SEVENTH MEETING OF THE PACIFIC METEOROLOGICAL COUNCIL (PMC-7)

"At the Frontline of Weather, Climate, Water, and Ocean Action in the Pacific"

17-19 September 2024, Warwick Le Lagon-Vanuatu Resort, Port Vila, Vanuatu

Agenda Item 23: Emerging National Meteorological and Hydrological Services Priorities

Purpose:

The purpose of this paper is to present to the Pacific Meteorological Council (PMC) members an overview of emerging priorities within National Meteorological and Hydrological Services (NMHS). It also seeks to propose actionable recommendations for mobilizing resources to effectively address and support these critical priorities.

Background:

The **7th Pacific Meteorological Council (PMC-7)** meeting is convened under the theme, *"At the Frontline of Weather, Climate, Water, and Ocean Action in the Pacific."* This theme underscores the critical role that the Pacific region plays in addressing the increasing challenges posed by climate change and environmental hazards.

The PMC serves as the principal forum for regional coordination and collaboration on meteorological, hydrological, and climate services, with a strong focus on strengthening the National Meteorological and Hydrological Services (NMHS) in Pacific Island countries. A core purpose of the PMC is to support and align with the regional and national needs of NMHS, ensuring their capacity to deliver essential services to their nations and communities.

The **Country Reports** submitted by each NMHS provide a foundational overview of the work undertaken at the national level and outline key priorities that require continued support to enhance their mandated roles. These reports highlight critical areas where NMHS need additional resources and guidance to further develop their operational capabilities and service delivery.

This paper summarizes the emerging priorities identified by NMHS and seeks the PMC's strategic guidance and recommendations on how best to address these needs. Attachment 1 provides a detailed breakdown categorizing these priorities into regional

initiatives that require support through current and future programs, projects, and funding streams.

It is essential to emphasize that these priorities have been directly identified by the NMHS themselves, reflecting their most pressing needs. Therefore, it is important for PMC members to consider these priorities and explore ways to support them, which would further strengthen the Council's role in fostering regional cooperation and resilience.

- Priority 1: Advancing Technical Training and Capacity Building
- Priority 2: Enhancing Climate and Ocean Services for Decision-Making and Community Engagement
- Priority 3: Addressing Staffing and Retention Challenges in NMHS
- Priority 4: Strengthening NMHS Infrastructure and IT Equipment
- Priority 5: Strengthening Early Warning Systems for Enhanced Safety
- Priority 6: Enhancing Data Quality and Management for Climate Services
- Priority 7: Improving Communication Infrastructure and Community Engagement
- Priority 8: Ensuring Effective Operation and Maintenance of Meteorological Infrastructure
- Priority 9: Strengthening the Observation Network for NMHS
- Priority 10: Enhancing Online Platforms (website/Apps) for NMHS
- Priority 11: Enhancing the Integration of Traditional Knowledge into Climate Services
- Priority 12: Strengthening In-Country Scientific Research to Support Climate Change Adaptation and Mitigation

Recommendations:

The Meeting is invited to:

1. **Acknowledge** the emerging priorities identified by the National Meteorological and Hydrological Services (NMHS).

2. **Recommend** the Emerging Regional Priorities be tabled at the Weather Ready Pacific Steering Committee to guide funding considerations for WRP Planning of Phase 1 activities.

3. **Request** the Secretariat to map out all relevant programmes, including support from WRP, and ensure that funding from these initiatives is effectively coordinated to address the identified priorities.

Attachment 1

Priority 1: Advancing Technical Training and Capacity Building	➢ There is a need for long-term donor support to build capacity in countries like Tokelau, moving away from discrete projects and toward sustainable development. ➢ Upskilling of current meteorological staff is essential, with a focus on formal qualifications and the recruitment of graduates in STEM fields, followed by specialized postgraduate training in meteorological services. ➢ In-region training initiatives, such through Regional Training Centre or equivalent, are strongly supported to enhance technical expertise within the region. ➢ Collaboration with RSMC and other National Meteorological and Hydrological Services (NMHS) is critical to fast-track training programs, helping staff achieve certification and competency. ➢ Training on communication skills and the application of Python for statistical analysis is necessary to produce climate services. ➢ Capacity building is required in several key areas, including climate outlooks, weather forecasting, and hydrological services. ➢ Financial support is sought for training observation staff to meet international standards, such as the six-month BIP-MT training under ICAO requirements. ➢ Specialized training programs identified include Clide Training, climate data analysis, assessing climate data homogeneity, geostatistics, and climate projections for adaptation. ➢ There is also a need for enhanced capacity development in areas such as IT database management, networking, weather, and climate services, as well as formal training in data management, customer service, twinning, and climatology. ➢ Completing climate competency assessments and providing ongoing training for staff in climate science and adaptation services is a key priority.
Priority 2: Enhancing Climate and Ocean Services for Decision-Making and Community Engagement	➢ Currently, only basic and minimal marine information is available for weather forecasting, resulting in limited data being provided to departments and communities. There is a need to expand marine services and integrate ocean currents into storm surge forecasting. ➢ The lack of integration between forecasting and warnings impacts planning across various sectors. Strengthening the ability to provide accurate and timely weather information to all sectors is essential. ➢ There is a need to enhance aeronautical services at airports by increasing the availability of METAR and TAF data. ➢ Developing climate services based on high-resolution simulations will provide better decision-making tools for various sectors, including public weather services (PWS), aviation, and marine operations. ➢ External funding is required for project-related activities, including community engagement in topics like climate, ocean, weather, and education, along with support for events such as WMO Day.

	➢ Developing in-house capacity to generate tailored weather products and public forecasts is a key goal, as is the expansion of marine services and engagement with relevant sectors. ➢ Setting up climate services that meet the needs of key sectors and creating sector-specific products, including impact-based forecasting, is a priority to ensure that services are relevant and actionable
Priority 3: Addressing Staffing and Retention Challenges in NMHS	➢ There is a pressing need for a better remuneration strategy to improve staff retention, particularly for well-trained personnel. Budgetary constraints in the environment sector often lead to difficulties in maintaining adequate staffing levels, requiring ongoing collaboration with Finance to secure sufficient funding. ➢ Recruitment efforts should focus on identifying and hiring new, qualified staff in key areas such as CIMS, with a particular emphasis on tertiary-level science graduates. ➢ Efforts are needed to enhance the quality and caliber of current staff through ongoing professional development, both in-country and through external institutions. ➢ There is a critical shortage of qualified specialists, including climatologists and meteorologists, which must be addressed. ➢ Some NMHS face severe human resource limitations, with a significant portion of staff funded externally, highlighting the need for additional, permanent positions. ➢ Low salaries, high staff turnover, and the loss of experienced personnel are ongoing issues, emphasizing the need for better training and retention strategies.
Priority 4: Strengthening NMHS Infrastructure and IT Equipment	➢ Collaboration with external funding agencies is sought to support the ongoing development of CIMS's infrastructure, including enhancing forecasting facilities and other critical components. ➢ National Meteorological and Hydrological Services (NMHS) require office equipment and IT support to improve their operations and service delivery. ➢ Improved internet connection support is necessary to ensure consistent communication and data transmission. ➢ Upgrading the Niue Meteorological Service building is a priority, focusing on climate-proofing the structure and establishing more robust communication systems. ➢ There is a need for IT equipment such as computers and laptops for the climate services sector, as well as mobile phones to facilitate weather and climate advice dissemination through social media platforms. ➢ The TMS building is small and lacks critical infrastructure, including a backup power source. Additionally, there are challenges with low bandwidth and high-cost internet, which hampers efficient operations.
Priority 5: Strengthening Early Warning	➢ There is a need to promote early warning systems and increase public awareness, as there is currently limited activity in this area. ➢ Timely warnings during sudden weather events are lacking, which requires urgent improvement.

Systems for Enhanced Safety	➢ Setting up weather radar systems is a priority to enhance aeronautical forecasting and strengthen the ability to issue warnings for severe and hazardous weather, thereby saving lives and property. ➢ Early warning communication services must be improved to ensure timely dissemination of information to communities. ➢ Incorporating ENSO (El Niño–Southern Oscillation) cycles into early warning systems is critical to better predict and respond to climate variability.
Priority 6: Enhancing Data Quality and Management for Climate Services	➢ Identify the best mode for transmitting data to the Global Data Network, as Tokelau is not currently contributing to this network. ➢ There is a need to make climate data more accessible to the general public, including providing climate references and projection indicators that can be utilized for urban planning, bioclimatic construction, and environmental management. This will make climate services more readily available and understandable. ➢ Safeguarding historical documents and data is essential to enhance their scientific value and ensure long-term availability. ➢ More staff training is required in data management, customer service, twinning, and climatology to ensure effective management of climate data and improved service delivery.
Priority 7: Improving Communication Infrastructure and Community Engagement	➢ There is a notable absence of communication and information sharing with communities. There is a critical need for the development of Standard Operating Procedures (SOPs) and hazard-specific communication plans. ➢ Training is required for staff to improve communication skills and effectively use climate services tools, including Python for statistical applications. ➢ Increasing and incorporating community engagement support programs is essential to enhance communication effectiveness and ensure proper verification and understanding of meteorological products provided by CIMS. ➢ There is a need to improve communication systems, particularly to reach remote areas and ensure all communities have access to vital information.
Priority 8: Ensuring Effective Operation and Maintenance of Meteorological Infrastructure	➢ There is a need for funding and technical assistance to establish and maintain essential tools and systems, such as Automated Weather Stations (AWS), and to provide training for local meteorological officers in their operation and upkeep. ➢ Efforts must be made to protect the network of automatic stations that monitor climate conditions and trends, ensuring their continuous operation. ➢ Ongoing maintenance for AWS, Automated Weather Observing Systems (AWOS), and wave buoys is critical to sustaining accurate and reliable data collection.
Priority 9: Strengthening the Observation Network for	➢ Developing new weather stations and tide gauges is a priority for future collaborative projects to enhance observational capacity. ➢ Expanding the network of Automated Weather Stations (AWS) is essential, particularly for improving the spatial coverage in regions.

Meteorological Services	➢ There is a need to improve the capacity to maintain high standards for observation instruments, equipment, and data backup systems, ensuring the reliability and accuracy of collected data.
Priority 10: Enhancing Online Platforms for NMHS	➢ Further development of the Weather Service Office (WSO) website through the CREWS/TK project is essential to improve accessibility and communication of meteorological information. ➢ Continued investment in the development and maintenance of websites is necessary to ensure that updated and reliable information is readily available to both professionals and the general public.
Priority 11: Enhancing the Integration of Traditional Knowledge into Climate Services	➢ There is a critical need to establish a comprehensive Traditional Knowledge (TK) database. Additionally, integrating traditional knowledge with climate indicators will enhance the effectiveness of climate services. Simplifying climate-related terminology is essential to improve public understanding and retention of vital information.
Priority 12: Strengthening In-Country Scientific Research to Support Climate Change Adaptation and Mitigation	➢ Enhancing national capacities for scientific research is crucial to support informed decision-making, as well as to drive climate change adaptation and mitigation projects effectively.