS representative, offered to look into possible options to enhance sea level monitoring capabilities on Niue.
- presentations by Ms Eileen Shea, East-West Center, on some emerging opportunities related to the development of a Pacific regional climate prediction applications programme in the context of emerging plans for a network of partners supporting the work of the Applications Research Division of the International Research Institute for climate prediction. And participation in an initial Pacific Islands Regional Assessment of the Consequences of Climate Variability and Change. Ms Shea's presentations, and subsequent discussions, highlighted the importance of climate assessment and forecasting application efforts as a part of the emerging integrated strategy for meteorological programmes. Conversely, her report underlined the important role that national meteorological directors should play in national, regional and international climate assessment and application efforts.

# REPORT OF THE MEETING

The Sixth SPREP Meeting of Regional Meteorological Service Directors (RMSD) was held in Tahiti, French Polynesia from 26 to 30 July 1999, under the chairmanship of Dr Jean Beysson, Director General of Meteo France.

The meeting follows the Fifth SPREP Meeting of RMSD held in Honolulu, Hawaii from 11 to 16 November 1998. The meeting was funded by the World Meteorological Organization (WMO); the Government of France through Meteo France and the French Polynesia local government, the Government of the United States through the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS), the United States Department of Energy (DOE) Atmospheric Radiation Measurement (ARM) programme; the Bureau of Meteorology, Australia; AusAID; and the New Zealand Official Development Assistance (NZODA).

The objectives of the meeting were to:

- review progress made since the 1998 SPREP Meeting of RMSD, towards strengthening regional cooperation in meteorological and climatological activities in the region
- review on-going activities in support of meteorological, climate and climate change activities in the region
- consider the draft Strategic Action Plan for the Development of Meteorology in the Pacific region (SDMP) for the next ten years (2000-2009) prepared by the SPREP Secretariat.

## 1. OPENING SESSION

### 1.1 OPENING CEREMONY

Opening remarks were made by the French High Commissioner to French Polynesia, the Honourable Jean Aribaud; Director General of Meteo France, Dr Jean-Pierre Beysson; Dr Michael Harrison, Chief of the WMO-CLIPS project representing Professor Obasi, (Secretary General of WMO); and the Director of SPREP, Mr Tamari'i Tutangata.

Honourable Aribaud and Dr Beysson set the context for the meeting by highlighting a number of key issues, unique to the Pacific region including: the special assets of Pacific Island jurisdictions as exemplified by the beauty of the meetings host, Tahiti; the vulnerability of the Pacific islands to weather and climate and the indispensable role of the National Meteorological and Hydrological Services (NHMSs) in helping these countries address current and future challenges in critical areas. Climate variability and change, natural disaster reduction, water resource management, and sustainable development are recognition of the continued and growing role that the Pacific islands are playing in WMO programmes and deliberations. This allows for emerging opportunities to address pressing problems facing the region.

Mr Tutangata, Director of SPREP, in his keynote address extended his deep appreciation, and that of the SPREP Secretariat and its member countries, to the Government of France and the local French Polynesia government for generously hosting the meeting. He noted this was the first time that a SPREP organised meeting had been held in Tahiti, and hoped there would be more to come, so that PICs could learn from the experiences of Tahiti, especially in relation to the environment and sustainable development.

### 1.2 ELECTION OF CHAIRPERSON

The meeting unanimously elected the Director General of Meteo France, Dr Beysson to chair the meeting.

### 1.3 ELECTION OF CHAIRPERSON OF THE DRAFTING COMMITTEE

Mr Chip Guard, University of Guam, was unanimously elected as Chair of the Drafting Committee. The meeting also endorsed Ms Eileen Shea of PEAC and the East-West Center, Mr Faatoia Malele, of Samoa, Mr Channel Iroi of the Solomon Islands, as members of the Drafting Committee to assist Mr Guard and the SPREP Secretariat in drafting the report of the meeting.

#### 1.4 ADOPTION OF THE AGENDA

The meeting considered the provisional agenda prepared by the SPREP Secretariat. With minor changes, the meeting adopted the agenda proposed by the Secretariat which is reproduced as Annex II to this report.

#### 1.5 WORKING ARRANGEMENTS

The necessary arrangements concerning the working hours and allocation of agenda items of the meeting were discussed. The meeting agreed that all matters on the agenda be dealt with in the order in which it was proposed, recognising that participants could revise the order of the discussion and agenda at any time.

## 2. REVIEW OF CONCLUSIONS AND RECOMMENDATIONS FROM PAST MEETINGS

### 2.1 FIFTH SPREP MEETING OF REGIONAL METEOROLOGICAL SERVICE DIRECTORS

Mr Lefale of the SPREP Secretariat introduced document 6RMSD/Doc.3 on this agenda item. He highlighted the work carried out by the SPREP Secretariat jointly with WMO, the EU Cyclone Warning System Upgrade Project (CWSUP) and each NMS in addressing the recommendations of the Fifth SPREP Meeting of RMSD. Amongst the highlights are the successful implementation of the Emergency Managers Weather Information Network (EMWIN) system in 16 SPREP Pacific island country NMSs. The assistance provided to NMSs, during the 13th Session of the WMO Congress held in Geneva in May 1999: the successful completion of negotiations amongst the US NOAA National Weather Service Office (WSO); National Weather Service Pago Pago, American Samoa; the Samoa Meteorological Division, Apia, Samoa; the Regional Specialised Meteorological Centre (RSMC) Nadi, Fiji Meteorological Service; and the WMO Region Association V (WMO RA V) Tropical Cyclone Committee (TCC), to allow the two Samoas to issue joint tropical cyclone warnings for the whole of the Samoa group. The establishment of the WMO Sub-regional office for the South West Pacific (SWP) within the SPREP Secretariat and the recruitment of Mr Henry Taiki, former Director of Vanuatu Meteorological Service, to the Post of Programme Officer of the WMO Sub-regional office, and the upgrading of telecommunications links in PNG, Vanuatu, Samoa, and Solomon Islands. The Secretariat report also highlighted

the successful implementation of outstanding issues, from the 1997-1998 SPREP meetings of RMSD. The Chairman invited participants to express general views on the SPREP Secretariat's presentation.

New Zealand thanked SPREP for the detailed report. New Zealand was highly appreciative of the work of SPREP, and encouraged to see positive actions taken by the SPREP Secretariat since the first meeting held in Vanuatu, in 1993 to strengthen NMSs in the Pacific region. New Zealand noted the major improvements in the services provided by NMSs for the people of the region, the difference it made, and praised the invaluable contributions by SPREP in making these changes.

Tuvalu (Ms Hilia Vavae) stated they had also benefited from EMWIN and requested their appreciation be recorded in the report.

Vanuatu joined New Zealand in thanking SPREP for the good work done since the last meeting. As a result of the SPREP report, Vanuatu informed the meeting they had applied to the WMO Volunteering Co-operation Programme (VCP) for assistance in Y2K compliance. A mission funded by WMO to assess Y2K compliance of the Vanuatu Meteorological Service was about to get underway with Mr Garry Clarke of the Meteorological Services of New Zealand Ltd, as the consultant.

The Director of SPREP, reaffirmed the views expressed in his opening address with regard to the need for the region to have a regional strategic action plan for future development of NMSs similar to other SPREP action plans already in place. These include the Action Plan for Managing the Environment of the South Pacific Region (1997-2000); the Pacific Ocean Pollution Prevention Programme (PACPOL) Strategy and Workplan; and the Action Strategy for Environmental Education and Training in the Pacific 1999-2003. He urged the meeting to ensure the Strategic Action Plan for the Development of Meteorology (SDMP) in the Pacific about to be discussed, would fit into the overall SPREP Action Plan, and also the work of other members of the Council of Regional Organisations of the Pacific (CROP) for its successful implementation. The Director envisioned the SDMP would be part of a fully fledged SPREP programme to be approved and endorsed by

the SPREP Governing Council meeting to be held in Guam in the year 2000.

Samoa (Mr Faatoia Malele) joined New Zealand, and other speakers in congratulating the SPREP Secretariat for the excellent report. He noted Samoa benefited hugely from the work SPREP carried out. He asked the Secretariat to amend the text of the report (Fifth RMSD) under paragraph (d) of the SPREP report to insert the word “in and” after the word “out” so it would read to upgrade telecommunication links in and out of Samoa was approved by the regional International Civil Aviation Organisation (ICAO) in February 1999. He also fully endorsed the views expressed by the Director of SPREP for Pacific regional organisations to work closely together and bring SOPAC more into the work of Directors of NMSs.

With minor modifications offered during discussion, the report was adopted in full.

## 2.2 REPORT ON THE YEAR 2000 PROBLEM (Y2K) COMPLIANCE

Mr Lefale of the SPREP Secretariat introduced Document four, “SPREP/WMO/US NOAA Y2K workshop” regarding follow up actions, and status of implementation of recommendations, from the Y2K workshop for SPREP NMSs held in Honolulu in November 1998. After Mr Lefale’s presentation, he called on Mr Garry Clarke, SPREP consultant on Y2K issues to expand on the report. Mr Clarke informed the meeting that since the November workshop, only one request from Pacific Islands NMSs (Vanuatu) for Y2K compliance assistance has been received by WMO. He urged the countries to be proactive and seek assistance from WMO, SPREP and through bilateral assistance to assist them with Y2K compliance tests.

During the discussion on the report, Mr Taiki of the WMO Secretariat urged the countries to contact the WMO for assistance. He informed the meeting he was still waiting for formal requests and encouraged member countries to forward submissions for assistance to the WMO Sub-regional Office.

Samoa thanked SPREP for the report but expressed concern about the lack of understanding amongst member countries of what the real Y2K problem is.

Samoa urged WMO, SPREP and donors to help PICs with public awareness and education programmes on Y2K issues.

Australia informed the meeting that during a meeting hosted by the European Centre for Meteorology and Weather Forecasts (ECMWF) to discuss Y2K contingency plans for WMO members, two key recommendations were endorsed. First, the establishment of four key regional centres worldwide to ensure essential meteorological data are put on the internet as segments of the GTS may have Y2K problems. And secondly, the establishment of Y2K “situation centres” worldwide to deal with Y2K problems. For the South West Pacific (WMO RA V) region, Melbourne was designated as both the Y2K situation centre as well as centre for putting meteorological data, particularly on tropical cyclones, onto the Internet.

Australia recommended the report of the meeting should be acknowledged and warmly thanked Mr Garry Clarke for the excellent work on Y2K issues he had carried out in assisting Pacific island NMSs to be Y2K compliant. Australia’s recommendation was endorsed by the meeting.

## 2.3 THE THIRTEENTH WMO CONGRESS

Mr Henry Taiki, Programme Officer, WMO Sub-regional Office for the South West Pacific introduced Document 6, “WMO Sub-regional Office Progress” report summarising the outcomes of the Thirteenth WMO Congress held in Geneva from 4 to 26 May 1999. He noted all 21 members from WMO RA V (South West Pacific) attended the Congress, making a total of 171 representatives from WMO member states and territories. Amongst the key issues discussed at the Congress were, the WMO Fifth Long Term Plan (2000-2009) which was endorsed by Congress, the Thirteenth Financial Period (2000-2003) which accorded highest priorities to the World Weather Watch (WWW) programme; strengthening of global observing system network to support the Global Climate Observing System (GCOS) programme and the CLIPS programme, improving and strengthening the GTS, and the Global Data Processing System (GDPS). Other key programmes given special funding consideration under the Thirteenth Financial Period include

capacity building through Education and Training, Regional Programmes, Technical Cooperation Programmes (TCP), Public Weather Services, Aeronautical Meteorology, Agricultural Meteorology, Hydrology and Water Resources, Marine and Oceanographic Meteorology, and those set up to address sustainable development and other global environment concerns such as climate variability and change.

Australia thanked Mr Taiki for his detailed report. Australia noted the CLIPS should emphasise operational options to ensure the products are widely distributed to users. Australia also reminded the meeting the WMO Executive Council (EC) at its next meeting in May 2000, to look closely at the productivity and effectiveness of the WMO Sub-regional Office. Australia urged NMSs in the region to help Mr Taiki in demonstrating the important contribution of the Sub-regional Office in strengthening their capacity.

Dr Beysson, Chairman, stated that the voice of RA V was loud and clear during Congress and thanked all the Permanent Representatives for their active participation. He noted the difficulties associated with geographic spread and diversity of RA V, which the WMO Executive Council would need to consider when allocating resources within WMO. With regards to the World Climate Programme (WCP), Dr Beysson said the regional voice was heard loud and clear in international meetings. He urged small island developing countries statements on the unique and special challenges facing them, should continue to be aired at United Nations (UN) and other international meetings. This would help other countries, particularly developed countries, understand the special challenges facing Small Island Developing States (SIDS) particularly in areas such as water resources, disaster preparedness and climate change.

The meeting adopted the report in full.

#### **2.4 WMO SUB-REGIONAL OFFICE FOR THE SOUTH WEST PACIFIC**

Mr Henry Taiki, tabled his report on the roles and functions of the WMO Sub-regional Office opened formally in Samoa in April 1999. He noted the WMO Sub-regional offices are operating as an integral part of the WMO Secretariat within the overall policy of

WMO, under the directives of the Secretary-General, and in close collaboration with other departments of WMO.

The main functions of the Sub-regional offices would focus on technical cooperation. In particular those related to identification of requirements of NMHSs and mobilisation of resources through closer contacts and liaison with relevant bilateral and multilateral development agencies, and financial institutions, UN agencies, and regional organisations globally. The sub-regional offices serve all WMO members.

WMO Secretariat had already established four Sub-regional offices worldwide: in Lagos, Nigeria for Western Africa ; in San Jose California, USA, for North and Central America and the Carribean; and Nairobi, Kenya for Eastern and Southern Africa.

The Sub-regional office in Samoa, would serve all members of WMO RA V. Mr Esia Al Majed, Director for Asia and the SouthWest Pacific, had been assigned as the WMO Representative, with Mr Taiki, as Programme Officer.

The activities of the Sub-regional Office include maintaining close liaison with South West Pacific members, and assist them in the development of their NMHSs, as well as implement WMO scientific and technical programmes.

Mr Taiki stressed that with the development of the SDMP by the SPREP Secretariat, the office would work largely with SPREP and member countries within WMO RA V to implement the new strategy once finalised. Mr Taiki thanked everyone in the region for their interest and support to the work of the Sub-regional Office since opening.

Samoa thanked Mr Taiki for his report.

Tonga asked for clarification from Mr Taiki, regarding the channel of communication between Tonga and WMO. With the establishment of the Sub-regional Office, would Tonga need to reply to WMO Secretariat in Geneva, or go through the Sub-regional Office in Apia? In response, Mr Taiki stated all Permanent Representatives should communicate directly to Geneva but copy the Sub-regional Office in Apia.

Federated States of Micronesia (Mr Akira Suzuki) congratulated Mr Taiki on his new appointment and for his detailed report.

Vanuatu (Mr Wilson Vuti) endorsed statements made by FSM. He noted the establishment of the new office showed the importance of the recognition given by WMO, and the need to strengthen its activities in the region. Vanuatu hoped that other countries in the region would join them in supporting the office beyond its trial phrase.

Dr Beysson suggested the new Sub-regional Office needs to regularly inform the WMO Secretariat in Geneva of its activities, and be clear in its dealings with them.

The meeting endorsed the report in full.

## 2.5 WMO/SPREP CLIPS WORKSHOP

Dr Mike Harrison, Chief of the WMO CLIPS programme introduced to them meeting the Resolution (Annex V to this report), from the WMO/SPREP/Meteo France CLIPS Workshop.

Dr Harrison acknowledged the opportunity to participate in the Directors meeting and to host the CLIPS workshop. He noted CLIPS activities had not yet adequately reached the RA V region, so holding this workshop for the first time in the region had provided invaluable stimulus for future work. He further noted the high calibre of participants at the workshop, most being Permanent Representatives to WMO, as well as the the high quality presentations and assistance by the International Research Institute (IRI) for Climate Prediction, Bureau of Meteorology, and ISAO-CNR of Italy. He noted that the highlights of the workshop were the discussions on regional outlook (as implemented in other regions) for a sequence and production of forum like forecast products for individual PICs produced during the workshop, and the key findings contained in the resolution.

The meeting discussed the resolution, and with minor changes urged the WMO/SPREP Secretariat to produce a new resolution reflecting comments put forward by member countries.

## 3. THE PACIFIC REGIONAL METEOROLOGICAL STRATEGY: STRATEGIC ACTION PLAN FOR THE DEVELOPMENT OF METEOROLOGY IN THE PACIFIC REGION (SDMP)

Mr Penehuro Lefale of the SPREP Secretariat introduced this Agenda item. He stressed that this Agenda item is the key item for the meeting. He urged member countries to provide the SPREP Secretariat with an appropriate and relevant approach when reviewing the draft SDMP to ensure the document would be fully examined and understood by all member countries. He then gave a brief introduction and background to the draft and sought views from the meeting.

French Polynesia thanked Mr Lefale for the draft strategy. He noted that the strategy would affect every NMS present, and ultimately the future development of meteorology in the Pacific region. He noted that the idea of undertaking a Needs Analysis of individual NMSs was an excellent idea, especially in the climate area. He recommended the Needs Analysis should be conducted by those who have experience in the Pacific region, especially in the climate area. And also those who recognised issues and constraints unique to the Pacific region in a broader context. He recommended the Needs Analysis should come out with a clear understanding of each country's needs.

Australia thanked SPREP for the draft strategy. Australia was delighted with the document and strongly supported its development. Australia envisioned there would be major progress made in the development of meteorology in the Pacific once the strategy was in place. Australia drew attention to comments made earlier by the Director of SPREP, urging member countries to work with the SPREP Secretariat to complete the strategic plan immediately. This plan would be part of RA V's contribution to the larger WMO planning process.

Australia noted that the approach taken in preparing the plan, was the bottom-up approach which had been widely used in the region. Australia felt the plan must recognise the diverse capabilities within individual countries of the region, and the need to agree on very specific objectives and an overall framework set out in the plan. Australia believes the next step for getting the bottom-up input through the Needs Analysis would be important in the finalisation of the plan, and hoped

the Needs Analysis would fulfil hopes and expectations by NMHSs in the region, on what is needed to strengthen their programmes and activities.

Australia also felt the strategic plan would provide a framework for developmental partners and agencies (donors), to assess how their work could contribute to helping and assisting NMHSs in the Pacific region.

Australia thanked SPREP for the effective job on the development of the plan so far. Australia recognised the Needs Analysis was critically important for NMHSs, to ensure donors would be fully engaged in the exercise.

New Zealand strongly supported Australia's views about the need to engage donors in the exercise, particularly those from outside the region. New Zealand reinforced the need for members of the Analysis team to be sensitive to regional diversity and appropriateness, while identifying priorities and needs of each country.

Samoa concurred with Australia and New Zealand's views. Samoa referred to the recent discussion at the Thirteenth WMO Congress for the need to upgrade NMHSs. Samoa noted the strategic plan under discussion would provide the platform for development of individual NMHS in the Pacific. While making reference to the Congress, Samoa placed on the record its thanks to Australia for sponsoring Pacific island countries participation there.

FSM thanked the Secretariat for preparing the draft plan. FSM had extensively reviewed the draft plan and saw no major changes necessary for the document except one issue. The plan should refer to the entire Pacific not just "the South Pacific" throughout the document. FSM thanked the US Government for supporting its participation at the WMO Congress.

Cook Islands expressed its gratitude to the SPREP Secretariat for the draft document. Cook Islands assured its full support and endorsed the Director of SPREP's comments on how this strategic plan could be a guideline for individual services in the Pacific, to encourage their own governments to lend support

to the plan, and for individual NMHSs to meet their regional responsibilities.

Australia reinforced the need for the Needs Analysis to fully assess the issue of technical maintenance and spare parts (consumable items, etc) as continuous operation of equipment is very important for the region. Australia noted the need to address this issue, while the Needs Analysis is being carried out. Australia proposed that a Regional Trouble Shooting Team (RTST) could be set up to address this problem. The Special Purpose Fund (SPF) set up by SPREP could possibly be used by the RTST to address problems as they arise.

SPREP endorsed Australia's proposal and referred to the need for on-going assistance with existing programmes and activities to be continued, while the Needs Analysis is carried out. SPREP saw this as an immediate priority and also strongly supported the idea of using the SPF to assist the RTST and members. SPREP noted that a high number of requests by member countries for assistance, particularly with equipment maintenance and spare parts, had already been received and as a result the SPF had been quickly used up. SPREP urged donors to put in more funds to the SPF to keep it going.

SPREP then took time to express its views on the strategic plan. It noted the importance of the plan in assisting the Secretariat to determine and prioritise assistance programmes for the benefit of each member country. SPREP urged the meeting to pay particular attention to three key areas when discussing the plan, as these would determine its successful implementation. These were how the plan could be funded; collaboration with other bodies and developmental partners in implementing the plan; and identifying key developmental partners who may be willing to fund the plan. SPREP further noted the need for member countries to focus on the long term development, and the continuity of programmes and activities rather than concentrating only on short term programmes or *ad hoc* arrangements. SPREP saw the draft strategic plan as the first step in this long-term approach.

Mr Garry Clarke, consultant to SPREP, reminded the meeting about the British Meteorological Office's Trust Fund set up to assist Pacific island countries' NMHSs.

He noted that the trust fund still exists and urged NMHSs to use the fund as it had hardly been utilised.

Vanuatu thanked the SPREP Secretariat for the draft plan. Vanuatu had one or two points to raise. Under Section 5 of the Plan on “Challenges and Opportunities” Vanuatu saw the need for standardisation of equipment within the region. This would allow for bulk purchase of consumables and spare parts ensuring the quality of data are met and there is easy calibration of equipment. Vanuatu expressed its appreciation to SPREP for the excellent job done in preparing the draft.

SPREP expressed the need for the discussion on the plan to ensure all existing programmes and activities would be fully covered, allowing the Needs Analysis to fully capture what is presently going on in the region. On the Needs Analysis, SPREP saw the need for this meeting to come to agreement that the Analysis should be done and possibly to draft and adopt Terms of Reference (TOR) for the exercise. On Section 7 of the draft, “Existing Priorities and Programme Continuity,” SPREP would also like the meeting to provide clear guidance on which programmes and activities SPREP should focus on, while the Needs Analysis is carried out.

Dr Beysson, Meteo France, speaking on the draft plan, recommended adding something into the plan on the Geneva Resolution, adopted at the Thirteenth Congress, calling on governments to support NMHSs. On priorities for the region, Dr Beysson ranked improvement of observational networks in the Pacific as the number one priority to be addressed, as everything (meteorological services and products) depends on the availability and quality of data. Dr Beysson also ranked improvement of the regional telecommunication network as another key area which needs to be addressed.

Australia noted that if NMHSs in the region want the plan to get to a broader audience, including developmental partners from outside the region, a couple of nice maps, displaying ENSO, basic regional observational network, vulnerability of the region to tropical cyclones, and the linkages amongst individual NMHSs to regional and international bodies would need to be included. These are similar to those in Dr Zillman’s paper on the role of National Meteorological and Hydrological Services (NMHSs) presented at the Fifth SPREP Meeting of RSMD.

On content, French Polynesia suggested inclusion of text reflecting the region’s unique features and characteristics (e.g. maritime region, isolation, etc) in the plan. This would ensure special attention and recognition by the international community is accorded to the special challenges facing smaller NMHSs in the Pacific.

SOPAC noted, that having just gone through a similar exercise themselves, they recommended having a one page version of the Executive Summary. Furthermore, they saw the need to extract the “guts” of the strategy up-front (e.g. such as those contained in chapters three and six) to put in the Executive Summary.

The meeting then discussed the establishment of a Needs Analysis Drafting Committee tasked with drafting the TOR for the Needs Analysis exercise. The meeting called for volunteers to the Committee. They were SPREP; Mr Chip Guard, University of Guam; Ms Eileen Shea, PEAC and East-West Center; Samoa and Solomon Islands volunteered to be members of the Committee. The Committee was asked to come up with a draft TOR for discussion the next day.

On the second day of the meeting, discussion on the draft plan resumed in the morning session. Dr Beysson, Chairman, re-affirmed his earlier comments on priority areas for the Pacific region when opening this session. He stressed the need to ensure that RA V priorities, agreed to at the RA V meeting in Bali, Indonesia in September 1998 and endorsed by the Thirteenth Session of the WMO Congress in May 1999 (contained in Annex II of the draft SDMP), be integrated and referenced in the plan and Needs Analysis.

SOPAC recommended making references to the Global Ocean Observing System (GOOS) and the International Decade for Natural Disaster Reduction (IDNDR) in the plan. He noted the IDNDR programmes would end in 1999 and sought clarification from WMO on decisions taken during the WMO Thirteenth Congress on post IDNDR activities. Any decisions should be referenced in the plan.

Dr Zillman, in his capacity as President of WMO, in reply to SOPAC, said the WMO Congress was sensitive to the fact that the UN General Assembly would have to decide and act on this issue. However

the WMO Congress agreed to pursue all the objectives of the IDNDR, in its various programmes and activities, and called for follow up mechanisms for emergency support to post IDNDR.

Mr Neville Koop, Project Coordinator for the EU CWSUP, in responding to post IDNDR raised by SOPAC, urged the SOPAC representative to look into the reports from the Working Groups of the RA V which had references to post IDNDR follow up activities.

New Zealand suggested, that perhaps there was a need for a temporal cut in priorities for the region dividing it up into near term; one to two year needs focussing on telecommunications, observations, data collection and management; and longer term, three to ten years requirements such as societal needs. New Zealand supported SPREP comments on the need to include a closer look at existing programmes and activities but at the same time taking a longer term view at what could happen to the public.

The USA supported the SPREP Secretariat's recommendation for the Needs Analysis to be looking at a three to ten year time frame, while recognising that some needs would be near-term.

Australia supported a 2000-2009 Strategic Plan but needed to further clarify, regarding the decade period. Australia also stressed the importance of presenting the plan in a "user-friendly" way, distinguishing between individual, national, and broader regional needs. Australia stressed the major diversities when outlining priorities in the areas of climate, climate prediction on short to intermediate time scales, and in national disaster reductions, weather services, identifying cross cutting needs, and defining individual themes.

France re-emphasised the need for the Plan to consider, as the highest priority the issue of protection of life and property especially in the short-term. France also backed the World Weather Watch as the top priority programme for the Plan. France supported SOPAC's recommendation to add GOOS to the Plan.

New Caledonia also supported the need for the Plan to pay closer attention to short to intermediate priorities. However, New Caledonia stressed that daily forecasts should remain the highest priority.

Samoa noted the outcomes of the CLIPS workshop held prior to this meeting which looked at a three monthly climate outlook. Samoa saw this three month forecast as very important to the region, but noted most small islands NMHSs could not do them. Samoa urged that assistance be given to this area. Samoa also expressed the need for the plan to fully recognise and implement WMO Resolution 40 on free exchange of data amongst NMHSs. Samoa recommended this to be one of the priorities in the short to intermediate term.

Australia reminded the meeting that historically, meteorology in the Pacific started with aviation, and this should be kept in mind when assessing individual country needs. Australia noted the absence of the International Oceanic Commission (IOC) West Pacific at the meeting and recommended that IOC views should be sought in order to strengthen the plan.

The meeting unanimously endorsed all the comments, suggestions and views expressed during discussion of this agenda item and urged the Needs Analysis Drafting Committee to complete its work and submit the draft TOR for consideration by the meeting, the next day.

In the next session, the Chair of the Drafting Committee introduced the draft paper prepared by them, summarising the discussions on the SDMP the previous day. The meeting unanimously endorsed the draft paper and recommended that the SPREP Secretariat incorporate the suggested changes to the plan. The draft paper adopted by the meeting is reproduced as Annex III to this report.

The meeting then considered the draft TOR for the Needs Analysis, also prepared by the drafting Committee. With minor changes the meeting unanimously adopted the draft TOR. This TOR is reproduced as Annex IV to this report.

#### **4. INTERNATIONAL ACTIVITIES IN SUPPORT OF THE STRATEGIC ACTION PLAN FOR THE DEVELOPMENT OF METEOROLOGY IN THE PACIFIC REGION (SDMP), 2000-2009**

##### **4.1 EU CYCLONE WARNING SYSTEM UPGRADE PROJECT (CWSUP)**

Mr Neville Koop, Project Coordinator of the EU CWSUP hosted by the Forum Secretariat in Fiji, briefed

the meeting on the status of implementation of the project. He informed the meeting that his project was close to the end of its third year, and had enjoyed the close collaboration with individual NMHSs and SPREP. He noted that the close working relationship developed between his project and SPREP enabled a number of projects to be successfully implemented in the region. He highlighted a number of activities already being implemented, including education, training for the public and the media, provision of equipment to upgrade telecommunication systems (e.g. EMWIN, support to Internet access with assistance from SOPAC), public and other technical programmes for better protection of the public of the region.

The project has a two million ECU budget and implementation was progressing well. The project was coming to the end of the third year and the meeting of the Project Steering Committee to be held in Port Moresby, PNG in August would discuss the work plan and programme for the next three years. He expressed his disappointment in that aside from SPREP and SOPAC, the project worked in isolation from other supporting regional organisations. He stated he had worked hard to convince the Forum Secretariat of the need for the project to work with regional bodies especially one with a finite and limited funding lifetime. He stressed the need for someone to step in to provide continuity (e.g. maintenance and training) when the project ends. He assured the meeting that the European Development Fund (EDF) would be available for similar projects in the future and the draft strategic plan provided an important framework for securing funds from EDF.

Mr Koop said that while the project would end in September 2000, he had already renegotiated a contract extension to March 31, 2000. The main task remaining was procurement and installation of automated weather stations (AWS). Tenders would be closed by the end of October 1999 with installation to follow.

Australia sought clarification from Mr Koop regarding AWS particularly on what was the EU's commitment to follow up and maintenance.

Mr Koop replied that the current seventh funding cycle would come to an end by December 1999. He

urged ACP member countries of SPREP to put in proposals to cover follow up, and maintenance under the new funding cycle. He told the meeting that bids for AWS emphasised the importance of training and maintenance support with 12 months warranty and two to five years support.

Samoa congratulated Mr Koop and the EU for the support to NMHSs, and urged ACP member countries to pay attention to the next EU funding cycle.

The participants welcomed the report on the progress of the EU funded project which is providing further assistance to strengthening the National Meteorological Services for participating countries.

#### RECONSIDERATION OF AGENDA ITEM 2.5: WMO/SPREP/METEO FRANCE CLIPS WORK- SHOP RESOLUTION

The meeting then reconsidered the new version of the Draft Resolution from the CLIPS workshop which was discussed earlier under Agenda Item 2.5. With minor changes, the draft resolution was adopted by the meeting. The final Resolution from the CLIPS workshop, adopted unanimously by the Directors' meeting, is reproduced as Annex V to this report.

#### 4.2 PRESENTATION BY AusAID

Ms Joanne Lawrence, AusAID representative gave a briefing on AusAID activities in support of meteorological and climatological activities in the region. She noted that AusAID had shown its support for meteorological services in a number of different ways over many years. AusAID had provided a range of support through bilateral and regional country programmes, training within the disaster preparedness programme through their Humanitarian and Emergency Section and fully funded the salary and costs of a full time Climate Change Officer in SPREP. Ms Lawrence noted that from 1994 to 1996, the Pacific Regional Programme funded a Meteorological Services Project. The project aimed to address the possible effects of climate change in PICs by strengthening the capacity of NMSs to monitor climate using conventional meteorological observation methods. Under the project, observer staff received training, and equipment was upgraded in 10 participating countries.

AusAID recognised the important contribution that effective meteorological services could make at both an economic and social level in critical areas like agriculture, tourism, and disaster preparedness. With the likely increase in extreme weather events, the importance was only going to increase. She noted that in the strategy being presented to the meeting there were certain areas of the services that need further development and that AusAID would like to assist. She expressed her appreciation of the opportunity to be invited to the meeting, to discuss and gain a greater understanding of where the needs and priorities of countries are in the area of meteorology.

She informed the meeting about the AusAID funded sea level rise and climate monitoring project. The project had been running since 1991 and aimed to provide PICs with accurate sea level and meteorological data. The data generated would be used in a number of ways. These included assisting Pacific island countries to predict the consequences of climate change and associated sea level rise, building the technical capacity to monitor climate change and environmental phenomena, and to provide tidal information for use in navigational, surveying and other marine activities. She noted that although the project was titled Sea Level and Climate Monitoring, the project had so far concentrated mainly on sea level. She said the present Phase Two of the project would come to an end in 1999, but AusAID would like to increase the focus on Phase Three, climate monitoring. AusAID was considering a meteorological component in the project. Ms Lawrence said she would be the programme officer looking after the meteorological component and was preparing options that would be put forward to a design team.

She reiterated AusAID's keenness about Phase Three and would like to work closely with regional organisations to integrate the project with the priorities of the region. She gave AusAID's full support to SPREP's earlier comment about the importance of development assistance projects complementing each other. She sought advice from the meeting on what would be the most effective contribution AusAID could make to meteorological services in the region. She further noted that effective partnerships and a coordinated regional approach was really important in meteorological services. AusAID saw great value in

meetings such as this meeting, which not only provided PICs with a chance to get together and work out what their priorities are, but also provided countries like Australia who are supporters of these services, direct contact with Directors of NMSs and an understanding of the real issues they face. She offered support for the importance of a Needs Analysis.

#### 4.3 THE SOUTH PACIFIC DISASTER REDUCTION PROGRAMME (SPDRP)

Dr Russell Howorth, Programme Manager, SOPAC highlighted some aspects of SOPAC's Work Programme of interest to NMSs Directors including: a Pacific-Global Ocean Observing System (GOOS) initiative for which SOPAC was the agreed secretariat; activities of the Disaster Management Unit including the next phase of the UNDP regional programme: Project South Pacific Disaster Reduction Project Phase Two; activities of the Water Resources Unit; and the Hazards Assessment Unit, including the Pacific Cities Project; and the Information Technology Unit including support to countries in development of information systems, communications networks and GIS/Remote Sensing.

He also reminded the meeting of the workshop to be held 19-23 October in Nadi prior to the SOPAC Governing Council Meeting which will bring together managers from the meteorology services, water resources and disaster management sectors, to discuss the economic and social impacts of the 1997-1998 ENSO events.

American Samoa noted that SOPAC was active in a range of areas that interface directly with NMHSs, and WMO. They urged SOPAC to work closely with other organisations to address shared concerns, and to ensure that the perspective of the NMSs Directors are effectively incorporated in their programmes.

Australia concurred with American Samoa's views, and re-emphasised the multiple links NMHSs Directors had with a number of UN bodies and programmes. Australia expressed concerns about the multiple sponsors of programmes like GOOS (e.g. IOC-West Pacific and WMO) which made coordination and contributions from national governments difficult unless sponsoring bodies coordinate their efforts better. As an example, Australia wanted what mechanism the NMHSs'

Directors are using to provide input to SOPAC in its role in regional coordination and collaboration on GOOS?

SPREP supported Australia's comments. In addition, SPREP sought clarification from SOPAC on their hydrological programme.

SOPAC, in clarifying their role as Secretariat for the GOOS programme, agreed with Australia about the need to better coordinate with other organisations in implementing GOOS in the region. SOPAC urged WMO to be more vocal with inputs from NMHSs on gaps and priorities for GOOS in the future. SOPAC noted that the strategy could help in this regard. SOPAC noted GOOS and GCOS programmes must have the full support of national governments if it was to be successful in the region.

On hydrology, SOPAC's understanding was that the strategy had been developed based on the WMO model, that would have NMSs linked to hydrology. They requested the strategy should be more specific and linked to meteorology only if it was appropriate. However, SOPAC wanted to see the Needs Analysis focus only on meteorology.

On water resources, SOPAC urged that the meeting might want to look at "Water Master Plans" produced via the UNDP/SOPAC project, or could choose to identify hydrology as a user like agriculture, emergency preparedness and so forth.

Kiribati expressed concerns over confusion arising from the work of regional organisations. It appeared SPREP handled weather and climate, but SOPAC handled hydrology. He noted this was a problem in Kiribati. As an example, in Kiribati, the hydrological services set up their own rain gauges and equipment and took their own data independent of the NMSs. This created a lot of problems over which service provided the accurate data.

France as the Chair of the meeting, suggested the meeting may need to re-visit the hydrology/meteorology issue in the discussion of the draft strategy.

Dr Lim, President of WMO RA V, reiterated Australia

and SOPAC's comments on the issue of hydrology/meteorology, and urged the meeting to resolve this matter.

New Zealand thanked SOPAC for the presentation and explanation. He said prior to this meeting, he had little knowledge of what SOPAC was doing and perhaps that was telling. New Zealand urged SOPAC and other regional organisations to coordinate their activities. As far as New Zealand was concerned, there was no problem with hydrological matters being sent directly to him as the Permanent Representative of New Zealand to WMO. He would then forward these matters to the appropriate department, or organisations responsible for hydrological and water resource issues.

#### 4.4 US DEPARTMENT OF ENERGY ATMOSPHERIC RADIATION MEASUREMENT (ARM) PROGRAM

Dr Bill Clements briefed the meeting on the current status of implementation of the US DOE ARM program in the three locales chosen for the program: Alaska, Southern Great Plains in the US, Oklahoma, and the Tropical Western Pacific (TWP).

Dr Clements said that all ARM activities in the TWP region were implemented jointly with SPREP and host countries. The stations in the TWP region would be operating for at least ten years supplemented by an education outreach programme. Of the three sites planned for the TWP, two had already been established, one on Nauru and the other on Manus Island, PNG. The Nauru site provided a basis for the establishment of the Nauru NMSs. The third site, originally planned for Christmas Island, Kiribati, is on hold, pending a review of scientific needs, consideration, and budget. A decision is expected to be reached by October 1999. The two sites in the TWP region collected standard meteorological data in addition to measuring radiation data (solar and terrestrial), vertical structure of clouds, cloud properties, water vapour and others. Data are sent to the US via satellite or magnetic tapes every month for checking and archives.

Dr Clements then briefed the meeting on the progress made by the ARM program in response to requests at previous meetings, encouraging the program and those countries involved to work together. This would ensure

that valuable meteorological data, particularly upper air data taken in the context of the ARM program, would be made available on the Global Telecommunication Station(GTS), and in real time to interested parties. ARM would like to see the data being put on the GTS by November 1999.

Dr Clements briefed the meeting on the first International Climate Campaign in the Pacific region, Nauru '99 held in June. Nauru '99 was sponsored by the DOE ARM program and was conducted in partnership with US National Oceanic and Atmospheric Administration; the Japanese Marine Science and Technology (JAMSTEC) ; Australia's Flinders University; and several American universities. The goal of the campaign, was to uncover clues regarding how the tropics influence weather and climate worldwide. The campaign involved more than fifty scientists and researchers from all over the world, plus two research ships, (the MV *Mirai* from Japan and the US *NOAA MV*). *Ron Brown*, a Cessna plane from Flinders University, the TAO buoys, and the station on Nauru were used in the campaign. Dr Clements noted that the results from Nauru 99 would be available by the end of 1999.

SPREP thanked and acknowledged the ARM support for fully funding Mr Lefale's position and partly funding participation of representatives from Nauru, PNG and two SPREP staff to the meeting.

USA representative, Mr Hagemeyer, requested Australia's Bureau of Meteorology, who provided balloon launchers for the ARM sites on PNG and Nauru, to provide him with details of these launchers. Australia agreed to Mr Hagemeyer's request.

New Zealand stated that they fully endorsed the Bureau of Australia's balloon launchers.

France asked Dr Clements if the optical rain gauges used by ARM were reliable both on land and sea?

Samoa complimented and thanked the ARM program for their important contributions in enhancing critical observations in the region, and their support for other regional efforts of interest to the NMS Directors. Samoa was also interested in the balloon launchers, as well as the whole sky imager and how they worked.

PNG expressed its appreciation to ARM for their assistance, in so many areas, to the PNG National Weather Service.

Mr Garry Clarke noted that once the data from the ARM sites were on the GTS, they could be uplifted on the Emergency Managers Weather Information Network (EMWIN)

Dr Clements, in response to France's question regarding the optical rain gauge said, the optical rain gauges used by ARM were working well on both land and sea (TAO buoys). On Samoa's question about the sky imager, Dr Clements requested Samoa discuss this matter outside the meeting.

#### 4.5 PRESENTATION BY NOAA OFFICE OF GLOBAL PROGRAM (OGP)

Ms Candyce Clarke of NOAA Office of Global Change, thanked the meeting for the opportunity to provide an overview of activities of the NOAA Office of Global Programs. These include climate prediction, applications and assessment with a focus on supporting an effective "knowledge bridge" that brings the information derived from scientific programmes to bear in addressing societal needs and practical decision making.

She noted that the Tropical Ocean and Global Atmosphere (TOGA) observing system programme in the Pacific was a major success which stemmed from excellent support from Pacific governments.

She reiterated the NOAA Office of Global Programs support for PEAC's move from its home in the East West Center to be fully incorporated into the work of the US NOAA NWS, Pacific office in Honolulu.

Ms Clarke announced her programme's support for the participation of NMS Directors, water resource managers, and disaster managers, in the upcoming Fiji Workshop on ENSO and water resources.

Ms Clarke also confirmed a commitment by the US NOAA OGP, to future work in the Pacific in collaboration with SPREP and the Pacific NMS Directors.

There was a brief demonstration by Mr Richard Hagemeyer of the capabilities of a computer-based tsunami data integration and visualisation tool which

could be supplemented to support Pacific regional needs.

Several meeting participants expressed interest in the system including SOPAC who offered to help provide additional data for incorporation in the system.

Australia sought clarification from US NOAA OGP on what type of economic valuation activities are likely to be supported by OGP.

Samoa asked Ms Clarke for information on economic impacts of climate change particularly vulnerability assessments undertaken by the OGP in small island developing countries. Samoa also acknowledged the excellent presentation by Mr Hagemeyer on tsunami and would like to see the software made available to the region.

#### 4.6 PRESENTATION BY FINNISH METEOROLOGICAL INSTITUTE

An encouraging presentation was made by Dr Raino Heino, announcing the Finnish Meteorological Institute's interest in support of Pacific meteorological programmes as part of an emerging effort focused on Small Island Developing States (SIDS). Dr Heino noted plans for a mission to the region in the coming year and highlighted global warming and its consequences for SIDS as a particular area of interest. He said there was potential, for broad capacity building in meteorological and climate programmes.

France asked the Finnish representative about the Vaisala GPS sondes. France noted the Vaisala GPS sondes were very expensive and would pose serious problems for (SIDS) in the Pacific region if they wanted to buy these sondes. France requested that a Vaisala representative should be involved in the mission to the region. In reply to France, Dr Heino said Vaisala would be involved in the mission but he was not clear on what their involvement would be at this stage.

Australia asked Dr Heino about the time scale of the proposed Pacific Aid programme by the Finnish government. Dr Heino replied that the programme would be for five years.

SOPAC sought clarification from Dr Heino on whether the funding for the fact finding mission proposed would only cover meteorology or would cover other areas?

Dr Heino implied that funding would primarily be for meteorology but could be expanded to cover other areas.

Australia asked whether it would be possible for the Finnish government to provide financial support for the Needs Analysis as part of their assistance. Dr Heino replied that this was not possible because funding for 1999 was already allocated for the Caribbean. Funding for the Pacific region is for the fiscal year 2000 and only for planning purposes.

Samoa expressed its thanks to the Finnish government for hosting a luncheon for a selected number of PICs Permanent Representatives during the Thirteenth WMO Congress in which the Finnish assistance was announced.

#### 4.7 PRESENTATION BY ISAO-CNR, ITALY

Dr Martin Fisher briefed the meeting on the activities of ISAO-CNR. His organisation mainly focused on specific environment and climate related projects.

The Italian government supported the idea of creation of regional centres for climate prediction and information. The centres could publish a monthly bulletin giving the state of climate, data from member states, plus other selected data such as sea level, wind state and seasonal forecasts. In addition, the centres could also provide training on use of climate information, research on downscaling of climate predictions, basic climate teaching materials preferably in local languages for each country.

Dr Fisher announced that the Italian government had agreed to provide funding of about US\$80,000 per year over three years to get the Pacific Climate Bulletin project started.

SPREP welcomed the announcement by Dr. Fisher of his government's support to getting the Pacific Climate Bulletin started. He noted however the need to revise the budget for the Bulletin as more money was needed if the project was to be a success. SPREP announced that it hoped to have a planning meeting with Italian government officials on this matter.

Australia expressed their appreciation to the Italian government for the exciting news about funding the start of the Pacific Climate Bulletin. Australia wanted to see the bulletin up and running as soon as possible. Australia wanted to build the Bulletin into the strategy and the meeting should consider other mechanisms to ensure long-term support for the Bulletin.

Samoa endorsed the views of Australia and thanked the Italian government. On behalf of the people of the Pacific for funding this important initiative. He urged all SPREP member countries to explore mechanisms to ensure sustainability of the Bulletin project.

SPREP noted that the strategy did reinforce the point raised by Samoa and the need to incorporate this new effort into the regional Strategy including consideration of appropriate mechanisms for sustained support of this new effort as part of an integrated regional programme.

#### **4.8 PRESENTATION BY NETSYS INTERNATIONAL**

Mr. Rob Purkiss and Mr Michael Brews provided a brief overview of the capabilities of Netsys International in the area of high-tech meteorological observations, communications and data integration and visualisation systems including an interesting presentation on the Netsys Flightman system designed to support aviation weather needs.

New Caledonia sought clarification from Mr Purkiss about whether their system could be used in personal computers. He noted the system was using UNIX which was not widely used in the Pacific region.

Mr Purkiss replied in the affirmative and stated that his company was working towards using the system in a Windows operating system.

#### **4.9 SCHOOLS OF PACIFIC RAINFALL AND CLIMATE EXPERIMENT (SPARCE), UNIVERSITY OF OKLAHOMA**

Dr. Susan Postawko provided a progress report on the Schools of the Pacific Rainfall Climate Experiment (SPaRCE) programme. The programme now includes over 140 rainfall measurement systems throughout the region, supplemented with climate educational material tailored for Pacific jurisdictions.

Of particular note was the exciting opportunity for the NMS Directors in the region to assume responsibility as the focal point for SPaRCE data collection thereby facilitating the availability of SPaRCE data to support operational requirements. This would include addressing quality control issues; providing the directors with an opportunity to identify priorities for future sites; and supporting the directors in their efforts to expand public awareness and understanding of local weather and climate issues.

Samoa acknowledged the SPaRCE programme and expressed its gratitude for the assistance provided by SPaRCE to Samoa especially on training observers in taking measurements.

#### **4.10 PRESENTATION BY THE INTERNATIONAL GLOBAL CHANGE INSTITUTE (IGCI), UNIVERSITY OF WAIKATO**

Dr Neil Ericksen, Director of IGCI, briefed the meeting about IGCI activities in support of NMHSs in the region. Dr Ericksen gave an overview of the climate and global change activities of IGCI highlighting their strong programmes in technical assistance, capacity building and infrastructure development. These included training material and courses; the development and application of integrated assessment capabilities in the area of climate vulnerability and adaptation; the PACCLIM programme; and research on the human dimensions of global change.

Dr Ericksen's presentation and subsequent discussion highlighted IGCI's commitment to continued collaboration with SPREP and other regional partners. He suggested a number of opportunities to enhance the role of national meteorological services in efforts to help their governments understand and build resilience to the impacts of climate.

#### **4.11 PRESENTATION BY UNIVERSITY OF GUAM**

A summary and progress report by Mr Chip Guard on weather, climate and hydrological research activities at the University of Guam. This covered tropical cyclone research; ENSO-related activities including PEAC and related rainfall catchment modeling studies; calibration for the NASA TRMM satellite mission; global change education

programmes in support of NASA's Mission to Planet Earth; rainfall modeling and distribution analysis for the USGS and US EPA; and education and training programmes.

In addition, the meeting participants were delighted to hear of the completion of efforts to adapt the Saffir-Simpson Tropical Cyclone Scale for use in tropical regions. Participants recognised the applicability of this new tool for providing decision makers in PICs with useful information regarding the potential impacts of tropical cyclones on communities, businesses and infrastructure in the Pacific region. The meeting encouraged SPREP and sponsoring organisations to find the resources required to ensure broad dissemination of this important new manual.

France noted that the Saffir-Simpson Tropical Cyclone Scale for use in the tropical regions is an exceptional work of extreme value of this new tool.

New Zealand endorsed France's comments. They said that the Saffir-Simpson tool was absolutely wonderful and urged the University of Guam to put this on the Internet. New Zealand recommended using the Aerobat, based on their own experience to run the Saffir-Simpson tool.

SPREP recommended perhaps the Special Purpose Fund (SPF) could be used for the production of extra copies of the publication if countries requested them.

#### **4.12 PRESENTATION BY THE NATIONAL TIDAL FACILITY (NTF), FLINDERS UNIVERSITY**

An overview of the status and key findings of the South Pacific Sea Level and Climate Monitoring Project was provided by Dr Wolfgang Scherer, Director of the National Tidal Facility. He placed emphasis on issues related to system capabilities and data quality; the need to provide long-term records to document or detect any sea level rise trends related to climate change; and the importance of recognising and addressing significant variations in sea level associated with ENSO.

Niue (Mr Sionetasi Pulehetoa) asked why no tidal gauge was placed on Niue. He referred to the huge storm surge hitting Niue during Cyclone Ofa in which a tidal gauge would have been useful in

measuring the height of the surge. He also stated the observed data collected by his office was different from the predictions put forward by NTF.

In reply to Niue's query, Dr Scherer stated that although he agreed with Niue's request for a tide gauge, scientifically it would not matter much as the data collected by the nearby tide gauges in Tonga, for example, were sufficient to provide accurate tidal fluctuation for Niue.

Australia noted that pursuant to discussions during the fifth SPREP Meeting of RSMD in Honolulu on this item, they wanted to know whether the tide gauges were providing the meteorological data in real time for use by NMSs for forecasting. In response Dr Scherer said it was difficult to monitor the radio links to the real time displays, as such efforts to provide meteorological data in real time were on hold.

Samoa noted the importance of data collected by this project to shipping.

Mr Garry Clarke told the meeting the data from NTF tide gauges were available on EMWIN.

Fiji (Ms Janita Pahalad) complimented NTF, AusAID and SPREP for this project. However, she expressed concerns that not all NMSs could access data via the Internet and urged that this matter be looked at. Fiji found the tidal predictions from NTF very useful.

Mr Hagemeyer (NOAA) offered the service of his roving technicians to carry out maintenance of NTF tide gauges if needed. USA wanted to know if the other tide gauges installed by the University of Hawaii around the region are still operational. In reply to Mr Hagemeyer's question, Dr Scherer said he was not aware of the present status of the tide gauges installed by the University of Hawaii, but he would be visiting them to discuss how the two universities could work together.

Mr Hagemeyer in response to Niue's storm surge question stated that his office may be able to provide assistance to Niue on tsunami warnings.

Tuvalu (Ms Hilia Vavae) thanked NTF and AusAID for funding the tide gauge for Tuvalu and subsequent

training provided under this project. She supported Niue's request for a tide gauge as it would be best for Niue to have their own. Tuvalu also expressed its concerns about flooding due to sea level rise and sought an explanation from Dr Scherer.

Samoa endorsed the same sentiments and gratitudes expressed by previous speakers, and suggested that maybe Niue would need to install a manual tide gauge.

AusAID and the US NWS representatives offered to look into possible options to enhance sea level monitoring capabilities of Niue.

#### **4.13 PRESENTATION BY IRI AND EAST WEST CENTER**

Ms Eileen Shea, representing the IRI and East-West Center, Hawaii, gave a presentation to the meeting on some emerging opportunities. Firstly the development of a Pacific region climate prediction applications programme in the context of emerging plans for a network of partners supporting the work of the Applications Research Division of the International Research Institute for climate prediction; secondly the participation in an initial Pacific Islands Regional Assessment of the Consequences of Climate Variability and Change.

Ms Shea's presentations and subsequent discussions highlighted the importance of climate assessment and forecasting applications efforts as a part of the emerging integrated strategy for meteorological programmes. Conversely, her report showed the important role that NMS Directors should play in national, regional and international climate assessment and application efforts.

#### **5. OTHER MATTERS**

Mr Hagemeyer, Director of US NOAA NWS Pacific region informed the meeting of a new initiative by his government to host three or four month long training attachments to the Hurricane Center in Honolulu for PIC forecasters. Mr Hagemeyer stated US NOAA NWS would work closely with the SPREP Secretariat to put in place the required arrangements for the new initiative to begin in the year 2000.

The participants thanked Mr Hagemeyer and his government for the new initiative and noted this would be an invaluable contribution to further the development of meteorology in Pacific island countries.

#### **6. DATE AND VENUE OF THE NEXT MEETING**

The meeting was informed of the offer by the Solomon Islands to host the SPREP Meeting of RMSD in the year 2001. Tonga, Samoa and the Cook Islands offered to host the meeting in the year 2000. The meeting unanimously agreed that the SPREP Secretariat pursue these offers and make a decision on the venue for the next meeting.

#### **7. CONSIDERATION OF THE MEETING SUMMARY AND RECOMMENDATIONS**

The Chairman of the Drafting Committee introduced the draft Meeting Summary and Recommendations for consideration by the meeting. The meeting considered the draft report paragraph by paragraph. After careful consideration and with changes to the text, the meeting adopted the meeting summary and recommendations. The Chairman thanked the drafting committee for their excellent work and dedication in preparing the draft of the report in time for consideration by the meeting.

#### **8. CLOSURE OF THE MEETING**

The Chairman, Mr Jacki Pilon, closed the meeting. In his closing remarks Mr Pilon thanked all participants for their invaluable contribution in making the meeting a huge success. He thanked the SPREP Secretariat for organising the meeting and all the sponsors. Mr John Lumsdem of the Meteorological Services New Zealand Ltd thanked Meteo France, SPREP and all sponsors on behalf of the meeting participants. Mr Faatoia Malele, Acting Assistant Director of the Samoa Meteorological Division also expressed his thanks to the organisers of the meeting. He wished every participant a safe journey home. Mr Gerald Miles of SPREP thanked all the countries for supporting the work of SPREP and wished everyone a safe journey back home. The meeting was officially closed at 1.00pm on Friday 30 July 1999.

## ANNEX I: OPENING REMARKS BY THE DIRECTOR OF SPREP

Your Excellency Honourable Jean Aribaud,  
France's High Commissioner to French Polynesia;  
Dr Beysson, Director of Meteo France and  
First Vice President of WMO;  
Dr John Zillman, President of WMO and  
Director of the Bureau of Meteorology of  
the Commonwealth of Australia;  
Dr. Lim Joo Tick, President of Regional Association V  
of WMO and Director of  
the Malaysian Meteorological Service;  
Mr Henry Taiki, Programme Officer,  
WMO Sub-regional Office for  
the South West Pacific;  
Donor representatives;  
Distinguished Directors and Officers-in-Charge of  
National Meteorological Services and  
Weather Offices in the SPREP region;  
Observers;  
Ladies and Gentlemen.

Let me begin by joining the High Commissioner in extending a warm welcome to you all to this Sixth SPREP Meeting of Regional Meteorological Service Directors, especially to those who are attending the meeting for the first time.

Through you Mr High Commissioner, please accept my deep appreciation and that of the Secretariat of SPREP and our member countries for generously agreeing to host this meeting. I am told this is the first time a SPREP organised Meteorological Services' meeting is being held here. I hope there will be more to come, Mr High Commissioner, so we can enjoy the hospitality of your people and the lush environment of your islands that lure tourists to your shores in record numbers. Thank you Sir for the warm welcome.

Mr Chairman,

When I sent out the invitations for this meeting, I, together with my staff was expecting the same turn out as in past meetings. However, this is not the case. I am overwhelmed by the response to my invitation. Since this meeting began seven years ago, this meeting has set

a record number of participants attending. Either it is a sign of the increasing recognition of the importance of this meeting and the role we in the SPREP Secretariat play in the development of meteorology in the Pacific region, or because it is the magic word "Tahiti". I hope it is both.

With the record attendance, let me firstly thank those who made this possible: the people of French Polynesia; Dr Beysson, Director of Meteo France; Mr. Jacki Pilon and his staff in Tahiti for agreeing to host this meeting. Dr Beysson, we welcome you to the Pacific. Thank you for travelling all the way from Paris to be with us. I should also like on behalf of Directors of SPREP member countries to congratulate you for your recent election to the post of First Vice President of WMO. I am confident your new position in WMO and your presence here will lead to further strengthening of the co-operative efforts between Meteo France and the National Meteorological Services (NMS) of Pacific island countries. I would also like to thank Dr Michael Harrison, Chief of WMO CLIPS programme, for his assistance in jointly organising the WMO/SPREP CLIPS workshop that concluded yesterday. Ms Eileen Shea, East West Center and Pacific ENSO Application Centre in Honolulu; and the sponsors of the workshop and meeting which I will acknowledge at the end of my speech.

I would also like to welcome Dr Lim Joo Tick, who is joining us for the first time, in his capacity as President of Regional Association V (RA V) of WMO. Your attendance Sir is a reflection of the ever increasing and close working relationship between SPREP and WMO in assisting NMS in the RA V and SPREP region.

I should also like to acknowledge the presence of Dr John Zillman, in his capacities as Permanent Representative of Australia to WMO and President of WMO. Dr Zillman's commitment towards strengthening the capacity of NMS in the Pacific region and internationally through his twin responsibilities in the Australian Government and WMO is well known. We greatly appreciate your assistance and efforts John and we look forward to your continued support and guidance and that of your government towards Pacific

Islands NMS. Let me also on behalf of the Secretariat and SPREP members congratulate you on your re-election as President of WMO at the recent WMO Congress in Geneva. You made us all proud.

I should also like to acknowledge the presence of Mr Henry Taiki, in his new capacity as Programme Officer for the WMO Sub-regional Office for the South West Pacific. Mr Taiki is no stranger to us. Welcome to your first SPREP meeting as a WMO Programme Officer Henry.

I would also like to acknowledge the presence of Mr Martin Yerg, Chief International Office of the US NOAA NWS in Washington; Mr Richard Hagemeyer, Director, US NOAA NWS, Pacific region ; Mr John Lumsden, Chief Executive Officer, New Zealand Met Service Ltd; Dr Raino Heino of the Finnish Meteorological Institute; Dr Martin Fisher of ISAO-CNR, Italy ; Dr Steven Halapua, Pacific Island Development Programme (PIDP); and Dr Russell Howarth, Programme Manager of the South Pacific Applied Geoscience Commission (SOPAC).

Today, I stand before you to report that we are on the verge of making history in our collective efforts to further strengthen and develop meteorology in the Pacific. Before I do so, let me share with you this story.

There was a King who once called three wise men together and posed the same problem to each: “Our island is about to be inundated by a huge tidal wave. How would you advise the people?” The first man thought long and hard and then said, “Sir, I would lead the people to the highest spot on the island and then set up an all night prayer vigil.” The second said, “Your Highness, I would advise the people to eat, drink and be merry for it would be their last opportunity to do so.” The third wise man said, “Your majesty, if I were you, I would immediately advise the people to do their best to learn how to live under water.”

Mr Chairman,

This meeting is in effect a test on our ability as a meteorological community to “learn how to live under water” of changes sweeping our region and the world today. Reforming, restructuring, downsizing, priv-

atising, are becoming the norms within our governments vocabularies. Today, no country in our region is spared from the reform process. For some, they had already been through it, for others, they have just begun while others are in between. From my experience on the national level, those government departments who adapt and re-invent themselves by finding new solutions to the proposed changes are able to survive. Those who do not are left behind. And no where is that more true than in the meteorological community.

Two years ago, at your fourth meeting in Apia, Samoa, I asked you to start thinking about long term planning. I foresaw at the time the reform wave was upon you and yet most of you were hesitant in accepting the situation. I also realised then that if we in your Secretariat were to better serve and meet your needs, we needed to address the reform process. To assist you with the long term planning process, we took the first step in Apia of accepting time lines for climate related projects that were proposed for the Pacific islands region.

But I am also a firm believer in the Pacific Way in that you take one thing at the time so I decided not to overload you in Apia. A year later in Honolulu, I again stood before you and asked you to continue to build on our Apia initiative. This time, urging you to provide us with a clear mandate on our work in meteorology and what we should do to assist you. Specifically, I asked you to provide a mechanism for effectively evaluating and monitoring the progress that you are making in the implementation of activities that fall under the preview of this body in a manner that is sustainable both in terms of resource capacity and technology.

Thanks to the pioneering leadership of WMO in formulating its Fifth Long Term Development Plan prior to the Honolulu meeting, we were able with your guidance, to collectively identify a number of key issues pertaining to further development of meteorology in the Pacific. These include, amongst others, the following:

First, the recognition of the importance to the region of providing an integrated programme of forecast and information services which addresses the continuum from weather to climate and including issues related to

hydrology and water.

Second, the importance of the role we in the SPREP Secretariat play in supplementing WMO and national efforts in the area of weather and climate and the unanimous agreement for us to broaden our scope of work to cover meteorology and climate matter, in addition to our climate change programmes,

Third, the need to develop a long term strategic plan for the Pacific region taking into account the WMO Fifth Long Term Plan and the priorities areas agreed to at the WMO Regional Association V meeting in Bali, Indonesia in September 1998.

Fourth, the need for SPREP to continue to provide a forum for National Meteorological Services in Pacific island countries to: identify critical issues relating to meteorology development; promote collaboration in the development of shared solutions to common problems; enhance awareness of weather and climate issues and programmes at appropriate levels of government in the region such as the ministerial level; and the need to identify opportunities to improve regional capacity to forecast, understand and address the impacts of weather and climate.

Fifth, the need to pursue appropriate mechanisms to establish a special purpose fund to supplement existing sources of support from national governments, donor nations and others to meet the growing public needs for weather and climate monitoring, forecasting, assessment and applications.

With these clear directions, I am pleased to report to you that the state of development of meteorology in the Pacific is entering a new, exciting but challenging era. Since the Honolulu meeting, we have managed to fulfil our obligations as you directed us to do.

First, we have prepared a detailed progress report under Agenda Item 2 highlighting some of the major achievements since we last met. This new initiative is an effort by your Secretariat, to report to you, our members in an open and transparent manner, on how we utilise the resources provided to us to assist you. I hope this report will allow you to fully assess and monitor our performance and keeping you and our

collaborating development partners fully informed of progress made since the last meeting. We hope to continue this reporting process indefinitely.

Second, in April 1999, the WMO Sub-regional Office for the South West Pacific was officially established within our premises. This will be fully discussed under Agenda Item 2.4. This is a milestone for our region and a major step forward in the development of meteorology in the region. We are now able to work closely with the WMO staff under the same roof. The setting up of the WMO office within our premises is in line with our own efforts to actively pursue our objective of merging our activities with those of other organisations and international agencies in order for us to better utilise the limited resources available to the region and avoid possible duplication of activities.

Third, the call to broaden our mandate at the last meeting gave us the green light to start exploring and seeking collaboration partners and new opportunities to assist you. The draft Strategic Action Plan for the Development of Meteorology (SDMP) in the Pacific region, we prepared jointly with WMO for your consideration at this meeting, is our first attempt to answer the “how to” question that has been hovering over us since our first meeting seven years ago. The draft is the main document for this meeting and will be discussed under Agenda Item 3.

We have laid out in the draft plan what we foresee as the foundation in which we can collectively build meteorological programmes and activities in the region. The goal of the SDMP is to develop an agreed understanding between all of us on priorities and goals for your individual development and mutual co-operation and to implement a programme to ensure these are achieved. Our vision as proposed under the plan is for all meteorological services in the Pacific region being able to provide all appropriate meteorological services to your nation through skilled and fully trained professional, technical and support personnel operating appropriate systems and working from appropriate facilities within appropriate infrastructure. The SDMP seeks to ensure all National Meteorological Services of our region are contributing fully to the World Weather Watch (WWW) and the World Climate Programme (WCP) through appropriate observing systems,

telecommunications, data processing and management system and public weather services.

The draft SDMP is a cultivation of the seeds we collectively planted in Apia in 1997 and nurtured in Honolulu eight months ago. I would like to specially thank those who drafted the plan. In particular, I am grateful to Dr Zillman for funding Dr Bob Brooke and Mr Ram Krishna's trip to Samoa to assist us draft the first draft.

As part of the on-going planning process, we seek to get your input and hopefully endorsement of the plan at this meeting. With your endorsement, we intend, with your cooperation and assistance and that of all of our collaborating and development partners to put the plan into action soon after the conclusion of this meeting. We look forward to your guidance and that of our collaborating and development partners to improve the plan.

But our efforts will go nowhere without your full support. The success of the SDMP will rely heavily on your full cooperation and of all parties involved in the development of meteorology in the region. It is your responsibility to make it work. The ownership of the plan is yours. We in the Secretariat and WMO, with assistance from our collaborating and developmental partners, can only assist you in making the SDMP a reality. I hope the draft plan will be acceptable to you and your governments and that it will act as a catalyst to get your governments to provide you with new and additional resources to assist you implement the plan at the national level.

Fourth, while the draft plan is being developed, we are also conscious of the need to maintain the momentum of our existing support to you and to focus this support on priorities in the short term. To address this issue, we have established a SPREP Meteorological Special Fund to pool together funding to assist with the continuity of existing projects while the SDMP is being developed. I thank the US NOAA National Weather Service and the New Zealand government for providing initial funding to set up the fund.

Fifth, we heeded your call for us to continue to provide a Forum for you to discuss issues of common

interest and promote the collaboration in the development of shared solutions to common problems. However, organising and hosting this meeting annually is not an easy task. It takes time and lots of resources. I urge you, my fellow Directors to re-visit at this meeting the issue of the frequency of this meeting. You may recall that at the Apia meeting in 1997, I propose this meeting be held biennially in light of the costs and other issues associated with having the meeting annually. However, our recommendation was not accepted then. I recommend that this meeting be held every two years beginning in 2001 and I urge you to support this recommendation. We believe having it every two years not only will allow us enough time to implement and develop projects you requested of us but will also give you time to implement your own activities at the national level.

So with these five new initiatives – on-going monitoring and reporting of our performance; strengthening our collaboration with WMO through the establishment of the WMO Sub-regional Office within our office and building allies with other agencies; the formulation of the draft Strategic Action Plan for the Development of Meteorology in the Pacific region; the establishment of the SPREP Meteorological Special Fund; and our proposal to have this meeting biennially – I believe we are now on sound foundation to begin working together to fulfil our mission of contributing to the economic and social benefit and welfare of our people.

In conclusion, I would like to extend our deep appreciation to you and all of our collaborating and development partners for the assistance and support given to us since the last meeting. As I alluded to above, we are now beginning to move more confidently towards longer term planning of climate activities generally and to weather/meteorological activities in particular. We especially thank WMO for continuing to be a close collaborating partner in our efforts to strengthen your capacity.

I should also like to acknowledge the increasing assistance of the US government, through the US NOAA National Weather Service and the US Department of Energy's Atmospheric Radiation Measurement Program in funding Mr Lefale's post

and other major components of our meteorological and climate programme. I also acknowledge the continued assistance of the Bureau of Meteorology, Australia and AusAID by funding meteorological programmes and the South Pacific Sea Level and Climate Monitoring Project.

Japan has contributed significantly through the provision of the new Regional Centre in Nadi, Fiji. NZODA continues to provide much needed support. The Global Environment Facility (GEF) through the United Nations Development Programme continues to support us. The European Union funded Cyclone Upgrade project deserves special mention as well in this context. A relative newcomer in supporting the Pacific islands climate activities is the Government of Denmark.

Finally, I would like to thank the sponsors of this meeting and the Climate Information and Prediction Services (CLIPS) Workshop: WMO, Meteo France, the US NOAA NWS, US DOE ARM programme, and the Bureau of Meteorology of Australia, AusAID and the management and staff of the Sofel Hotel for the excellent facilities and services provided for this meeting.

I wish you every success in your deliberations. Thank you and good morning.

## **ANNEX II: AGENDA**

1. **OPENING SESSION**
  - 1.1 Opening Ceremony
  - 1.2 Election of Chairperson
  - 1.3 Election of Chairperson of the Drafting Committee
  - 1.4 Adoption of the Agenda
  - 1.5 Working Arrangements
2. **REVIEW OF CONCLUSIONS AND RECOMMENDATIONS FROM PAST MEETINGS**
  - 2.1 Fifth SPREP Meeting of RMSD, Honolulu, Hawaii, November 1998
  - 2.2 The SPREP, WMO and US NOAA NWS Y2K Workshop, Honolulu, Hawaii, November 1998
  - 2.3 The Thirteenth WMO Congress, Geneva, Switzerland, May 1999
  - 2.4 WMO Sub-regional Office Progress Report
  - 2.5 WMO/SPREP/CLIPS Workshop, Tahiti, 26-27 July 1999
3. **PACIFIC REGIONAL METEOROLOGICAL STRATEGY**
  - 3.1 National Meteorological Service in Pacific Island Countries – An Overview
  - 3.2 The present state of Meteorological and Climate Programmes in the Pacific – A Regional Perspective
  - 3.3 The need for a Strategic Action Plan for the Development of Pacific Meteorology in the Pacific (SDMP)
  - 3.4 The draft SDMP
  - 3.5 Mechanisms for implementing the Strategy – Funding Mechanisms, Planning and Legal Framework
  - 3.6 Open Discussion – Review of the draft SDMP
4. **INTERNATIONAL ACTIVITIES IN SUPPORT OF THE PRMS**
  - 4.1 SPREP and WMO Programmes
  - 4.2 EU Cyclone Warning System Upgrade
  - 4.3 South Pacific Disaster Reduction Programme

- 4.4 South Pacific Applied Geoscience Commission (SOPAC)
- 4.5 US Department of Energy Atmospheric Radiation Measurement Program
- 4.6 Netsys International Flightman Presentation
- 4.7 Other programmes
5. OTHER MATTERS
6. DATE AND VENUE OF THE NEXT MEETING
7. CONSIDERATION OF THE MEETING SUMMARY AND RECOMMENDATIONS
8. CLOSURE OF THE MEETING

## **ANNEX III: SUMMARY OF DISCUSSIONS ON THE DRAFT STRATEGIC ACTION PLAN FOR THE DEVELOPMENT OF METEOROLOGY IN THE PACIFIC REGION (SDMP)**

A primary objective of this, the Sixth SPREP Meeting of Regional Meteorological Services Directors, was to present and discuss a draft Strategic Action Plan for the Development of Meteorology in the Pacific region. The SPREP Secretariat presented the draft Plan, and following the excellent presentation, requested discussion and recommendations. Participants addressed sections of the draft Plan sequentially. The following bullet paragraphs summarise the key points of the discussion and recommendations.

- Many of the participants praised the draft Plan. There was widespread agreement that the Plan was long overdue, however, there was wide agreement that the Plan should also include more specific information on long and short term goals, and should incorporate the results of SPREP's programmed Needs Analysis.
- The document should be a truly "regional" strategy, reflecting consultation with participating organisations especially the National Meteorological and Hydrological Services (NMHSs).
- The document should be "user friendly" and accessible to a broad audience, including the NMHS Directors themselves, individual national governments, regional organisations, WMO leadership, and potential donors. The latter may have no knowledge of the programme aside from the information provided by the SDMP. Priorities should be clearly spelled out and should delineate national needs from regional needs.
- The document should include useful visual images, including a map of the region and member countries, a map displaying the existing observational network (e.g. from Dr Zillman's paper), a map displaying the vulnerability to tropical cyclones, a diagram displaying regional ENSO impacts, and a diagram illustrating linkages among NMHSs and regional organisations.
- Organise the document along the lines of key drivers such as seasonal and interannual climate variability, climate change, natural disaster reduction, and basic weather services. NMHS legacies and basic missions must be emphasised and dominant to emerging responsibilities and opportunities.
- The Executive Summary must be strong and attention grabbing. Many potential donors may not read past the Executive Summary especially if it does not grab their attention. A summary of hard hitting key points (e.g. information from sections three and six) should be at the beginning of the Summary. Ultimately this may be the most important part of the Plan.
- The document should come across as "the single" comprehensive strategy for meteorological programmes for the entire Pacific islands region (North West and South West Pacific). To accomplish this, it must consider all regional and appropriate international meteorological, oceanographic, and hydrological programmes, and make the Plan the most comprehensive and effective solution for satisfying the meteorological needs of all. For example, IOC-WESTPAC should be mentioned.
- The cover of the Plan should include the national seals of all of the SPREP member countries and the logos of contributing partners.
- The document should include specific references to national government financial commitments to support NMHSs (pursuant to the "Geneva Resolution" adopted at the 13<sup>th</sup> WMO Congress).
- The document should include a description of the unique characteristics and challenges faced by the region (e.g. totally a maritime region, massive geographic extent, unequalled separation/isolation, physical and cultural diversity, etc.). These should be summarised in the Executive Summary.
- Ultimately, the final Plan should be compiled by people strongly familiar with the unique circumstances of the region and with a clear knowledge of the "big picture."

The current “top down” draft document should incorporate “bottom up” input from regional meteorological directors, and input from organisations concerned with regional challenges and opportunities through the Needs Analysis. The Plan should be compatible with the WMO Fifth Long Term Plan and should indicate how it supports the two major goals of the WMO for the next decade: “strengthening the core activities of the national services” and “contributing toward sustainable development”.

- The document should include expanded text on relevant programmes (e.g. SOPAC disaster reduction program) and add GCOS and GTOS to GOOS in references to observing programmes and responsibilities. Integrate WMO RA V plans to “foster the establishment of a Pacific HYCOS.”
- If IDNDR is continued as a programme, its follow-on objectives should be integrated into the document.
- The Needs Analysis is required to identify the mid-term and long-term input for the Strategic Plan. The Draft Committee was tasked to derive the Terms of Reference (Annex IV of this report) for the Needs Analysis.

## ANNEX IV: DRAFT TERMS OF REFERENCE FOR THE NEEDS ANALYSIS

### BACKGROUND

As agreed at the Sixth SPREP Meeting of Regional Meteorological Service Directors, a Needs Analysis is to be undertaken under the auspices of the World Meteorological Organization in co-operation with the South Pacific Regional Environment Programme. This Needs Analysis will involve an extensive review of the needs of all the Pacific Island Meteorological Services in the context of the RA V Fifth Long-Term Plan priorities, their obligations under WWW, COP 4, WCP and other international agreements and conventions, their specific local activities in support of government, public weather and climate services and other national activities. From the review, the Needs Analysis should propose a developmental assistance programme subdivided into projects that would sensibly be undertaken by individual donors. The plans should be prioritised, and the linkages between each one be carefully drawn so the consequences and interactions are clearly appreciated by donors. The particular aim here is to ensure that coordination between donors is facilitated.

The Needs Analysis will require a small team of high level experts, preferably with senior management and operational experience in national meteorological services to be available full time over a period of several months. They will be required to visit and discuss extensively with the Pacific meteorological services and to consult with potential donor agencies.

### OBJECTIVE

To undertake an in-depth review of the needs of all the National Meteorological Services of Pacific island countries in the SPREP Region to meet national, regional and international obligations.

### TASKS

The team will be required to:

1. comprehensively review existing country and regional reports, studies and programmes, including those related to surface and upper-air observations, instrumentation,

telecommunications, data processing, forecasting operations, natural disaster mitigation and preparedness related to tropical cyclones, floods, tsunamis and other severe weather systems, climate monitoring and prediction, research, hydrology, meteorological applications such as Public Weather Services, Aeronautical Meteorology, Marine Meteorology and Agricultural Meteorology, education and training, and technical cooperation.

2. define additional information requirements for the Needs Analysis.
3. develop a questionnaire or other techniques for obtaining additional information.
4. conduct, in conjunction with SPREP/WMO and relevant organisations, a scoping/training workshop for Directors of Meteorology.
5. analyse the available information and outputs of the scoping/training workshop.
6. prepare a summary report including national and regional needs, categorise these into short, medium and long term and present them under key headings (e.g. climate change, climate prediction, early warning etc.).
7. each need to be presented in a project concept format that identifies key stakeholders, specific outputs and cost implications.
8. circulate a draft report to Directors of Meteorology by 31 December 1999.
9. comments to be provided by 1 February 2000.
10. final Needs Analysis to be produced and circulated by 1 March 2000.

# **ANNEX V: RESOLUTION CONCERNING THE CLIPS PROJECT FROM THE SIXTH SPREP MEETING OF REGIONAL METEOROLOGICAL SERVICES DIRECTORS (RSMD)**

## **THE MEETING OF REGIONAL METEOROLOGICAL SERVICES DIRECTORS,**

### **NOTING:**

- (1) The Resolution from the WMO/SPREP/Météo-France Climate Information and Prediction Services (CLIPS) Workshop, Tahiti, 26-27 July, 1999.

### **RECOGNISING:**

- (1) The importance of seasonal to interannual climate variability and change to the social and economic development of Small Island Developing States in the Pacific Region.
- (2) The important impact of the ENSO (El Nino-Southern Oscillation) phenomenon on seasonal to interannual climate variability and change within the Pacific Region.
- (3) That the impacts on the social and economic development in the region of the 1997 - 1998 ENSO event will be reviewed at a number of forthcoming meetings including: the WMO Workshop on Reviewing National Capabilities for Water Resources Assessment in the South Pacific Countries and the Meeting of Experts on Hydrological Needs of Small Islands, Nadi, 29 September to 6 October, 1999; a regional workshop organised by SOPAC for water managers, disaster managers and heads of meteorological services to be held in Nadi, 19-23 October, 1999; the SPREP Pacific Islands Climate Change Conference in the Cook Islands, April, 2000; the WMO RA V Tropical Cyclone Committee in the Cook Islands, September, 2000.
- (4) The disparate levels of expertise in interpreting climate data and in utilising seasonal to interannual climate predictions and of available technology at meteorological services throughout the region.
- (5) The complex climatology of the region in which strong gradients in rainfall distributions occur both spatially and temporally, such as and including those in the South Pacific Convergence Zone (SPCZ), and which requires

expert interpretation in the preparation of climate information and services.

### **NOTING THAT:**

- (1) The scientific understanding of the causes of the ENSO phenomenon has improved substantially in recent years.
- (2) Based on this improved understanding, the ability to provide predictions of seasonal to interannual climate variations is also developing rapidly in some meteorological centres, but not including all of those in the Pacific region.
- (3) Available facilities, and expertise in use, of the CLICOM system vary between Pacific Meteorological Services.
- (4) Predictions are optimally provided in probability terms and training of NMHS staff is required.
- (5) The use of seasonal to interannual climate predictions requires customisation appropriate to each particular use.
- (6) Thirteenth Congress WMO held in Geneva during May 1999 adopted a resolution the CLIPS Project..

### **CALLS FOR:**

- (1) Improved monitoring of seasonal to interannual climate variations and their impacts within the Pacific Region and provision of monitoring results to all National Meteorological and Hydrological Services within the region.
- (2) Further development of high quality data bases through the CLICOM and DARE projects.
- (3) Development of improved prediction capabilities within each National Meteorological Service.
- (4) Additional developmental training of NMHS staff in the provision of climate data collection, information and prediction service.

- (5) The development of documentation and education courses under the CLIPS Project to provide required training.
- (6) Further studies of optimal methods for applying climate information and prediction within the region, including the development of a CLIPS Showcase Project.
- (7) Increased and enhanced collaboration amongst all agencies in the development of climate services in the region and to investigate new and additional sources of funding to assist these efforts.
- (8) Initiated and enhanced interaction between NMHS staff and end users of seasonal to interannual climate information and services.
- (9) Investigation of the feasibility of developing a CLIPS project for the Pacific region.
- (10) The CLIPS Project Office/SPREP to organise a Training Workshop within the region, including the developing of local prediction capabilities.
- (11) Exploration of the possibility of developing a regional climate centre for the Pacific in accordance with Resolution 3.2.5 adopted at WMO Cg-XIII.
- (12) Examination of means to extend Internet facilities to all NMHSs, within RA V in accordance with decisions taken at WMO Cg-XIII (3.2.5.5).
- (13) Further research into the dynamic and synoptic rainfall climatology of the region to aid and support the interpretation of climate information, the understanding of the causes of intense rainfall events, and to facilitate provision and application of seasonal to interannual climate predictions.

**RESOLVES:**

- (1) To hold a one-day Regional Forecast Forum during the first six months of the year 2000 and to attempt to attach this Forum to an existing meeting involving NMHS staff.
- (2) To invite Australia to collate and disseminate current seasonal to interannual climate prediction information from centres around the world (plus supporting documentation) to participating states who require it on a monthly basis leading up to the one-day Regional Forecast Forum.

**REQUESTS THAT:**

- (1) This resolution be brought to the attention of all concerned by the President of RA V and the Director of SPREP.

**ANNEX VI: LIST OF PARTICIPANTS FOR THE SIXTH SPREP MEETING OF RMSD  
FOR THE CLIMATE INFORMATION, PREDICTIONS AND SERVICES/  
SIXTH SPREP MEETING OF REGIONAL  
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TAHITI, FRENCH POLYNESIA, 28-30 JULY 1999

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