

## Sixth Meeting of the Pacific Meteorological Council (PMC-6)

Sustaining Weather, Climate, Water and Ocean Services for a Resilient Blue Pacific

14-16 August 2023, Sofitel Fiji Resort and Spa, Denarau, Nadi, Fiji

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### Agenda item 12.1: Progress and Update on the Pacific Hydrology Services Panel

#### Purpose of the paper:

1. **Inform** the Council of the progress of the Pacific Hydrology Services (PHS) Panel;
2. **Update** the Council of regional initiatives addressing gaps and challenges related to hydrological services with an emphasis on flood and drought warning and management at the national and regional level;
3. **Inform** the Council of regional priorities to enhance hydrological services outputs and data management at the national and regional level;
4. **Note** the revised PHS Panel Terms of Reference and Work Plan 2018-2026.

#### Background:

1. As per the Terms of Reference, the purpose of the PHS Panel is to provide general advice and guidance to the PMC on matters related to hydrological services, with an emphasis on flood and drought warning and management at the national and regional level, as prescribed in the Pacific Island Meteorological Strategy 2017-2026 and other international and regional frameworks such as the Framework for Resilient Development in the Pacific;
2. The panel works collaboratively with relevant partners on the development and implementation of new programmes and initiatives to enhance the capacities of PICTs to provide quality hydrological services;
3. There is a general lack of awareness and investment into the integral role that hydrological services play in realising climate resilient communities. Hydrometric observations and analysis (hydrology) underpin the accuracy, timeliness and confidence in flood and drought warnings. Additionally, hydrological data is a critical input to realise water and food security, sanitation and hygiene, water resources management, sustainable energy, as well as the design of climate resilient infrastructure;
4. However, hydrology within the region is poorly supported. This has led to reduced hydrological capacity for monitoring and analysis, which limits the ability to effectively provide flood and drought early warning and management.
5. The inclusion of hydrological data and engagement with National Hydrological Services (NHSs) has been minimal in recent years. A study related to hydrological services in the Pacific in 2019 identified 46 projects where high-quality hydrological services were fundamental to the success of these projects, however only three appear to have directly involved the National Hydrological Services in the activities being undertaken through the project (Catchlove et al, 2019);

## Pacific Hydrological Services Panel Update

1. The PHS Panel and members have progressed various actions to enhance hydrological services in the Pacific. These include:

1.1 Finalisation of the commissioned survey by Wave Consulting Ltd. to assess the hydrological capacity of 11 Pacific Island Countries (PICs) and identify gaps and needs at the national as well as the regional levels;

The survey identified the following gaps and challenges around hydrological services in the Pacific region:

- Flood and drought EWS not available in many countries (where relevant);
- Limited profile and understanding of hydrological services;
- Outdated/non-existent policy and legislation that support the service and extend the role and reach of hydrological services;
- Limited funding and investment in hydrological services;
- Limited engagement with NHTs as part of broader projects;
- Limited capacity/training opportunities;
- Monitoring (water quality, quantity and hydrometric network coverage);
- Hydrological analysis and forecasting (e.g. EWS);
- Infrastructure (monitoring/water supply);
- Community engagement/advocacy (inc. GEDSI, traditional knowledge); and,
- Existing hydrological databases are outdated and reaching the end of functional life.

1.2 Identifying regional initiatives and projects currently in progress that may provide support and opportunity to address some of the gaps and challenges to hydrological services:

- Technical support in hydrology to enhance flood early warning systems (SPC funded by the Australian Water Partnership);
- Managing coastal aquifers in selected Pacific SIDS (SPC funded by GEF);
- Managing Water Scarcity through Strengthened Water Resources Management (SPC funded by New Zealand Ministry of Foreign Affairs and Trade);
- WMO initiatives: Hydro-Hub Phase II, and Hydro-SOS (Hydrological Status and Outlook System);
- WMO CREWS Pacific SIDS 2.0 Project.

Future opportunities include the:

- Weather Ready Pacific (SPREP);
- Integrating Flood and Drought Management and Early Warning for Climate Change Resilience in the Pacific Islands - Fiji, Samoa, Solomon Islands and Vanuatu (Adaptation Fund- Pre-Concept Note); and the,
- COSPPAC Phase-3, which has identified support for the feasibility study on the advancement of hydrological data and database management with the SPC and the PHS Panel.

1.3 Updating of hydrological services focal points around the region, enabling coordinated and efficient communication of hydrological services information etc.;

1.4 Online review and update of the PHS Panel TOR and Workplan. There was a need for the panel to update its TOR and Workplan given the impact of COVID-19 on the progress of some of the work and changing priorities over time. The updated TOR was again reviewed at the PHS Panel meeting on 12 August 2023;

1.5 Establishing connections, networking opportunities, and increased engagement of Panel members with relevant hydrology forums and groups, including the WMO-Regional Association V (RAV) Working Group for Hydrology and Water Resources (WG-HWR), SPREP, SPC and others.

WMO in partnership with NIWA hosted a face-to-face meeting in Christchurch, NZ for the WG-HWR and the development of the HydroSOS Implementation plan from the 20-24 March 2023, and was attended by hydrology focal points from Fiji, Niue, PNG, Samoa, Solomon Islands and Tonga;

- 1.6 The Panel has tried to be active with ongoing meetings including a series of virtual forums to engage with members and connect them with current and future opportunities/projects, as well as key issues which may require support for the advancement of hydrological services within the region;
- 1.7 Some of the recent priorities discussed by the PHS Panel has included:
  - consideration of a regional hydrological services planning/strategic document aligned to the PIMS and other regional frameworks, that can clearly articulate the objectives, key activities, and resource needs to progress hydrological services at the regional and national levels;
  - the need to consider a joint session between the meteorological and hydrological services providers to discuss and address issues to further strengthen services to our communities;
  - implementation of HydroHUB and HydroSOS activities within the region including the Social Economic Benefit Analysis to raise awareness on the significance of hydrological data and the importance of investing in hydrological monitoring; and,
  - enhancing hydrological/water resources data management systems at the regional and national level.

There will be follow-up presentations on these initiatives by WMO and SPC.

#### The Meeting is invited to:

- **Note** the progress of the PHS Panel;
- **Endorse** the updated TOR for the PHS Panel;
- **Note** the completion of the Needs and Gaps Analysis Survey for hydrology services within the region, identifying gaps and challenges and the need to address them;
- **Note and Support** the implementation of WMO HydroHub and HydroSOS initiatives in the Pacific region and its opportunities in developing user focused hydrological products;
- **Note and Support** the improvement of regional hydrological data management and database development, and task the SPC to lead the coordination in implementing this activity;
- **Encourage** the hydrology community to be more engaged in the PHS Panel and the WMO WG-HWR, as well as support the work of meteorological and disaster management services;
- **Acknowledge** the Pacific Meteorological Council for the vision to raise the profile of hydrological services through the establishment of the Pacific Hydrological Services Panel, and **support** opportunities for the meteorological and hydrological communities to jointly discuss and address issues to further strengthen services to our communities;
- **Encourage** development partners and regional agencies to strengthen/sustain hydrological monitoring and services through access to technical and financial resources, specialised training, research, joint projects to address needs and gaps;

#### References

Catchlove, R., Stewart B, and Hankinson A., 2019. Pacific Countries and Territories Hydrological Capacity Assessment and Needs. A report for Pacific Hydrological Services Panel and SPREP.

# Pacific Meteorological Council

## Pacific Hydrological Services Panel

### Draft Interim Terms of Reference

(Version: 12/08/2023)

#### 1. Introduction

1.1. The Pacific Hydrological Services Panel (PHS Panel) was established by the Fourth Meeting of the Pacific Meteorological Council (PMC-4) in August 2017 to serve in the capacity of an advisory committee to the Pacific Meteorological Council (PMC) on hydrological and water resource service matters in the Pacific region.

#### 2. Purpose

2.1. The purpose of the PHS Panel is to raise awareness of the role that hydrological services play in preparing for climate resilient communities.

2.2. The PHS Panel will provide general advice and guidance to the PMC on matters related to hydrological services, with an emphasis on flood and drought warning and management at the national and regional level, as prescribed in the Pacific Island Meteorological Strategy 2017-2026 and other international and regional frameworks such as the Framework for Resilient Development in the Pacific.

2.3. The PHS Panel will assist the work of the PMC by collaborating with relevant partners on the development and implementation of new programmes and initiatives to enhance the capabilities of PICTs to provide quality hydrological services.

#### 3. Role and responsibilities of the PHS Panel

3.1. The roles and responsibilities of the PHS Panel include the provision of technical advice and guidance to the PMC on the following:

3.1.1. Establishing links and improving coordination between the PMC and international and regional organizations interested in hydrological services. This would include organisations such as, but not be limited to the:

- World Meteorological Organization,
- UNESCO-Intergovernmental Hydrological Programme
- International Association of Hydrological Sciences (IAHS)
- International Association of Hydrogeologists (IAH)
- International Groundwater Resources Assessment Centre (IGRAC)
- Pacific Islands Forum Secretariat (PIFS)
- South Pacific Regional Environment Programme (SPREP)
- University of the South Pacific (USP)
- The Pacific Community (SPC)
- *Commonwealth Scientific and Industrial Research Organisation (CSIRO)*
- Geosciences Australia
- National Institute of Water and Atmospheric Research (NIWA)
- Bureau of Meteorology (BOM)
- National Oceanic and Atmospheric Administration (NOAA)
- United States Geological Survey (USGS)

- 3.1.2. To provide guidance on the design and scope of current and future programmes that support hydrological services at the community, national and regional levels.
- 3.1.3. To strengthen the coordination, continuity, and integration of current and future programmes, projects and initiatives that support hydrological services and activities at a community, national, and region level.
- 3.1.4. To work with partners including the WMO RA-V Working Group for Hydrology and Water Resources, to advance the development and implementation of new programmes/projects, enabling activities and initiatives to address identified gaps in PICTs capacity to provide quality hydrological services relevant to Pacific Island environments and circumstances. This includee:
  - 3.1.4.1. The development and maintenance of hydrological networks, data collection, quality control, archival and exchange at national and regional levels.
  - 3.1.4.2. The provision of more accurate, timely and reliable forecasts and warnings related to floods and drought, and effective communication of these to vulnerable communities.
  - 3.1.4.3. The effective, management, analysis, production and dissemination of hydrological information, products and services.
  - 3.1.4.4. The development and maintenance of effective and efficient information management systems for hydrological data.
  - 3.1.4.5. Improved approaches to the assessment, monitoring and management of water resources (surface, groundwater and rainwater).
  - 3.1.4.6. The application of quality management frameworks to support the sustainability of hydrological services.
  - 3.1.4.7. Advance the capacity development agenda of NMHS on hydrology and hydrogeology including training and research.
  - 3.1.4.8. Promote coordinated activities on climate change and climate variability related to hydrology and the water resources sectors including drought vulnerability.
- 3.1.5. To provide a platform for partners and members to discuss, share, and promote activities associated with hydrological services and to identify including collaborative capacity building opportunities.

#### **4. PHS panel arrangements**

- 4.1. The PHS Panel should meet in principle semi-annually before the Pacific Meteorological Council (PMC) meeting or the WMO Regional Association-V Working Group for Hydrology and Water Resources and explore additional opportunities for remote or in-person interactions when necessary funding is available.
- 4.2. To report regularly to the PMC on progress of the PHS Panel activities.

#### **5. Membership**

5.1. The PHS Panel will comprise between 8 and 12 core members, including representation from WMO, SPREP and SPC, and a minimum of four representatives of PICTs across a range of different island types, ensuring representation from both surface water and groundwater specialists.

From PMC-4: USP, IFRC, SPC, Samoa, NZ, PNG, New Caledonia, Fiji

From PMC-5: Australia, Niue

From PMC-6 - American Samoa, Tuvalu, Solomon Islands, Vanuatu, Tokelau, Nauru and

5.2. The combined membership of the PHS Panel will include representation to address the following thematic areas:

5.2.1. Flood management

5.2.2. Drought management

5.2.3. Water resources management

5.2.4. Water supply

5.2.5. Meteorological services

5.2.6. Disaster risk reduction

5.2.7. Early Warning Systems

5.2.8. Hydrological data management and information systems

5.3. The PHS Panel will nominate a Chair and vice Chair in accordance with Section 6 below.

5.4. The PHS Panel may establish Task Teams to carry out specific time-bound tasks.

5.5. Meetings of the PHS Panel shall be coordinated and convened by its Chair, with the Secretariat support from SPREP and WMO and the Pacific Meteorological Desk (PMDP) in partnership with SPC.

5.6. The PHS Panel may invite non-voting other experts to participate in its meetings and discussions.

5.7. The Chair, with assistance from the Secretariat, will review membership to ensure engagement with relevant members and to account for change in roles, resignations, study leave etc.

## **6. Appointment of Chair/Vice-Chair and duration of appointment**

6.1. The PHS Panel chair/vice-chair will serve for a term of two (2) years.

6.2. At the end of each term, the current chair will invite expressions of interest in the chair/vice-chair roles. If no nominations are received and the chair and vice-chair wish to continue, they may serve for another term. There is no limit to the number of terms a member can hold a position.

6.3. Should the current chair/vice-chair wish to step down, the Vice Chair would assume the role of Chair until an election can be held.

## **7. Review and approval of Terms of Reference**

7.1. The PHS Panel may develop and revise these Terms of Reference for consideration and seek endorsement by the PMC.