



PACIFIC
METEOROLOGICAL
COUNCIL



FOURTH PACIFIC METEOROLOGICAL COUNCIL (PMC-4)

Draft Report

Abstract

This Draft Report is still awaiting comments from PMC members (4 September) before being finalised. Most of the Annexes are not included.



Pacific Meteorological Desk Partnership (PMDP)

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Introduction

1. The Fourth Pacific Meteorological Council Meeting (PMC-4, henceforth referred to as the Meeting) was held at the Forum Fisheries Agency Conference Centre in Honiara, Solomon Islands from 14-18 August, 2017. The Second Pacific Ministerial Meeting on Meteorology (PMMM-2) was held on 18 August, 2017.
2. The Meeting was attended by PMC representatives from 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. American Samoa attended the PMMM-2. A full list of participants, including partners, donors and observers is included in **Annex 1**.
3. This report offers a short synopsis of the working papers presented during the Meeting, the key discussion points, and the Meeting recommendations. Action items will be highlighted for ease of reading and action items will be included in **Annex 2**. For more information on a given agenda item please refer to the working papers that were submitted to the Meeting (<https://www.pacificmet.net/pmc/meetings/pmc-4/working-papers>).

Agenda Item 1: Opening

4. The meeting was opened with a video presentation, followed by a prayer from Reverend John Ashley, Representative of the Solomon Islands Christian Association and a cultural welcome. The meeting was addressed by the outgoing PMC chair, Mr. 'Ofa Fa'anunu, the Director of the Tonga Meteorological Services. Key note statements were given by the Director General of the Secretariat of the Pacific Regional Environment Programme (SPREP), Mr. Kosi Latu and by the World Meteorological Organisation (WMO) Director, Development and Regional Activities Department, Ms. Mary Power. The Solomon Islands Meteorological Services Acting Permanent Secretary, Mr. Chanel Iroi, acted as the Master of Ceremonies. Transcripts of the key note speeches and the opening address are included in **Annex X**.
5. The Meeting was officially opened by the Honourable Samuel Manetoali, Minister for Environment, Climate, Disaster Management and Meteorology. The Honourable Premier's opening address is attached as **Annex X**.

Agenda Item 2: Organization of the Fourth Meeting of the Pacific Meteorological Council (PMC-4)

2.1: Election of Chair and Vice Chair for PMC-4

The Meeting:

- **confirmed** the Representative of Solomon Island as Chair; and
 - **confirmed** the Representative of Fiji as Vice-Chair.
6. In accordance with the Rules of Procedure, the Meeting host Solomon Islands was appointed as Chair and Fiji was appointed as Vice Chair of the PMC.
 7. Mr. 'Ofa Fa'anunu, Tonga, the outgoing PMC Chair expressed thanks for the support received since PMC-3, and noted it was a pleasure to hand the chairmanship to the Solomon Islands. The

Secretariat expressed their appreciation for the outgoing chair's hard work. As a token of the Meetings appreciation the in-coming chair presented the outgoing chair with a tanoa bowl.

8. The Chair for the Meeting, Mr. Lloyd Tahani, expressed his thanks to the Meeting for electing him as chair, acknowledged the outgoing chair for the work he has done for the past 2 years and expressed his hopes that during the years to come that we will work together to achieve our goals. He expressed his appreciation to the Meeting for their trust and confidence in the Solomon Islands.

2.2 and 2.3: Adoption of the Agenda and Working Procedures

The Meeting:

- **considered** and Adopted the Provisional Agenda;
- **agreed** on the hours of work;
- **appointed** an open-ended Report Drafting Committee; and
- **appointed** an open-ended Ministerial Statement Drafting Committee.

9. The Meeting reviewed the Provisional Agenda and suggested hours of work.
10. The Meeting appointed an open-ended Report Drafting Committee comprising of Cook Islands, IFRC, New Caledonia, SPC, Tokelau, USP, United States, Vanuatu, WMO, to be chaired by Fiji in their capacity as Vice-Chair of the Meeting, with support from the Secretariat.
11. In addition to the members appointed during plenary Australia, Niue, Samoa, and the Central Weather Bureau joined the open-ended drafting committee. The drafting committee elected Tokelau as the co-chair for the Committee.
12. The Meeting appointed an open-ended Ministerial Drafting Committee comprising of the Chairs of the PMC Panels and the outgoing chair of the Meeting, with support from the Secretariat.

Agenda Item 3: Setting the Scene for PMC-4: Objectives and Expected Outcomes

The Meeting:

- **noted** the objectives and expected outcomes of the meeting.
13. The Meeting was convened with the theme "Sustainable Weather, Climate, Oceans and Water Services for a Resilient Pacific."
 14. The Secretariat reported on the objectives and expected outcomes of the Meeting. The meeting was informed about the expanded scope of the theme (as compared to PMC-3), the important role NMHSs play in achieving regional and global frameworks, and the opportunities the Meeting and the Donor Roundtable present for NMHSs, donors and partners to meet and discuss programs and their support to the climate resilient of pacific communities.

Agenda Item 4: Report on Actions Taken on Matters Arising from the 3rd Meeting of the Pacific Meteorological Council (PMC-3) and the Nuku'alofa Ministerial Declaration

The Meeting:

- **noted** actions taken against the decisions and directives of PMC-3 and the Nuku'alofa Ministerial Declaration.

15. The Secretariat reported to the Meeting on actions taken against the decisions and directives from the 3rd Pacific Meteorological Council (PMC-3) and the 1st Pacific Ministerial Meeting on Meteorology (PMMM-1).

Agenda Item 5: WMO Strategic Plan

The Meeting:

- **noted** the report from WMO; and
- **noted** the invitation from WMO for all PICs to become members.

16. WMO briefed the Meeting on their future strategic planning process and how they are working to support regional NMHSs. WMO invited the participation of member states in the member's survey and the importance of their input into the new strategic plan (2020-2023), which will be adopted at the WMO Congress in 2019.

17. Samoa requested WMO to clarify the linkages between WMO Strategic Plan, the linkages to the Pacific Island Meteorological Strategy, and Pacific Roadmap for Strengthened Climate Services. WMO informed the Meeting that they are guided broadly by the Sendai Framework and the Paris Agreement, and have established a SIDS program within WMO. WMO noted that the PIMS provides WMO with guidance on its engagement in the region.

Agenda Item 6: SPREP Strategic Plan

The Meeting:

- **noted** the SPREP Strategic Plan 2017-2026; and
- **noted** the draft Performance Implementation Plan and Results Framework 2018-2019.

18. SPREP informed the Meeting about the SPREP Strategic Plan 2017-2026, which was approved by SPREP Members at the 27th SPREP Meeting in 2016. The Meeting was provided with an overview of the Plan and the key priorities related to climate and meteorological services. Since the SPREP Meeting will be held every 2 years SPREP is developing a Performance Implementation Plan and Results Framework for 2018-2019, to be presented to the 28th SPREP Meeting in September 2017 for approval.

Agenda Item 7: Contribution to the Implementation of the Sustainable Development Goals (SDGs)

The Meeting:

- **noted** that the draft Pacific SDG Roadmap for Sustainable Development will be considered for adoption by the Forum Leaders Meeting in 4-8 September which cover issues that are of interest and relevance to the PMC;
- **requested the use or reference to the relevant Pacific SDG indicators (PSDGIs) in monitoring and reporting on the work of the NMHSs; and**
- **endorsed, as a standing item on its agenda, their progress in the implementation of the Pacific SDG Roadmap for Sustainable Development in relation to the work of the NMHS.**

19. UNESCAP briefed the Meeting on the implementation of SDGs in the Pacific and the contributions National Meteorological and Hydrological Services (NMHSs) can make in achieving them. The Meeting was informed that the 48th Pacific Islands Forum Meeting is expected to consider for adoption the draft Pacific Roadmap for Sustainable Development. The roadmap is to guide and consolidate the region's efforts to implement and monitor the 2030 Agenda and the Sustainable Development Goals, the SAMOA Pathway and the Framework for Pacific Regionalism.
20. Examples of how NMHSs can contribute to achieving the SDGs were presented, with a focus on SDGs 2, 8, 11, 13, 14 and 17.

Agenda Item 8: Framework for Resilient Development in the Pacific (FRDP)

The Meeting:

- **noted** the progress in the work of implementing the Framework for Resilient Development in the Pacific (FRDP) and establishing governance arrangements;
- **directed the Secretariat to play an active role in the Pacific Resilience Partnership (PRP) governance and to Report to Members on progress; and**
- **sought to have active engagement by PMC and NMHSs in the relevant bodies of the PRP governance structure in the context of their national delegations to those meetings.**

21. The Secretariat briefed the Meeting on the status of the Framework for Resilient Development in the Pacific (FRDP), and the implications and opportunities for the PMC in the new Pacific Resilience Partnership (PRP) that will monitor implementation of the FRDP.
22. It was noted that in its capacity as a major provider of climate change science and information in the region, as well in its capacity as a subsidiary body of SPREP, the PMC can make valuable contributions to the implementation of the FRDP through SPREPs membership on the Taskforce Support Unit. PMC Members could also participate through their national delegations. There is also scope for requests to be made by the PRP Meeting or the PRP Taskforce to carry out specialized work.
23. Samoa inquired if the Chair of the PMC would be involved in the governance of the FRDP. The Secretariat responded that there is at present no clear role for the PMC Chair in the PRP structure. It was noted that the governance arrangements for the FRDP have not been finalized and will be decided by the Leaders.

Agenda Item 9: Outcomes of the UN Oceans Conference

The Meeting:

- **acknowledged** the leadership and effort put forth by Fiji in co-hosting the UN Ocean Conference with Sweden;
- **noted** the SDG 14 Targets of relevance (14.3, 14.6 and 14.a) to NMHSs; and
- **noted** the outcomes of the UN Ocean Conference including the Call for Action declaration and Voluntary Commitments.

24. The Secretariat informed the Meeting of the outcomes of the UN Conference to Support the Implementation of Sustainable Development Goal 14 (UN Ocean Conference) and implications for NMHSs.
25. The objectives of Sustainable Development Goal 14 (SDG 14) were noted, and areas where NMHSs can work to support the achievement of targets 14.3, 14.6 and 14.a were highlighted. It was noted that the inclusion of SDG 14 was led by the Pacific islands, including Fiji as the co-host of the UN Ocean Conference. The meeting was informed of the Secretariat's and other CROP agencies support to members in the lead up and during the Conference and of the Conference outcomes.
26. The University of the South Pacific asked about data sources to support marine work. The meeting was informed that ocean observing networks and research are priorities for the region and that capacity development and research need to be included in all aspects of marine services.
27. Samoa requested an update on the New Zealand Pacific Partnership on Ocean Acidification project. The Secretariat informed the meeting of the current status of the project and noted that they hope to start monitoring and resilience building activities in pilot countries by the end of the year.

Agenda Item 10: Outcomes of the Multi Hazard Early Warning System and Disaster Risk Reduction Global Platform Meetings in Cancun, Mexico

The Meeting:

- **noted** the outcomes of the Fifth Session of the Global Platform for Disaster Risk Reduction and Multi-Hazard Early Warning System Meeting convened from 22-26 May 2017 in Cancun, Mexico;
 - **requested that the PMC adopt the priorities for action identified by the Fifth Session of the Global Platform for Disaster Risk Reduction and Multi-Hazard Early Warning System Meeting, as well as the Commitments of the Cancun High-Level Communique; and**
 - **endorsed** the outcomes of the Chair's Summary-Cancun 26 May 2017-From Commitment to Action and the Commitments of the Cancun High-Level Communique.
28. The Meeting was provided with an update on the outcomes of the Fifth Session of the Global Platform for Disaster Risk Reduction and Multi-Hazard Early Warning System Meeting held 22-26 May 2017 in Cancun, Mexico.
 29. The Meeting was informed that the main meeting was preceded by a MHEWS Conference which focused on increasing the availability of and access to multi-hazard early warning systems and disaster risk information and assessments, and by a "Climate and Disaster Resilience in Small

Island Developing States: Practical Solutions” event. The outcomes of the meeting, conference, and event were presented to the PMC.

Agenda Item 11: Country Reports from National Meteorological and Hydrological Services

30. NMHS reports were submitted to the Secretariat prior to the Meeting and summaries of plenary reports and discussion are included in **Annex X**. A summary of key priorities, needs, and gaps from the country reports and plenary are included in **Annex X**.

Agenda Item 12: Aviation Weather Services

12.1: Progress on the PIAWS Panel including outcomes of related regional and international meetings and surveys

The Meeting:

- **noted** the report on the progress of the PIAWS Panel;
- **noted** the role of International Civil Aviation Organization (ICAO) in support of a safe, efficient, secure, economically sustainable and environmentally responsible civil aviation sector, including development of the Annex 3 provisions to ensure the uniform application of meteorological services by States signatory to the Convention that are deemed necessary or desirable for safe and regular international air navigation;
- **noted** the key recommendations formulated by the ICAO Meteorology Divisional Meeting in 2014 on the enhancement of (global) aeronautical meteorological service provision over subsequent years;
- **noted** the key outcomes of the ICAO Meteorology Panel as reported in its second meeting in 2016 on the development of ICAO provisions for aeronautical meteorological services and associated guidance materials;
- **noted** the structure of the Asia-Pacific Air Navigation Planning and Implementation Regional Group, its objectives and outcomes ensuring continuous and coherent development of the Asia-Pacific Regional Air Navigation Plan and other relevant regional documentation, facilitating the implementation of air navigation systems and services with due observance to the primacy of air safety, regularity and efficiency and the identification and resolution of specific deficiencies in the air navigation field;
- **noted** the role of the ICAO Asia-Pacific Meteorology Sub-Group and its expert contributory bodies in assisting APANPIRG in its work programme, especially in problems requiring expert advice in the field of aeronautical meteorology, and outcomes from the Sub-Group's twenty-first meeting in 2017;
- **noted** the importance of the above with respect to improving the coordination between PMC and ICAO in support of the mutual sustainable development objectives; and
- **noted** and endorsed the content of the PIAWS survey.
- **requested the PIAWS Panel to develop a regional project proposal to address the regional aviation requirements of member countries identified by the survey and by the PIMS in collaboration with WMO and ICAO.**

31. The PIAWS Chair, Mr. Ofa Fa'anunu, informed the Meeting on the progress on the PIAWS Panel, and raised awareness of the activities of the International Civil Aviation Organization (ICAO) in the field of aeronautical meteorology. Noted was the structure and outcomes of expert bodies facilitating the implementation of meteorological service for international air navigation, both globally and in the Asia-Pacific Region.
32. The PIAWS Panel has met three times since PMC-3: 1) Nadi, Fiji, 25 November 2015, which focused on developing the Panel Terms of Reference (TOR); 2) Nadi, Fiji, 27 May 2016, which focused on raising awareness among the PICTs NMHSs on the importance and requirements to provide meteorological services to air navigation; 3) Honiara, Solomon Islands, 2 September 2016, which focused on identifying priority actions for the Panel. Additionally, eight video/teleconferences were conducted over the past few months to discuss and prepare for PMC-4 and PMMM-2.

12.2: Compliance with ICAO requirements including Annex 3, QMS (ISO 9001-2015) CAR Document/ Part 174 and competency assessment and capacity development of AMOs and AMFs

12.2.1: Compliance with ICAO Annex 3

The Meeting:

- **noted** the purpose of ICAO Standards and Recommended Practices (SARPs) (including those in Annex 3 — Meteorological Service for International Air Navigation) for harmonized global aviation safety and efficiency in the air and on the ground, the worldwide standardization of functional and performance requirements of air navigation facilities and services, and the orderly development of air transport;
- **noted** that compliance with the Standards in ICAO Annex 3 is recognized as necessary for the safety or regularity of international air navigation and that, in the event of impossibility of compliance, notification to the ICAO Council is compulsory under Article 38 of the Convention;
- **noted** that compliance with the Recommended Practices in ICAO Annex 3 is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation and that States are invited to notify the ICAO Council of non-compliance;
- **noted** the definition of and procedure for resolution of ICAO Asia/Pacific Air Navigation Planning and Implementation Regional Work Group (APANIRG) air navigation deficiencies – especially in the field of aeronautical meteorology – and the importance of close coordination between PMC and ICAO in order to effectively facilitate the resolution of deficiencies in the PICTs; and
- **noted** the importance of fundamental ICAO Annex 3 SARPs concerning the designation and role of the meteorological authority, implementation of quality management of meteorological information and establishment of competency of aeronautical meteorological personnel.
- **requested the Chair of PIAWS to follow up with WMO President of RAV and the WMO Chief of Aeronautical MET about when the Regional MET/CAA/Operators Coordination Meeting may take place as a matter of urgency, and if funding is not available, to bring the matter to the Donor Roundtable.**

33. The Meeting was briefed on the international standards for aeronautical meteorological service, and in particular issues concerning compliance or non-compliance with ICAO Annex 3, including a review of air navigation deficiencies in the field of meteorological information or services. The fundamental provisions of Annex 3, including those concerning the role of the designated meteorological authority, quality management of meteorological information, and competency of aeronautical meteorological personnel, were highlighted.

12.2.2: QMS ISO 9001-2015

The Meeting:

➤ noted:

1. The level of conformity for WMO Region V (South West Pacific), in response to the ICAO quality management requirements stated in the ICAO Annex 3 to the Convention on International Civil Aviation, Meteorological Service for International Air Navigation; and
2. The update and replacement of WMO-No.1100 is currently underway and is due for release in September 2017.

➤ requested a training workshop for Quality Management practitioners on the transition to the ISO 9001:2015 Quality Management Standard.

34. The meeting was informed on the need to establish the level of conformity for the WMO Regional Association V (South West Pacific), in response to the International Civil Aviation Organization (ICAO) quality management requirements stated in the ICAO Annex 3 to the Convention on International Civil Aviation, Meteorological Service for International Air Navigation.
35. A new ISO Standard 9001:2015 was released in 2015 with some fundamental changes including a greater focus on leadership and risk management. The introduction by the ISO in September 2015 of the ISO 9001:2015 Quality management systems - Requirements has been the catalyst for the update and replacement of WMO-No.1100. The update to WMO-No.1100 is currently underway and is due for release in September 2017.
36. It was noted that JICA supports the capacity development in QMS in the Pacific and recognizes the need to provide support for basic weather observations. JICA will continue coordinating with the PIAWS Panel on capacity development and competency assessments of aeronautical meteorological personnel.
37. Samoa expressed their support for the proposed training workshop with ICAO and WMO on aviation weather services and certification training.

12.2.3: CAR Document Part 174

The Meeting:

➤ noted:

1. NMHSs are encouraged to liaise with their national Civil Aviation Authority (CAA) counterparts as part of process to allow for compliance and recognise the Quality Management System (QMS) of NMHSs under the CAR Part 174;
2. NMHSs to take note of the CAA Matrix on 174.77 in reference to QMS and safety Management CAR 100.3, to be clarified in the documentation and explained to CAA.

3. Director of NMHSs also to have a title of Chief Executive Officer (CEO) as designated under the CAR Part 174; and
4. Director of NMHSs to appoint a Quality Manager or Quality Assurance Manager who will have responsibility and report on matters related to QMS including the CAR Part 174 and Aviation Meteorological Services.

➤ **requested:**

5. **SPREP to organize for technical experts to work with other Pacific Island Countries and Territories' NMHSs and helping them on the CAR Part 174 certification;**
6. **national CAA to recruit inspector/auditor to audit NMHSs on the CAR Part 174; and**
7. **NMHSs to document an integrated quality system including QMS and Safety Management System (SMS).**

38. The Meeting was provided information on Aviation Meteorological Services (AMSs) certification under the Civil Aviation Rule (CAR) Part 174 in compliance to the national Civil Aviation Authority (CAA) regulations and in reference to CAA Advisory Circulars AC 00-3 and AC 174-1 for Aviation Meteorological Service Organizations.
39. Vanuatu encouraged the PICs to work with Pacific Aviation Safety Office to support NMHSs with auditing and Part 174 Certification.
40. Papua New Guinea noted the challenges of NMHSs and Civil Aviation Authorities in achieving certifications and observation upgrades.

12.2.4: Competency assessment and capacity development for Aviation Meteorological Observers (AMO) and Aviation Meteorological Forecasters (AMF)

The Meeting:

➤ **noted:**

1. the results of a recent survey conducted by the PIAWS Panel on the implementation of competency assessment of the Pacific Island Countries and Territories' NMHSs personnel providing services to international air navigation;
2. NMHSs personnel providing services for international air navigation are to comply with the WMO qualifications and training requirements of Aeronautical Meteorological Personnel (AMP), to meet the ICAO Annex 3, paragraph 2.1.5;
3. NMHSs are to implement competency assessment methods to meet the ISO 9001: 2015 Standards especially clause 7 and sub clause 7.2;
4. a set of "Implementation Guidance of AMP Competency Standards" and Competency Assessment Toolkit (CAT) are developed by the WMO Commission for Aeronautical Meteorology (CAeM) to assist in developing tailored competency assessment tools; and
5. Fiji Meteorological Services (FMS) procedure outlining the process for assessing competency for of personnel providing services to international air navigation, as presented in Annex 2.

➤ **requested:**

6. **NMHSs to ensure that personnel providing services for international air navigation meet the AMP qualification competency education and training requirements included in the WMO Technical Regulations No.49, Vol.1 together with the required learning outcomes of the BIP-M and BIP-MT;**

7. SPREP, WMO and ICAO to assist NMHSs' personnel providing services for international air navigation to meet the AMP qualifications;
8. SPREP, WMO and ICAO to assist NMHSs' personnel providing services for international air navigation to meet the AMP standard requirements; and
9. NMHSs to consider implementing competency standards and requirement as per the ISO 9001: 2015 standards especially clause 7.2 on competence, to all services.

41. The meeting was provided information on AMS, a competency and qualification requirement that has been developed by the WMO Commission for Aeronautical Meteorology (CAeM) in response to the requirements listed in paragraph 2.1.5 of the ICAO Annex 3 to the Convention on International Civil Aviation, Meteorological Service for International Air Navigation.
42. These competency standards and qualification requirements have been developed by the WMO CAeM in response to the requirement listed in ICAO Annex 3, paragraph 2.1.5 which states that "Each contracting State shall ensure that the designated meteorological authority complies with the requirements of the WMO in respect of qualifications and training of meteorological personnel providing service for international air navigation".
43. Fiji Meteorological Service (FMS) needs to comply with the statutory and regulatory requirements and therefore it has become mandatory for all Aeronautical Meteorological Personnel (AMP) at FMS to complete and satisfactorily pass the Competency Assessment. FMS procedure outlining the process for assessing competency for AMP is based on 'know-tell-do' criteria and is designed to best suit FMS's staff.
44. A recent survey conducted by the Pacific Islands Aviation Weather Services (PIAWS) Panel on the implementation of competency assessment of the Pacific Island Countries and Territories' NMHSs personnel providing services for international air navigation, shows that 10 of the 11 respondents have either completed or started the competency assessment of their AMP.
45. Samoa sought clarification from the PIAWS Panel on the regional project proposal to address the regional aviation requirements of member countries identified by the survey and by the PIMS, given the challenges anticipated with a number of organizations involved in the project development.
46. Fiji noted that countries need further assistance in capacity development.
47. **Fiji requested development partners to provide additional support to progress the implementation of quality assessment and competency assessment.**

12.3: Cost recovery for aviation weather services

The Meeting:

- **noted** the content of this paper;
- **requested the PMC to continue the development of cost recovery mechanisms and guidance as stipulated in the PIAWS Panel TOR; and**
- **requested ICAO to work with the PIAWS Panel to develop a cost recovery strategy to be used for the Pacific Island Countries.**

48. The Meeting was updated on the progress in the Pacific region on the implementation of cost recovery for aviation weather services in the Pacific and identify areas for further development by the PIAWS.

49. Samoa noted that they need increased funding to improve aviation weather services, and that cost recovery is important for countries to increase their funding and become more self-sufficient.
50. Tonga requested ICAO to develop a uniform cost recovery model to be used for the Pacific Island Countries.

12.4: Future Work of the Pacific Island Aviation Weather Services (PIAWS) Panel including Terms of Reference

The Meeting:

- **endorsed** the draft TOR for PIAWS Panel.

51. The Meeting was presented with the Revised Terms of Reference (TOR) for the PIAWS Panel.

Discussion on Agenda Item 12:

52. Marshall Islands and Papua New Guinea endorsed all of the recommendations and Marshall Islands requested that all recommendations be placed in one working paper to make it easier for NMHS Directors to review.

Agenda Item 13: Climate Services

13.1: Progress on the Pacific Island Climate Services (PICS) Panel

The Meeting:

- **noted** that the PICS Panel is now primarily using teleconferences for its meetings, as a cost-saving measure;
- **suggested that countries holding National Climate Outlook Forums (NCOFs) in the region consider the lessons learned from Papua New Guinea, Kiribati and Vanuatu; and**
- **endorsed** the 2017/18 Priority Actions (document [PMC-4 WP13.1 Att 1](#)) and revisions to the Terms of Reference (document [PMC-4 WP 13.1 Att 3](#)).

53. The Meeting was updated on the PICS Panel work plan and activities. The third Panel meeting was held in Port Vila, Vanuatu from 21-23 March 2016 and updates from recent regional meetings were discussed. The Meeting was updated on the progress of the Pacific Islands Regional Climate Centre (PI RCC) and how the Pacific Climate Change Centre (PCCC) will contribute to it. The Panel meeting recognised that challenges exist for sectors using climate information. The Panel re-elected Dr. Andrew Tait of New Zealand as Chair and Mr. Samuel Maiha, of Papua New Guinea as Vice Chair.
54. The Meeting was informed of revisions the Panel has made to its Terms of Reference (document [PMC-4 WP 13.1 Att 3](#)), including the addition of New Caledonia, Meteo France, IFRC, and the addition of sector representatives from Agriculture and NDMO. The revised TOR includes reference to Actions listed in the Pacific Roadmap for Strengthened Climate Services (replacing the PICS Panel Action Plan)
55. The Panel noted that the role of the PICS Panel is to provide technical advice to the PMC (i.e. not to implement proposed activities) and that membership remains open-ended to allow for the

PMC members to volunteer their experts to participate in the PICS Panel activities, and for the PICS Panel to invite experts either from its PMC members or its partners or climate users to its meetings and discussions.

56. Marshall Islands, on behalf of the PMC Members, thanked all of the Panels for their efforts.
57. Samoa noted that the PICS Panel has done a lot of work, noting that they have helped countries in data collection, sharing information with IPCC and climate change issues.
58. Samoa supported the RCC demonstration in Pacific and requested that the coastal inundation project supported by WMO. [rapporteurs notes unclear, please clarify]
59. Samoa noted that they are ready to host PICOF 4.

13.2: Progress on the establishment of the WMO RA-V Pacific Islands Regional Climate Centre

The Meeting:

- **noted** that the PICS Panel and the WMO RA-V WG CLS are working together to establish the PI Regional Climate Centre (RCC);
- **further** noted that considerable progress has been made on the development of and institutional commitment to the Implementation Plan; and
- **endorsed** the WMO RA-V Pacific Islands RCC Network Implementation Plan (document **PMC-4 WP 13.2 Att 1**) with a **recommendation to the President of RA-V that the PI RCC 2-year demonstration phase begins as soon as possible.**

60. The Meeting was presented with the outcomes of the WMO RA-V Pacific Islands Regional Climate Centre progress report, implementation plan and how it will contribute to the Pacific Roadmap for Strengthened Climate Services. The PMC was requested to support the WMO RA-V Pacific Islands RCC and its implementation of activities.
61. USP noted that they were invited to join the RCC but declined. USP stated that the proposed RCC structure and responsibilities does not address the need to develop long term capacity to deliver the RCC required outlooks and thinks that this is a requirement for long term sustainability of an RCC.

13.3: A review of second Pacific Island Climate Outlook Forum (PICOF-2) and plans for PICOF-3

The Meeting:

- **noted** that PICOFs 1 and 2 have been very successful events;
- **further noted** that regular Regional Climate Outlook Forums are highly recommended by WMO, should have a sector focus, and are one of the key functions of an RCC; and
- **endorsed** the need for future PICOFs for 2017 and 2018 and the evaluation of the structure, timing and usefulness of PICOFs following a participant survey at PICOF-3.

62. The Meeting was informed of the review of the NCOFs, the proposed review of the PICOF 1 and 2 to assess their effectiveness and future sustainability, and the plans for PICOF-3.
63. USP noted USP and USP EU-Global Climate Change Alliance (USP EU-GCCA) project support for PICOF-1 and the PICS Panel Chair apologized for the oversight.

Agenda Item 14: Multi-Hazard Early Warning System (MHEWS)

14.1: Outcomes of the Twenty-seventh Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVII)

The Meeting:

- **noted** the outcomes and recommendations of ICG/PTWS-XXVII Session held in Tahiti, French Polynesia, from 28 – 31 March 2017;
- **noted** the outcomes of the 5th Meeting of the ICG/PTWS Regional Group for the PICTs working group that was held in Honiara from 7-8 August 2017;
- **requested Pacific Meteorological Council members to:**
 1. **participate actively in ICG/PTWS and PICT Working Group for Tsunami Warning System programmes and activities given that many of the National Meteorological Services are the official warning focal points and centres for tsunami. The PMC Member States to further strengthen tsunami detection, warning and response at regional, national and local levels;**
 2. **support the implementation of the recommendations from the 5th Meeting of the ICG/PTWS Regional Group for the PICTs; and**
- **requested the PMMM through the PMC to support further investment in strengthening and up-scaling tsunami warning and early warning systems infrastructure within PICTs including NMHSs staff competency and capability.**

64. The Meeting was updated on the outcome and follow up actions of the ICG/PTWS-XXVII, as well as the activities of the PTWS Regional Working Group for the Pacific Island Countries and Territories (PICTs).

14.2: Oceania Regional Seismic Network (ORSNET)

The Meeting:

- **requested** support for ORSNET to be sustainable in the long term; and
- **endorsed** ORSNET an approved vehicle for sharing seismic data in the region for tsunami early warning.

65. The Meeting was informed that ORSNET was established to support seismic observatories in the South West Pacific to improve their national capabilities through regional arrangement of sharing of seismic data, resources and technical expertise for tsunami early warning. One of the primary objectives of ORSNET is the timely sharing of seismic data for tsunami early warnings.

66. Samoa asked how ORSNET will be linked to PMC. Vanuatu noted that the PIMS includes tsunami and there is linkage through PKO 4 on MHEWS.

67. SPREP noted the need to support the work on tsunami and requested guidance from PMC Members on this, and that the SPREP meeting would then decide.

14.3: Pacific Resilience Program (PREP) in Samoa and Tonga

The Meeting:

- **noted** the PREP, its objectives and components and how it contributes to strengthening early warning and preparedness through the implementation of multi-hazard early warning systems (MHEWS) platforms, procedures and systems in participating PICs to increase resilience to climate change and disasters; the regional approach that it has taken to implement its activities building on existing capacities of participating countries' National Weather Services (NWS) and National Disaster Management Offices (NDMOs); and
- **requested PMC Members to support the PREP approach as best practice in anticipation of future incoming resources for non-participating countries to implement multi-hazard early warning systems.**

68. The Meeting was informed about the objectives and outcomes of the PREP and how the Project is facilitating the implementation of MHEWS in Samoa and Tonga. It was noted that sharing experiences and lessons learnt from this project would help inform other countries in doing the same or taking the same approach given the limited resources, capacity and capability in country to establish, operate and maintain separate EWSs for different natural hazards. It was further noted that improved MHEWS would help in developing a common alerting platform (CAP) and procedures including the means of communication for the dissemination of alerts hence leading to improved timeliness of warnings and advisory services and products. In addition to establishing and strengthening MHEWSs, legal frameworks and institutional capacities in NMHSs in Tonga and Samoa were also further strengthened through PREP.
69. Samoa acknowledged the contribution of the World Bank for the work in Samoa. They noted there was an issue on the second recommendation as it does not include risk insurance for rainfall. SPC informed the Meeting that an extreme rainfall product is being considered by the World Bank to be included in the next insurance season (November 2017-October 2018).
70. Niue and Fiji support extension of PREP project to other countries.
71. USP noted that they can offer computing services countries in this area, and that they have research collaborations with institution that have the super-computer capabilities.
72. PNG asked what the second component of PREP would include and noted that Solomon Islands and Papua New Guinea suffer from heavy rainfall but not strong wind. They requested support for extension of the PREP project to additional countries.
73. Marshall Islands stated that small islands countries need special attention for their country reports to address gaps and needs to be taken up by PREP and others. SPC replied that PREP is working to support the Marshall Islands.

Agenda Item 15: Hydrology and Flood Early Warning System

15.1: Hydrology

The Meeting:

- **noted** that, while support for hydrological services continues to be provided to PICTs through a range of national, regional and international programmes, additional sustained and targeted support is required to meet the growing demands of PICTs, specifically in the area of flood and drought warning and management;
- **considered** the benefits of establishing a dedicated Pacific Hydrological Services (PHS) Panel within the PMC structure, to provide advice and guidance to the Council and to progress the

development and implementation of new programmes and initiatives to support the capacity needs of hydrological services in PICTs;

- **endorsed the inclusion of a Pacific Hydrological Services (PHS) Panel within the PMC structure; and**
- **noted the attached Interim Terms of Reference for the proposed Pacific Hydrological Services (PHS) Panel, and requested that SPREP and WMO liaise with SPC and others to finalise the ToR and facilitate progress on key tasks in consultation with panel membership. USP, IFRC, SPC, Samoa, NZ, PNG, New Caledonia (after consultation with water division), and Fiji are the initial members of the Panel and enrolment will be left open ended for further membership, noting the need for a balance of NMHS and Hydrology members.**

74. The Meeting was updated on the implementation of the hydrology activities of the PIMS 2012-2021 and presented with an outline of a way forward to advance hydrology activities under the revised PIMS.
75. An overview of the components of hydrology services was provided, noting the strong linkages between the meteorology and hydrology. As a way forward it was proposed to establish the Pacific Hydrological Services (PHS) panel to further address the needs and better aligned to leverage resources.
76. Samoa fully supported the establishment of PHS panel and acknowledged that it has been a long process since PMC 2 to include the new PKO 7 on Hydrology in the PIMS. Furthermore, Samoa commended the SPC, SPREP, and WMO on their efforts to collaborate on this initiative.

15.2: Flood Early Warning System

The Meeting:

- **noted:**
 - high resolution Numerical Weather Prediction (NWP) and Catchment models are essential to improve Flood Warning Services (FWS);
 - more flood monitoring stations are required for effective flood management;
 - **Fiji is in need of technical assistance in the way of a hydrological expert to fully set up hydrology functions including centralizing the hydrological services; and**
 - **support for hydrological services, capacity building and appropriate tools for FWS is needed for PMC members.**

77. The Meeting was presented background about Fiji Meteorological Service (FMS) responsibilities for flood forecasting and their Hydro-metric network. The hydrology program was formerly with the Public Works Department within the Ministry of Works, Transport and Public Utilities and was later transferred to Water Authority of Fiji. After the 2012 Nadi flood, the mandate for flood forecasting was transferred to the FMS. Other functions of hydrology remain fragmented and lie with the Water Authority of Fiji, the Ministry of Waterways, and the Department of Mineral Resources.

15.3: Re-engage UNESCO International Hydrology Program in the Pacific Region

The Meeting:

- **noted** UNESCO's scoping and consultation initiative, as well as their request for comments, inputs, and feedback from PICTs, partners, and experts; and
- **requested:**
 3. **UNESCO, in coordination with WMO, SPC, SPREP and other agencies, to assist PICTs in meeting SDG 6 and their needs and priorities in water and sanitation;**
 4. **UNESCO to inform PMC on project development progress; and**
- **invited PMC members to respond to UNESCO's request for feedback.**

78. The Meeting was briefed on the United Nations Education, Scientific, and Cultural Organization's (UNESCO) work on water and informed of UNESCO's new initiative to re-engage PICTs in their International Hydrology programme and other UNESCO water institutes, programmes and initiatives.

Agenda Item 16: Marine Weather Services and Ocean Issues

16.1: Progress on the Pacific Island Marine and Ocean Services (PIMOS) Panel

The Meeting:

- **endorsed** the PIMOS Panel Terms of Reference, noting the inclusion of Australia and Tuvalu as members of the Panel and the inclusion of marine climate change and ocean acidification as priorities;
- **noted** the need for PICTs to develop marine weather and oceans services to strengthen economic growth, public safety and security, and to comply with country obligations under the UN SOLAS Convention;
- **recognised** the complementary roles of the CROP and other partners in supporting the implementation of PIMS PKO-2;
- **noted** the current and proposed activities that are supporting the goals of the PIMOS panel and acknowledge the support provided for them;
- **requested the PMC to task the PIMOS Panel to draft an implementation plan, consistent with the WMO RA V implementation plan and other relevant plans, to assist with the development of marine weather and oceans services capacity of the regions' NMHSs, to assist NMHSs meet their obligations under SOLAS and to achieve the goals of PIMS PKO-2 and WMO Marine Meteorology goals for PMC endorsement; and**
- **requested the PMC to task the PIMOS Panel to develop a project proposal to assist with the development of marine weather and oceans services capacity of the regions' NMHSs, to assist NMHSs meet their obligations under SOLAS and to achieve the goals of PIMS PKO-2 for PMC endorsement. NMHSs interested in working with the PIMOS Panel to develop a marine and ocean services project proposal are requested to express their willingness to participate in the proposed project(s). Tonga, Samoa, USA, and Vanuatu expressed their willingness.**

79. The Meeting was updated on the progress of the Panel, including its meetings and activities. The Meeting was also informed about PICT Maritime Safety Information (MSI) obligations under the UN Safety of Life at Sea (SOLAS) Convention, noting that the International Maritime Organization (IMO) is undertaking state audits on compliance. It was noted that Marine and Ocean Services in NMHSs are lacking.
80. In reference to the recommendations, Tonga requested the Secretariat to clarify the timelines for the preparation of potential projects. The meeting was informed that a project concept could be prepared within a short time line, dependent on the donor approached.
81. The outgoing PIMOS Panel Chair thanked the Meeting for electing him as the first panel chair and expressed his support for the incoming chairs.

16.2: Methodologies to evaluate climate change impacts on storm surge/storm wave hazards in SIDS

The Meeting:

- **noted** through RESTEC and its partners considerable progress has been made on the implementation of the project; and
- **request donors and partners to provide additional resources to upscale and replicate the project in other countries.**

82. The Meeting was briefed on the Ministry of the Environment, Government of Japan (MOEJ) Project: *Develop a cost-effective methodology to assess the impact of natural hazards (Storm Surge and Storm Wave) considering the climate change scenarios for Small Island Developing States*, that applies satellite-based remote sensing technologies and presented a report on the project activities and achievements conducted by Remote Sensing Technology Centre of Japan (RESTEC).
83. USP requested further information on the synergies between this project and the Japanese Meteorological Agency (JMA) research project that assessed the climate change finger print from Typhoon Haiyan and the proposed research project assessing the Tropical Cyclone Pam. RESTEC informed the Meeting that the RESTEC project is separate from the JMA projects.
- 84. SPC asked whether the methodologies for satellite derived bathymetry and coastal inundation used will be open source. RESTEC replied that this might be a possibility for the future.**
85. Samoa asked when further coastal inundations models would be developed. The meeting was informed that additional workshops will take place after September and that new locations will be chosen in close collaboration with the NMHS.

16.3: Coastal Inundation Forecasting in Fiji and Tuvalu

The Meeting:

- **noted** the need to improve technical capacity and knowledge-base in order to build resilience against coastal hazards and marine inundation in the region;
- **recognised** the significant contribution that SPC and numerous partners have made to develop tools supporting NMHSs to operationalize coastal hazard information for EWS, as well as impact assessment tools, strengthening preparedness and response;

- **recommended that effective pilot studies, models, and decision-making tools be upscaled and further developed for other vulnerable coastal zones in the Pacific; and**
- **requested the PMC to task the PIMOS Panel to support the existing collaborative approach and to work with interested NMHSs to replicate and upscale the implementation of multi-hazard early warning systems and impact forecasting for coastal areas.**

86. The meeting was briefed on the risks coastal inundation and storm surge pose to PICTs, specifically in Fiji and Tuvalu, in the absence of effective EWS. The meeting was updated on the work that is underway by SPC and a consortium of partners to operationalise hazard and asset information into impact and risk assessment tools that can be used to inform national planning and decision-making processes.

Agenda Item 17: Communications and Infrastructure

17.1: Progress on the Pacific Island Communication and Infrastructure (PICI) Panel

The Meeting:

- **endorsed** the PICI Panel TOR and the current members of the PICI Panel;
- **acknowledged** UCAR, FINPAC, WMO, COSSPac and SPREP for supporting the face-to-face meetings of the Panel;
- **acknowledged** the University of Hawaii TASI for providing the teleconference facilities to host meetings; and
- **recommended that NMHSs collaborate on the development of the National Emergency Telecommunication Plans with their National Telecommunication Regulators office to ensure that their priorities are reflected in their plan.**

87. The Meeting was updated on the progress of the PICI panel work plan and activities. The first Panel meeting in August 2016 to identified and invited potential members, and developed the Panel ToR. The second Panel meeting in May 2017 discussed the needs and gaps in communication and dissemination of meteorological and warning information in the region. This meeting also looked at how to improve coordination between national and regional communications providers, regulators and regulatory networks.

88. The University of Hawaii TASI confirmed their support for the work of panel.

17.2: National Emergency Telecommunication Plans (NETP) and opportunity for NMHSs to link

The Meeting:

- **noted** the importance of national meteorological and hydrological services participating in the development of their National Emergency Telecommunications Plans and inclusion in their respective national Emergency Telecommunications Cluster activities;
- **requested the Pacific Information and Communications Technology Regulatory and Resource Center and the World Food Programme Emergency Telecommunications Cluster to work closely with the PMC PICI Panel to provide advice to the National Meteorological and Hydrological Services; and**

- **recommended that NMHSs participate in the development of their National Emergency Telecommunications Plans and their inclusion in their respective National Emergency Telecommunications Cluster activities.**

89. The Meeting was updated on the regulations in the Pacific for emergency telecommunications and the opportunities for NMHSs to join the development of NETPs.
90. Samoa requested assistance from WMO, the Secretariat and the Regional Regulator Center to assist NMHSs in addressing licensing costs issues associated with operating monitoring and warning systems.
91. UNESCAP asked if there was a need to define who leads the coordination of communications at the national level for disaster communication. Mr. Ed Young clarified that there is coordination, but that it is still in its early stages. He further clarified that most NETPs are in the process of being developed, apart from Samoa.
- 92. The Secretariat advised and encouraged PMC members to start a dialogue with National Regulators offices to ensure inclusion of NMHS communication needs in their NETP.**

17.3: RANET

The Meeting:

- **noted** the considerable effort undertaken to upgrade the backbone infrastructure that supports RANET systems, and contribution provided by COMET/UCAR/NOAA to help establish the SPREP PICI Panel and support its ability to meet;
- **noted** the completion of the RANET Pacific Systems Inventory and the valuable role these systems play as a backup communications and dissemination tool to obtain meteorological data;
- **requested to be kept updated on NOAA's plans to launch a new Geostationary satellite in 2018; and**
- **endorsed the establishment of an adhoc RANET Requirements Group to help develop a transition strategy for operation and maintenance of RANET systems to a site within the Pacific region (WMO RA V).**

93. The Meeting was updated on RANET systems and activities since PMC-3, including a report on the overall health of the RANET network hardware and systems in the Pacific.
94. **WMO expressed interest in working with JMA and NOAA for coordination of GOESS data availability on the Himawari broadcast.**

Agenda Item 18: Training, Education and Research

18.1: Progress on the Pacific Island Education, Training and Research (PIETR) Panel

The Meeting:

- **noted** progress made by the PIETR panel;
- **encouraged** research and training institutes to complete the survey on education, training and research prepared by SPREP;
- **invited partners to support the development of the Capacity Development Strategy;**
- **endorsed** the ToR of the PIETR Panel; and

- **endorsed Fiji Meteorological Service to pursue a RIC proposal with the President and the Management Group of RA V in coordination with the Commission for Instrument and Methods of Observation (CIMO) and other relevant departments of WMO, and report progress to PMC-5.**

95. The Chair of the PIETR panel, Mr. Arona Ngari reported on the progress of the PIETR Panel and presented to the Meeting the proposal by the Government of Fiji through the FMS to host a Regional Instrumentation Centre (RIC) with basic capabilities and functions that will support WMO RA V countries, especially the smaller Pacific Island NMHSs. The RIC will assist in ensuring traceability to International System of Units (SI) by the calibration of their meteorological standard instruments, namely barometers, thermometers and hygrometers.
96. UNESCAP asked if there was a need to mainstream early warning and impact forecasting as part of the primary, secondary and tertiary curriculum and questioned if it was premature to include as one of the recommendations.
97. WMO noted the considerable work already implemented by UNISDR on similar issue and that this should be taken into consideration.

18.2: The Pacific Regional Meteorological Training Centre

The Meeting:

- **noted the contents of the paper; and**
 - **endorsed FMS and USP to continue exploring the possibility of establishing the Pacific Regional Training Centre (RTC). FMS and USP to work towards presenting the proposed RTC plan to the RA V President and Management Group meeting in 2018, and report progress to the PIETR Panel and PMC-5.**
98. The Meeting was updated on the progress made on establishing a WMO Regional Training Centre (RTC) in the region. Both FMS and USP have complementary strengths and capabilities. Combined, they would be able to deliver a consolidated regional training centre, support WMO global campus activities, and quickly incorporate materials, tools, capabilities and perspectives as required.
 99. Samoa requested USP to align the qualification trainings with the national accreditation frameworks to ensure the certificates obtained by the NMHS officers are recognized nationally. USP noted they will confirm the TVET and certificates are accredited Pacific wide, similar to other courses offered.
 100. The Cook Islands noted that research was also considered as one of the key area of focus and should be strengthened in the future.
 101. Clarification was requested by UNICAR on the inclusion of other disciplines such as agriculture and economy in the proposed RTC. USP noted that three different streams are being proposed to the USP senate for consideration, whereby PACE will collaborate with other area of USP such as the School of Governance on multilateral agreements and School of Finance on Climate Finance.
 102. USP concluded with a note on scheduled training that is being offered to IT and NMHS officers in January 2018, with support from the COSPPac project, and a remote sensing course proposed for June 2018.

18.3: Impacts of climate change for the Pacific according to the latest findings of the Intergovernmental Panel on Climate Change (IPCC) and Future priorities of the IPCC

The Meeting:

- **noted** that during the Sixth Assessment Cycle, the IPCC will produce three Special Reports, a Methodology Report and the Sixth Assessment Report (AR6);
- **noted** that the IPCC, through Fiji Focal Point, has sent an invitation to Government of Fiji to host the First Lead Author meeting for the IPCC Special Report on Oceans and Cryosphere. Upon Fiji's confirmation, the meeting will be held in Nadi, Fiji 2-6 October, 2017;
- **encouraged participation of PMC National Focal Points or their nominees and Pacific observer organizations in IPCC processes meetings held twice a year;**
- **encouraged the National Focal Points of the IPCC to enhance engagement of their research institutions, universities and key researchers in the IPCC process;**
- **encouraged the nomination of National Focal Points to the IPCC for those countries that do not have one already;**
- **encouraged participation in the Pacific IPCC outreach event to be held at USP on 7 October, 2017 and broadcast to the USP regional campuses;**
- **encouraged National Focal Points and Pacific observer organizations to nominate Pacific representatives to serve as Coordinating Lead Authors, Lead Authors and Review Editors for the IPCC 6th assessment cycle before the 2017 deadline (Oct/early November, 2017); and**
- **requested the IPCC Secretariat to copy the NMHS Directors for all invitations and requests.**

103. The Meeting was briefed on the impacts of climate change in the Pacific according to the latest findings of the IPCC and on future IPCC priorities that will be presented during the Ministerial segment. The Meeting was informed of ways they can improve engagement from the Pacific in the IPCC process.
104. IPCC acknowledged and thanked the Fiji and Cook Islands IPCC focal points for inviting them to the Meeting.
105. Cook Islands encouraged IPCC focal points to take part in the IPCC process to promote the issues of the small islands for consideration. In the case that the NMHS Director is not the IPCC focal point the Cook Islands requested they make contact with them to ensure NMHS engagement with IPCC.
106. Samoa requested clarity on the selection of IPCC focal points since in some countries the NMHS Directors are not the IPCC focal point. IPCC replied that country arrangements vary and are able to provide letter of support if needed. Fiji noted that their Ministry of Foreign Affairs are copied in all communication from IPCC Secretariat to the Fiji focal point.
107. IFRC mentioned that research on adaptation and traditional knowledge are often “grey literature” and that there is a need to partner with civil society organisations and research institutes to capture this in the peer-reviewed form that meets IPCC standards. IPCC shared the same sentiments emphasising the important role that universities play in this area and that peer review of “grey literature” should be promoted in order to be considered by the IPCC processes.
108. IPCC outlined an approach taken by other African countries in increasing the chances of their authors being selected to assist in drafting IPCC reports. It was suggested that countries and

regional partners submit nominations for qualified authors for every chapter of the report and that female authors are particularly encouraged to apply.

Agenda Item 19: Republic of Korea- Pacific Islands Climate Prediction Project Update

The Meeting:

- **noted** that through Republic of Korea Pacific Island Climate Prediction Services (ROK-PI CliPS) project and their partners that considerable progress has been made on the implementation of the project, and that this work complements the work of GFCS and supports the implementation of the PIMS; and
- **recommend** PI NMHS **actively utilize the Pacific Islands Advanced Seasonal Outlook (PICASO) system in generating seasonal outlooks upon its launch at PICO-3;**
- **requested additional resources to develop a user-friendly integrated approach to determine the optimal prediction for higher quality forecast information in the Pacific Islands; and**
- **requested additional resources for communication, capacity building and training of NMHS and in-country stakeholders to ensure that the tools and products developed by ROK-PI CliPS are taken up for decision making in sectors such as Agriculture, Health, Water, Disaster Risk Reduction, and so on.**

109. The Meeting was updated on the Republic of Korea-Pacific Islands Climate Prediction Services project, and on the activities and achievements of the project carried out by the APEC Climate Center (APCC) and SPREP.
110. Australia asked about the accuracy of the models used for their seasonal forecasts. APCC replied that they use a multi-model ensemble approach to minimize uncertainty.

Agenda Item 20: FINPAC Project

The Meeting:

- **acknowledged** the kind contribution of the Government of Finland in supporting the NMHSs since 2006 and supporting the FINPAC project from 2013 to 2017;
- **acknowledged** the technical support from FMI;
- **acknowledged** the successful activities carried out under the project in the various NMHSs and communities in the region;
- **recommended NMHSs to support the national IFRC societies and other community mobilizers to ensure strong collaboration developed under FINPAC can continue;**
- **recognised** that the MoU signed between Solomon Island Red Cross and the Solomon Island Meteorological Service is a great example of sustainability and collaboration to get information to the last mile;
- **recommended NMHSs and their regional partners engage national red cross societies or other NGO's early in program design processes to ensure public weather information can be easily understood and used to inform early actions at the community level;**
- **recognised** existing tools and processes developed under the FINPAC;
- **encouraged NMHSs to work closely and strengthen relationships with their National Media (print and broadcasters) to provide wider access to public weather information; and**

- **recommended that donors and partners continue support to NMHSs and their partners to replicate the community early warning system activities piloted under the FINPAC to other communities.**

111. The Meeting was updated on the Finnish-Pacific (FINPAC) Project and the achievements of the project. The Meeting was also presented with the terminal report of the FINPAC project and recommendations for future scaling up of the pilot.
112. Tonga noted that FINPAC had a great impact in the region and addressed the challenge of working with communities and the media, and that this work was carried out with IFRC.
113. Samoa asked about the future of FINPAC project and the sustainability of the work that has already been done, and **Samoa, Tonga, Papua New Guinea and Niue requested that the Finnish Meteorological Institute (FMI) and other donors and partners continue the work started by the FINPAC project. Tonga requested WMO continue the FINAPC project through the new WMO CREWS SIDS project.**
114. Fiji and Papua New Guinea noted the impact the FINPAC project had on the region and communities, and the importance of SMART MET and SMART ALERT in community early warning systems.
115. Niue acknowledged the Government of Finland for the installation of an AWS in Niue.

Agenda Item 21: Forum Fishery Agency (FFA) Observer Program

The Meeting:

- **noted** that the possible utilization of fisheries observers and fishing boats to collect meteorologically significant data has implications for training, costs, operations and risks faced by fisheries administrations, observers and boats and that these elements would have to be technically addressed by SPREP, SPC, FFA and PNAO and would require national observer program approval;
- **requested** the PMC to task the PIMOS Panel to coordinate with FFA and report progress to PMC-5 ; and
- **noted** the growing interest and importance of oceans observations in the PICT Region and **requested PMC to provide its views on relevance and importance of a coordinated, sustainable, accessible, validated and region-driven framework for ocean observations.**

116. The Meeting was briefed on the FFA fisheries observer program and the importance of ocean observing and data sharing in the Pacific region, and the opportunity for this work to contribute to the data needs of PMC.

Agenda Item 22: COSPPac Project

The Meeting:

- **noted** the update on COSPPac activities and transition progress; and
- **acknowledged** the collaborative effort and successful transition of COSPPac activities with SPC, SPREP and the partner country NMHSs.

117. The Meeting was updated on the Climate and Ocean Services Program for the Pacific (COSPPac) activities and transition of products to SPREP and SPC.
118. Marshall Islands, Niue and Papua New Guinea recognised the success of the COSPPac project in the region, and expressed gratitude to the government of Australia for the support provided to the NMHSs including the review of the PIMS which aid in the development of the PNG National Strategic Plan.
119. **Marshall Islands and Niue requested the continued support of the partners and steering committee for the COSPPac project, including the continued support for tide gauges and other equipment. Niue also noted the importance of COSPPac's support for oceanography.**
120. Samoa noted the value of the COSPPac flexible funding mechanism and requested it be available for the countries in the future.

Agenda Item 23: Pacific Island Meteorological Strategy

23.1 and 23.2: Presentation of the Final Draft of the Reviewed Pacific Island Meteorological Strategy (PIMS) 2017-2026 for Endorsement

The Meeting:

- **noted** the importance of the PIMS 2012-2021 in guiding regional action and support for NMHSs;
 - **noted** the review process of the PIMS 2012-2021 and acknowledge SPREP and WMO for providing the Secretariat via the PMDP to support the review process and Government of Australia through the COSPPac project for financially supporting the review;
 - **acknowledged** the support from the PMC working group for providing their support and guidance in the review process;
 - **noted** the Mid-Term Review Report of the PIMS 2012-2021;
 - **noted** that the draft Reviewed PIMS 2017-2026 is aligned with the global and regional frameworks as indicated under Part 4 of the Reviewed PIMS;
 - **noted** that an implementation Plan for the PIMS 2017-2026 was still in draft. The Secretariat will continue to work with the PMC Panels to complete it;
 - **endorsed** the Reviewed PIMS 2017-2026;
 - **requested partners and donors to allocate resources to support the implementation of the PIMS 2017-2026, and to align regional and national projects on climate, meteorology, ocean and water services to the PIMS priorities; and**
 - **requested for the Secretariat, NMHSs and partners to promote the PIMS 2017-2026 at regional and global fora.**
121. The Secretariat briefed the Meeting on the mid-term review PIMS 2012-2021. The review found that the PIMS is highly relevant to all PICTs, and that while PMC Members are aware of the Strategy most stakeholders outside the NMHS community were not. The review recommended that the Pacific Key Outcomes be updated to reflect NMHSs' progress and take into account emerging opportunities to ensure its continuing usefulness. It was noted that it was not possible to attribute progress made in achieving the PKOs directly to the PIMS as no monitoring and evaluation framework (MEF) was implemented.

122. The PIMS 2017-2026 was presented to the Meeting. The PIMS was updated to address the recommendations from the mid-term review and to align it with current global and regional framework and strategies.
123. New Caledonia, UCAR, and USP acknowledged the role of the PIMS in regional coordination of its NMHS and priorities. USP further noted that they will continue to work with the PIETER Panel.
124. New Caledonia noted that they will support the implementation of the PIMS in the region.
125. **USP requested the need for scientific research and building long-term capacity in the region as well as the need for strong peer reviewed literature and funding for research at USP and other organisations. They noted that there needs to be a better coordinated capacity and research development strategy in the Pacific.**
126. UCAR noted it will continue to work with the PICI Panel and will coordinate its work with the PIMS. They noted that a WYGOS workshop will be held later this year.

Agenda Item 24: The Pacific Roadmap for Strengthened Climate Services

24.1 and 24.2: Presentation of the Final draft of the Pacific Roadmap for Strengthened Climate Services (PRSCS) 2017-2026 for Endorsement

The Meeting:

- **noted** the extensive consultative process that was used for the development of the Pacific Roadmap for Strengthened Climate Services (PRSCS) and the alignment of actions presented in the PRSCS with the WMO Strategic Plan and RA V Operation Plan (2016-2019), the Global Framework on Climate Services (GFCS), the Sendai Framework and other relevant regional and international initiatives;
 - **endorsed** the Pacific Roadmap for Strengthened Climate Services 2017-2026; and
 - **requested NMHSs, donors and partners to support the implementation of suggested actions within the PRSCS.**
127. The Meeting was updated on the development of the Pacific Roadmap for Strengthened Climate Services. The PRSCS provides overall guidance for the generation and delivery of climate services in the Pacific region. The PRSCS recognized the need to expand on the five original WMO Global Framework for Climate Services (GFCS) focal areas by adding tourism, fisheries and aquaculture.
128. The PRSCS was developed in consultation with regional NMHSs and stakeholders directly on the margins of 5 different meetings and through a questionnaire. The need for the PRSCS was identified at the Regional Consultation workshop for Climate Services for Pacific Small Island States in Rarotonga.
129. The PRSCS is strongly aligned to the GFCS as well as the WMO RA V Strategic Plan. The Five GFCS Pillars are used as the structural blocks for the Roadmap. The implementation of these actions will be the responsibility of the NMHSs, donors and partner organisation in the region.
130. Tonga congratulated the PICS Panel and the Chair for the great work with the formulation of the PRSCS and expressed their support for the PRSCS.
131. USP thanked the chair of PICS Panel for their leadership, provided their full support to the PRSCS and their support for all of the pillars, especially research.

132. SPTO thanked the Panel for including the tourism sector in the PRSCS, and SPTO noted that they are committed to working with SPREP and other regional organisations to support needs of the tourism industry in implementing activities at the national level. SPTO also thanked the PMC for their hard work.

Agenda Item 25: Pacific Climate Change Centre (PCCC) and Role in Supporting Meteorology in the Pacific

The Meeting:

- **noted** the progress made in the establishment of the Pacific Climate Change Centre (PCCC);
 - **noted** the support of the Government of Japan and Government of Samoa for the PCCC to be established at SPREP;
 - **noted** request from Marshall Islands to SPREP to add Meteorology into the name of the PCCC;
 - **welcomed** the renewed focus that SPREP has placed on climate change science, especially underpinning meteorology and climate services;
 - **requested SPREP to maintain within the PCCC future programs an emphasis on climate change, meteorology, climate services, and disaster risk reduction, as well as support and coordinate efforts on meteorology, climate services, climate change, oceanography and integrate disaster risk reduction into development planning processes; and**
 - **endorsed** the PCCC as a shared regional resource and a Centre of Excellence for Pacific climate change action and climate services.
133. The Meeting was briefed on the progress made in the establishment of the PCCC, and the opportunities it offers for enhancing meteorological and climate change services and science in the region. The construction of the PCCC is anticipated to start in early 2018, prior to PALM 8 and take up to 14 months, with a possible hand over of the PCCC to SPREP in April 2019.
134. The Meeting was briefed on the progress made in the establishment of the PCCC, and the opportunities it offers for enhancing meteorological and climate change services and science in the region. The construction of the PCCC is anticipated to take place in early 2018, prior to PALM 8. Construction is expected to commence in March 2018 and take up to 14 months, with a possible hand over of the PCCC to SPREP in April 2019.
135. WMO stated they would promote the PCCC and its uses.
136. JICA welcomed the developments with regards to the PCCC, and urged SPREP to complete the plan for the uses of the PCCC for consideration of the PALM-8 meeting.
137. Samoa supported the establishment of the PCCC.
138. Tonga and Marshall Islands questioned the name of the PCCC and Marshall Islands suggested adding Meteorology to the name. The Secretariat clarified that this matter could be considered by the 28th SPREP Meeting.
139. Cook Islands noted that they see the PCCC as a milestone demonstrating the growth of the PMC community and its services to support the region.
140. French Polynesia asked about the organizations that will be housed in the PCCC. SPREP replied that the PCCC is envisaged as a resource for the region, and that it would be open to secondments and hosting of organisations working on climate change in the region.

141. SPC noted the alignment of the PCCC and the SPC Ocean Centre of Excellence and noted the need for alignment with other regional Centres.

Agenda Item 26: Review of PMC Terms of Reference

The Meeting:

- **noted** that the Terms of Reference is still current.

142. The Secretariat presented the Meeting with the PMC TOR for comment, noting that SPREP is the decision making body and that PMC is a subsidiary meeting of the SPREP Officials Meeting.
143. Samoa sought clarification of the inclusion of the Hydrology Panel, PCCC and RCC. The Secretariat clarified that the TOR is generic and can encompass new initiatives that come under the PMC.
144. Niue sought clarification on the number of Panels the PMC can establish. The Secretariat replied that the PMC can use its discretion on the number of Panel to be established.

Agenda Item 27: PMC-4 Outcomes, Donor and Partners Roundtable and the Ministerial Meeting

27.1: Review and Finalize the Second Pacific Ministerial Meeting on Meteorology (PMMM-2)

Agenda

The Meeting:

- **reviewed** and endorsed in principle the draft Honiara Statement for PMMM-2; and
- **endorsed** the agenda for PMMM-2.

145. The agenda for the Second Pacific Ministerial Meeting on Meteorology (PMMM-2) was presented the meeting and the meeting reviewed the draft Honiara Statement.
146. The Chair thanked the drafting committee for their work in drafting the Honiara Statement.

27.2: Briefing for Donor and Partner Roundtable Meeting

The Meeting:

- **noted** the briefing for the Donor and Partner Roundtable meeting.

147. The Meeting was briefed on the Donor and Partner Roundtable meeting and presented the draft agenda for the meeting.

Agenda Item 28: Venue of the Fifth Meeting of the PMC

The Meeting:

- **nominated** Samoa to be the host of the Fifth Pacific Meteorological Council Meeting;
- **agreed** that the PMC will Meet in 2019 in Samoa and that the PMC and PMMM-3 will meet in 2020, and that the PMC will meet every 2 year thereafter and that the PMMM will meet every 4 years thereafter, pending approval in PMMM-2.

148. The Meeting was briefed on the venue of the next PMC Meeting and the frequency of the next PMC and Ministerial Meetings. It was noted that the PMC and the Ministerial meeting falls in the same year as the SPREP Meeting. The Secretariat's preference is for the PMC Meeting to fall in an off year from the biennial SPREP Meeting. The Secretariat proposed that the PMC next meet in 2019 and then meet in 2020 including the Ministerial Meeting. The PMC would meet every two years after and the Ministerial Meeting would be held every four years.
149. Samoa expressed their willingness to host PMC-5, noting that the PCCC will be launched in 2019. There was no objection to Samoa being the host of PMC-5 and the Chair expressed congratulations.
150. New Caledonia noted the challenges of hosting the PMC Meeting in 2019 before the WMO Congress as the meeting would have to be held during cyclone season. The Secretariat noted that Members had expressed their preference to have the Meeting close to the WMO Congress and accepted New Caledonia's proposed meeting time in March or April 2019. Tonga noted that preparation for the WMO Congress occurs 1 year before and regional preparations will take place at the WMO RA V meeting in 2018. Samoa noted that at RA V there is usually a mini-PMC meeting and that it may not be possible to have a full PMC meeting in 2018.
151. Tonga, Cook Islands, Solomon Islands and Australia proposed to hold PMC-5 in 2019 after the WMO Congress.

Agenda Item 29: Review and Adopt the Report of PMC-4

The Meeting:

- **adopted** the recommendations and decisions from the report of the Fourth Pacific Meteorological Council.

152. The Chair, WMO, SPREP and Solomon islands commended the drafting committee for their work, thanked the Meeting for their hard work in making this a successful meeting, and thanked all the partners, donors and participants for their engagement in the Meeting.

Agenda Item 30: Closure of PMC-4

153. The Meeting was formally closed at 6:10pm on 16 August, 2017.

Annex 1: Participants List

4th Pacific Meteorology Council Meeting - 2017 Participants		
No	Name	Organisation/Country
1	Jacinta Brown	American Samoa
2	Patrick Suckling	Australia
3	Arona Ngari	Cook Islands
4	Johannes Berdon	FSM
5	Eden Skilling	FSM
6	Hon Joeli Cawaki	Fiji
7	Ravind Kumar	Fiji
8	Viliame Vereivalu	Fiji
9	Priya Chand	Fiji Media
10	Pita Ligaiula	Fiji Media
11	Repeka Nasiko	Fiji Media
12	Ruci Vakamino	Fiji Media
13	Isabelle Leleu	French Polynesia
14	Ueneta Toorua	Kiribati
15	Bentaaki Kiima	Kiribati Media
16	Reginald White	Marshall Islands
17	Barassi Botelanga	Nauru
18	Hon Aaron Cook	Nauru
19	Hugues Ravenel	New Caledonia
20	HE Don Higgins	NZ
21	Rossy Mitiepo	Niue
22	Hon. Dalton Tagelagi	Niue
23	Maria Ngemaes	Palau
24	Sam Maiha	PNG
25	Kevin Luana	PNG
26	Matthew Yari	PNG Media
27	Mulipola Titimaea	Samoa
28	Tile Tofaeono	Samoa
29	Takashi Matsumura	Samoa
30	Hon. Fiamē Mataafa	Samoa
31	Bismarck Crawley	Samoa
32	Seia Ualesi	Samoa Media
33	Joshua Lafoai	Samoa Media
34	Lloyd Tahani	Solomon Islands
35	Chanel Iroi	Solomon Islands
36	Hon. Samuel Manetoali	Solomon Islands
37	Noel Sanau	Solomon Islands
38	Alick Haruhiru	Solomon Islands
39	Titus Polesi	Solomon Islands
40	Solomon Sammy	Solomon Islands

41	Benjamin Kere	Solomon Islands
42	Job Meke	Solomon Islands
43	Ruth Nalangu	Solomon Islands
44	Florence Bale	Solomon Islands
45	Jenny Davson	Solomon Islands
46	Alex Rilifia	Solomon Islands
47	Nelson Tourism	Solomon Islands
48	Cameron Vindi	Solomon Islands
49	Nelson Anaia	Solomon Islands
50	Father Nigel	Solomon Islands
51	Mr Ben Bilua	Solomon Media
52	Mr Fredrick Kusu	Solomons Media
53	Mr Lynton Filia	Solomons Media
54	Ms Priscilla Ragu	Solomons Media
55	Mr Samie Waikori	Solomons Media
56	Mr Jared Koli	Solomons Media
57	Ms Stella Waioha	Solomons Media
58	Mr Simon Tavake	Solomons Media
59	Mr Alex Dadamu	Solomons Media
60	Mr Henry Oritaimae	Solomons Media
61	Mr Andrew Fanasia	Solomons Media
62	Mr Kung-Yueh Chao	Solomons Advisor
63	Mr Hsiu-Wu Chang	Solomons Advisor
64	Mr Mark Cheng	Solomons Advisor
65	Mr Chia-Ping Cheng	Solomons Advisor
66	James Onoi	Solomon Islands
67	Karen Tanabose	Solomon Islands
68	Gordon Tapalia	Solomon Islands
69	Loia Tausi	Tokelau
70	Hon. Kelihiano Kalolo	Tokelau
71	Mikaele Fatia	Tokelau
72	Ofa Fa'anunu	Tonga
73	Hon. Siaosi Sovaleni	Tonga
74	Ana Uili	Tonga Media
75	Viola Ulakai	Tonga Media
76	Linny Folau	Tonga Media
77	Ueneta Toorua	Tuvalu
78	Asela Peneueta	Tuvalu
79	Yvette D'Unienville	Tuvalu Media
80	Raymond Tanabe	USA
81	Jennifer Lewis	USA
82	David Gibson	Vanuatu
83	Jerry Timothy	Vanuatu
84	Levu Antfalo	Vanuatu
85	Esline Garaebiti	Vanuatu

86	Hon. Ham Lini	Vanuatu
87	Silas Aru	Vanuatu
88	Tensly Sumbe	Vanuatu Media
89	Robb Webb	BOM
90	Ben Churchill	BOM
91	Agata Imielska	BOM
92	Scott Power	BOM
93	Grahamme Reader	BOM
94	Doug Ramsay	NIWA
95	Graham Elley	NIWA
96	Alan Porteous	NIWA
97	John Samra	NIWA
98	Ed Young	UCAR
99	Bo Ra Kim	APCC
100	Dr Yun-Young Lee	APCC
101	Dr WonMoo Kim	APCC
102	Dr Jinho Yoo	APCC
103	Dr Hong-Sang Jung	APCC
104	Ms Jennifer Strahl	PITD
105	Ms Gingerlei Porter	UH
106	Ms Christina Higa	UH
107	Mr Tsugito Nagano	Japan
108	Mr Kinji Furukawa	Japan
109	Mr Moeka Yamaji	Japan
110	Shin Furuno	Japan
111	Mr Koji Kuroiwa	JICA
112	Ms Rina Kurumisawa	JICA
113	Ms Moeka Yamaji	JAXA
114	Kin Ji	JAXA
115	Mrs Sandra I'anson	DFAT Australia
116	Mr Raymond Bojczak	DFAT Australia
117	Mr Matti Nummelin	MFA
118	Mr Matti Eeraikainen	FMI
119	Ms Kathryn Clarkson	IFRC
120	Ms Olivia Warrick	IFRC
121	Mr Stephenie Zoll	IFRC
122	Ms Lynelle Popot	UNDP
123	Mr Noud Leenders	UNDP
124	Ms Azusa Kubota	UNDP
125	Iosefa Maiava	UNESCAP
126	Mr Sune Gudnitz	UNOCHA
127	Ms Vinie Talai	UNOCHA
128	Joy Pereira	IPCC
129	Mr A.R Subbiah	RIMES
130	Jimmy Gomoga	RIMES

131	Peter Dunda	ICAO
132	John Fenwick	RA V
133	Joseph Instiful	GCF
134	James Movick	FFA
135	Rosemary Kafa	FAO
136	Ian White	ANU
137	Rajendra Prasad	UNESCO
138	Ian White	UNESCO
139	Geoff Gooley	CSIRO
140	Anthony Freeman	WFP
141	Dr Andrew Tait	PICS Panel
142	Mary Power	WMO
143	Lina Sjaavik	WMO
144	Petteri Taalas	WMO
145	Henry Taiki	WMO
146	Ms Molly Powers-Tora	SPC
147	Mr Jens Kruger	SPC
148	Mr David Hebblethwaite	SPC
149	Mrs Rhonda Robinson	SPC
150	Mr Peter Sinclair	SPC
151	Ms Litea Biukoto	SPC
152	Dr Audrey Aumua	SPC
153	Sylvie Goyet	SPC
154	Evlyn Mani	SPC
155	Christina Leala Gale	SPTO
156	Elisabeth Hollan	USP
157	Satui Bentin	Consultant
158	Bapon Fakhruddin	Consultant
159	Carla Fonseca	Consultant
160	Faumuina Maria Tafunai	Consultant
161	Samisoni Pareti	Consultant
162	Mr Kosi Latu	SPREP
163	Mr Espen Ronneberg	SPREP
164	Mr Salesa Nihmei	SPREP
165	Mr Sunny Seuseu	SPREP
166	Mr Tommy Moore	SPREP
167	Mr Philip Malsale	SPREP
168	Mr Alex Montoro	SPREP
169	Ms Siosinamele Lui	SPREP
170	Ms Azarel Mariner	SPREP
171	Ms Sela Simamao	SPREP
172	Ms Angelica Salele	SPREP
173	Mr Epeli Tagi	SPREP