PACIFIC METEOROLOGICAL COUNCIL

FIRST PACIFIC MINISTERIAL MEETING ON METEOROLOGY AND THIRD MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL

"Sustainable Weather and Climate Services for a Resilient Pacific"

REPORT OF PROCEEDINGS AND OUTCOMES

20 - 24 July 2015

Fa'onelua Convention Centre, Nuku'alofa, Kingdom of Tonga

World Meteorological Organization · Weather · Climate · Water

MINISTRY FOR FOREIGN AFFAIRS OF FINLAND

SPREP Secretariat of the Pacific Regional Environment Programme

Australian Government Bureau of Meteorology

FINNISH METEOROLOGICAL INSTITUTE

NOAA

APCC APEC CLIMATE CENTER

ACKNOWLEDGEMENT

The Secretariat of the Pacific Regional Environment Programmme (SPREP) wishes to acknowledge the kind support of the Government of the Kingdom of Tonga for hosting the Third Meeting of the Pacific Meteorological Council (PMC-3) and the first ever Pacific Ministers Meeting on Meteorology (PMMM-1).

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Special acknowledgement is extended to the staff of Tonga's Meteorology and Coast Radio Services and the rest of staff of MMEIDEC, SPREP and WMO for providing logistical and organizational support throughout the meetings.

ACRONYMS

AeM	Aeronautical Meteorology
AF	Adaptation Fund
AMDAR	Aircraft Meteorological Data Relay
AMSPs	Aeronautical Meteorological Services Providers
APCC	Asia-Pacific Economic Cooperation Climate Center
ARM	Atmospheric Radiation Measurement
ASBU	Aviation System Block Upgrade
ATM	Air Traffic Management
IPCC AR6	Intergovernmental Panel on Climate Change Sixth Assessment Report
AWSs	Automatic Weather Stations
BoM	Australian Bureau of Meteorology
CAeM ET-GOV	Commission for Aeronautical Meteorology Expert Team on Governance
CAeM	Commission for Aeronautical Meteorology
CBOs	Community Based Organizations
CBS	Commission for Basic System
CIFDP	Coastal Inundation Forecast Demonstration Project
CIFDP-F	Coastal Inundation Forecast Demonstration Project for Fiji
Cg-17	17th World Meteorological Congress
Chy	Commission for Hydrology
CLEWS	Climate Early Warning System
CLiDE	Climate Data for the Environment
CLIK	Climate Information ToolKit
CliPS	Climate Prediction Services
COP21	21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC)
COSPPac	Climate and Oceans Support Program in the Pacific
CPDB	Country Profile Database
CROP	Council of Regional Organisation in the Pacific
DBCP	Data Buoy Cooperation Panel
DoE	Department of Energy
EPS	Ensemble Prediction System
ENSO	El Nino Southern Oscillation
EWS	Early Warning System
FMI	Finnish Meteorological Institute
FMS	Fiji Meteorological Service
GANP	Global Air Navigation Plan
GCOS	Global Climate Observing System
GCF	Green Climate Fund
GDPFS	Global Data Processing and Forecasting System
GISC	Global Information System Center
GIS	Geographic Information System
GOS	Global Observing System
GOOS	Global Oceans Observing System

GFCS	Global Framework for Climate Services
ICAO	International Civil Aviation Organisation
GTS	Global Telecommunication System
HYCOS	Hydrological Cycle Observing System
IFRC	International Federation of Red Cross
ICG	Intergovernmental Coordination Group
ICSU	International Council of Science Union
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPTD	International Pacific Training Desk
ISO	International Organisation for Standardisation
IT	Information Technology
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JCOMM	Joint Commission for Oceanography and Marine Meteorology
JICA	Japan International Cooperation Agency
KMA	Korea Meteorological Agency
MHEWS	Multi Hazard Early Warning System
MHIS	Multi-hazards Information System
MNRE	Ministry of Natural Resources and Environment
MoU	Memorandum of Understanding
NCs	National Climate Centers
NCOFs	National Climate Outlook Forums
NDMO	National Disaster Management Office
NDMS	National Disaster Management System
NDP	National Development Plan
NES	National Emergency Service
NFEWS	National Flood Early Warning System
NIWA	National Institute of Water and Atmospheric Research
NMHSs	National Meteorological and Hydrological Services
NMSs	National Meteorological Services
NHSs	National Hydrological Services
NIE	National Implementing Entity
NOAA	National Oceanic and Atmospheric Administration
NTWCs	National Tsunami Warning Centres
NWS	National Weather Service
NWP	Numerical Weather Prediction
OSCAR	Observing System Capability Analysis and Review Tool
PacIOOS	Pacific Islands Oceans Observing System
PaCIS	Pacific Islands Climate Information System
PACCSAP	Pacific-Australia Climate Change Science and Adaptation
PACMAS	Pacific Media Assistance Scheme
PEAC	Pacific El Nino/Southern Oscillation (ENSO) Application Center
PFA	Pacific islands Framework for Action on Disaster Risk Mangement
PIAWS	Pacific Islands Aviation Weather Services
PICOF	Pacific Islands Climate Outlook Forum
PICs	Pacific Island Countries

PICTs	Pacific Island Countries and Territories
PIETR	Pacific Islands Education, Training and Research
PIFACC	Pacific Islands Framework on Climate Change
PIFS	Pacific Islands Forum Secretariat
PI-GOOS	Pacific Islands Global Oceans Observing System
PIMOS	Pacific Islands Marine and Ocean Services
PIMS	Pacific Islands Meteorological Strategy
PITD	Pacific International Training Desk
PIURN	Pacific Island University Research Network
PKOs	Pacific Key Outcomes
PMC	Pacific Meteorological Council
PMC-2	Second Meeting of the Pacific Meteorological Council
PMC-3	Third Meeting of the Pacific Meteorological Council
PMC-4	Fourth Meeting of the Pacific Meteorological Council
PMDP	Pacific Meteorological Desk Partnership
PMMM-1	First Pacific Ministerial Meeting on Meteorology
PMMM	Pacific Ministerial Meeting on Meteorology
PTWC	Pacific Tsunami Warning Center
PTWS	Pacific Tsunami Warning and Mitigation System
PWS	Public Weather Services
QMS	Quality Management System
RANET	Radio Internet
RCC	Regional Climate Centre
RCOF	Regional Climate Outlook Forum
RIE	Regional Implementation Entity
RMFS	
ROK-PI CliPS	Republic of Korea-Pacific Islands Climate Prediction and Services
RRF	Rapid Response Fund
RTC	Regional Training Center
RTSM	Regional Technical Support Mechanism
RSMC	Regional Specialized Meteorological Centre
S.A.M.O.A	SIDS Accelerated Modality of Actions
SDGs	Sustainable Development Goals
SDP	Strategic Development Plan
SIDS	Small Islands Development States
SIGMET	Significant Meteorological phenomenon
SMS	Short Message Sesrvices
SOLAS	Safety of Life at Seas
SOPs	Standard Operating Procedures
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SREX	Special Report on Weather Extremes and Disasters
SRDP	Strategy for Climate and Disaster Resilience Development in the Pacific
SSWS	Storm Surge Warning System
SWFDP	Severe Weather Forecast Demonstration Project

SWFDDP	Severe Weather Forecast and Disaster Risk Reduction Demonstration Project
TCAC	Tropical Cyclone Advisory Center
TAF	Terminal Aerodrome Forecast
TAO	Tropical Atmosphere Ocean project
TCP	Tropical Cyclone Program
TEWS	Tsunami Early Warning System
TNCs	Tsunami National Contacts
TOR	Terms of Reference
TPOS	Tropical Pacific Observing System
TRITON	Triangular Trans-Oceans Buoy Network
TWFPs	Tsunami Warning Focal Points
UH	University of Hawaii
UKMO	United Kingdom Meteorological Office
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNESCO-IOC	United Nations Educational, Scientific and Cultural Organisation – Intergovernmental Oceanographic Commission
UNFCCC	United National Framework Convention on Climate Change
UNGA	United Nations General Assembly
USAID	United States Agency for International Development
USP	University of the South Pacific
UV	Ultra Violet
VCP	Voluntary Cooperation Program
VMGD	Vanuatu Meteorology and Geo-Hazard Department
WAF	Water Authority of Fiji
WFO	Weather Forecasting Office
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization
WMO RA V	World Meteorological Organization Regional Association V (South-West Pacific)
WRNGI	Weather Ready Nations Global Initiative
WSO	Weather Service Office

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EXECUTIVE SUMMARY

The First Pacific Ministerial Meeting on Meteorology (PMMM-1) and the Third Pacific Meteorological Council Meeting (PMC-3) convened at the Fa'onelua Convention Centre in Nuku'alofa, Tonga on the 20 to 24 July, 2015. A total of a hundred and sixty eight (168) participants including ministers, associated ministers, directors from National Meteorological and Hydrological Services (NMHSs) and government officials from the following countries and territories: American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, United States of America and Vanuatu plus development partners, media, regional institutions, regional and international organisations and donors.

The meeting adopted the theme: "*Sustainable Weather and Climate Services for a Resilient Pacific*"; underpinning the important role of NMHSs in the sustainable development context of Pacific Island Countries and Territories (PICTs).

The main objectives of PMMM-1 are (i) to engage ministers in the development of meteorological (weather and climate) and hydrological services in the Pacific; (ii) to discuss gaps and opportunities for strengthening the operations and provision of services by NMHSs and their role in contributing to resilient development; and (iii) to provide political support and direction for the development of NMHSs. The meeting concluded with the endorsement of the Nuku'alofa Declaration by Ministers which promulgated that NMHSs must be given equal priority to build the necessary capacity to support national efforts towards sustainable development. It also reaffirms the call to countries and territories to maintain and comply with the International Civil Aviation Organization (ICAO), and WMO requirements for Quality Management Systems (QMS) in-line with the International Organisation for Standardisation (ISO) 9000 series of quality standards. Finally, the Pacific Ministers of Meteorological Services called for support from governments, development partners and donors to ensure NMHSs have the necessary capacity to support sustainable development.

Similarly, PMC-3 meeting objectives are (i) to prompt discussions on issues related to the advancement of meteorological and hydrological services in the Pacific; (ii) to review the progress of the Pacific Islands Meteorological Strategy (PIMS) 2012-2021 and PMC-2 report; and (iii) finally to expand the networks of PMC members to include value-added experiences of development partners, Council of Regional Organizations in the Pacific (CROP) agencies, collaborating organization and institutions. The meeting also offers as a market place for sharing experiences (best practices/lessons learned) and parallel initiatives that strengthens meteorological and hydrological services of PICTs.

Overall, the meetings are successful. Consensuses were forged around multiple key discussion points. The first agreement is to acknowledge the need to integrate national and regional meteorological developments of Pacific Island Governments with the outcomes of the 17th World Meteorological Congress (Cg-17). It was noted that WMO programmatic strategies consisted of a specialized support package tailored for Small Island Developing States (SIDS) and Pacific Territories *inter alia*. Secondly, realignment is needed for PICTs' NMHSs strategies and development activities with key forums that relate to the work on meteorological services. This is needed for three reasons (i) policy compliance: vertical integration between national, regional and international policies on meteorological services particularly in aviation and marine services; (ii) capacity development in meteorological services; and (iii) coordination of development results for meteorological services in-order to make some meaningful contribution towards the SIDS Accelerated Modality of Actions (S.A.M.O.A) Pathway and the Sendai Framework to Disaster Risk Reduction (DRR) 2015-2030, Post-2015 Sustainable Development Goals (SDGs) and the United Nations Framework Convention on Climate Change (UNFCCC). Finally, participants re-emphasized on the inter-related linkages between meteorological services, climate change and disaster risk reduction. Acknowledging the need to

nurture investment in early warning and prediction systems for severe weather is paramount to upfront planning and preparation to respond effectively to disasters and adapt appropriately to climate change and climate variability.

The discussions and outcomes of the five day meeting is divided into two parts of the report 1) PMMM-1 and 2) PMC-3 respectively. Both meeting agendas can be found in the annexes for reference with key recommendation and summary of sessions presented under each sub-heading. All meeting papers and presentation can be obtained from SPREP website and via clicking on this PMC and PMMM Documents and Presentation LINK.

Part 1: PACIFIC MINISTERIAL MEETING ON METEROLOGY

FIRST PACIFIC MINISTERIAL MEETING ON METEROLOGY

The First Pacific Ministerial Meeting on Meteorology (PMMM-1) convened on the 24 July, 2015 at the Fa'onelua Convention Centre, Nuku'alofa in the Kingdom of Tonga. The meeting was attended by Ministers and Associate Ministers from the following countries: Cook Islands, Fiji, Marshall Islands, Nauru, Niue, Samoa, Tonga, Tuvalu, and Vanuatu. Australia, Federated States of Micronesia, French Polynesia, Kiribati, New Caledonia, New Zealand, United States of America, Palau, Marshall Islands, Kiribati, and Solomon Islands were represented by Government Officials.

All meeting papers and presentations can be obtained from SPREP website and via clicking on this PMC and PMMM Documents and Presentation LINK.

i.Key Outcomes and Recommendations

The key outcome of the meeting is the adoption of the Nuku'alofa Declaration by the Ministers on the 24 July, 2015. The Nuku'alofa Declaration is provided below:

a. Nuku'alofa Declaration

NUKU'ALOFA MINISTERIAL DECLARATION

For

SUSTAINABLE WEATHER AND CLIMATE SERVICES FOR A RESILIENT PACIFIC

24th July 2015, Nuku'alofa, Tonga

The First Pacific Ministerial Meeting on Meteorology was held on 24th July 2015 in Nuku'alofa, Kingdom of Tonga with representation from American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States of America and Vanuatu.

WE, the attending Secretariat of the Pacific Regional Environment Programme (SPREP) Member Countries' Cabinet Ministers responsible for Meteorology, and their representatives, are calling for support from our governments, development partners and donors to ensure that National Meteorological and Hydrological Services (NMHSs) have the necessary capacity to support sustainable development;

1. **PRESENT** this Declaration as a statement of our political will to support the development of weather, climate, water, and related environmental services in the Pacific Island Countries and Territories (PICTs) fully taking into account national development priorities, regional and global meteorological strategies and other relevant frameworks;

2. **RECOGNISE** the vital importance of the mission of NMHSs, as stated in the Convention of the World Meteorological Organization (WMO), in providing meteorological, hydrological and related services in support of relevant national needs, including protection of life and property, sustainable development and safeguarding the environment. **NOTE** that weather and climate services are not an option but are a responsibility and a basic human right;

3. **RECOGNISE** the importance of timely and accurate weather and climate information to aviation to ensure the highest standards for flight safety, reduction of the environmental impacts of aviation and increasing efficiency of air traffic operations;

4. **COMMIT** to maintain the PICTs' NMHSs role in the development of effective methods for the provision of services to aviation to meet International Civil Aviation Organization (ICAO) and WMO requirements including Quality Management System (QMS) implementation in line with the International Organization for Standardization (ISO) 9000 series of quality assurance

standards, and competency standards. **WE URGE** PICTs' NMHSs that are not yet compliant to take necessary steps to achieve and sustain compliance with QMS and staff competency requirements;

5. **RECOGNISE** the need to improve the capacities and services of PICTs' NMHSs to address weather, climate, water, drought and related environmental impacts and hazards and to improve the safety and security of our region;

6. **ENCOURAGE** our governments, regional organizations and development partners to establish and support the implementation of impact-based multi-hazard early warning systems (MHEWS) and Multi-Hazard Information Systems (MHIS);

7. **RECOGNISE** that this region is also highly prone to tsunami with several countries having recently experienced locally generated tsunamis, requiring rapid detection and prompt dissemination of tsunami warnings to coastal communities and therefore the need to strengthen Early Warning Systems for this hazard;

8. **ACKNOWLEDGE** the vital contributions of environmental satellites from United States of America, Japan, China, Korea and Europe necessary for the provision of remotely sensed data and derived products to the PICTs' NMHSs to improve weather, climate, water and related environmental services;

9. **EXPRESS CONCERN** about inadequate infrastructure and limited human resources of PICTs' NMHSs as factors that limit the effective uptake of scientific and technological advances to improve services of NMHSs;

10. **AGREE** that telecommunication networks and Information Technology (IT) infrastructure used by NMHSs are critical for exchange and delivery of weather, climate, water and related environmental observations and data, and products vital for the timely delivery of alerts, impact-based forecasting, and successful operation of the Multi-Hazard Early Warning System and the Multi-Hazard Information System. **WE FURTHER AGREE** to prioritize

improvements in the capabilities of PICTs' NMHSs with our national telecommunication authorities and mobile phone carriers to provide greater reach for warning services to remote areas;

11. **CALL ON** our governments, regional organizations, development partners, PMC and its Panels on Education, Training and Research; Marine and Ocean Services, Climate Services and Aviation Services, and donors to support the implementation of the Pacific Islands Meteorological Strategy (PIMS) 2012-2021 and other related regional frameworks, and PMC outcomes;

12. **REQUEST** SPREP, University of the South Pacific (USP), Secretariat of the Pacific Community (SPC) and other regional organizations, WMO and development partners to expedite the implementation of the Pacific Roadmap on Strengthening Climate Services in the Pacific region, and to explore possibilities for the establishment and operation of a Regional Climate Centre (RCC), and future annual Pacific Island Climate Outlook Forum (PICOF);

13. **REQUEST** the Education, Training and Research Panel of the PMC to work with PICTs' NMHSs, USP, SPREP, SPC and other regional organizations, and WMO to address the education and training needs of NMHSs in PICTs with a possibility to establish a WMO Regional Training Center (RTC) and the development of regional research capacity;

14. **REQUEST** support from SPREP, SPC, USP and other regional organisations and WMO to improve the capacity of National Hydrological Services in the region to ensure adequate level of service delivery in PICTs for flood and flash flood forecasting and early warnings; and **CALL** for further collaboration between WMO, SPREP and SPC to increase operational hydrology as part of the Pacific Meteorological Desk Partnership;

15. **ENCOURAGE** PICTs NMHSs to participate in climate change forums at national, regional and international levels including the United Nations Framework

Convention on Climate Change (UNFCCC) and Intergovernmental Panel on Climate Change (IPCC);

16. **COMMEND** the establishment and support from development partners to the PMC as a subsidiary body of the SPREP Meeting and the Pacific Meteorological Desk Partnership hosted and managed by SPREP. **WE URGE** development partners and SPREP member countries and territories to continue their support to PMC and PMDP;

17. **COMMEND** the continuous support from WMO to PICTs' NMHSs through initiatives such as the Voluntary Cooperation Programme (VCP), Canada/WMO Programme for Implementing Global Framework for Climate Services (GFCS) at Regional and National Levels, training fellowships, the Severe Weather Forecast and Disaster Risk Reduction Demonstration Project (SWFDDP), the Coastal Inundation Forecast Demonstration Project (CIFDP) and other initiatives;

18. **COMMEND** the establishment by the 17th World Meteorological Congress of the Programme for WMO Small Island Developing States (SIDS) and Member Island Territories, and request strong support and partnerships of the international community for implementing concrete, focused, forward looking initiatives that contribute to the SIDS Accelerated Modality of Activities (S.A.M.O.A.) Pathway priority areas, the Post-2015 Sustainable Development Goals, Sendai Framework on Disaster Risk Reduction 2015-2030, and the outcomes of the 21st Conference of the Parties of UNFCCC and sustainable development;

19. **COMMEND** the draft Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP) to guide resilient development through the mainstreaming of integrated climate change and disaster risks into political, social, ecological and economic development of PICTs. Further, **WE WELCOME** the intended support from the European Union (EU), World Bank, Australia

and other donors for the implementation of the SRDP and the proposed Pacific Resilience Partnership and encourage all efforts to ensure the early adoption and implementation of the SRDP in the Pacific;

20. **ACKNOWLEDGE** the support of the Government of Fiji to its Meteorological Service to perform its functions as the WMO designated Regional Specialized Meteorological Centre for Tropical Cyclones (RSMC Nadi-TCC); as the ICAO designated Tropical Cyclone Advisory Center (TCAC) for aviation, and Meteorological Watch Office (MWO) for Nadi Flight Information Region (FIR). **NOTED** that the aviation and other weather services provided by Fiji Meteorological Services to Cook Islands, Kiribati, Nauru, Niue, Tokelau, Tonga and Tuvalu with no formal arrangements with these countries;

21. **ACKNOWLEDGE** the continuous support from development partners and donors for critical programmes, projects and other initiatives which have supported WMO, SPREP, SPC and other regional organisations, PMC, PMDP, the Pacific Island Climate Services (PICS) Panel and RSMC Nadi/ICAO TCAC/MWO for Fiji FIR in the various roles they play in the PICTs' region;

22. **ACKNOWLEDGE** the Statement of the WMO and Partner's Conference on the Gender Dimensions of Weather and Climate Services, calling upon all partners at all levels to take the necessary steps to improve the understanding of gender-specific impacts of weather and climate through the systematic collection and use of gender-disaggregated data and to pursue strategies and structures to increase the involvement of women in the development and communication of gender-sensitive weather, hydrological and climate services, among others. **WE ARE COMMITTED** to promote gender in developing and implementing weather and climate programmes, projects and activities;

23. **EXPRESS APPRECIATION** to the Government and the people of the Kingdom of Tonga for the excellent facilities and hosting of the First Pacific Ministerial Meeting on Meteorology;

24. **EXPRESS APPRECIATION** to the Government of Finland through its Ministry of Foreign Affairs and WMO for co-sponsoring the First Pacific Ministerial Meeting on Meteorology, and **WE ENCOURAGE** them and other development partners to continue providing financial support for future Meetings;

25. **DECIDE** to establish the Pacific Ministerial Meeting on Meteorology and to hold its sessions at least once every two years and **REQUEST** SPREP, with the support of WMO and development partners to convene the Meetings;

26. **COMMIT** to implementing this Declaration and **INVITE** SPREP Director-General and WMO Secretary-General to bring this Declaration to the attention of the 2015 Pacific Leaders Meeting, the SPREP Meeting and the Council of Regional Organization in the Pacific (CROP) agencies and to the WMO Executive Council, respectively;

Adopted in Nuku'alofa, Kingdom of Tonga, on 24th July 2015

ii. Summary of the Proceedings

The agenda of PMMM-1 is 0rganised in five sessions (i) Meteorology supporting sustainable development in the Pacific; (ii) Multi-Hazard Early Warning System; (iii) Climate services; (iv) Outcomes of PMC-3 and; (v) Discussion and consideration of the draft Nuku'alofa Declaration. For each of the sessions, presentations or statements from ministers were delivered, and followed by comments and discussions .

The main objectives of PMMM are (i) to engage ministers in the development of meteorological (weather and climate) and hydrological services in the Pacific; (ii) to discuss gaps and opportunities for strengthening the operations and provision of services by NMHS and their role in contributing to resilient development; and (iii) to provide political support and direction for the development of NMHSs.

a. Opening

The opening devotion and prayer for PMMM-1 was conducted by the President of the Free Wesleyan Church of Tonga, Reverend Dr.'Ahio.

His Royal Highness Crown Prince, Tupouto'a 'Ulukala, Pacific Island Government Ministers, the Australian High Commissioner to the Kingdom of Tonga, His Excellency Brent Aldam, dignitaries and participants were formally welcomed by the Honorable Acting Prime Minister and Minister MMEIDEC, Mr. Siaosi 'Ofakivahafolau Sovaleni on behalf of the Government of the Kingdom of Tonga. The Acting Prime Minister encouraged ministers to invest in weather and climate services as an area of contribution to building the overall resilience of Pacific communities. Finally, he acknowledged senior Officials from respective Government Departments and Ministries across the Pacific and development partners who have collaborated intensively to develop a proposed pathway for ministers to consider and agree upon.

Subsequently, the statement by the Assistant Secretary-General of WMO, Dr. Elena Manaenkova outlined specific WMO initiatives to support SIDS NMHSs. Moreover, Dr. Manaenkova reiterated the challenges faced by Pacific NMHSs and re-emphasized their importance as critical players in supporting sustainable development and resilience development of PICTs.

The official statement for the Government of Finland was delivered its representative from its Ministry of Foreign Affairs, Mr. Matti Nummelin. He shared the sentiments echoed by previous speakers to underpin the critical role of weather and climate services in both national and regional sustainable development, particularly in poverty reduction efforts as well as combating the adverse impacts of climate change. He reaffirmed the Finnish Government's commitment through the Finland-Pacific (FINPAC) project that aims to strengthen the overall capacities of NMHSs in the Pacific. Finally, Mr. Nummelin referenced key international frameworks that require the Pacific region's valuable input to ensure that meteorological issues are well addressed. Some of these include the Sendai Framework for DRR 2015-2030, Post-2015 Development Agenda and Sustainable Development Goals (SDGs) and a possible new global climate agreement at the 21st Conference of the Partities to the United Nations Framework Convention on Climate Change (COP21/UNFCCC) in Paris.

The final opening statement was delivered by the Director General of SPREP, Mr. David Sheppard. Mr. Sheppard expressed his gratitude to the Government of the Kingdom of Tonga for hosting PMMM-1 and PMC-3. He elaborated on the role of SPREP over the years in supporting PICTs national efforts to strengthen their meteorological and climate change services in the region. He emphasized the importance of working with strategic partners in the Pacific region to achieve shared goals of helping PICTs meet their own national priority to deliver good quality meteorological and climate change services.

The official opening address was delivered by His Royal Highness Crown Prince Tupouto'a 'Ulukalala. In his opening address he challenged the Ministers with the following quote "having a robust weather service is no longer a luxury for us but an obligation and a human right. Quality weather and climate information is now a requirement to help us adapt, reduce risk and build resilience against climate and weather related hazards. This is of fundamental importance to all our Governments". Additionally, he noted the cost of operating weather stations but is necessary for our communities to be informed. He concluded by thanking Ministers of Meteorology, WMO, SPREP and partners for hosting the meeting in Tonga.

Statements and opening address can be found in *Annex 2: Statements and Opening Address.*

b. Election of the Chair

The Honorable Acting Prime Minister and Minister for MMEIDEC of the Kingdom of Tonga, Mr. Siaosi 'Ofakivahafolau Sovaleni was designated as Chair of PMMM-1.

c. Adoption of Agenda and Program of Work

The meeting adopted by consensus the agenda and program of work, attached in *Annex 4: PMMM Agenda.*

d. Meteorology Supporting Sustainable Development in the Pacific

The Honorable Minister of Natural Resources and Environment from **Samoa**, Faamoetauloa Lealaiauloto Taito Dr.Faale Tumaalii delivered his statement on NMHSs contribution to sustainable development in the Pacific. He reiterated the commitment of Heads of State and Governments on sustainable development at the United Nations Conference on Sustainable Development in Rio de Janeiro. He added the needed concrete actions for the region as stipulated in the S.A.M.O.A Pathway outcomes. He also congratulated the Pacific NMHS's Directors who attended Cg-17 for their success to include the SIDS in WMO Program. He concluded calling for support on sustainable observation and monitoring equipment; recognizing the importance of hydrological observations for data collection as the basis for Early Warning Systems (EWS); urged for partnerships in advancing developments in aviation services and QMS; calling for more capacity building on marine weather, climate and hydrological services; and aligning these to the Pacific Islands Meteorological Strategy (PIMS) 2012-2021. He also appealed for a WMO and SPREP partnership to establish an Operational Hydrological Unit at the WMO Office for the South-West Pacific as an integral part of the Pacific Meteorological Desk Partnership (PMDP) of PMC at SPREP. Lastly, for high level sustainability and visibility, he called on WMO and SPREP to ensure that PMMM would be an annual event and to secure funds to host these meeting leading up to SPREP council and Forum Leaders meetings.

The Chief of Division of Marine Transportation, Mr. Levan Akitaya presented the statement from the Republic of **Palau** on behalf of the President His Excellency Tommy E Remengesau Jr and Minister of Public Infrastructure, Industries and Commerce, Mr. Charles Obichang. Mr. Akitaya mentioned that funding provided by the Climate and Oceans Support Program in the Pacific (COSPPac) , Palau National Weather Service (NWS) in collaboration with Division of Marine Transportation has provided extension to pre-recorded forecasts to mariners due to the minimum number of cellphone towers resulting in multiple blind spots for cellphone reception. This initiative has enabled sea mariners to access pre-forecasts via Very High Frequecy (VHF) Channel 16 which is also available to ships transiting through Palau's territorial waters. Secondly, he discussed Palau's Marine Sanctuary which was announced last year turning its territorial waters to a 'no take' marine protected area.

Palau envisaged the Marine Sanctuary will provide a model to other nations and opportunity for international partners to enforce their initiative or support other countries who wish to follow suit. He concluded by thanking all the ministers and the government of the Kingdom of Tonga for hosting PMMM-1.

The Honorable Minister of Natural Resources, Agriculture, Forestry and Fishery of **Niue**, Mr. Billy Graham Talagi delivered the statement on behalf of the Government of Niue, supporting NMHSs in sustainable development. He outlined the provision of reliable weather, climate and climate change information and services to protect lives and properties, and is the mission of Niue Meteorological Service. This also underpins the overall goal of the Government for a prosperous Niue. The role and function of Niue Meteorological Service falls under two categories of the Niue Integrated Strategic Plan, pillar (3) on Economic Development and Maintaining Critical Infrastructures and pillar (5) on Environment. He requested all ministers to have the political will to act and support ongoing and developing programs of NMHSs in the region.

This followed by the statement by **Nauru** delivered by the Honorable Minister of Commerce, Industry and Environment, Mr. Aaron Cook. He highlighted the experiences of Nauru with droughts notably in 1998 and 2001 consequently forcing the government to request to neighboring countries Marshall Islands, Federated States of Micronesia and others for water. He also made reference to the devastations caused by Cyclone "Pam" and Typhoon "Maysak" on the low-lying areas of Nauru. Furthermore, the impacts of climate change and extreme events pose serious threat to livelihoods of communities and further undermining their efforts to achieving sustainable development. He concluded expressing the government's commitment to advancing NMHSs and also invited partners, SPREP and WMO to support the effective implementation of the newly established Nauru Meteorological Service to assist the government and people of Nauru on weather and climate forecasts, early warning and others.

Federated States of Micronesia expressed with appreciation the Honorable Acting Prime Minister of the Kingdom of Tonga for hosting PMMM-1 and acknowledged the Secretariat and funding support provided by SPREP, WMO and Government of Finland. Apologies were also conveyed on behalf of the Minister due to other competing commitments would not be able to attend the meeting but he would be informed of the outcomes of PMMM-1.

The Secretary of the Ministry of Transport and Infrastructure of **Papua New Guinea**, Mr. Roy Mumu conveyed the apologies of the Honorable Minister for Transport and Infrastructure, Mr. William Duma for not attending the meeting due to national Parliament session. In his statement Mr. Mumu made mentioned of the contribution of the Papua New Guinea NWS in the areas of aviation and maritime in the Pacific and abroad. He emphasized the importance of access and distribution of reliable weather and climate information to users of these information and services. He also referred to experiences with the recent Pacific Games hosted in Port Moresby whereby Papua New Guinea NWS were requested to provide two (2) weeks advance weather information to the Pacific Games Organizing Committee. He concluded by thanking the Government of the Kingdom of Tonga and noted the request from Samoa for PMMM to meet every year.

The Honorable Acting Prime Minister of the Kingdom of Tonga congratulated Papua New Guinea for hosting a successful Pacific Games and looked forward to collaborate in the future as Tonga has been selected to host the next Pacific Games.

e. Opportunities and Challenges in the National Meteorological and Hydrological Services and Importance of Investing in Meteorology

The Director of WMO Resource Mobilisation, Development and Partnership, Ms. Mary Power delivered the combined presentation on behalf of SPREP and WMO on opportunities and challenges faced by NMHSs and the importance to invest in meteorology. Full presentation can be downloaded by clicking HERE.

NMHSs are invaluable and indispensable when dealing with improving resilience of communities to impacts of natural hazards and disasters such as those related weather, climate variability and change. The provision of reliable weather and climate information and extreme event are essential services provided by NMHSs. In this regard, investment is needed for NMHSs "value chain" including observation, infrastructure, telecommunication and others. It was emphasized that telecommunication system is an important service in the collection and transmitting of data and translating these data into information for users. For example, maritime and aviation are vital for the region thus adequate information on weather and climate is essential.

Ms. Power emphasized that 90% of natural disasters are related to weather and climate globally. She explained that with increased in frequency and severity of disasters the loss of life can be reduced with the introduction of early warning systems.

World Bank report (2013) estimated that better observation and forecasts will lead to US$30 billion/year increase in global productivity.

In conclusion, she highlighted the benefits of hydro-meteorological information and services are not just financial but also social. Every dollar invested in hydro-meteorological services delivers socio-economic benefits of at least 3 dollars or more and; hydro-met generate more value with increased use of services and products and investments in user capacity and engagement between providers and users greatly enhances the value of services.

f. Importance of Multi-Hazard Early Warning Systems

The Honorable Assistant Minister of Infrastructure and Transport from **Fiji**, Mr. Vijay Nath delivered the statement on behalf of the Government of Fiji. He re-emphasized the commitment of the Government of Fiji in securing long-term solution to weather, water and climate related issues that are impacting communities, livelihoods of our region. He noted that meteorological and hydrological extremes are becoming more frequent and intense due to global warming as described in the Intergovernmental Panel on Climate Change (IPCC) Special Report on Weather Extremes and Disasters (SREX) and the Pacific is no exempt from its impacts.

The Government of Fiji has been and still strongly committed working with partners, NMHSs, academia and scientific communities to ensure decision makers benefit from science-based weather, water and climate advice.

Since its establishment, Fiji Meteorological Service (FMS) has continued to engage with other PICTs in the region in providing early warning services on an ad hoc basis. As the designated Regional Specialized Meteorological Centre (RSMC) for tropical cyclones in the South-West Pacific, Fiji is committed to sustaining and enhance its services in years to come. He also elaborated on the successful completion of the first phase of the Coastal Inundation Forecasting Demonstration Project for Fiji (CIFDP-F) in collaboration with WMO, the Intergovernmental Oceanography Commission (IOC), Joint Commission on Oceanography and Marine Meteorology (JCOMM) and the Commission on Hydrology (CHy). The project is aimed at strengthening technical capacity of FMS to issue timely

weather warnings and advisories to local communities and nearby islands on extreme and unexpected coastal hazards like storm surges, cyclones, swells and flooding.

Additionally, the Honorable Assistant Minister informed the meeting that in collaboration with Japan International Cooporation Agency (JICA) a grant aid of FJ$5.7 Million to improve FMS capacity for DRR has been implemented this year which also include installation of Automated Weather Stations (AWSs), wind profilers, Very Small Aperture Terminal for a 2-way satellite ground station (VSAT) systems, tide gauge and lightening detectors. Support is also provided to continue the training of NMHSs' staff around the region in basic weather and climate observations and to be expanded to include aeronautical meteorological observations competency certification.

In conclusion, the Mr. Nath highlighted that further improvement will be directed to DRR, the Global Framework on Climate Services (GFCS), WMO Integrated Global Observing System (WIGOS), aviation meteorological services and capacity development. He called on ministers to reignite their commitment in enhancing capacity and providing NMHSs necessary and needed resources to improve provision of weather and climate services so that communities are well informed and better prepared to minimize the effects of weather, climate and water related disasters.

The Honorable Associate Minister of Foreign Affairs and Immigration of **Cook Islands**, Mr. Tutai Tura presented the statement on behalf of the Government of Cook Islands on the importance of severe weather forecast. He relayed the importance of collaboration with partners, NMHSs and regional organizations to support the needs of NMHSs particularly in SIDS. He also acknowledged the work of the Directors of NMHSs in their respective roles as "eyes and ears" for the countries especially in anticipation for severe weather. Reference was also made to past cyclones which impacted the Pacific including the Cook Islands resulting in the loss of 19 lives. In his concluding remarks he expressed appreciation to the Government of the Kingdom of Tonga and members of PMMM, and looked forward to the deliberation and discussions presented at hand.

The Honorable Minister of Communication and Transport, Mr. Monise Laafai delivered the statement of behalf of the Government of Tuvalu. He expressed with appreciation the **opportunity** to be part of the meeting and to be involved in the deliberation on the very important issues pertaining to meteorological services. He also acknowledged that there is a need to be more recognition and support towards NMHSs to increase community resilience to changing climate and extreme events. Mr. Laafai further requested the need to promote climate proofing of infrastructures to ensure security of livelihoods and safety of lives and properties. The Honorable Minister also shared his experience on his island having limited access to information during a state of emergency.

The Honorable Minister for Climate Change Adaptation, Meteorology and Geo-Hazards, Environment, Energy and Disaster Management, Mr. Thomas Laken delivered the statement on behalf of the Government of **Vanuatu**. He provided a brief background on the establishment of the Vanuatu Meteorology and Geo-Hazard Department (VMGD), which significantly enabled the setup of the Multi Hazard Early Warning System (MHEWS) which is operational 24/7. He also outlined the important role of VMGD, in the significant reduction in the loss of lives during the category five Cyclone "Pam" which devastated Vanuatu earlier this year. He emphasized the need for good communication between NMHSs and users of weather, climate and water related information including warnings. He encouraged the region to look at the sustainability of MHEWS and call on partners and NMHS to work together.

New Zealand was also provided with an opportunity to share their statement on MHEWS. There has been a long standing support provided by New Zealand to the region on meteorology through various institutes in particular NIWA and MetService New Zealand. MetService New Zealand also issues tropical cyclone warnings and pleased to note that there are number of partners and projects who are also providing these services for the region. Collaboration on the issue and dissemination of

warnings for the region and preventative measure as oppose to a reactive response to natural hazards, are very important.

Niue also provided inputs to the discussions on MHWES, emphasizing the importance of integrated approach and recognizing the importance of MHEWS to provide immediate response to communities and in rural areas. Investment on meteorology is a priority.

g. Flood Warning System

The Director of **Solomon Islands** Meteorological Service, Mr. David Hiba Hiriasia delivered the statement on behalf of the Government of Solomon Islands. He first conveyed the apologies of the Honorable Mr. Samuel Manetoali, Minister of Environment, Climate Change, Disaster Management and Meteorology, and the Permanent Secretary for the Ministry, Dr. Melchoior Mataki for not able to attend the meeting due to disaster relief efforts in response to the devastation of Cyclone "Raquel" in the Solomon Islands.

The Director highlighted five (5) key lessons learnt, experiences and issues related to flood early warning in the Solomon Islands. Firstly, the importance of strengthening institutional arrangements. Solomon Islands Hydrological and Seismic Unit hosted within the Ministry of Mines and Energy. The setup is posing many challenges in coordinating flood and tsunami warnings. Secondly, forecast and early warning for flood is not included in the Meteorology Act but the Meteorological Service has been providing information on heavy rain. It is important to review and amend the Act to cater for flood and tsunami warnings. Thirdly, to invest in proper equipment for meteorology and hydrology. The Hydrological Unit is currently oriented mostly towards renewable energy but not a lot on flood. Forthly, communication is vital for early warnings and Solomon Islands is expanding its services not only on national radio but Short Message Services (SMS) text. Mr. Hiriasia concluded with a final point on public awareness, and Solomon Islands is working with SPREP through FINPAC project to raise awareness of communities in early warnings.

h. Climate Services for Drought Management

The Director of **Tonga's** Meteorology and Coast Radio Services of MMEIDEC, Mr. 'Ofa Fa'anunu delivered a presentation on drought management. He discussed the impacts of 2014 severe drought affecting lives and livelihoods in Tonga. Drinking water was shipped from Nuku'alofa to the island groups of Ha'apai and Vava'u.

Mr. Fa'anunu also commended the efforts of FINPAC project in bringing the media and engaging with community mobilizers such as Red Cross to provide information to remote communities to be well prepared for such events.

He encouraged ministers to support the establishment and role of climate services to ensure they are able to provide information on drought as well as long term seasonal prediction. He also acknowledge the various partners who have supported and funded the development of drought tools such as drought forecasting and impact forecasting for drought. He also welcomed new partners and program in the hope to advance drought information and prediction in the region.

The President Aide from the Office of the President of **Marshall Islands,** Mr. Benjamin Kiluwe delivered the statement from their government with regards to drought management. He noted that whist there has been an increase in visibility and support from donors and partners on drought preparation, response and recovery from drought, Marshall Islands is faced with a number of challenges and gaps in drought monitoring and forecasting. He expressed with appreciation the support provided by the USA and the international community and regional organization in ensuring

the recovery from 2012 drought. However with 29 atolls and 5 islands remotely separated by vast oceans there are only 8 weather and climate observation stations on selected atolls. In order to deliver accurate and timely drought forecasts there is a need to increase in the number of observation stations. There also a need to improve dissemination of information to and from remote islands. For this reason Marshall Islands urge the support of partners, SPREP and WMO to assist in addressing these needs.

Australia also shared its experience with El Nino and impacts of droughts. Although there is not much upside of El Nino and drought, it however provides an opportunity to show value and importance of climate information.

i. Global Framework for Climate Services – the Pacific Roadmap

The Chair of the Pacific Island Climate Services (PICS) Panel, Dr Andrew Tait (NIWA) presented the Roadmap for Strengthened Climate Services in the Pacific Region. He provided background information in which the Roadmap was formulated through the Regional Consultation on GFCS in Pacific SIDS in Rarotonga, Cook Islands in April 2014.

He elaborated on the three overarching themes of the Roadmap (i) Improve coordination, continuity and integration of projects, programs and initiatives that support climate services at national, regional and global levels; (i) Strengthen the basic core functions and capabilities of NMHSs for robust and sustained data collection and management, analysis of data and quality assurance, production and dissemination of products, research and modelling; and (iii) Enhance avenues and modes of multi-way communication and feedback between climate services providers and users to enhance the uptake and use of relevant and tailored climate services down to the communities and individuals.

He concluded by introducing the PICS Panel's Action Plan for 2015-2017.

More information on presentation can be found HERE.

j. Asia-Pacific Economic Cooperation Climate Center Meteorological Support to the Pacific

The Director of the Asia-Pacific Economic Cooperation (APEC) Climate Center (APCC), Dr. Hyung-Jin Kim delivered a presentation on the Republic of Korea-Pacific Island Prediction Services Project (ROKPI-CLIPS). The APCC is a new partner to the Pacific assisting NMHSs on climate prediction services through ROKPI-CLIPS. ROKPI-CLIPS is implemented by SPREP in collaboration with APCC and Pacific Island Forum Secretariat (PIFS). The total budget for the project is 1.5M USD for a 3 year period (2014-2016). The overall project objective is 'strengthening the adaptive capacity building of vulnerable communities'.

In addition to ROKPI-CLIPS, the Republic of Korea is also providing support to Tonga's Meteorology and Coast Radio Services on Climate Services for Climate Sensitive Sectors. This initiative is implemented in partnership with various Government departments and ministries of the Kingdom of Tonga.

k. Third Pacific Meteorological Council Outcomes

The current Chair of PMC, Mr. 'Ofa Fa'anunu delivered a presentation on the outcomes of PMC-3.

Mr. Fa'anunu highlighted that PMC has increased in the number of attendance, partners and investments in the area of meteorology since 2011 PMC meeting in Majuro, Marshall Islands. The

implementation budget for 2015-2017 showed most of the funding is sourced from projects implemented by PMDP and other partners who are contributing immensely to the development of meteorological services programs.

Some of the gaps and challenges identified include limited focus and resources invested in research, communication, infrastructure and gender. The meeting also noted the mid-term review of PIMS 2012-2021 will be conducted no later than 1 July, 2017 to ensure that the strategy remains current and focused on the appropriate priority areas and needs of NMHSs.

Another key outcome of PMC-3 is the establishment of Pacific islands Aviation Weather Services (PIAWS) Panel, Pacific Islands Marine and Ocean Services (PIMOS) Panel; and formalizing the Pacific Islands Education, Training and Research (PIETR) Panel, and recognizing the progress made by PICS Panel.

And finally, Mr Fa'anunu commended the role of media and establishment of effective partnerships with community mobilizers such as Red Cross through FINPAC project.

Full presentation can be found by clicking HERE.

- END -

Part 2: THIRD MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL

i. KEY OUTCOMES and RECOMMENDATIONS

The key outcomes and recommendations below are arranged in order of PMC-3 agenda. The agenda is organized with an aim to provide PMC members, development partners, regional institutions, regional and international organisations and donors the opportunity to share information on current and future program and projects related to each of the fourteen (14) Pacific Key Outcomes (PKOs) of PIMS 2012-2021.

Opening Session

1. Ensure national and regional activities are aligned to WMO strategies and programs relevant to NMHSs such as the outcomes of Cg-17, including the Program for WMO SIDS and Member Island Territories, GFCS, WIGOS, WMO Information System (WIS), Aeronautical Meteorological Services (AeM) Progam, Public Weather Service (PWS) Program and its Strategy for Services Delivery, and WMO Capacity Development Strategy.
2. Encourage NMHSs to play an active role in the implementation of S.A.M.O.A Pathway, the Sendai Framework for DRR 2015-2030, the Post-2015 Development Agenda and SDGs and in the 21COP/UNFCCC in December 2015 where a new global climate agreement will be proposed; and
3. Recognise the need for ongoing investment in the area of early warning and prediction systems for severe weather, climate extremes and high impacts weather events to support disaster risk reduction and adaptation to climate change; thereby safeguarding important sectors at risk such as agriculture and fisheries, water, health, transport, and tourism, contributing to building resilience.

Session 4: Country Reports

4. Recognise the need, expressed by all PICTs, for increased observations in terms of spatial coverage and temporal frequency relating to marine weather, lightning detection, seismic activity, soil moisture and ultra violet (UV) radiation;

5. Encourage national governments to develop and implement strategies to retain professional and skilled staff at NMHSs;
6. Support specialised training in climatology, hydrology, oceanography and meteorology;
7. Adopt WMO competency standards for weather, climate and hydrology services at the national level;
8. Encourage national governments to invest in critical infrastructure for NMHSs to support and promote disaster risk reduction;
9. Encourage improvements to and long-term sustainability of the Climate Data for the Environment (CliDE) Data Management System which provides countries with a central database for climate records, with key entry forms, quality assurance tools, reports and data;
10. Support reliable telecommunication system, including the use of Radio internet (RANET) and Chatty Beetles, mobile phones and other innovative technologies necessary for exchanging and dissemination of hydro-meteorological data, products and information including warnings and alerts;
11. Support the development of end-to-end, people-centered preventive approach, multi-sectoral, inclusive and accessible MHEWS in order to be efficient and effective;
12. Encourage each country to develop National Meteorological Plan and Legislation as appropriate to formalize their national mandates, roles and responsibilities;
13. Encourage NMHSs to be proactive in establishing cross-sectoral and community partnerships in the areas of hydro-meteorology;
14. Support public and outreach education and awareness programs at community levels about risks associated with severe weather and climate hazards and tsunami and how to make life saving decisions in these events;
15. Encourage NMHSs to meet ISO 9000 series quality management standard and the International Standards and Recommended Practices (ISRP) of Annex to the Convention of International Civil Aviation - Meteorological Service for International Air Navigation, for the safety operation of aircrafts and passengers;
16. Encourage NMHSs to strengthen their compliance to ISO 9000 series quality management standards in the provision of weather information including warnings and alerts to mariners taking into full consideration the International Convention of Safety of Life at Seas (SOLAS), to improve transportation and safety of operation and passengers; and
17. Encourage PMC members and partners to support Nauru's request for assistance in setting up a NMHS under the National Emergency Service (NES).

Session 5: Outcomes of the Seventeenth World Meteorological Congress and WMO Regional Program

18. Note the outcomes of Cg-17; and
19. Request that WMO Members of PMC to nominate National Focal Points and provide update information for the WMO Country Profile Database (CPDB).

Session 6: Climate Services

6.1: Pacific Islands Climate Information System

20. Note that, through the Pacific Islands Climate Information System (PaCIS) and its partners, considerable progress has been made on implementation of climate services in Pacific Islands since the Second Meeting of the Pacific Meteorological Council (PMC-2) in July of 2013;

21. Request that the newly establish PMC's PICS Panel build on the progress made by PaCIS and use it as a model to support a robust and sustained forum to coordinate and collaborate with PMC members. This includes maintaining and enhancing the products and services offered by the Pacific El Nino/Southern Oscillation (ENSO) Application Center (PEAC), which plays a vital role in the region, and follow up on the on-going and proposed projects and programs that the USA Agency for international development (USAID)-funded to develop and deliver robust climate services to PICTs' region.

6.2: Climate and Information Prediction Services Project

22. Express appreciation to the Government of the Republic of Korea through APCC for providing support to the development of climate service and information in PICTs' region via ROK-PI CliPS project to compliment and support the implementation of GFCS and PIMS 2012-2021;

23. Note the progress made by ROK-PI CliPS project since its implementation in early 2015, which include installation of CLiPS Server hosted in SPREP and training of NMHSs' staff;

24. Request the Government of the Republic of Korea, APCC and other partners for additional resources needed for communication, capacity building and training of NMHSs' staff and in-country stakeholders consultations to facilitates the use of the Climate Information ToolKit (CLIK) tool and Climate Prediction Services (CliPS) products for decision making in sectors such as agriculture, health, water and disaster risk reduction; and

25. Request for collaboration and coordination among relevant partner agencies currently providing climate outlook services to PICTs.

6.3: Climate and Oceans Support Program in the Pacific

26. Note the changes in the Climate and Oceans Support Program in the Pacific (COSPPac) objectives and deliverables for the next two years. This included the shift of resources, build skills and transfer delivery responsibilities from Australia to Pacific Regional Organisations so activities can be sustained and further improved beyond the project lifetime;

27. Provide advice and collaborate in the transition of climate and ocean products and services from COSPPac into the regional and national operational programs with the ultimate aim to promote sustainability of these services; and

28. Provide input to COSPPac Transition Strategy and Work Plan for 2015 to 2016 by end of September 2015.

6.4: Climate Services in the Pacific Region

29. Note the progress of works carried out by PMC's PICS Panel and encourage the Panel to continue its work as an advisory body to PMC, for strengthening climate services in PICTs' region;

30. Express appreciation to SPREP, WMO, Environment Canada, BoM, FMS, and Ministry of Foreign Affairs of Finland, for the financial support provided to PMC's PICS Panel to carry out its works and welcome their future contributions and contributions from other development partners;

31. Agree that Vanuatu, Palau and Niue continue to represent PMC on PMC's PICS Panel for the next two years;

32. Endorse the establishment of an annual Pacific Regional Climate Outlook Forum (RCOF), to be referred to as the Pacific Islands Climate Outlook Forum (PICOF);

33. Encourage NMHSs to undertake National Climate Outlook Forums (NCOFs) and National Climate Forums (NCFs), based on best practices and in full partnership with user of climate services and information;

34. Encourage NMHSs to seek assistance from expertise of other countries and seek national and international support to ensure sustainability of results achieved from NCOFs and NCFs;

35. Request that PMC's PICS Panel explore potential mechanisms for establishing a Regional Climate Centre (RCC) Network for PICTs region, and report to PMC before the end 2015;

36. Monitor the ongoing efforts to establish partnerships and coordination mechanisms to enhance the production, delivery and use of climate information and services at global, regional and national levels to support the implementation of GFCS in PICTs' region;

37. Express appreciation to WMO, Environment Canada and other development partners for the support, which has resulted in substantial progress towards: the process of establishing a RCC Network for PICTs region; holding the first physical RCOF in the Pacific region with a special focus on the water sector; initiating and guiding the process on NCOFs and other User Interface Platforms such as NCFs; and ongoing capacity development and training efforts provided to the NMHSs staff in the areas of climate services; and

38. Urge PMC, SPREP, development partners and donors to support and guide GFCS implementation, the PMC's PICS Panel and other related climate services activities initiated in PICTs region, in order to ensure the sustained and continuous development of climate information and services to contribute to sustainable development in the Pacific SIDS.

Session 7: Marine Weather Services and Ocean issues

7.1: Tropical Pacific Observing System 2020

39. Note the importance of the Tropical Atmosphere Ocean/Triangular Trans-Oceans Buoy Network (TAO/TRITON) moored buoy array for measuring and making available real-time oceanography and surface meteorological data for monitoring, understanding and predicting ENSO and La Nina and tropical climatology in the Pacific;

40. Understand the difficulty in sustaining TAO/TRITON moored buoy array, consequently recently been reduced to less than 40% of its operational capacity because it is frequently subject to vandalism which impacts its ability to perform vital observations and, request PMC to convey the importance of these systems to their national governments and communities and encourage them to join organizations such as United Nations General Assembly (UNGA), WMO, United National Educational, Scientific and Cultural Organization – Intergovernmental Oceanographic Commission (UNESCO-IOC) and RMFS in protecting these essential systems maintained by USA NOAA, Republic of Korea, and Japan;

41. Request that SPREP and PMDP to provide updates information on the Tropical Pacific Observing System (TPOS) 2020 Project which reviews ocean observing requirements and will recommend a plan to modernize the tropical pacific observing system and, represent PMC interests in these undertakings.

42. Request that NMHSs to support and engage with TPOS 2020, where practical; and

43. Encourage PMC and development partners to promote and seek support for marine research and observations.

7.2: Argo Program

44. Note the importance of the contribution of the Argo Program comprising of free-drifting profiling floats that measures the temperature and salinity of the upper 2000 meters of the oceans for continuous monitoring of the temperature, salinity and velocity of the upper layer of the ocean, to regional climatology and real-time weather and climate forecasting and prediction.

7.3: Marine Weather Services in the Pacific Region

45. Appreciate the support from WMO and UNECO-IOC JCOMM Data Buoy Cooperation Panel (DBCP) in hosting their first capacity building workshop in Palau;

46. Recognize the importance of marine weather services for safety and livelihoods and request that NMHSs to improve the services;

47. Express appreciation to the Pacific islands Oceans Observing System (PacIOOS) and COSPPac for their contributions to ocean observing and data products development in PICTs' region;

48. Request PICTs to nominate point of contact on marine issues to SPREP;

49. Note the resolutions and recommendations of Cg-17 which address oceanography and marine meteorology;

50. Approve the establishment of a Pacific Islands Marine and Ocean Services (PIMOS) Panel and note that Palau, Solomon Islands, Vanuatu, Samoa, Fiji, Tonga, Niue, United States of America, New Zealand, UNESCO-IOC, WMO, the Secretariat of the Pacific Community (SPC), the University of the South Pacific (USP) and SPREP have volunteered to form the PIMOS Panel, with SPREP as the Chair;

51. Request for volunteers and invite regional and international organisations to work with PMDP to develop a Terms of Reference (TOR) and a costed work plan for the new PMC's PIMOS Panel;

52. Request WMO to consider supporting the PMC's PIMOS Panel through the Program for WMO SIDS and Member Island Territories, WMO Regional Program and WMO/UNESCO-IOC JCOMM;

53. Request SPREP to approach and seek support from other relevant partners to support PMC's PIMOS Panel; and

54. Request that PMC's PIMOS Panel to report progress of its work to PMC-4 and the Annual SPREP meetings.

Session 8: Multi Hazard Early Warning System

8.1: National Multi-Hazard Early Warning Systems

55. Request that NMHSs to promote and implement impact-based forecasting and risk-based warnings to better communicate threats related to meteorological, hydrological and marine hazards, noting the importance of timely delivery of warnings and alerts for the successful operation of MHEWSs and Multi-hazards information Systems (MHIS).

8.2 National Flood Early Warning System

56. Note concern in the lack of progress made on recommendations of PMC-2 on hydrological services and call on PMC and partners with assistance from SPREP, SPC and WMO Regional Association V (South-West Pacific) (WMO RA V) Working Group on Hydrology to urgently address these recommendations;

57. Note Fiji's recent successful transfer of the mandate for flood forecasting to FMS which has improved service delivery and encourage other NMHSs to adopt similar best practices to reduce the considerable risks faced by flooding;

58. Request SPREP to closely monitor progress on recommendations regarding hydrological services and report to PMC;

59. Encourage SPREP to collaborate and draw on the SPC and other partners' expertise in hydrological services, as needed.

8.3 Coastal Inundation and Hazards

60. Note that mitigating coastal hazards are a priority in PICTs region and that technical support is required to build resilience and sustainable development;

61. Recognise the contribution that SPC and partners have made in developing tools to support NMHSs in the development of coastal inundation early warning systems and encourage wide dissemination of these tools to other countries;

62. Request that PMC's PIMOS Panel to include coastal hazard forecasting and early warning systems in its TOR; and

63. Encourage WMO and SPC to seek further support for the Pacific Islands region-wide implementation of real-time forecasting systems of coastal inundation hazards such as the Coastal Inundation Forecast Demonstration Project (CIFDP).

8.4 Progress on Tsunami Warning and Mitigation - Status on Implementation of New Tsunami Products in South West Pacific

64. Note the 50th anniversary of the Pacific Tsunami Warning and Mitigation System (PTWS) and the leading role taken by PICTs;

65. Welcome the election of Ms. Filomena Nelson from Samoa as the Chair of the UNESCO-IOC Inter-governmental Coordination Group for the PTWS (ICG/PTWS);

66. Welcome the election of Mr. 'Ofa Fa'anunu from Tonga and Ms Esline Garebiti from Vanuatu as Chair and Vice-Chair of ICG/PTWS Regional Working Group for the South-West Pacific, respectively;

67. Express appreciation to USA NOAA Pacific Tsunami Warning Center (PTWC) for the enhanced tsunami guidance products and convey to partners – especially emergency managers that the mandate to provide national and local tsunami warnings is a sovereign responsibility of each country;

68. Note that tsunamis are high-impact events and those originating in the region are localized rapid onset events and this should be fully taken into consideration when developing Standard Operating Procedures (SOPs) and awareness programs;

69. Encourage PICTs to seek assistance, support and guidance from UNESCO-IOC, USA NOAA and development partners to develop and design SOPs and awareness programs, taking into full consideration high-impact events, those originating in the region and localized rapid onset events;

70. Request that PMC's PIMOS Panel to include Tsunami Early Warning System (TEWS) in its TOR;

71. Encourage the PMC's PIMOS Panel to collaborate with UNESCO-IOC ICG/PTWS for further improvement of US NOAA PTWC enhanced products and their uptake by the PICTs; and

72. Requests PMC to keep up to date listings of the Tsunami National Contacts (TNCs), the Tsunami Warning Focal Points (TWFPs) and contacts for the National Tsunami Warning Centre (NTWCs) to ensure efficient and effectively delivery of tsunami advisory products from USA NOAA PTWC.

Session 9: Public Weather Services

9.1 Finland-Pacific Support to Public Weather Services and Communication to Communities

73. Note the progress made by FINPAC project in supporting the development of NMHSs including the implementation of SmartMet in Fiji, Papua New Guinea, Samoa, Solomon Islands, and Tonga to strengthen their NMHSs PWS;
74. Note the requests from Vanuatu and Kiribati for the implementation of SmartMet in their respective NMHSs;
75. Encourage NMHSs to build relationships with Community Based Organizations (CBOs) and national media as partners to assist with the delivery of weather and climate information to communities; and
76. Encourage partners to work closely with NMHSs to engage with communities to help them better understand and use weather and climate information.

9.2 Severe Weather Forecast and Disaster Risk Reduction Demonstration Project

77. Express appreciation to WMO, MetService New Zealand, USA NOAA and participating partners for supporting the Severe Weather Forecast and Disaster Risk Reduction Demonstration Project (SWFDDP) to strengthen NMHSs in their capacity to forecast severe weather and waves other than cyclones; and
78. Request that SPREP to work with WMO and relevant partners to secure resources to continue implementing SWFDDP in PICTs' region.

Session 10: Communication

10.1 Radio Internet

79. Request that SPREP to work with USA to explore the establishment of a fund for Pacific emergency meteorological communications development which can be supported by multiple donors, countries and local stakeholders focusing on SIDS and Least Developed Countries (LDCs);
80. Request that SPREP and PMDP to explore opportunities with mobile phone service providers for additional distribution pathways for emergency communications messages; and
81. Note that USA NOAA's Pacific International Training Desk (PITD) is conducting a survey in Pacific SIDS NMHSs to determine the type of communications systems training that is deemed a priority and **request** the Pacific SIDS NMHSs to respond to the survey.

10.2 WMO Information System

82. Recommend that PMC and SPREP to work with non-WMO Members but members of PMC to provide to them update and information on WMO activities in the development of key programs that may benefit these concerned PICTs;
83. Request that PMC Chair to discuss with WMO RA V Management Group for inclusion of additional experts from PICTs in the WMO RA V Working Group on Infrastructure, specifically to its Task Teams on WIGOS and WIS.

Session 11: Education, Training and Research

11.1 Education, Training and Research in the Pacific

84. Request that PMC's Pacific Island Education Training and Research (PIETR) Panel to revise its TOR and update its membership, noting that current members are Cook Islands, Federated States of Micronesia, Fiji, Marshal Islands, Solomon Islands, USP, University of Hawaii (UH), WMO and SPREP;

85. Request that PMC's PIETR Panel to explore the possibility of establishing a WMO Regional Training Centre (RTC) for the Pacific Islands region in consultation with WMO, taking into full consideration criteria established by WMO for becoming and designation as WMO recognized RTC;

86. Request that PMC's PIETR Panel to explore the development of a Capacity Development Strategy for the Pacific within the context of PIMS 2012-2021;

87. Request that USP to review curriculum development and course mapping in regards to weather, climate, hydrology and ocean services in PICTs, including a full tropical meteorology course;

88. Encourage the development of Pacific Islands' research capacity and recognise the importance of academic and regional organization research partnerships; and

89. Note the establishment of the Pacific Island University Research Network (PIURN) in supporting research capacity development.

11.2 Pacific International Training Desk and Other USA NOAA Training Programs

90. Request that SPREP and NMHSs provide guidance and recommendations for specialised topics for in-country and follow-up training by PITD;

91. Request that the NMHSs to nominate participants to attend future cohorts at PITD, particularly countries who have not previously submitted nominations nor participated in this training event;

92. Request that NMHSs to assist in updating the PITD database, a communication tool or system used by NMHSs; and

93. Request that UH to work closely with PMC's PIETR Panel to enable greater coordination and information sharing on courses including clarification on how they relate to the WMO requirements, classifications for meteorologists and competency standards.

11.3 SPREP Media Outreach

94. Note the progress made by SPREP through FINPAC project, the Pacific Media Assistance Scheme (PACMAS) and its partners to develop capacity of the media in the region for better reporting on weather and climate hazards, information and services;

95. Acknowledge the support of PACMAS and its partners in engaging journalists in weather and climate reporting;

96. Support the continuation of activities under SPREP Media Outreach Program to support PMC;

97. Note the proposal to have a Media and Meteorology Roundtable Meeting in 2016 and encourage PMC, WMO and partners to support this initiative;

98. Agree to task PMC's PIETR Panel to consider training on weather, climate, disaster risk reduction and disaster risk management, tsunamis and other topics related to weather, climate and oceans for the media, noting that some PICTs do not have televised forecasts but rely on radio;

99. Urge SPREP and partners to support the attendance of PMC members at CO21/UNFCCC in December this year, including participation in side events and other pre-COP trainings for participants; and

100. Note that WMO is conducting training for TV presenters through the capacity development including the production of a series of videos, **and request** that PMC be updated on the progress of this project.

11.4 Reinforcing Meteorological Training Function of Fiji Meteorological Service

101. Note that the Japan International Cooperation Agency (JICA) Project for Reinforcing Meteorological Training Function of FMS has been launched, to strengthen FMS to be innovative and more instrumental in capacity development activities in PICTs region; and

102. Encourage PICTs and partners such as Australia, New Zealand, SPREP, USP, SPC and WMO to coordinate and collaborate with FMS and JICA in the Project for Reinforcing Meteorological Training Function of FMS.

Session 12: Aviation Weather Services

12.1 Quality Management System and Competency Standards

103. Note the importance of achieving full compliance with ISO 9000 series quality management standards and the International Standards and Recommended Practices (ISRP) of Annex to the Convention of International Civil Aviation - Meteorological Service for International Air Navigation, in the provision of aeronautical meteorological services for the safety operation of aircrafts and passengers;

104. Note the contribution of Australia, through BoM, towards building capacity of NMHSs in PICTs region in quality management to meet ISO 9000 series quality management standard and ISRP of Annex to the Convention of International Civil Aviation - Meteorological Service for International Air Navigation, through the implementation of a regional program of quality management auditor training and accreditation, using aid-funding under Australia's Public Sector Linkages Program;

105. Endorse the establishment of PMC's Pacific Islands Aviation Weather Services (PIAWS) Panel to discuss and address issues relating to aeronautical meteorological services including cost recovery, quality management and competency standards;

106. Note that Cook Islands, Fiji, Niue, Palau, Samoa, Solomon Islands, Tonga, USA, Vanuatu, WMO and USP volunteered to work with PMDP to establish PMC's PIAWS Panel and develop its TOR, with Tonga serving as the Chair;

107. Note the upcoming WMO Regional Forum for Directors of NMHSs in RA V which is scheduled to be held in Nadi, Fiji from 28 to 30 October 2015 as an opportunity to kick-start discussions and advance tasks of PMC's PIAWS Panel;

108. Request that NMHSs to assign high priority to be compliance to quality management and competency standards as soon as possible;

109. Request that SPREP, WMO, ICAO and partners to continue and intensify their assistance to PICTs' NMHSs to be compliance to quality management and competency standards as soon as possible;

110. Request that NMHSs to establish bi-lateral twinning agreements targeting the implementation of quality management and competency assessment;

111. Request that NMHSs and SPREP to include appropriate work packages in on-going and future programs and projects to ensure funding for sustainable implementation of quality management and competency to meet ISO, International Civil Aviation Organization (ICAO) and WMO requirements;

112. Request that PMC's PIAWS Panel include in its TOR to address a regional target of resolving existing deficiencies related to the compliance with WMO and ICAO quality management and competency standards;

113. Encourage the attendance of PMC representatives to ICAO meetings;

114. Request that Australia to continue to provide technical backstopping to NMHSs on quality management and competency standards; and

115. Request that WMO, SPREP and PMDP to draft TOR and provide financial support to assist with Samoa's efforts to complete it quality management and competency assessment.

12.2 Cost Recovery for Aviation Weather Services

116. Request that PMC to work with WMO AeM Program to establish a regional task team or focal point or to include as part of PMC's PIWAS Panel, to address cost recovery in a transparent and equitable manner, to liaise with relevant WMO and ICAO groups to establish an appropriate business model that allow all countries participating in service provision to benefit from the air navigation services charges attributed to aeronautical meteorological services;

117. Request that PMC to work with WMO AeM Program to establish a pilot project on cost recovery with one or more countries to test possible solutions and business model as a component of larger scale regional project;

118. Request that PMC through PMDP to send a formal request to WMO and ICAO Secretariats, the Commission on Aeronautical Meteorology Expert Team on Governance (CAeM ET-GOV), and the ICAO Meteorology Panel – Meteorological Cost Recovery Guidance and Governance Team raising Pacific cost recovery issues that need special attention;

119. Request that PMC's PIAWS Panel include in its TOR to address a regional target or dateline for development of specific guidance and proposed business model for cost recovery in PICTs region.

12.3 Safe Skies for Aviation over the Pacific

120. Request that SPREP and PMDP to work with WMO AeM Program to establish a regional roadmap for improvements of the meteorological service to aviation that will serve as a basis for relevant projects supported by WMO and other partner organizations;

121. Encourage NMHSs to establish priorities for technology improvement and modernization in relation to aeronautical meteorological services;

122. Request that PMC designate a regional coordinator or a team or request PMC's PIAWS Panel to include in its TOR to work with WMO AeM Program and ICAO to develop a project proposal to addresses priority technology issues;

123. Request that PMC's PIAWS Panel include in its TOR to address regional target or dateline for development of a project proposal for the improvement of aeronautical meteorological service in PICT region; and

124. Endorse a regional collaborative approach with strong focus on airport weather and climate observations and reports quality and improved communications for near-real time data exchange and requested PMC's PIAWS Panel to include in its TOR to address this issue.

13: Monitoring and Observations Systems

13.1 WMO Integrated Observing System for Region V

125. Request that SPREP and PMDP to work together with WMO Observations Services (WMO OBS) Department and WIGCOS Project Office (OBS/WIGOS) and WMO RA V Working Group on Infrastructure Task Team on WIGOS to identify and confirm WIGOS priorities for PICTs' region;

126. Encourage PICTs to take a proactive role in WMO RA V Working Group on Infrastructure Task Team on WIGOS;

127. Endorse the establishment of a Regional WIGOS Centre to ensure that operating stations are delivering observations and informed properly on failure to deliver and quality issues; and

128. Request that SPREP and PMDP to work with WMO OBS/WIGOS to align national priorities with regional WIGOS priority actions and to include them in projects.

14: The Update and Review of the Pacific Islands Meteorological Strategy 2012-2021

129. Note the report on the summary of progress of implementing PIMS 2012-2021 in PICTs' NMHSs;
130. Endorse in principle the TOR for the review of PIMS 2012-2021 as well as the methodology to carry out the review;
131. Agree to establish a team consisting of Cook islands, Palau, Samoa, Tonga, and USA to support the Secretariat in the process of the mid-term review of PIMS 2012-2021; and
132. Encourage partners to support the mid-term review process of PIMS 2012-2021.

15: Strengthening the Pacific Meteorological Council and the Pacific Meteorological Desk Partnership

15.1 Governance of the Pacific Meteorological Council

133. Request that the team tasked with assisting the Secretariat in the mid-term review of the PIMS 2012-2021 would also assist the Secretariat in ensuring meteorology, climatology and oceans are emphasized in the new SPREP Strategic Plan 2016-2020.

15.2 Pacific Meteorological Desk Partnership

134. Note PMDP work plan and budget and the planned schedule of works for the next 2 years (July 2015 to July 2017);
135. Encourage PMC and partners to provide update information on their activities to PMDP planned schedule of activities, to be circulated at the end of each month;
136. Encourage partners to advocate for and provide financial support for the Pacific Islands Global Climate Observing System (PI-GCOS) Officer and the Meteorology and Climate Advisers positions in PMDP;
137. Encourage PMDP to provide ongoing guidance and timely advice to PMC;
138. Request that SPREP and partners continue to increase efforts to secure financial resources for PMDP and meteorological activities for PICTs region; and
139. Request SPREP, WMO and partners to increase efforts to secure funds including support for future of PMMM.

16: Resources Mobilization

16.1 Regional Technical Support Mechanism

140. Encourage PMC to use and promote the Regional Technical Support Mechanism (RTSM) and the Rapid Response Fund (RRF) noting that current available funding of USD$149,689 and proposed second tranche of approximately USD$300,000;
141. Encourage PMC members and PICTs' NMHSs staff register as RTSM experts;
142. Encourage PMC members and PICTs' NMHSs to utilise RRF before its end date of June 2016, noting that requests for Technical Assistance (TA) are accepted and considered throughout the year; and
143. Note that PMC may assist a country to prepare and submit an application or request to RTSM, and requests must come from a country, not on behalf of a country or a group of countries.

16.2 Green Climate Fund and Adaptation Fund

144. Note that SPREP has been accredited as a Regional Implementing Entity (RIE) for the Adaptation Fund (AF) and the Green Climate Fund (GCF); and

145. Encourage PMC members in full consultation with their national governments to submit proposals for the two funds for inclusion in project proposals.

16.3 WMO Resource Mobilization and Partnership

146. Commend WMO for their continued comprehensive support to PICTs region; and

147. Note that the United Nations Development Program (UNDP) is developing two project concepts, namely the South-South Cooperation on Integrated Climate and Disaster Resilient Development between Pacific and Caribbean SIDS and; Disaster Resilience, Response and Recovery for Pacific SIDS.

17: Disaster Risk Reduction and Climate Change in the Pacific

17.1 *The Strategy for* Climate and Disaster Resilient Development in the Pacific

148. Note the development of the draft regional Strategy for Climate and Disaster Resilience Development in the Pacific (SRDP).

17.2 The Intergovernmental Panel on Climate Change and the 21st United Nations Convention of Climate Change Conference of the Parties

149. Encourage PMC, SPREP and partners to consider publishing their works for the Intergovernmental Panel on Climate Change (IPCC) peer review and further encourage PMC members to contribute as an author or reviewer to IPCC 6th Asessment Report (AR6); and

150. Invite those in a position to do so to provide additional resources to support SPREP and regional organizations to support PMC members participation in the COP for UNFCC and IPCC meetings, noting that support from IPCC Secretariat is available for one delegate per country to attend IPCC meetings.

17.3 Third United Nations World Conference on Disaster Risk Reduction

151. Note the similarity between the Sendai Framework on DRR 2015-2030 and the SRDP that both have similar goals and are consistent with the proposed Post-2015 SDGs; and

152. Encourage PMC members to note the Sendai Framework and the need for collaboration within national agencies and partners to implement the Framework.

18: Guidance to the First Pacific Ministers Meeting on Meteorology

18.3 Review and Finalize the Draft Nuku'alofa Declaration

153. Draft Nuku'alofa Declaration is endorsed by PMC.

19: Venue of the Fourth Meeting of the Pacific Meteorological Council

154. Endorse the offer from the Solomon Islands to host the Fourth Meeting of the Pacific Meteorological Council (PMC-4).

155. Request that SPREP and PMDP review the meeting duration to allow for adequate discussions, and provide a recommendation to the next meeting of PMC Steering Committee.

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ii. Summary of the PROCEEDINGS

All meeting papers and presentation can be obtaine from the SPREP website and via clicking on this PMC and PMMM Documents and Presentation LINK.

1. Opening Ceremony

1.1. The opening devotion and prayer was conducted by Rev. Kinitoni Mafi, Deputy General Secretary for the Free Constitution Church of Tonga and Head Minister for Kolomotua Congregation.

1.2. This was followed by the welcome speech from the PMC-2 Chair Mr. Ravind Kumar, Director of Fiji Meteorological Services. He highlighted the key priority areas for PMC and emphasized the importance of activities to be aligned to the main strategies relevant to the development of NMHSs such as the recent Cg-17, with strategic priority on DRR, a focus towards impact based forecasts and multi-hazard early warning, GFCS, WIGOS, aviation meteorological services, capacity development for delivery of quality service and PIMS 2012-2021. He also acknowledged the new Program for WMOSIDS and Member Island Territories, envisaged to accelerate efforts in enhancing NMHSs capabilities in the next decade. He concluded by encouraging participants to have constructive deliberations during the week.

1.3. The first keynote address was delivered by the Director of the Climate Change Division of SPREP, Dr. Netatua Pelesikoti. She highlighted the progress made in the past two years in the region and NMHSs. In particular she noted the development of new tools to assist with informed decision making, including early warning systems, ocean data portals and forecasting tools. New partnerships with APCC, the Korean Meteorological Agency (KMA), UH and the International Federation of Red Cross and Red Crescent Societies (IFRCS) were also highlighted. Dr. Pelesikoti welcomed Nauru, attending for the first time and the presence of more than ten regional media and broadcasters. She further noted the major weather events that have recently impacted the region, and emphasized the importance of NMHSs in resilient development, where weather, climate information, warnings and projections are essential. Dr. Pelesikoti concluded by acknowledging the support from the Government of the Kingdom of Tonga in hosting PMC-3, the Government of Finland through FINPAC project, WMO for financial, advisory, and technical support, the Government of Australia through BoM and COSPPac project, USA NOAA, and APCC. Further acknowledgement was given to the partners who helped with the planning of PMC-3, including US NOAA, WMO, MetService New Zealand, NIWA, BoM, Samoa Meteorology Division, Tonga Meteorology and Coast Radio Services, and the Marshal Islands NWS.

1.4. Dr. Elena Manaenkova, Assistant Secretary-General of WMO, on behalf of the Secretary-General of WMO, Mr. Michel Jarraud, delivered the second keynote speech. Dr. Manaenkova noted the extreme vulnerability of SIDS, experiencing more than 650 hydro-meteorological disasters – one third of which in the Pacific, since 1970, which has impacted more than 35 million people causing more than USD $34 billion in damages. She also noted that due to lack of resilience, the impacts of natural disasters are often amplified, placing further strains on limited resources. She further noted that SIDS and their people have often demonstrated leadership in calling for determined and urgent action to address climate change. Based on this, Dr. Manaenkova noted that SIDS are a priority for WMO, which has been reinforced by the decision of Cg-17 to establish a new program dedicated to SIDS and Member Island Territories to increase their resilience to extreme weather events and other adverse impacts of climate change. The new program has been conceived with two long-term objectives: the

implementation of the S.A.M.O.A. Pathway, and to strengthen the capacities of NMHSs of WMO SIDS and Island Territories to strengthen community resilience and contribute to sustainable development. She concluded by emphasizing that NMHSs of the Pacific are critical actors in supporting the sustainable development of their countries and there is today increased awareness among policymakers and the general public of the socio-economic benefits delivered by weather and climate services.

1.5. The final keynote address was delivered by Mr. Matti Nummelin, Senior Environmental Adviser of the Ministry of Foreign Affairs of Finland, on behalf of the government of Finland. He noted three major international policy frameworks guiding the work of all nations domestically and internationally. The Sendai Framework for DRR 2015-2030, which was adopted earlier this year, the Post-2015 Development Agenda and SDGs, and finally in December 2015 the anticipated new global climate agreement. He emphasized the important role of NMHSs in reaching and implementing priority goals defined by these policy frameworks. He was also pleased to note that Finnish Meteorological Institute (FMI) and its key expertise from observation networks, numerical atmospheric modeling, commercial user application services, automated productions systems and public awareness are working with PICTs' NMHSs to ensure benefits of the projects are maximized.

The Honorable Siaosi 'Ofa-ki-vahafolau Sovaleni, Deputy Prime Minister of the Government of the Kingdom of Tonga and Minister for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication delivered the opening statement for the meeting. The Deputy Prime Minister was the first Minister to attend a Pacific Meteorological Council meeting. He welcomed the dignitaries from WMO, the current Chair of PMC, SPREP's Director, and the Ministry of Foreign Affairs of Finland. He noted that His Majesty in his Capacity as Prime Minister and Minister responsible for Meteorology in 2003 established Tonga's National Forecasting Centre and set the direction for Government to provide an autonomous and robust weather and climate service to support economic development and enhance the safety and security of all citizens and visitors to the Kingdom. He went on to note that Tonga knows all too well the devastation that severe weather events can cause, namely severe Cyclone "Ian" in Tonga last year and Cyclone "Pam" early this year in Vanuatu, and that NMHSs are fundamental in safeguarding against such devastation. He continued in noting the importance in weather and climate services in resilient development, and highlighted the need to invest in the area of early warning and climate prediction systems for severe weather and climate extremes and high impacts weather events, to support disaster risk reduction and adaptation to climate change. The Deputy Prime Minister relayed his expectations for the deliberations during PMC-3 to provide concrete recommendations and action strategies for consideration during the PMMM-1. In conclusion, the Deputy Prime Minister expressed his thanks to the development partners and solicited their support in building more durable partnerships and to provide the necessary support to transform meteorological information into a form that is understood by user communities.

2. Organisation of the Third Meeting of the Pacific Meteorological Council

Election of Chair and Vice-Chair

In accordance with PMC Rules of Procedures 8.1 and 8.2, Fiji as the current Chair requested confirmation from members of the election of the Kingdom of Tonga as Chair and Federated States of Micronesia as Vice Chair of PMC-3.

The proposal was confirmed by Samoa and supported by Cook Islands.

The new Chair was then invited to lead the facilitation of the meeting.

Adoption of Agenda and Program of Work

The new Chair tabled the provisional agenda and working arrangements for the meeting. The following changes were suggested from the floor: (1) Samoa requested for an additional agenda item under *17: Disaster Risk Reduction and Climate Change in the Pacific* to provide update on the Sendai Framework for Disaster Risk Reduction 2015-2030; (2) Cook Islands requested to move their presentation to the afternoon and Samoa requested to replace Cook Island under Agenda 4.2; (3) Marshall Islands requested to postpone their country presentation, which Vanuatu agreed to replace under agenda 4.7; (4) Agenda 5 was agreed to move to 13:30pm on Tuesday; and (5) Chair requested a new starting time at 9am instead of 08.30am in the Agenda to accommodate the work of the Drafting Committee which would start at 08:00am each day.

Having noted the suggested changes from the members, the meeting adopted by consensus the agenda and program of work attached in *Annex 1: PMC Agenda.*

Establishment of Drafting Committee

The Chair invited volunteers for the open-ended committee, and the following representatives agreed to be involved: New Zealand (Mr. Doug Ramsey), USA (Ms Jennifer Lewis), SPC (Ms Molly Powers), Australia (Ms Janita Pahalad), WMO (Ms Mary Power and Mr. Henry Taiki), Fiji (Mr. Ravind Kumar), Cook Islands (Mr. Arona Ngari) and SPREP. The Drafting Committee met every morning at 08:00am and the Vice Chair facilitated these sessions.

3. Report on Actions Taken on Matters Arising from the Second Meeting of the Pacific Meteorological Council

Dr. Pelesikoti provided updates on Actions Taken on Matters Arising from PMC-2. Key highlights included the establishment of PICS Panel following the GFCS workshop in April 2014; a new Memorandum of Understanding (MoU) with APCC, United Kingdom Met Office (UKMO), Met-Service New Zealand and IFRC who plays vital role in community outreach activities implemented through the FINPAC Project; Vanuatu and Palau became members of IOC; NMHSs were successfully highlighted during the Third International Conference on SIDS in 2014 including the launch of the "Weather Together" campaign and hosting of three side events; and WMO, BoM, US NOAA, NIWA and others conducted capacity building and new product development in partnership with NMHSs.

Samoa commented on PaCIS consultations to be included in the report and requested clarification on lighting data access. The meeting agreed to defer these items to be discussed further in agenda item 6.1 and agenda item 9.1, respectively. Samoa also mentioned COSPPac assistance on Hydrological Modelling for Afulilo Dam and suggested to include all FINPAC project's activities, not just the workshop on lightning detection which was in Samoa. SPREP commented that FINPAC project's activities will be discussed further in agenda item 9.1.

The meeting endorsed PMC-3 WP 3.0 Att1 Progress on the outcomes of PMC-2.

4. Country Reports from National Meteorological Services

NMHSs were requested ahead of the meeting to provide presentations and reports summarizing NMHSs capacity, achievements under each of the Pacific Key Outcomes (PKO) of PIMS 2012-2021, proposed activities for the next two years, gaps and future needs of NMHSs and national activities

undertaken to respond to the current El Nino. This session is summarized below and country reports and presentations are provided online.

4.1. American Samoa

American country report was presented by Mr. Edward Young . American Samoa conducted its first Rip Current Awareness Week and noted the challenges of recruiting new staff. He further highlighted the new contract with O3b network on low orbiting satellites to provide reliable high speed internet, which will provide American Samoa with greater access to US NOAA cloud services. Gaps and future needs identified by American Samoa include increase observation from transiting ships and improve lightning detection systems. He also noted the need to collaborate with other agencies on seismic data coverage.

Samoa sought clarification on the GOES R transition which the meeting noted that it would be discussed in detail during the USA Country Report.

4.2. Samoa

Samoa country report was presented by Mr. Luteru Tauvale, starting with an overview of the new structure of the Ministry of Natural Resources and Environment (MNRE) within the Government and stated that the new changes have helped to establish the importance of Samoa Meteorology Division, especially regarding the importance of climate services. Samoa showcased a number of operational activities implemented, including the new televised weather forecasts, increased public visibility, broadcast information about natural hazards such as tsunamis, climate services are improving, and the Geosciences Division is operating 24/7, monitor of ozone, noting that there is still room for improvement.

Tonga made mentioned that Samoa is one of the first Pacific Islands to install a Climate Early Warning System (CLEWS) and noted the opportunity for knowledge exchange on lessons learnt from this intiative.

4.3. Federated States of Micronesia

Federated States of Micronesia country report is presented by Mr. Johannes Berdon. Progress has been made in some areas of the Federated States of Micronesia NWS, particularly with trainings and advancement of academic support for staffs in the fields of meteorology, ocean instruments, operation of meteorological instruments and tsunami warnings. There is need to rehabilitate Weather Service Office (WSO) in Chuuk, establish the Pacific Desk II Program in the Guam Forecast Office, accelerating outreach programs to the neighboring island of Chuuk and continue to seek training opportunities for Weather Service Specialists and Electronic Program Specialists.

Gaps and future needs identified include insufficient number of trained meteorologists and the need to improve cooperation between the National Disaster Management Office (NDMO) and WSOs , amongst other issues.

Photos from the devastation of Super Typhoon “Maysak” impacting Chuuk were also displayed. It was noted that the storm caused extensive damage in Chuuk and that the WSO Chuuk buildings were fortunate remain undamaged. It was further stated that Chatty Beetles were a vital form of communication during this event.

4.4. Fiji

Fiji country report is presented by Mr. Ravind Kumar. FMS is responsible for providing forecast and warning services for Fiji and some PICTswith six core services: public, aviation, marine, Hydrology, climate and severe weather including tropical cyclones. Further, a comprehensive update on

achievements under each PKOs of PIMS was provided. Fiji has also been certified ISO 9000 quality standards for provision of meteorological services to aviation. It has improved radar coverage and increased staff training, establishment of new weather stations and wind profiles. For marine weather services, Fiji focused on SWFDDP and installed a tide gauge on Viti Levu.

The ongoing challenges of maintaining 72 staff and limited capacity enhancement on specialized climatology courses, downscaling of climate projections, development of standards for weather, climate and hydrology at the national level were also noted.

USA requested an update on mandate shift of tsunami warning responsibilities, which Fiji explained is underway due to the 24/7 capabilities FMS.

Storm surges and inundation for some islands are noticeable and Samoa requested for more information on this.

Fiji explained that the SWFDDP are working on products but had not yet verified the accuracy of their inundation products after the events.

Tonga also requested clarification on QMS, where it has been a challenge in organize MoU needed for countries to obtain certification and request for exchange and service agreements for provision of meteorological services for aviation. Fiji explained that the issues raised are being looked at, especially in light of Cook Islands, however since cost recovery strategies are not fully operational in FMS, it add to the already existing challenge.

The Chair also acknowledged the Director of FMS, Mr. Ravind Kumar as the Permanent Representative of Fiji with WMO and a member of the WMO Executive Council, representing the Pacific Islands.

4.5. New Caledonia & Wallis and Futuna

New Caledonia & wallis and Futuna report is presented by Mr Philippe Frayssinet. Various achievements and advancement within New Caledonia & Wallis and Futuna Meteorological Services, in collaboration with Météo-France. With a total of 72 staff, 6 of whom are based in Wallis and Futuna, the services are extended to ensure all communities are covered. There is a need for improved marine observations and improved early warning systems for floods.

A high resolution Météo-France (no-hydrostatic) Numerical Weather Prediction (NWP) model (AROME) model is being developed

Samoa requested to have access to the AROME NC model. It was explained that super computer is required similar to the one in France to run AROME NC, but New Caledonia can share the results as they are generated from the model. Further discussions on this is needed between Samoa and New Caledonia.

4.6. Kiribati

Kiribati country report was presented by Mr. Ueneta Toorua, Acting Director for Kiribati National Meteorological Services. Since PMC-2, Kiribati has worked on developing a Meteorology Strategy and Implementation Plan and working to improve forecasting, climatology, and technical capacity. In the next 2 years they are seeking support to continue working on developing and implementing their Meteorology Strategy and Implementation Plan, continue capacity building, reopen and

establish more observation stations, improve product delivery to stakeholders, and implement QMS. Gaps and needs include internet connectivity and reliable electricity, staffing and budget, adequate facilities, and training.

Discussion focused on staffing challenges, including trained staff leaving the country and the need to promote the value of NMHSs to recent college and university graduates.

There was also discussion around Kiribati's plans to move towards using Chatty Beetles for communications on remote islands. Marshall Islands, Federated States of Micronesia and US NOAA shared their experiences on the usefulness and reliability of the Chatty Beetles and some history on development of Chatty Beetles.

4.7. Vanuatu

Vanuatu country report was presented by Mr. David Gibson, Director of Vanuatu Meteorology and Geo-hazard Department (VMGD), informing the meeting of VMGD's progress since 2013. VMGD is guided by the Meteorological Act of 1989 and a new Strategic Development Plan (SDP) 2014-2023 for VMGD, launched in 2014. The first review of the VMGD's Strategic Plan is due to take place in 2015.

Notably, VMGD responded well by providing advanced warnings during Cyclone "Pam" and with the commitment of staff to assist NDMO during the recovery. Achievements since PMC-2 include the launch of the Research and Development Working Group and Communications Outreach and Partnerships Working Group; utilization of a variety of technologies such as SMS, video conference and other traditional methods used to disseminate information to VMGD Offices and communities throughout the country; and the approval of the new organizational structure in 2014.

A concern was raised by Tuvalu and Tonga regarding the reliability of Chatty Beetles during severe cyclones. During the Cyclone "Pam" most of the islands in Tuvalu are inundated with sea water, and the only method of communication was via HF radio. Similarly, during Cyclone "Ian" the Ha'apai Group was out of contact for more than 48 hours. It was agreed that this issue should be revisited and discussed during the USA country report.

Fiji cautioned Vanuatu against replacing manual stations with AWSs, noting that when FMS took this approach some year ago, it produced significant gaps in weather and climate records when AWS failed.

Solomon Islands noted that 'voluntary' stations were no longer possible as most volunteers insisted to receive some payments, and Vanuatu clarified that their volunteers do receive monetary incentive.

4.8. Nauru

Nauru country report was presented by Mr. Roy Harris, Deputy National Controller of the National Disaster Risk Management Office, informing the meeting of recent development in the area of meteorology in Nauru. Nauru is probably the only Pacific Island Country that does not have a National Meteorological Service (NMS) or a National Hydrology Service (NHS). However, the US Department of Energy (DoE) Atmospheric Radiation Measurement (ARM) project established a station on Nauru to monitor radiation and clouds formation but it ceased operation in 2013.

In May of this year, the Government of Nauru has approved a 24/7 NMS to be established under the new department of National Emergency Services (NES). The priority is to acquire a land for NES Headquarters. Other priorities including establishment of infrastructure for meteorology, training of

staff in the field of meteorology, purchasing and installing equipment, draft a meteorology legislation, and networking with other PICTs' NMHSs.

Nauru requested assistance in setting up a NMHS under NES. WMO agreed to assist in any way possible and recommended to Nauru that they join WMO. Tonga and Fiji offered to assist with training of observers and meteorologists.

4.9. French Polynesia

French Polynesia report was presented by Mr. Yann Guillou, Director of the Meteorological Service of French Polynesia, informing the meeting of their progress and achievements since 2013. The Meteorological Service of French Polynesia is a Regional Directorate of Météo-France. Its functions include observation of the atmosphere, weather forecasting and safeguard of climate data, to support safety of life and property, aviation, public and other sectors. These functions are performed by 8 Divisions namely – Administration, Quality Management, Human resources, Communication and Commerce, Telecommunication and Data Management, Observations, Climatology and Weather. It also has the responsibility for issuing tropical cyclones information, warnings and alerts support for French Polynesia. It has a total of 82 staff.

Some of the achievements presented include the first test of Météo-France (no-hydrostatic) Numerical Weather Prediction (NWP) model (AROME) over Tahiti and the test model (PERLE) on dispersion of atmospheric pollutants over Tahiti. Future planned activities include the implementation of forest fires risk products over Tahiti, improve the WWLN lightning network over French Polynesia for an operational use, the development of a local lightning networks in collaboration with French Polynesia University over Tahiti, and implementation of a hydrological network over Tahiti, in collaboration with the French Polynesia Government.

4.10. Niue

Niue country report was presented by Ms. Melissa Douglas, Meteorological Officer, on behalf of her Director, Mr Sionetasi Pulehetoa, on progress and achievements since 2013. The Niue Meteorological Service's vision is to deliver weather and climate information efficiently for a prosperous Niue, and its mission is to provide Niue with effective and efficient quality weather and climate information. Niue Meteorological Service's operation is guided by the Niue National Strategy Plan 2014-2019, and its mandates are legislated in the Meteorological Service Act of 2012. Since 2013 Niue has focused on capacity building, QMS, development of a climate services communications plan and installation of a tide gauge.

Future activities include the ongoing work on digitising and archiving of climatological observations, QMS, improving weather services and cyclone warning, community outreach and capacity development for staff.

4.11. Palau

Palua country report is presented by by Mr. Levan Akitaya, Chief of Division of Marine Transportation. Palau discussed their protected area network and shark sanctuary, and went on to discuss future plans to conserve their territorial waters. Palau's future plans include the development of a marine transport project with support of COSPPac , which is seeking to extend the range of their marine Very High Frequency (VHF,156.0 and 162.025 Mhz) communication system to deliver 3 marine forecasts per day out to a distance of 70 nautical miles from the shores.

4.12. Papua New Guinea

Papua New Guinea country report was presented by Mr. Samuel Maiha, Director of Papua New Guinea NWS. PNG noted that they do not have a Meteorology Act and NWS currently operate 7 AWSs while there are more than 40 being operated by private companies. Funding for recommended improvements to NWS was delayed until 2016 due to PNG's commitment to host the 2015 Pacific Games. PNG NWS's climate services has improved. Moving ahead there is a need to implement QMS meteorological services for mariners with the ultimate aim to help prevent loss of life at sea.

During the discussions, Fiji shared their experiences on provision on meteorological services for mariners and application of QMS to these services.

4.13. Cook Islands

Cook Islands country report was presented by Mr. Arona Ngari, Director of the Cook Islands Meteorological Service, noting improvements that the Cook Islands have made in regards to auditing of compliance to quality management standards for provision of meteorological services for aviation, upper air observation network, and use of real-time data display from tide gauges, the installation of AWSs, improvements in CLiDE database, and trainings received from PITD. In the next 2 years Cook Islands is planning on improving meteorological services to aviation, implementing CLEWS, and improving communications through a new website design. There is a need for more professional staff, improved MHEWS, and reliable communications.

4.14. Solomon Islands

Solomon Islands country report was presented by Mr. David Hiriasia, Director of the Solomon Islands Meteorological Service. It has 50 staff, and only 5 of them are female. Achievement since 2013 include a formal handover of the responsibility for preparing and issuing Terminal Aerodrome Forecast (TAF) for the Solomon Islands aerodromes to Solomon Islands Meteorological Services from Papua New Guinea NWS, use of SmartMet system provided through FINPAC project and, the improvements of the Meteorological Service's website through support from COSPPac flexible fund. For the next 2 years, the Solomon Islands is going to review its Meteorological Act, continue to improve its infrastructure, and establishing Climate and Ocean Services Divisions. Gaps and needs include sustainable funding, consumables related to upper-air observations, improvements in MHEWS, ocean observations, landslide warnings, and more training of staff.

4.15. Tonga

Tonga country report was presented by Mr. Moleni Tu'uholoaki, Senior Forecaster, providing a brief overview of progress and achievements of Tonga's Meteorology and Coast Radio Services since 2013. He elaborated on activities achieved under each PKO of PIMS 2012-2021 and Tonga's National Development Plan (NDP). Mr. Tu'holoaki further described the different services provided by Tonga's Meteorology and Coast Radio Services which includes weather and warning, climate, observation, coastal radio and technical support . These are implemented by a total of 28 staffs including a JICA Volunteer. Gaps and future needs were also discussed, and these are related to inadequate number of trained staffs, lack of community awareness, limited number of monitoring stations to support MHEWS and limitation in hydro-meteorological variables being monitored and messaured. The presentation concluded with information on national activities undertaken in response to the current ENSO.

4.16. Tuvalu

Tuvalu country report was presented by Mr. Taual Katea, Acting Director of Tuvalu Meteorological Services, The Meteorological Services has continues to expand its services and undertaken capacity building initiatives for its staff. He elaborated that in support of the proposed re-structuring of the Meteorological Service, there is a plan to develop a national strategy and implementation for meteorological services, a national policy on meteorological services, a legislation for meteorological, with funding from WMO. For the next two year, proposed plan envisage improving of communication systems in outer islands using HF radios and robust serviceable antennas/mast, early warning and communication backup services using RANET and Chatty Beetle. Mr. Katea further identified the lack of near coast bathymetry data for coastal inundation modelling, limited capacity to prepare and deliver high quality early warning and forecasts of weather, climate and water related hazards..

4.17. Marshall Islands

Marshall Islands country report was presented by Mr. Lee Z. Jacklick. He provided background information on the operation and services of WSO Majuro, consisting of the operation, forecast and warning, and electronic and facility units. Some of the achievements included the up-skilling of staff on tsunami warning, climate and customer education. On the operational side, SOPs for Tsunami Warning Program is now in place, 13 additional Chatty Beetles were procured and, Audits for compliance with quality management standards for surface and upper air program were conducted. In the coming two years, the wave buoy that was damaged will be re-deplyed, installation automated sensors, installation of Chatty Beetles in 5 of the 8 atolls and continue to support capacity building for staff. Mr. Jacklick concluded the presentation and noted the need for observation stations in outer islands to improve drought forecasts, the need for sustainable and robust communication equipment's for early warning, and strengthening of NDMO.

4.18. Australia

Australia country report was presented by Mr. Neil Plummer, Assistant Director for Climate Information Services of BoM. He provided a summary of BoM's activities contributing to national and regional priority areas of PIMS 2012-2021, including capacity development made possible by various projects such COSPPac and the Pacific-Australia Climate Change Science and Adaptation (PACCSAP); implementation of key regional infrastructure networks; implementation of QMS frameworks and auditor training for PICTs' NMHSs; and unilateral support for particular countries such as Fiji.

Mr. Plummer elaborated on Australia's Department of Foreign Affairs and Trade (DFAT) long standing support to the Pacific in particular through the $33 Million for COSPPac (2012-2016) and $32 million for PACCSAP (2011-2015) projects. He concluded by outlining activities related to the transitioning of some of COSPPac products into the region and forward looking into funding opportunities such as GCF.

Thhe meeting noted the importance of CLiDE but COSPPac project coming to a end raised concern on maintenance and management of the database due to funding constraints.

4.19. New Zealand

A joint presentation was delivered by Mr. Doug Ramsay, Mr. James Lunny, MetService New Zealand for New Zealand. They provided updates on New Zealand's support in developing the capacity of NMHSs of PICTs.

Key highlights of New Zealand support included technical and engineering support in conjunction with US NOAA for PI-GCOS support programme and UK Met Office for the Pacific Fund Programme; collaboration on various activities under WMO SWFDDP; New Zealand-USA Joint Commission Roadmap renegotiation; climate change monitoring; research and services in the Pacific; and support for the installation of CLEWS in three countries among other activities. In response to the current El Nino, NIWA and MetService New Zealand continue to provide Regional Water Watch, in-country consultation with SPC Water Security Project for Marshall Islands, Kiribati, Tuvalu, Cook Islands and Tokelau and ongoing support to develop specific CLEWS products to countries with CLEW systems.

4.20. United States of America

USA country report was presented by Mr. Edward Young, Deputy Director for the Pacific Region. He provided background information on US NOAA and the Pacific Regional Weather Service Offices, an overview of activities benefitting PICTs, followed by providing some recommendations. Mr. Young highlighted activities implemented by US NOAA such as the Weather Ready Nation Global Initiative (WRNGI) involving weather enterprise working together to achieve far-reaching national preparedness for weather events; provided updates on Observations and Satellite Services GOES R Transition as discussed in the NOAA Satellite Conference where in the next decade a launch of a new generation of geostationary satellites (GOES R series, JPSS and EUMETSAT polar-orbiting satellites) significantly improving data rates, volumes, acquisitions and information content; ongoing support on guarding against tsunami impacts in the Pacific such as the production of new, accurate products from PTWC and a focus on local tsunamis (tsunamis which a country has very little time to respond to) which cause 99% of tsunami related deaths in the region; NOAA also continues to offer resources in science and training on how to spot rip currents, survivor stories and outreach materials under the RIP Current Program; and finally COMET is offering training on aviation QMS that is recognized by WMO.

5. Outcomes of the Seventeenth World Meteorological Congress and Regional Programs

The key outcomes of Cg-17 was delivered by Mr. Robert O. Masters, Director of WMO Development and Regional Activities Department,. Cg-17 culminated in the adoption of the new strategic plan with priorities for 2015-2019. Eight priorities were identified along with capacity development initiatives that included the new Program for WMO SIDS and Member Island Territories and Capacity Development Program. Additional emphasis on marine weather activities was also identified as a priority area. The total budget for 2016-2019 is 266.2 million Swiss Francs with only a 2% increase in core budget, thus there is an additional reliance on extra-budgetary contribution. Dr. Petteri Taalas of Finland has been appointed as the new Secretary- General. The re-election of Presidents and Executive Council members also took place and Mr. Ravind Kumar, Director of the Fiji Meteorological Service and Permenant Representative of Fiji with WMO was elected as a member of WMO Executive Council. Additionally, gender issues featured prominently at the meeting.

WMO Capacity Development Strategy was discussed in detail in response to calls from governments concerning the need for a new strategy to address ongoing and emerging issues such as the lack of sustainability. Country examples on issues pertaining to this topic were also presented. This was followed by the explanation of the eight steps of NMHSs Capacity Development and approaches taken on the draft Implementation Plan. The development of the Capacity Development Strategic Implementation Plan could be used to guide NMHSs through the eight steps; define requirements, establish baseline, analyze gaps, elaborate strategic plan, ensure national commitment and support, mobilizing resources, and monitor and evaluate.

Mr. Masters also noted that WMO will continue its assistance in establishing national legal and policy frameworks; education, training and fellowships; expand direct country assistance (advocacy, etc.); and focus on services and risk management.

6. Climate Services (Pacific Key Outcomes 6)

6.1. Pacific Islands Climate Information System

PaCIS has provided a programmatic framework for US NOAA to bring together ongoing and future climate observations, operational forecasting services and climate projections, research, assessment, data management, outreach, and education – an integrated system of climate services to address the needs of the Pacific Islands. It has served as a forum for sharing expertise, experiences, and perspectives needed to guide integrated program planning and product development.

Consistent with the priority actions identified in the December 2011 PaCIS Plan, projects and activities carried out over the past 12 to 18 months with support from USAID through PaCIS and its partners include a series of Climate Services Dialogues in Cook Islands, Marshall Islands, Papua New Guinea, Samoa, and Vanuatu in 2014 focusing on freshwater resources, coral reefs and coastal fisheries, and coastal erosion. These Dialogues were planned with NMHSs, planning and resource agency partners, and sectoral representatives, and all focused on climate variability and climate early warning given the ENSO status and the local interest in seasonal forecasts. These dialogues involved a set of activities around 'climate stories' (case studies that incorporate traditional/experiential knowledge and scientific data; and illustrate lessons learned and best practices). This novel approach, which was well received, has broad application in the region.

With the establishment of PICS Panel, PaCIS and the administrative structure that is associated with it is evolving into a structure where the region-wide coordination that PaCIS has previously provided can now be carried out by PICS Panel. This will allow USA NOAA Pacific Region climate services program to better direct limited resources by focusing on how NOAA can contribute towards priority activities identified in PICS Panel's "Action Plan for Strengthening Climate Services in the Pacific", which includes support for the distributed RCC networks concept and proposal that is now evolving in the region.

6.2. Climate and Information Prediction Services Project

ROK-PI CliPS is a nationally-tailored project on climate prediction information aiming to *strengthen the adaptive capacity of vulnerable communities to climate risks at a seasonal timescale*. This is made possible with funding by the Government of the Republic of Korea through the Pacific Island Forum Secretariat (PIFS) and implemented jointly by APCC and SPREP.

Since the signing of the agreement on 24 October 2014, ROK-PI CliPS has implemented a number of activities including an Inception Workshop hosted by Tonga's Meteorology and Coast Radio Services in July this year. The workshop included attendees from the Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Marshall Islands, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tuvalu, Tonga and Vanuatu whereby prediction methodologies, statistical downscaling, information communication technologies and climate prediction systems were discussed.

In addition, the Climate Information Application System computer hardware was installed on 6 May 2015 at SPREP to host the web-based forecast assistant tool which will be developed in the second half of 2015 based on APCC's Climate Information Toolkit (CLIK) coupled with links to APCC Climate database.

The meeting noted and welcomed the new project and acknowledged APCC and the Government of of the Republic of Korea in support of ROK-PI CliPS . (Refer to PMC-3 WP 6.2 for more details).

6.3. Climate and Oceans Support Program in the Pacific Project)

Presentation on COSPPac) was delivered by Ms. Janita Pahalad, COSPPac Manager, providing background information on recent developments and reduction in funding by DFAT aid budget. The four year project had a total budget of 31.5 million Australian Dollars scheduled to be completed by June 2016. The program is being implemented in fourteen Pacific Island Countries (PICs), namely the Cook Islands, Fiji, Federated State of Micronesia, Kiribati, Nauru, Niue, Palau, Papua New Guinea, Republic of the Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu, with a large focus on seasonal climate forecasting or prediction, sea level monitoring and capacity building.

COSPPac budget will be reduced from 7.4 million Australian Dollars to 5.25 million Australian Dollars in 2015 to2016 but will receive a one year extension of 5.0 million Australian Dollars in 2016 to2017, hence resulting in an overall increase in budget of approximately 33.3 million Australian Dollars.

Key priority for the final two years is the transition of project products and services to the Pacific regional partners where appropriate and as recommended by recent independent mid-term review. During COSPPac Planning Meeting and the Sixth COSPPac Steering Committee Meeting in Apia from 4 to 6 May 2015, members endorsed COSPPac Transition Strategy and draft Work Plan for 2015 to2016.

COSPPac Transition Strategy can be accessed here

6.4. Climate Services in the Pacific Region

Mr. Andrew Tait, Principal Climate Scientist from NIWA and current Chair of PICS Panel delivered a presentation on activities and achievements of PICS Panel since its establishment in April 2014 at special session of PMC in Rarotonga, Cook Islands.

The first PICS Panel meeting was hosted by FMS in August 2014 which culminated in the development of PICS Panel's Action Plan (available here) to assist the Panel in providing advice to PMC on climate services development in the region. The second meeting was held in Samoa in April this year whereby members agreed on the activities listed in paragraph 6 of the PMC-3 WP 6.4 Climate Services in the Pacific Region.

The meeting noted the financial support for PICS Panel meetings which was provided by SPREP, WMO, Environment Canada, BoM, FMS and Ministry of Foreign Affairs of Finland.

7. Marine Weather Services and Ocean issues (Pacific Key Outcome 2)

7.1. Tropical Pacific Observing System 2020 (TAO/Triton Array)

The Tropical Pacific Observing System (TPOS) 2020 Tropical Atmosphere Ocean/Triangular Trans Ocean Buoy Networks (TAO/TRITON Array) is a major component of ENSO observing system, and the Global Climate Observing System (GCOS) and Global Ocean Observing System (GOOS).

Deliberations in January 2014 between US NOAA, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) and Ocean Observations Panel for Climate (OOPC) considered immediate actions to address the deterioration in the observing system. These considerations formed the basis for initiating the TPOS 2020 Project with the goal to design a modern, sustained TPOS that meets both science and societal needs and will focus on determining efficient and effective observational solutions to support prediction system for ocean, weather and climate services and, advancing understanding of tropical Pacific physical and biogeochemical variability and predictability.

7.2. The Argo Program

The deployment of Argo profiling floats began in 2000 and the program has contributed significantly to our understanding of global ocean processes and climate change. The Argo programhas also contributed to the improvement in ocean and climate forecasting with direct benefits to the protection of life and property, and effective planning for the effects of seasonal to inter-annual climate variability.

The Argo program is implemented in accord with the United Nations Convention on the Law of the Seas (UNCLOS) and is supported by UNESCO-IOC, WMO, the United Nations Environment Program (UNEP) and the International Council of Science Union (ICSU). The array of Argo profiling floats provides more than 120,000 temperate and salinity profiles per year, with each float conducting a profile of the top 2000 meters of the ocean every 10 days. Some Argo floats are now being equipped with additional sensors such as dissolved oxygen and pH, increasing their monitoring capability. Additionally, tests are now underway on “Deep Argo” floats capable of profiling over the full ocean depth.

Argo floats may drift into waters under national jurisdiction, and the Argo Program is obligated to inform concerned coastal states in advance through appropriate channels of all deployments of floats which might drift into waters under their jurisdiction. The PI-GOOS Officer, based at SPREP, is the focal point for Argo program in the PICTs’ region.

7.3. Marine weather services in the Pacific Region

Members of the meeting were provided with an updated on the status of marine weather services in the region and activities implemented since PMC-2 in 2013.

The Pacific Island region is 98% ocean, thus making marine weather services of utmost importance; however due to lack of resources and capacity, they are often not prioritized. In attempt to strengthen the recognition of marine services in the region the PIMS2012-2021 and WMO RA V Strategic Plan (2012-2015) have identified marine weather services as key outcomes in both strategies (Refer to PMC-3 WP 7.3 for more details).

Another area with limited exploitation by PICTs’ NMHSs is PI-GOOS, which focuses on developing work programs and supporting PMC members in key activities in the areas of communication; marine observing program support; marine data access and management; and education and training. NMHS have limited knowledge of available datasets and how to effectively use them,

compounded by a lack of forecasting guidelines, warning and hazards criteria and polices, and products for use by stakeholders.

The meeting noted that Cg-17 adopted the WMO Strategic Plan (2016-2019), which also include oceanography and marine weather services.

8. Multi-Hazard Early Warning System (Pacific Key Outcomes 4 and 5)

8.1. National Multi-Hazard Early Warning Systems

Mr. Luteru Tauvale, Principal Scientific Officer of Samoa's Meteorology Division of MNRE presented an overview of Samoa's MHEWS and CLEWS, elaborating on the importance and the role of the Samoa's Meteorology Division in MHEWS and CLEWS. He also mentioned that a number of SOPs were developed for a range of hazards and highlighted the importance of working collaboratively both Samoa's NDMO and the American Samoa's WSO to coordinate actions in the preparation of warnings and alerts. The World Bank has committed some funding to upgrade Samoa's MHEWS, especially the Information Technology (IT) and information infrastructure. It was noted that the coordination between partners, including the communities, other agencies and experts is essential to make the MHEWS fully operational and useful.

Mr. Tauvale also discussed measures taken to increase its readiness in an event of a hazard. This includes the development of community disaster response plans, awareness and outreach program, provision of additional staff to support the rotational work on a 24/7 basis, inter-agency/government ministry trainings, optimizing telephone services in disseminating warnings to the public, hazard simulations are conducted annually and sirens are tested every month.

Tonga emphasized the importance of communities to respond to warnings when issued, as in the case of Tonga a wave generated in the Tonga Trench can arrive within 15 minutes, hence the short time-span for communities to respond.

Vanuatu also shed some light on their experience during Cyclone "Pam" where the category 5 cyclone impacted communities severely, and suggested emphasis on impact based forecast may assist in informing communities in the future.

8.2. National Flood Early Warning System)

Mr. Ravind Kumar, Director of FM delivered a presentation on National Flood Early Warning System (NFEWS). FMS conducted a gap analysis for flood forecasting following January and March 2012 floods, which subsequently led to the transfer of the Hydrology Unit of the Water Authority of Fiji (WAF) to FMS. The devastation of the floods also spurred an increased investment in flood monitoring systems, and advancing the hydrological services. However, hiring of qualified hydrologist has been challenging. Mr. Kumar also described SOPs and process which have been developed for issuing alerts for floods. He also gave an overview of Fiji's experiences with floods in 1999, 2003 and 2012.

Gaps and challenges in Fiji's NFWS include the need for trained and qualified hydrologists, loss of historical data during the transition and/or transfer of the Hydrology Unit of WAF to FMS. Mr. Kumar concluded the presentation by requesting PMC to provide guidance on how to advance hydrological services in the region, and seeking provision for capacity building, scientific research and guidance on new software and hardware.

Solomon Islands commented that flooding is common and recent events resulted in loss of life. Currently there are poor institutional arrangements and observations are lacking. They sought clarification from Fiji on the use of radar in flood early warning, which Fiji has found to be useful in the estimation of precipitation and rainfall in real time.

Samoa congratulated Fiji on successful transition of the Hydrology Unit of WAF to FMS. Samoa's Meteorology Division is aiming to acquire Hydrology Unit which is also a division of MNRE in support of the meteorology Division important role in NFEWS. Samoa further encouraged WMO to do more in the region on floods.

New Zealand also shared some of the products and information produced by HIMWARI 8 broadcast to help with flood prediction and noted that it is available every 10 minutes and has a heavy rainfall estimator.

Papua New Guinea also supported the notion to encourage flood monitoring in the region. 10 bridges were lost during Cyclone "Tom" and there is need to have climate change priority on impacts of floods and open to investment to increase resilience of infrastructure.

Similar problems are faced in Tuvalu and they embraced Samoa's recommendation to support MHEWS and MHIWS in the region.

WMO also informed the meeting that hydrological program in the Pacific such as the Pacific Hydrological Cycle Observing System (Pacific HYCOS) project which was implemented in collaboration with SPC in PICs; and a similar project is proposed for the Pacific SIDs on hydrology. WMO is has also offered work with PICTs to address issues related to floods and to assist with organizing training for qualified hydrologists.

The discussions also noted the need to strengthen engagement and working relationship with WMO RA V Working Group on Hydrology. SPREP was also requested to collaborate with SPC and other regional organizations advancing hydrology in the PICTs' region.

8.3. Coastal Inundation and Hazards

Mr. Jens Kruger, SPC's Manager for Ocean and Coastal Geosciences emphasized that coastal inundation from extreme ocean surface waves pose ongoing risks to sustainable development which are exacerbates by the absence of effective EWS. There has been progress in understanding physical processes that cause inundation in mid-ocean small islands, particularly in computer models to forecast inundation at reef fringed coastlines and utilization of Geographic Information System (GIS) to map out meaningful and accessible forecasts.

Mr. Kruger elaborated on the challenges faced with the uptake of EWS and associated tools to address impacts posed by ocean waves such as accessing to wave observation and; building and maintaining capacity of PICTs NMHSs to operate and use EWS. There is a need for a consortium of partners among CROP agenciesto effectively improve access to wave data and introduce appropriate tools with technical backstopping services by SPC and SPREP.

It was proposed that an open-source coastal inundation end-to-end operational forecasting and warning system in Fiji be embedded in the National Disaster Management System (NDMS). Lessons learnt from this change will be incorporated into an operational prediction tool that will be able to calculate direct and indirect hydrodynamic (water level, currents, wave heights) and morphodynamic (bottom changes) impacts of tropical and extra-tropical storms at other locations in the Pacific. International and regional collaboration is critical for the progress and success of this initiative.

JCOMM proactively contributes to disaster management in coastal and marine hazards. It has published a Guide to Storm Surge Forecasting, and it works collaboratively with the WMO Tropical Cyclone Programme (TCP) and the Commission for Basic Systems (CBS) on Storm Surge Watch Scheme (SSWS).

JCOMM and CHy CIFDP has shown the value of integrated coastal inundation forecasts and warnings, and of the MHEWS. Cg-17encouraged JCOMM to collaborate closely with Severe Weather Forecasting Demonstration Project (SWFDP) and TCP to improve service efficiency and effectiveness.

8.4. Progress on Tsunami Warning and Mitigation and Status on the Implementation of the New Tsunami Products in the South West Pacific

Mr. 'Ofa Fa'anunu, Director of the Tonga's Meteorology and Coast Radio Services Chair of ICG/PTWS Regional Working Group for the South-West Pacific, and Mr. Rajendra Prasad, UNESCO-IOC Program Officer delivered a presentation on issues and concerns regarding the implementation of PTWS at the regional and country level, especially on understanding and use of PTWC's enhanced products.

PICTs are requested to provide updated listing of TNCs, TWFPs, NTWC as relevant. It was noted that the great majority of tsunamis that impact the Pacific are locally sourced and countries should develop and put in place SOP(s) and community awareness to address this.

9. Public Weather Services (Pacific Key Outcome 3)

9.1. FINPAC Support to Public Weather Services and Communication to Communities

Mr. Matti Eerikainen, Senior Environment Adviser of the Ministry of Foreign Affairs if Finland and Ms. Christina Gale, FINPAC Project Manager presentation reiterated that supporting public weather is one of the key objectives of FINPAC project on 'Reduced Vulnerability of Pacific Island Communities to the effects of Climate Change' implemented by SPREP and FMI.

Public weather services in the Pacific have improved tremendously over the past number of years with NMHSs now providing information on a regular basis via their own websites. FMS has continued to provide public weather forecast guidance for several PICTS. Some PICTs' NMHSs have secured partnerships with their local television networks to broadcast weather information such as in the Cook Islands and Samoa.

The operation and maintenance of observation stations is one of the priorities for the region but are often faced with challenges such as the collection of data from remote locations and making them available to the WMO Global Telecommunication System (GTS). Support by the RANET project is contributing to strengthening the operational system of NMHSs in the region by addressing communication gaps in receiving information from remote communities using Chatty beetle and HF radio communications.

In addition, FINPAC project has conducted a number of situation analysis of NMHSs observation stations to identify areas for support. These assessments have been carried out in the Cook Islands, Fiji, Federated States of Micronesia, Marshall Islands, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu with Kiribati and Tuvalu assessments to be carried out remotely in the near future. NMHSs would have the opportunity to purchase relevant equipment or spare parts as part of the funding support from FINPAC project.

Moreover, the project introduced the SmartMet which is an integrated forecasting system in Fiji, PNG, Samoa, Solomon Islands and Tonga, and carried out forecasting training to manage and operate the system. The system will be complemented by the SmartAlert System that will be installed in the same countries in 2015-2016.

Access to lightning location data feed provided through a licensed online service provider was also introduced by FINPAC project to PICTs' NMHSs on its usefulness and usage. A regional workshop was held in Apia in October 2014 and was attended by eleven PICs from Cook Islands, Fiji, Kiribati, Marshall Islands, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tuvalu and Vanuatu.

Climate Service remains the large and important part of NMHS and one of the most contributed sectors in terms of development aid for NMHSs in the Pacific region. The FINPAC project recognized the amount of work that has been done or is planned and it aims to share information, methods, products and templates in the Pacific by documenting good practices already used by NMHSs. The information will be collated during a Writeshop proposed for September 2015.

One of the challenges faced by communities is understanding weather terminologies and in an attempt to bridge this gap and improve communication with communities, FINPAC project has targeted several areas including improving the level of understanding of the national media on weather and climate and providing media training and assisting NMHSs to develop communication strategies. In addition, the community Climate and Disaster Resilience Planning Workshops are coordinated and delivered jointly by NMHSs and the National Red Cross Societies in collaboration with NDMOs to raise the awareness of communities on weather and climate information and develop or update community Climate and Disaster Resilience Plans. Additional support from WMO has been secured to assist with coordinating small scale projects with communities to demonstrate how weather information can be applied to aid decision making in a community setting (refer to Agenda Item PMC-3 WP 9.1 for more information).

To further inform the meeting, reference was made to the WMO Strategy for Service Delivery (https://www.wmo.int/pages/prog/amp/pwsp/documents/WMO-SSD-1129_en.pdf). The meeting was also informed about the outcomes of Cg-17 on Public Weather Services (PWS), and how these will be applied to the current and future PWS activities and initiatives in PICTs' region.

9.2. Severe Weather Forecast and Disaster Risk Reduction Demonstration Project

Mr. James Lunny, MetService of New Zealand informed the meeting that the first World Weather Open Science Conference (WWOSC2014, Montreal, Canada, August 2014), recognized that a seamless system spans multiple dimensions including: (a) timescales; (b) multi-hazard forecasts; and (c) supporting applications, including the use and propagation of Numerical Weather Prediction and Ensemble Prediction System (NWP/EPS) into high-impact weather forecasting and hazard risk management. Cg-17 noted that with technological advances, new areas of research addressing these dimensions will require transition to operations. Cg-17 also noted that the Global Data-processing and Forecasting System (GDPFS) is at the core of the WMO operational system, and in order to support adequately the high priorities of WMO, GDPFS needs to evolve, be flexible and adaptable so that it can respond efficiently to current and emerging needs, and user's requirements. Cg-17 therefore agreed to initiate a process for the gradual establishment of a future enhanced integrated and seamless WMO Data-processing and Forecasting System, and adopted Resolution 4.1(1)/1 (Cg-17) – Towards a future enhanced integrated and seamless WMO Data-processing and Forecasting System.

10. Communications

10.1. Radio Internet Communication

Mr. Edward Young (US NOAA) presented on the progress and achievements since 2013 in relation to MHEWS using the Chatty Beetle. He explained its design to support data and transferring of information from remote areas and emphasised that Chatty Beetles are not designed to replace formal means of communication but rather serves as a "heads up" notification. He also mentioned

the challenges in initial deployment and the need for further training. RANET programme is also seeking to develop new form factors (models) of the chatty beetle terminals with some designed intended to cater for less environmentally harsh conditions, reduce costs, etc. while increasing near-real-time exchanges of information.

The presentation also provided an update on the Emergency Managers Weather Information Network (EMWIN), a US NOAA developed and operated system, which provides a highly reliable stream of basic warning messages, low resolution graphics and variety of text products. Low Rate Information Transmission (LRIT) is a standard adopted by WMO for rebroadcast of meteorological satellite imagery. Support was also provided by USAID, Australia DFAT and New Zealand in the deployment of HF and VHF digital radio system networks.

Samoa noted their concern with the short time frame which consultants carried out the installation of communication systems and transfer of information. Tuvalu, Kiribati and Niue also commented on communication issues to communities and outer islands, as well as receiving meteorological synoptic information.

10.2. WMO Information System

Dr. Elena Manaenkova (WMO) delivered the presentation on WIS. Dr. Manaenkova introduced WIS and elaborated on its three core components (i) Global Observing System (GOS); (ii) GTS and; (iii) GDPFS. She also provided updated information WIS implementation with over 150,000 metadata records in the global catalogue and ways to further exploit WIS.

The presentation concluded with the recommendation for NMHSs to (i) designate/confirm national WIS Focal Points; (ii) encourage PICTs to complete the implementation of WIS and/or WIS Compliance procedure; (iii) ensure stable GTS connection to Wellington or Melbourne; (iv) make the implementation of WIS a priority in National Centers (NCs) to ensure staff are appropriately trained in WIS support activities in particular the creation and management of discovery metadata; and (v) to work closely with Global Information System Center (GISC) in Melbourne, Australia to benefit from WIS.

11. Education, Training and Research (Pacific Key Outcome 11)

11.1. Education, Training and Research in the Pacific

Dr. Elisabeth Holland (USP and Chair of PMC's PIETR Panel) presented on capacity development progress made by PMC's PIETR Panel since its establishment. The Panel also identified gaps and outlined possible structure and partnership for the W-CHAOS. She elaborated on courses available but emphasized the need to promote these courses for student update in order for USP to continue offering courses on meteorology.

11.2. Pacific International Training Desk and Other US NOAA Training Programs

Ms. H. Gingerlei Porter (UH) and Ms. Jennifer Strahl (UH) delivered the presentation on PITD The presentation provided background information on PITD function and achievements. It was noted that the key purpose of PITD is to provide introductory tropical weather forecast training with a focus on applied operational forecasting for trainees from PICs.

Some of the proposed activities include the training of 20 participants annually at Honolulu Weather Forecasting Office (WFO); providing in country training on specialized topics and tracking alumni career progression and connecting with past participants.

The meeting encouraged PICTs' NMHSs to complete PITD survey (**http://wfoinventory.uhtasi.org/forms**) and to provide nominations for new candidates to be trained, especially countries who have not yet participated. The mmeting also requested UH to work with the WMO Working Group on Education, Training and Research to assess where this training activities falls under and how it will be credited under the WMO classifications.

11.3. Media Training on Disasters, Weather and Climate Services

Ms. Nanette Woonton (SPREP)presented on media training related to disasters, weather, and climate services. She highlighted the progress made by SPREP through FINPAC project and PACMAS , including improvements in communication channels between NMHSs and stakeholders.

11.4. Reinforcing Meteorological Training Function of FMS

Mr. Koji Kuroiwa (JICA) presented on the reinforcing meteorological training function of FMS The key objective is to strengthen training capacity of FMS for delivering training to other PICTs' NMHSs to meet specific needs and requirements of capacity development. Targeted countries include Cook Islands, Fiji, Kiribati, Nauru, Niue, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. A survey of capacity developments in Kiribati, Tuvalu, Nauru and Vanuatu, and Train of Trainer exercise on operation and calibration of equipment ahs been successfully completed. A number of trainings events are scheduled for the next 2 years.

12. Aviation Weather Services (Pacific Key Outcome 1)

12.1. Quality Management System and Competency Standards

Dr. Elena Manaenkova (WMO) presented on ICAO) and WMO requirements for the establishment of QMS for the provision of aeronautical meteorological service. As of 15 November 2012 it became a standard practice, supplemented by a set of recommendations on the conformity of QMS with ISO 9000 series of quality assurance standards. The current status of implementation of QMS by PICTs is not yet satisfactory. QMS certification has been completed only by Fiji, French Polynesia, New Caledonia, Papua New Guinea and Vanuatu, while all other PICTs were yet to finalize the process. Nevertheless, valuable assistance by Australia, Finland, SPREP and WMO have given opportunities to almost all PICTs to participate in QMS training programme(s) and have initiated the implementation of QMS procedures and principles in their respective NMHSs and Aeronautical Meteorological Services Providers (AMSPs). Experts who have received training, including as QMS auditors, are fully capable of conducting the necessary QMS tasks, however, the lack of financial resources and limited human resources impede the completion of QMS implementation, including external audit and certification.

The lack of QMS for the provision of aeronautical meteorological service qualifies as an "air navigation deficiency" and puts those NMHSs (and AMSPs) in an adverse situation including liabilities that affect not only the NMHS but also the responsible National Civil Aviation Authorities (NCAAs). All PICTs have been urged to develop their national competency assessment programs, including respective target dates.

12.2. Cost Recovery for Aviation Weather Services

Dr. Elena Manaenkova (WMO) presented on the implementation of effective cost-recovery mechanism aligned with ICAO and WMO guidance is crucial for ensuring the provision of high quality and sustainable aeronautical meteorological service. It is recognized that most of PICTs' NMHSs are lacking such cost-recovery mechanism(s) which results in systematic underfunding of the aeronautical meteorological services and related deficiencies in services provision. In addition, lack of funding prevents uptake of advanced technology for monitoring and forecasting of aviation weather hazards with overall negative impact on safety, efficiency and regularity of the aviation operations.

To address such crucial governance issue, both ICAO and WMO established relevant expert bodies, such as the WMO CAeM/ET-GOV, and the Meteorological Cost Recovery Guidance and Governance Team under the ICAO Meteorology Panel. It is therefore recommended that specific cost-recovery issues for PICTs should be addressed to those bodies for development of respective proposals and guidance. In addition to the need for guidance from ICAO and WMO, it should be fully understood that effective implementation of a cost-recovery mechanism at national level is not possible without full cooperation between all relevant stakeholders: the AMSPs (i.e, the NMHSs), the CAAs, airline and airport operators, and government department related to finance and taxation (the treasury). It is therefore essential that the Minister responsible for meteorology should strongly support the cost-recovery and coordinate with relevant government agencies.

12.3. Safe Skies for Aviation over the Pacific

Ms. Elena Manaenkova (WMO) presented and highlighted the need for members PMC to follow the global and regional developments aimed at enhanced Air Traffic Management (ATM), as outlined in ICAO's Global Air Navigation Plan (GANP) and the Aviation System Block Upgrade (ASBU), and at the same time, address specific challenges that affect the current day-to-day operations of AMSPs such as NMHSs, through a regional collaborative approach. The aim of such approach should be a rapid and tangible improvement of the meteorological services for aviation that would bring benefits to all aviation stakeholders and to the population of the region.

The PICTs region has a specific set of issues related to the provision of meteorological service for aviation which need to be carefully analyzed in order to create a suitable and realistic plan for improved and sustainable services, thus contributing to the safety, efficiency and regularity of the aviation operations in the region, as well as addressing related environmental concerns. Due to the scarce resources, it is highly recommended that such a plan should follow a strong regional collaborative approach. Such approach should address both the governance issues (including funding and cost-recovery) and the technical issues for improved monitoring and forecasting capabilities of PICTs.

With regard to technology improvement and modernization, the following components should be considered (i) ensuring sustainable provision of high quality airport observations and reports; (ii) communications and information exchange; (iii) TAF; (iv) Significant Meteorological (SIGMET) phenomenon and aviation hazards information; (v) link with DRR; and (vi) capacity development.

13. Monitoring and Observations Systems (Pacific Key Outcome 7)

13.1. WMO Integrated Observing System for Region V

Dr. Elena Manaenkova (WMO) presented on WIGOS highlighting the next generation of integrated observation systems and provided a brief introduction on WIGOS component systems. She noted the

integration is timely as previously systems have operated independent of one another. Cg-17 resolutions were all approved with regard WIGOS. Implementation of the pre-operational phase will be conducted over the next 4 years (2016-2019). Dr. Manaenkova demonstrated OSCAR website and emphasized metadata needs to be harmonized with database. She also highlighted the need for high quality (& temporal) TEMP profiles from the data sparse Pacific (cf Europe/Asia/Africa). Radiosonde and AMDAR were amongst top 5 most important observational data. She noted that Regional WIGOS Implementation Plan for RA V has made good progress. Overall, WIGOS is advancing well, and she encouraged PICTs to be active with regard WIGOS matters.

14. The Update and Review of the Pacific Islands Meteorological Strategy 2012-2021

Mr. Salesa Nihmei (SPREP) presented on update and implementation of PIMS 2012-2021. The update focused on the mid-term review of PIMS. He emphasized that country reports assist in reporting on the progress of the 14 PKOs of PIMS and encouraged countries to submit more reports. He also noted that PMC has continued to expand, with more participants and partners attending such as APCC and Taiwan. He estimated that over 600 staff working in PICTs' NMHSs and that over 20 million US Dollars per year are invested in in the development of PICTs' NMHSs. There are some gaps in the current PIMS in relation to the areas of research, communication, infrastructure and gender which need to be addressed.

A mid-term review of PIMS will be completed by 1 July 2017. A ToR has been drafted and he welcomed the establishment of a committee to provide input from the PMC to the review team.

15. Strengthening the Pacific Meteorological Council and the Pacific Meteorological Desk Partnership (Pacific Key Outcomes 10 and 14)

15.1. Governance of the PMC

Dr. Netatua Pelesikoti (SPREP) presented on response to a request during PMC-2 on clarification on the operation of PMC as noted in Paragraph 163 of PMC-2 Final Report "some difficulties in the administrative operation of the PMC and requested for a review of the existing institutional arrangements for considerations at the PMC-3". The general concerns relate (i) to the lack of clarity of the status of PMC within the SPREP structure; (ii) membership of PMC; and (iii) financing of PMC.

15.2. Pacific Meteorological Desk Partnership

Mr. Salesa Nihmei (SPREP) presented on PMDP Work Plan and Budget and highlighted the tentative schedule plan for the next two years. He noted that PMDP continues to provide support to secure projects and funding to implement PIMS 2012-2021. He further highlighted the establishment of new partnerships with IFRC to engage with NMHSs and FINPAC project's communities, UKMO and MetService New Zealand to manage the Pacific Fund in supporting upper air operation in the Cook Islands, Kiribati and Tuvalu He also noted ongoing work on bringing visibility and promoting meteorological issues around the region and coordination efforts with partners on regional and national activities.

16. Resources Mobilization (Pacific Key Outcome 12)

16.1. Regional Technical Support Mechanism

Dr. Netatua Pelesikoti (SPREP) presented on RTSM and its associated financing facility RRF. RTSM and RRF were launched in July 2014 in Marshall Islands during the Forum Leaders Meeting and at the 25th SPREP Meeting. RTSM is a registered network of experts in climate change and disaster management matters who will provide coordinated and timely TA targeting strategic approaches to effective resourcing across key areas related to climate change such as adaptation, climate science and meteorological services, policy development, capacity building, economics, knowledge management and others. RRF is the financing arm of the RTSM and ends in June 2016. Total financing available through RRF is 1.1 million USA Dollars. Information on types of TAs eligible for RRF financing and process for applying for TA assistance is available at http://rtsm.pacificclimatechange.net/ and or by email rtsm@sprep.org.

16.2. Green Climate Fund & Adaptation Fund

Dr. Netatua Pelesikoti (SPREP) presented on status of SPREP as a Regional Implementing Entity (RIE) under the Kyoto Adaptation Fund in November 2013, and recently accredited to GCF in March this year.

SPREP can assist countries in developing and submitting climate change adaptation proposals to the Adaptation Fund Board for financing of up to 10 million USA Dollars. This is particularly important for countries in the region with limited national capacity. At the same time, SPREP plans to continue to support efforts in the region that would allow countries to attain National Implementing Entity (NIE) status, allowing countries to gain direct access to funds from AF.

For GCF, SPREP is one of seven RIE, and is accredited to 'Category C' (low risk) projects of up to 50 million USA Dolara through a project management modality. This means that SPREP can work with eligible SPREP Member countries to develop adaptation and mitigation project proposals, and that SPREP can serve as both the implementing and executing agency as needed.

16.3. WMO Resource Mobilization and Partnership

Ms. Mary Power (WMO) presentation focused on project-based activities on specific global and regional priorities identified by WMO members during WMO Congress and Executive Council and Regional meetings. These might include demonstration projects with potential for upscaling and replication, project opening up new areas of services delivery and projects with piloting innovative technology.

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17. Disaster Risk Reduction and Climate Change in the Pacific

17.1. The Strategy for Climate and Disaster Resilient Development in the Pacific

Dr. Netatua Pelesikoti (SPREP) presented on SRDP and informed PMC members on the progress made in the development of the draft SRDP. She explained the draft SRDP intends to succeed the previous regional frameworks on climate change and disaster risk management namely the Pacific Islands Framework Action on Climate Change (PIFACC) and the Pacific Framework for Action on

Disaster Management (PFA). The overall aim is to strengthen the resilience of Pacific Island communities to the impacts of climate change and disaster risks within the context of sustainable development. To achieve this goal, SRDP provides targeted high-level strategic guidance to key stakeholder groups that are recognized as having a critical role to play in addressing challenges posed by climate change and disasters in the Pacific. These stakeholder groups include governments and administrations, private sector, CSOs and communities, CROP agencies and other development partners.

17.2. The IPCC1 and the UNFCCC-COP21 in Paris, France

Dr. Netatua Pelesikoti (SPREP) presented and informed PMC on preparation SPREP is undertaking to support PICs in light of the UNFCCC COP 21 to be held in Paris, France, from 1 to 11 December 2015. Supporting activities were including pre-COP negotiation trainings for PICs

PMC members expressed their desire to attend COP Meetings in the context of climate activities and functions carried out by NMHSs.

17.3. Third United Nations World Conference on Disaster Risk Reduction

Dr. Netatua Pelesikoti (SPREP) presented on the outcomes the WCDRR and development of the Post-2015 Framework for DRR. Dr. Netatua Pelesikoti, Director of SPREP's Climate Change Division, highlighted the Pacific delegation as one of the largest to attend a Global DRM conference with over 70 participants from 13 PICTs.

She also noted the linkages of the DRR framework on Multi-Hazard EWS components to planning and investments; preparedness and response; communication and disseminations; hazard monitoring and forecasting; exposure and vulnerability; and risks. Attempts are being made also by UNISDR and other partners to ensure national progress reports on the Sendai Framework on DRR are done simultaneously and aligned with reporting on the regional SRDP to reduce burden upon PICTs.

18. Guidance to the 1st Pacific Ministers Meeting on Meteorology

18.1. Provide Guidance to the Agenda for the 1st PMMM

18.2. Provide Guidance to PMC-3 Presentation to the 1st PMMM

18.3. Review and Finalize the Nuku'alofa Declaration

The meeting reviewed the Nuku'alofa Declaration and endorsed with changes to be presented in the PMMM.

19. Venue of the 4th Meeting of the Pacific Meteorological Council

The meeting decided that the next PMC will be held in Solomon Island 2017.

[1] IPCC - Intergovernmental Panel on Climate Change

20. Review and Adopt the Report of 3rd Meeting of the Pacific Meteorological Council

The meeting endorsed PMC-3 recommendation and requested two weeks duration for inputs and adequate discussions.

-End-

ANNEX 1: PMMM Participant List

FIRST PACIFIC MINISTERIAL MEETINGON METEOROLOGY

Theme: "Sustainable Weather and Climate Services for a Resilient Pacific "

24 of July 2015

Faonelua Convention Centre, Nuku'alofa, Kingdom of Tonga

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ANNEX 2: Statement and Opening Address for PMMM-1

1) Opening Address – Acting Prime Minister and Minister of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications

OPENING STATEMENT ON THE OCCASION OF THE FIRST PACIFIC MINISTERIAL MEETING ON METEOROLOGY

by

The Acting Prime Minister

& Minister for Meteorology, Energy, Information, Disaster Management, Environment,

Climate Change and Communications (MEIDECC)

(24 July 2015, Nuku'alofa, Kingdom of Tonga)

His Royal Highness, Crown Prince Tupouto'a 'Ulukalala

Honourable Ministers responsible for Meteorology in the Pacific, Head of delegates

Ministers of his Majesty's Cabinet

His Excellency Brent Aldam (Australian High Commissioner to Tonga) and the diplomatic corps

Dr Elena Maneankova, Assistant Secretary-General of the World Meteorological Organization,

Mr Matti Nummelin, Representative of the Ministry of Foreign Affairs of Finland

Mr David Sheppard, Director-General of the Secretariat of the Pacific Regional Environment Programme,

Reverend Dr 'Ahio, President of the Free Wesleyan Church of Tonga,

Partners, Media and Friends

Malo e lelei

Your Royal Highness, thank you for gracing us with your presence this morning.

Hon Ministers, senior officials, partners, on behalf of the Government and people of Tonga I welcome you all this morning to the opening of the First Pacific Ministerial Meeting on Meteorology but more importantly welcome to the Kingdom of Tonga.

Hon Ministers and representatives of member countries, today is the first time that you gathered together, with an unprecedented opportunity to find a pathway to providing 'Sustainable weather and climate services for a resilient Pacific". I do not have any doubt that if we invest more in weather and climate services, we will make our Pacific communities more resilient, and in turn reduce our losses from disasters and more importantly save lives!

Hon Ministers in welcoming you today, I would also like to take this opportunity to welcome and thank your hard working senior officials who have been working really hard in the last four days to draw up a way forward for us to consider today.

To our partners, welcome and thank you for your willingness to partner with us, the Pacific communities, despite the various challenges ….and we hope you will be by our side as we overcome these challenges and when we face the next natural disaster…

Today we will have our first Ministerial meeting on Meteorology and if I may quote Henry Ford 'Coming together is a beginning; keeping together is progress; working together is success.

Today mark our coming together and I look forward to our working together to ensure success and to build our resilience.

Your Royal Highness, thank you once again for honoring us with your presence and welcome to you all once again to the Opening of the First Pacific Ministerial Meeting on Meteorology

'Ofa atu and Malo aupito!

2) STATEMENT ON THE OCCASION OF THE OPENING OF THE FIRST PACIFIC MEETING ON METEOROLOGY by

E. Manaenkova

Secretary-General

World Meteorological Organization

(Nuku'alofa, Tonga, 24 July 2015)

Excellencies, [Tonga],

Distinguished Ministers responsible for Meteorology in the Pacific,

Ladies and Gentlemen,

It is a great honour to address you on the occasion of the First Pacific Meeting on Meteorology. On behalf of the World Meteorological Organization, I wish to extend special thanks and appreciation to [Tonga] and the Government of the Kingdom of Tonga for hosting this important meeting. This is the first ever dedicated Pacific ministerial meeting on meteorology. It follows the third meeting of the Pacific Meteorological Council. This is a clear sign of the commitment of Tonga to WMO and meteorology.

I am happy to note the presence of numerous Ministers, which clearly reflects the commitment of Pacific countries in advancing the agenda of meteorology in Africa. This meeting represents the culmination of all the tireless effort that we, the meteorological community of WMO and our partners, have invested since early 1990s and then since 2011, when the first meeting of the PMC was convened, a true landmark event.

I wish to acknowledge the critical role of the South Pacific Regional Environment Programme, our partner, for their commitment and support in moving forward the agenda of meteorology in the Pacific. I would like to express the satisfaction of WMO for the progress that has been made, especially since the creation in 2010 of the Pacific Meteorological Desk Partnership, hosted by SPREP in Apia, in Samoa and supported jointly by SPREP and the WMO Regional Office for the South-West Pacific.

I wish to recognize also the contribution of Finland. The Finland-Pacific project, FINPAC, is assisting Pacific National Meteorological Services (NMS) to enhance their capacity and tools to better deliver weather and climate services. It is also working with communities to strengthen their ability to use and apply meteorological data and information.

Excellencies, Ladies and Gentlemen,

The agenda you have before you concern some of the most critical issues faced by meteorology in the Pacific.

Strengthening the capacities of the Pacific National Meteorological Services remains the priority number one – modernizing their infrastructure, equipping them with staff with the highest technical skills, providing them with sufficient resources, raising their political visibility. The contribution of the Pacific met services to the sustainable development of their countries is being increasingly recognized, and must be paired by the necessary support and investments at the national level.

I wish to mention here the leading example of the met services of Tonga and Papua New Guinea, which have requested their governments to allocate funds specifically for climate related activities such as National Climate Outlook Forums and other stakeholder forums.

But the geographical situation of Pacific island clearly demands a regional approach, were resources, such as the centres of excellence, are contributed towards a common goals, for the benefit of all. This is the case of WMO Regional Meteorological Centre in Fiji, specialized as a Tropical Cyclone Warning Centre. The same can be said for WMO Regional Training Centres in Indonesia and for the APEC Climate Centre in the Republic of Korea. I should add that the first Pacific Regional Climate Outlook Forum will take place in Fiji next October, also as a result of sharing of experiences from other SIDS regions.

All this demands coordination and the same is true of the activities of development partners. The Pacific region benefits from significant support from the international community. Yet, further efforts should be done to ensure an effective coordination mechanism on meteorology in the Pacific region. A mechanism that can assist in enhancing the best scientific and technical resources available in the region, for the benefit of the region. A mechanism that can facilitate external investments, directing them where they are most needed and can be most effectively utilized. The Pacific Island Climate Services Panel can serve this task.

With the establishment of the Programme for WMO SIDS and Member Island Territories, adopted by the World Meteorological Congress last June, WMO wants to give a strong signal of its commitment to support SIDS:

- First by supporting the implementation of the SAMOA Pathway in priority areas such as disaster risk reduction, climate change, oceans, food security, and science and technology;
- Then by supporting Pacific National Meteorological Services in the development of durable partnerships on disaster resilience and climate change adaptation.

Last year, at the Third United Nations Conference on Small Island Developing States in Samoa, WMO launched a partnership initiative for strengthening weather and climate services in SIDS under the umbrella of the Global Framework for Climate Services (GFCS). The partnership involves numerous United Nations organizations, but also other international organizations such as the International Federation of Red Cross and Red Crescent Societies and the International Union for Conservation of Nature, and many regional organizations from SIDS regions.

Through this partnership, we expect to achieve a number of important results through 2019:

- Improved delivery of information services on weather and climate;
- Enhanced human and technical capacities at national and regional climate centres;
- An increased range of products and services to deliver to users;
- Expansion of the infrastructure for weather and climate research and services;
- The partnership will also be a means to foster South-South and North-South cooperation.

Excellencies, Ladies and Gentlemen,

This meeting will certainly provide an opportunity to discuss in concrete terms some critical subjects. Not only the importance of investing in meteorological infrastructure, human resources and services so that can they contribute to sustainable development.

SIDS are exposed to and dramatically affected by different types of natural disasters and climate change impacts: tropical storms, floods, drought, tsunamis… Because of sea level rise, some Pacific SIDS face the real prospect of submergence and complete abandonment during this century. WMO is strongly in favour of multi-hazard early warning systems that provide a coordinated platform for managing multiple risks. They can deliver alerts on cyclones, storms surges, and temperature extremes, as well as on the resulting impacts such as floods, diseases and physical damage. This is important because different hazards can influence one another or occur simultaneously. For example, tropical cyclones cause wind damage but can also lead to storm surges and coastal inundation. A multi-hazard approach helps also to improve the coordination between structures to which early warning and disaster management are delegated.

Effective and tailored weather and climate products and services at relevant scales can play a vital role in supporting adaptation to climate variability and change and supporting weather and climate-sensitive sectors. Strengthening weather and climate services will promote sustainable economic development and build resilient societies in SIDS. Through the GFCS, WMO and its partners will support SIDS in developing and enhancing systems for production and delivery of useable climate information for decision-makers in different sectors.

In conclusion, I wish to re-emphasize that the Pacific National Meteorological Services are critical actors in supporting the sustainable development of their countries. There is today increased awareness among policymakers and the general public of the socioeconomic benefits delivered by weather and climate services. Through this and future meetings and mechanisms, you, Ministers responsible for meteorology in the Pacific, together with SPREP and WMO, are raising the visibility of meteorology in the national and regional development agendas. I am confident that the ambitious objectives that were set will be achieved.

I wish you a successful meeting and an enjoyable stay in Tonga.

Thank you.

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3) STATEMENT DELIVERED BY MINISTRY OF FOREIGN AFFAIRS FINLAND

Speech 24. July 2015

Matti Nummelin

Senior Environmental Adviser

Ministry for Foreign Affairs of Finland

Third Meeting of the Pacific Meteorological Council, Ministerial session

Your Royal Highness Crown Prince Tupouto'a 'Ulukalala

Honourable Ministers responsible for meteorology from around the region

Excellences, ladies and gentlemen

I am happy and honoured to address Third Meeting of the Pacific Meteorological Council on the behalf of the Government of Finland. Especially when the very first time Cabinet Ministers responsible for meteorology in the Pacific Islands discuss, promote and commit resources for weather and climate services in order to contribute more effectively to the sustainable development needs of the Pacific Island Countries.

Now a day it is commonly recognized that weather and climate services are an essential component in national and regional development framework and sustainable development, particularly in poverty reduction efforts of developing countries as well as combatting the adverse impacts of climate change. The National Meteorological Services is a fundamental component of the national infrastructure of all countries. It is acknowledged that many of those in Pacific island countries are constrained by limited resources and staff to meet operational needs and the capacity to absorb advanced technology. I am happy that Finland on its own part has been able to collaborate in this area in the Pacific Region.

In Finland – far north – we are aware that the Pacific region is located in an area very prone to extreme adverse shifts in weather patterns like tropical cyclones, floods and droughts. We are aware that these pose a serious threat to the fragile economies and social fabrics of these countries through death, destruction and suffering caused by natural disasters.

Appropriate meteorological and climatological services applied to sensible planning have the potential to greatly minimise and alleviate many of these adversities, clear some of the major obstacles to economic growth and contribute to the sustainable development, reduction of poverty, and contribute to better living standard and self-reliance of the Pacific countries.

This year has a great international significance for guiding the development of the meteorological services. We have three major international events which will guide the work of all nations domestically and internationally. The Sendai Framework for Disaster Risk Reduction 2015-2030 has already been adopted earlier this year. In September we will agree on the Post-2015 Development Agenda and finally in December we should seal the new global climate agreement.

According to the Sendai Framework combatting disasters includes several issues directly related to meteorological services. It requests to substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people. Met-services have in this work a crucial role.

The Framework stresses special case of small island developing States, stating that is a critical need to build resilience. It calls to incorporate disaster risk reduction measures into multilateral and bilateral development assistance programmes within and across all sectors. Many development cooperation programmes in the Pacific countries already address this, and I am happy that Finland is one of the developing cooperation partners to strengthen this region.

The development of multi-hazard, multisectoral forecasting and early warning systems should be done through a participatory process and tailor them to the needs of users, including social and cultural requirements, in particular gender. I am glad that in the regional meteorological project supported by Finland steps have been taken to strengthen the collaboration with met-services and local communities by the facilitation of the Red Cross.

The other big issue this year is the Post-2015 Development Agenda to be adopted soon. Its final draft includes several issues closely related to the work of met-services. The Agenda raises among other things the maintenance and enhancement of food security, sustainable management of water, sustainable modern energy for all, combating climate change and desertification as well the promotion of resilience and disaster risk reduction. Met-services play important role for reaching these goals.

Thirdly in the ongoing climate change negotiations the development and strengthening early warning systems for climate hazards have a prominent

role. Especially small island developing states have constantly kept this issue as one of their top priorities in the negotiations. Research and systematic observations are a permanent agenda item of the climate negotiations. Met-services have a prominent role of these issues as well as in adaptation planning and mapping the potential of many types of renewable energy.

The met-services of Pacific islands are overwhelmed by the need to respond to a number of policy issues and operational requirements ranging from tropical cyclones, climate variability, climate monitoring, climate change, provision of routine weather information including forecasts, and meeting the needs of several economic sectors. Finland understands these concerns as its own part tries to support small island developing states. The ongoing FINPAC project executed by SPREP together with FMI is one example of this.

I am pleased that National Meteorological Service of Finland and its key expertise work with the Pacific colleagues for the ultimate beneficiaries which are groups that have special needs for accurate weather forecasts like aviation and maritime services, farmers, tourism industry and fisheries and governments that receive improved information for decision-making. A particular focus is on those living in rural communities and villages.

In addition to the internationally recognised expertise of the FMI, Finland is also home to the largest manufacturer of meteorological equipment in the world, Vaisala. Vaisala equipment ranges from sounding stations and radiosondes to weather radars and is found in virtually any country in the world. Many of the Pacific Island Countries currently use Vaisala equipment for weather and climate observations.

Finally, in the context of this Meeting of the Pacific Meteorological Council I want expresses on the behalf of the Government of Finland our gratitude to the Pacific States for the support to Professor Petteri Taalas, the Director of the National Meteorological Service of Finland, in the recent election of the incoming Director the World Meteorological Organization. I am sure that this appointment will also be beneficial to this region.

I wish you a successful meeting. Thank you for your attention.

4) SPREP DIRECTOR GENERAL

FIRST PACIFIC MINISTERIAL MEETING ON METEOROLOGY:

"Sustainable Weather and Climate Services for a Resilient Pacific"

Fa'onelua Convention Centre, Nuku'alofa, Kingdom of Tonga

Opening Speech: Director General of SPREP, David Sheppard, 24 July 2015

Talofa and Good Morning,

Your Royal Highness, Crown Prince of Tonga, thank you for honoring us with your presence,

Honorable Acting Prime Minister and Chair of this first Pacific Ministerial Meeting on Meteorology

Ministers responsible for Meteorology from around the Pacific

Directors, Heads and Seniors Officials from the National Meteorological Services as PMC members,

Ms. Elena Maneankova, Assistant Secretary General of the World Meteorological Organization and WMO staff,

Matti Nummelin from the Ministry of Foreign Affairs of Finland,

Government Officials,Development Partners, Members of the Media,Ladies and gentlemen

It is a great pleasure to provide some remarks on behalf of SPREP to this first ever Pacific Ministerial Meeting on Meteorology.

At the outset I would like to acknowledge the Government of Tonga's outstanding contribution to meteorological services in the Pacific region, in particular through the Tonga Meteorological Services. Your Highness and Acting Prime Minister, thank you and congratulations on all your Government's achievement. I also acknowledge the excellent hosting

arrangements and coordination by your local team with SPREP and WMO staff to arrange this meetings.

SPREP – the Secretariat of the Pacific Regional Environment Programme - has been working in the Pacific for a long time – 40 years –to protect and improve our environment and to ensure sustainable development for present and future generations.

Over the last 5 years we have been undertaking an aggressive change management process at SPREP to ensure we can better support Pacific island countries and territories in the areas of our mandate. I am pleased that this process has resulted in a significant increase in our support, better partnerships, more effective governance, and a sharper focus for our organisation.

Climate change and meteorology is one of 4 areas on which SPREP works. In fact SPREP has had a climate change programme for more than 25 years in the Pacific region – long before climate change was a household word.

Meteorology has strong roots in the Pacific islands with knowledge and historical data stored in our Pacific Meteorology Services going back over 100 years.

Meteorology is critically important for our Pacific countries and impacts across all sectors and communities, and is essential for sustainable development in our region. We at SPREP are proud to be part of this crucial and valuable function.

Honorable Ministers, I would also like to take this opportunity to provide a short history of SPREP's role to support national Meteorological in the region.

One of the recommendations from the landmark 1991 report "the Changing Climate in Paradise", was for annual meetings of Pacific Island Meteorological Services to provide a foundation for regional cooperation in climate monitoring and climate data services.

Twenty two (22) years ago, in 1993, SPREP, with partners, convened the first Regional Meteorological Services Directors (RMSD) in Vanuatu to discuss how National Meteorological and Hydrological Services could best contribute to strengthening the resilience and security of the Pacific Communities to climate change. The meeting has met on a bi-annual basis for 14 meetings…and one of the biggest challenge for SPREP was to continually faundraise for the convening of this meeting.

Since then there has been much progress and we saw the World Meteorological Organization establish their regional office in the Pacific - hosted at SPREP - to continue this support to the region.

Pacific island leaders recognized that we were at a cross roads with meteorological services 5 years ago and requested SPREP, along with partners, to undertake a major review of meteorological services in our region.

This review highlighted major problems of capacity and sustainability with Met Services in our region and made a number of key recommendations.

I am pleased to note that the majority of these recommendations have been implemented. In particular I would highlight:

First, the establishment of the Pacific Meteorological Council – PMC - which met for the first time in Majuro, Republic of Marshall Islands in August 2011. The PMC provides authoritative guidance and recommendations on weather, climate services, climate change and extreme events.

The PMC has provided a new and reinvigorated vision for our region on meteorological issues and it is indeed significant that today we are having the first ever Ministerial meeting in our region.

Second, the development of the Pacific Island Meteorological Strategy (2012-2021) which provides a clear and agreed framework for action on meteorological services and support.

Third, the establishment of the Pacific Meteorological Desk Partnership (PMDP), based at SPREP, consisting of SPREP and WMO officers, working closely with partners and other organisations.

The latter point underlines how important SPREP views the issue of partnership and in particular our close and effective partnership with WMO over many years, in particular through having the Pacific Regional Office for WMO, headed by Henry Taiki, based with us at SPREP.

On behalf of SPREP and our members I would like to sincerely thank WMO for their partnership, friendship and hard work in support of all Pacific island countries over many years.

On meteorological issues the issues involved are many and varied – partnership is essential. As a Pacific leader once said: *" if you want to go fast you go alone, if you want to go far you go together".*

Regarding meteorology in our region, there are many challenges and we must go together.

I am thus pleased to acknowledge the involvement of many other partners and agencies working in our region.

These partners include:sister CROP agencies, particularly USP and SPC; the Government of Australia, particularly through the Bureau of Meteorology

and CSIRO; the New Zealand Government, particularly through NZ Met and NIWA; the Government of the US, particularly through NOAA; the Government of France, through France Meteo; and the Government of the UK, through UK Met.

I also acknowledge the new partnership the PMC has forged with the media as its *new arms and legs* to get information to communities in the Pacific.

It is significant and important to note the involvement of many new Governments and agencies over the last 5 years, including: the Government of Finland, through the FINPAC Project; and the Government ofKorea, through the APEC Climate Centre and APCC.

I would also like to acknowledge the Government of Japan through JICA – the Japan International Cooperation Agency – which is supporting development of the Pacific Climate Change Centre at SPREP, which will become a major centre for support for meteorological services and associated capacity building in our region. I note this support builds on a long history of JICA support to the Pacific in the field of met services.

To all partners working to support meteorological services in Pacific island countries, a warm and sincere thank you.

Chair, Pacific leaders have long identified climate change and natural disasters as a matter of survival and national security in our region. Even though our countries contribute 0.03% of the world's greenhouse gas emissions, we are in the "front line" of climate related impacts.

Meteorological services are now recognized as essential if Pacific island countries are to respond to these challenges.

The PMC, particularly todays' first ever Ministers Meeting, is at the centre of our responses to a changing climate and natural disasters.

SPREP is honoured to be part of this process and will continue to support our Pacific island countries in this vitally important area. Thank you.

5) Opening Statement by His Royal Highness Prince TUPOUTO'A 'ULUKALALA

OPENING STATEMENT ON THE OCCASION OF THE FIRST PACIFIC MINISTERIAL MEETING ON METEOROLOGY

by

His Royal Highness Prince TUPOUTO'A 'ULUKALALA

(24 July 2015, Nuku'alofa, Kingdom of Tonga)

Honourable Siaosi Sovaleni, Acting Prime Minister of Tonga

Honourable Ministers responsible for Meteorology in the Pacific,

Dr Elena Maneankova, Assistant Secretary-General of the World Meteorological Organization,

Mr Matti Nummelin, Representative of the Ministry of Foreign Affairs of Finland

Mr David Sheppard, Director-General of the Secretariat of the Pacific Regional Environment Programme,

Reverend Dr 'Ahio, President of the Free Wesleyan Church of Tonga,

Members of the Diplomatic Corp, **Partners, Media and Friends**

Malo e lelei and welcome to the Kingdom of Tonga.

It is my great honour, on behalf of the Government and the people of Tonga to join Honourable Siaosi Sovaleni, in extending a warm welcome to all present here today for the occasion of the First Pacific Ministerial Meeting on Meteorology.

It is also an honour and privilege to be part of this historical occasion held here in the Kingdom of Tonga.

Choosing the theme of "Sustainable weather and climate services for a resilient Pacific" for this first meeting of the Pacific Ministers for Meteorology, is very timely and appropriate.

The increase in the frequency and intensity of high impact weather events on our small islands due to climate variability and climate change is a concern. Cyclones, drought, landslides, floods and storm surges pose critical threats to our safety and security; water and food security; availability of clean fresh water, sustainable development, prosperity and in some cases now our very existence and survival.

Having a robust Weather Service is no longer a luxury for us but an obligation. Quality weather and climate information is now a requirement to help us adapt, reduce risk and build resilience against climate and weather related hazards. This is of fundamental importance to all our Governments.

We listen to the weather forecast after the news every day and during warning events and we receive information on El Nino time and again from the Weather Office giving us advice on the state of the atmosphere and potential threats to our livelihoods but if we ask the questions, Where does that information come from? Or How was it created? Or How much does it cost? many will not know the answer. But I can confirm this morning, it's expensive. As most of you already know.

Let us talk about Cost. How much does it cost to provide a reliable weather forecast? What is the cost of operating a National Meteorological Service? What is the cost of maintaining a network of automatic weather stations? or the cost of training? Can we afford it? The answer to these questions is in the price. Do we pay with sweat or do we pay with our lives or our livelihoods. What is the price to pay if our communities are not informed? It's easy mathematics.

Honorable Ministers of Meteorology, you are gathered here in Tonga today to deliberate and find ways to advance weather and climate services in the Pacific. I encourage you to work

together and find common ground to support Meteorological Services in our region as a means of building resilience by committing national resources and working with our development partners to mobilize the necessary resources needed. This is the first meeting of its kind and I thank you and your Governments for your commitment to Meteorology and for accepting our invitation to come to and discuss these important matters in Tonga.

I thank the World Meteorological Organization (WMO) and its Members for its support in the recent establishment of the new WMO Program for Small Island Developing States (SIDS) and Island Territories. It gives us new hope for finding mechanisms that will work for small island states and territories in advancing meteorology. I also like to thank the Secretariat of the Pacific Regional Environmental Program (SPREP) and regional and international Partners for organizing and supporting this event. We start here and I sincerely hope this important forum continues to meet in the future.

I wish you a successful meeting and I declare this First Pacific Ministerial Meeting on Meteorology Officially Open.

'Ofa atu

ANNEX 3: Pacific Ministers Meeting on Meteorology Agenda

FIRST PACIFIC MINISTERIAL MEETING ON METEOROLOGY

Theme: "Sustainable Weather and Climate Services for a Resilient Pacific "

24 July 2015

Fa'onelua Convention Centre, Nuku'alofa, Kingdom of Tonga

Annex 1: PROVISIONAL AGENDA

8:30 - 09:00	**ARRIVAL OF DIGNITARIES**
09:00 - 10:30	**OFFICIAL OPENING PROGRAME**

Master of Ceremony: **Mr. 'Ofa Fa'anunu,** Director of Tonga Meteorology Service.

Opening Prayer: Hymn #421 v1, 4, 5, 6, FWC Fasi-moe-Afi Choir
Dedication Prayer **Rev Dr.'Ahio,**
President of the Free Wesleyan Church of Tonga
Lord's Prayer, FWC Fasi-moe-Afi Choir

Welcome Speech: **Hon. Siaosi 'Ofakivahafolau Sovaleni,** Acting Prime Minister and Minister *for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications.*

Statements: 1. **Dr. Elena Manaenkova,** Assistant Secretary General of the World Meteorological Organisation.

2. **Mr Matti Nummelin**, Senior Environment Adviser, Ministry of Foreign Affairs, Finland.

3. **Mr David Sheppard**, Director General, Secretariat of the Pacific Regional Environment Programme (SPREP).

Anthem FWC Fasi-moe-Afi Choir

Opening Address: His Royal Highness Crown Prince Tupouto'a 'Ulukalala

Vote of Thanks: **Mr. Paula Ma'u,** CEO Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications

Benediction: **Rev Dr. 'Ahio,** President of the Free Wesleyan Church of Tonga

Presentation of Gift for His Royal Highness Crown Prince Tupouto'a 'Ulukalala

Photo Session and Morning Tea – End of the Opening Ceremony

10.30 – 11.00 **Agenda Item 1: ORGANIZATION OF MEETING**

1.1 Designation of Chair – Honourable Siaosi Sovaleni Acting Prime Minister and Minister for Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications

1.2 Adoption of Agenda and Program of Work

11:00 – 12:00 **Agenda Item 2: METEOROLOGY SUPPORTING SUSTAINABLE DEVELOPMENT IN THE PACIFIC**

2.1 National Meteorological and Hydrological Services Contributions to Sustainable Development in the Pacific *(Samoa)*

Discussions/Interventions/Statements from Ministers.

2.2 Opportunities and Challenges in the National Meteorological and Hydrological Services and Importance of Investing in Meteorology *(SPREP/WMO)*

Discussions/Interventions/Statements from Ministers.

Signing of Letter of Agreement between SPREP and WMO

12:00 - 13:00BREAK: LUNCH

13:00 - 14:00 **Agenda Item 3: MULTI-HAZARD EARLY WARNING SYSTEM**

3.1 The Importance of Multi-Hazard Early Warning System *(Fiji)*

Discussions/Interventions/Statements from Ministers.

3.2 Flood Warning Systems - Lessons Leant *(Solomon Islands)*

Discussions/Interventions/Statements from Ministers.

14:00 - 15:00 **Agenda Item 4: CLIMATE SERVICES**

4.1 Climate Services for Drought Management *(Tonga)*

Discussions/Interventions/Statements from Ministers.

4.2 Global Framework for Climate Services - The Pacific Roadmap *(WMO)*

Discussions/Interventions/Statements from Ministers.

4.3 APCC[2] Meteorological Support to the Pacific *(APEC [3]Climate Centre)*

15:00 – 15.30 **BREAK: AFTERNOON TEA**

15:30 – 16:30 **Agenda Item 5: OUTCOME OF THE THIRD MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL**

16:30 - 17:30 **Agenda Item 6: DISCUSSION AND CONSIDERATION OF THE NUKU'ALOFA DECLARATION**

17:30 – 18:00 **Agenda Item 7: PRESENTATION OF GIFTS**

Agenda Item 8: CLOSING OF MEETING

18:00 – 21:00 **Reception/Dinner**

[2] APCC – APEC Climate Centre

[3] APEC - Asia Pacific Economic Cooperation

ANNEX 4: PMC 3- Meeting Agenda

THIRD MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL

Theme: "Sustainable Weather and Climate Services for a Resilient Pacific "

20 - 23 July 2015

Fa'onelua Convention Centre, Nuku'alofa, Kingdom of Tonga

PROVISIONAL AGENDA

Monday, 20 July 2015

07:30-09:00 Registration at Fa'onelua Convention Centre (Continued)

09:00-10:00 Agenda Item 1: Opening Ceremony

1.1: Opening Prayer *(Tonga)*

1.2: Welcome *(2013 PMC Chair)*

1.3: Key Note Address *(SPREP)*

1.4: Key Note Address *(WMO)*

1.5: Key Note Address *(Finland)*

1.6: Opening Statement *(Tonga)*

Group Photo

10:00-10:30 *Refreshment*

10:30-11:00 Agenda Item 2: Organisation of the 3rd Meeting of the Pacific Meteorological Council

2.1: Election of Chair and Vice-Chair

2.2: Adoption of Agenda and Program of Work

2.3: Establishment of a Drafting Committee

11:00-11:20 **Agenda Item 3:** Report on Actions Taken on Matters Arising from the Second Meeting of the Pacific Meteorological Council *(SPREP)*

11:20-12:30 **Agenda Item 4: Country Reports from National Meteorological Services**

4.1: American Samoa

4.2: Cook Islands

4.3: Federated States of Micronesia

12:30-13:30 *Lunch*

13:30-15:30 **Agenda Item 4***(Continued)*

4.4: Fiji

4.5: French Polynesia

4.6: Kiribati

4.7: Marshall Islands

4.8: Nauru

4.9: New Caledonia & Wallis and Futuna

15:30-15:50 *Refreshment*

15:50-17-30 **Agenda Item 4***(Continued)*

4.10: Niue

4.11: Palau

4.12: Papua New Guinea

4.13: Samoa

4.14: Solomon Islands

19:00-21:00 **ICE BREAKER – Hosted by the Government of Tonga**

TUESDAY, 21 JULY 2015

08:30-10:00 **Agenda Item 4***(Continued)*

4.15: Tokelau

4.16: Tonga

4.17: Tuvalu

4.18: Vanuatu

10:30-10:50 *Refreshment*

10:50-12:30 4.19: Australia

4.20: United Kingdom

4.21: New Zealand

4.22: United States of America

4.23: France

Agenda Item 5: Outcomes of the Seventeenth World Meteorological Congress and Regional Programs (WMO)

12:30 - 13:30*Lunch*

13:30-15:50 Agenda Item 6: Climate Services (Pacific Key Outcomes 6[4])

6.1: Pacific Islands Climate Information System *(US NOAA[5])*

6.2: Climate and Information Prediction Services Project *(SPREP and APCC[6])*

6.3: Climate and Oceans Support Program in the Pacific Project *(BoM[7])*

6.4: Climate Services in the Pacific Region *(PICS Panel[8])*

15:50 - 16:10*Refreshment*

16:10- 17:10 Agenda Item 7: Marine Weather Services and Ocean issues (Pacific Key Outcome 2)

7.1:Tropical Pacific Observing System 2020 (TAO/Triton Array[9])*(SPREP/US-NOAA)*

7.2: Support for the Argo Program*(SPREP/US-NOAA)*

7.3: Marine weather services in the Pacific Region *(SPREP)*

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[4] PKO - The Pacific Islands Meteorological Strategy (PIMS) 2012-2021 has 14 priority areas called the Pacific Key Outcomes (PKO) which are which are implemented from both the Regional and National levels.

[5] US NOAA – United States National Ocean and Atmosphere Administration

[6] APCC –APEC Climate Center

[7] BoM – Australian Bureau of Meteorology

[8] PICS Panel - Pacific Islands Climate Services Panel

[9] TAO/Triton - Tropical Atmosphere Ocean and Triton = Triangular Trans-Ocean Buoy Network

08:30-10:30 Agenda Item 8: Multi-Hazard Early Warning System (Pacific Key Outcomes 4 and 5)

8.1: National Multi-Hazard Early Warning Systems *(Samoa/SPREP)*

8.2: National Flood Early Warning System *(Fiji)*

8.3: Coastal Inundation and Hazards *(SPC[10]/WMO)*

8.4: Progress on Tsunami Warning and Mitigation and status on the implementation of the new Tsunami Products in the South West Pacific *(Tonga)*

Agenda Item 9: Public Weather Services (Pacific Key Outcome 3)

9.1: FINPAC Support to Public Weather Services and Communication to Communities *(SPREP/FMI)*

9.2: Severe Weather Forecast and Disaster Risk Reduction Demonstration Project (New Zealand MetService/WMO)

10:30-10:50 *Refreshment*

10:50-12:30 Agenda Item 10: Communications

10.1 Radio Internet (RANET) Communication *(US NOAA)*

10.2: WMO Information System *(BoM/WMO)*

Agenda Item 11: Education, Training and Research (Pacific Key Outcome 11)

11.1: Education, Training and Research in the Pacific *(USP[11]/Working Group on Education and Training)*

11.2: Pacific International Training Desk and other US-NOAA Training Programs *(UH[12]/US-NOAA)*

12:30 - 13:30*Lunch*

13:30-15:50 Agenda Item 11 Cont: Education, Training and Research (Pacific Key Outcome 11)

11.3: Media Training on Disasters, Weather and Climate Services *(SPREP/PACMAS)*

Agenda Item 12: Aviation Weather Services (Pacific Key Outcome 1)

[10]SPC – Secretariat of the Pacific Community

[11]USP – University of the South Pacific

[12]UH – University of Hawaii

12.1: Quality Management System and Competency Standards *(ICAO[13]/WMO)*

12.2: Cost Recovery for Aviation Weather Services*(ICAO/WMO)*

12.3: Safe Skies for Aviation over the Pacific *(ICAO/WMO)*

Agenda Item 13: Monitoring and Observations Systems (Pacific Key Outcome 7)

13.1: WMO Integrated Observing System(WIGOS) for Region V *(BoM/WMO)*

Agenda Item 14: The Update and Review of the Pacific Islands Meteorological Strategy (PIMS) 2012-2021 *(SPREP)*

Agenda Item 15: Strengthening the Pacific Meteorological Council and the Pacific Meteorological Desk Partnership (Pacific Key Outcomes 10 and 14)

15.1: Governance of the PMC *(SPREP)*

15:30-15:50 *Refreshment*

15:50- 17:30 **Agenda Item 15 Cont': Strengthening the Pacific Meteorological Council and the Pacific Meteorological Desk Partnership (Pacific Key Outcomes 10 and 14)**

15.2: Pacific Meteorological Desk Partnership*(SPREP)*

Agenda Item 16: Resources Mobilization (Pacific Key Outcome 12)

16.1: Regional Technical Support Mechanism *(SPREP)*

16.2: Green Climate Fund & Adaptation Fund*(SPREP)*

16.3: WMO Resource Mobilization and Partnership *(WMO)*

Agenda Item 17: Disaster Risk Reduction and Climate Change in the Pacific

17.1: The Strategy for *Climate and Disaster Resilient Development in the Pacific(SPREP)*

18:00 - 2100 **SUNSET EVENT:** Function Hosted by APCC

THURSDAY, 23 JULY 2015

08:30-10.30 **Agenda Item 17: Disaster Risk Reduction and Climate Change in the Pacific**

17.2: The IPCC[14] and the UNFCCC-COP21[15]in Paris, France*(KMA/SPREP)*

[13]ICAO – International Civil Aviation Organization

[14] IPCC - Intergovernmental Panel on Climate Change

Agenda Item 18: Guidance to the 1st Pacific Ministers Meeting on Meteorology

18.1: Provide Guidance to the Agenda for the 1st PMMM

18.2: Provide Guidance to PMC-3 Presentation to the 1st PMMM

18.3: Review and Finalize the Nuku'alofa Declaration

Agenda Item 19: Venue of the 4th Meeting of the Pacific Meteorological Council

Agenda Item 20: Review and Adopt the Report of 3rd Meeting of the Pacific Meteorological Council

10:30-10:50 *Refreshment*

10:50-13:00 **Agenda Item 20 (Continued)**

Agenda Item 21: Closing

13:00 *Lunch*

FRIDAY, 24 JULY 2015

First Pacific Ministerial Meeting on Meteorology

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[15] UNFCCC-COP21 - United National Framework Convention on Climate Change - 21st Conference Of the Parties

ANNEX 5: PMC – 3 Participant list

3rd MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL

Theme: "Sustainable Weather and Climate Services for a Resilient Pacific"

20 - 23 July 2015

Fa'onelua Convention Centre,Nuku'alofa, Kingdom of Tonga

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