PACIFIC METEOROLOGICAL COUNCIL

SPREP PROE

Pacific Regional Observations Network Strategy

Earth Sciences New Zealand

Weather Ready Pacific

Prepared by:
Andrew Harper

For **Weather Ready Pacific (WRP) Programme**

For any information regarding this guidance document please contact:

Principal Technician - Climate
Environmental Monitoring
+64 3 343 7824
andrew.harper@earthsciences.nz

New Zealand Institute for Earth Science Limited
PO Box 8602
Riccarton
Christchurch 8440

Phone +64 3 348 8987

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Executive Summary

Pacific Island Countries and Territories (PICTs) face some of the world's highest exposure to tropical cyclones, severe weather, flooding, drought, coastal inundation, and climate related hazards. Reliable and sustainable Earth observation networks are fundamental to effective early warning systems, robust climate monitoring, disaster risk reduction, aviation safety, water security and informed decision making across all sectors.

Many National Meteorological and Hydrological Services (NMHSs) continue to operate under significant constraints including fragmented and ageing observation infrastructure, limited specialist staff, challenging logistics, fragmented project drive investments, and insufficient long-term maintenance funding. These challenges undermine the availability, quality, and interoperability of observational data that underpin critical weather, climate, hydrological, marine and geohazard services.

The Weather Ready Pacific (WRP) Programme provides a regionwide framework for strengthening multi-hazard early warning systems across the Pacific. This **Pacific Regional Observations Network Strategy** (PRO Network Strategy) establishes a coordinated pathway for designing, procuring, operating, maintaining and sustaining observation networks. It offers a unified framework to guide national and regional decision makers, ensuring investments are efficient, fit for purpose, and aligned with World Meteorological Organization (WMO) programmes and standards including the WMO Integrated Global Observing System (WIGOS), the Global Basic Observation Network (GBON), the Regional Basic Observation Network (RBON), and the Unified Data Policy.

Vision

A resilient, interoperable, sustainable, and Pacific-owned observing network that supports effective multi-hazard early warning systems, climate resilience, and sustainable development across the Pacific

A Shift Toward a Tiered, Lifecycle Approach

Recognising that different observing sites serve different operational and scientific purposes, the Strategy supports a **practical three-tiered system** to help NMHSs prioritise and optimise their observing infrastructure:

Reference	• Global Reference Station • Critical data source for severe weather forecasting
Operational	• Operational use for operational forecasts and warnings • Climate services e.g., health sector
Supplementary	• Specific applications e.g. agriculture, tourism, fisheries etc.

This tiered approach enables countries to match their investments to service needs, reduce unnecessary complexity, and improve long-term sustainability. It also provides a common language for NMHSs, regional partners, and donors to coordinate investments more effectively.

Addressing Long-standing Regional Challenges

The Strategy responds to persistent regional issues:

- Project by project installations that create incompatible systems
- Limited workforce capacity and heavy reliance on individual technicians
- Gaps and inconsistencies in OSCAR/Surface and CliDE metadata
- Insufficient maintenance, calibration, and resilience planning
- Incomplete data sharing across national, regional, and global systems

Without a coordinated strategy, future investments risk duplication, stranded assets, and limited return on investment. This Strategy offers a unified approach to reverse these patterns and strengthen long term operational performance.

Strategic Outcomes

By adopting this Strategy, Pacific countries and partners will achieve:

- **Interoperability** — observations that flow reliably across national, regional, and global systems
- **Sustainability** — networks supported by realistic maintenance, spares management, and lifecycle financing
- **Resilience** — infrastructure designed for harsh Pacific conditions, including cyclone exposure, corrosion, and remote-island communications challenges
- **Capacity development** — trained and confident technical staff supported by regional collaboration
- **Improved service delivery** — observations that directly enhance forecasts, warnings, and climate services

The Strategy emphasises that building stations is not enough—**long-term stewardship of metadata, maintenance, communications, and workforce capability is essential**.

A Call for Regional Cooperation

This document serves as a foundational instrument for Pacific cooperation under the WRP Programme. By strengthening shared procurement, maintenance, training, calibration, and data exchange systems, Pacific NMHSs can collectively build an observing network that is more resilient and cost effective than any country could achieve alone. The result is a regional system capable of meeting the increasing challenges of climate change, evolving user needs, and global interoperability requirements.

Contents

1 Introduction

This Pacific Regional Observations Network Strategy should be read alongside other **WRP KRA 3 Observation Network Infrastructure** workstreams, including the **Radar Network Strategy** and **Hydrology Network Strategy**

1.1 Purpose

This Strategy provides a regional strategy for strengthening the Pacific observing system in a coordinated, sustainable and WIGOS-aligned way. It establishes a shared rationale for prioritising observing investments and operational support, with a focus on stations and systems that underpin multi-hazard early warnings, numerical weather prediction (NWP), climate monitoring and regional data exchange.

1.2 Scope

This Strategy initially focuses on the regional backbone of meteorological and climate observations and the subset of stations intended for international exchange through GBON/RBON and other agreed mechanisms. It draws on available information from WMO systems (including OSCAR/Surface and WDQMS) and national inputs to form an initial, draft network baseline.

This initial version is primarily land-based and weather/climate focused. It does not yet fully integrate national, rainfall-only networks, hydrology, marine/ocean observing, geohazards or other specialised observing systems. These are recognised as critical components of multi-hazard early warning systems and should be incorporated in subsequent phases of regional planning.

The Strategy is intended to guide coordinated planning, prioritisation and support across national and regional levels.

2 Context

Pacific Island Countries and Territories rely on observing networks to support cyclone and severe weather warnings, drought monitoring, climate services, aviation operations, water security planning and disaster risk reduction. However, the regional observing system remains uneven in coverage and is highly exposed to environmental stressors (cyclones, salt corrosion, flooding) and operational constraints (limited staffing, supply chain delays, communications outages and constrained maintenance budgets).

In recent years, several complementary initiatives have supported observing and capacity development in the region, including (but not limited to): SOFF, UNEP CIS-Pac5, ClimSA, H-CLEWS, CREWS, COSPPac, Van-KIRAP, the Pacific aviation weather observation infrastructure capacity development project, and WMO RA-V efforts related to RBON implementation.

These initiatives have delivered important upgrades and new installations but have not always translated into consistent long-term operational performance.

This Strategy provides a single coherent regional direction under WRP governance. It is intended to help align national and project investments with agreed regional and global requirements, while strengthening the enabling foundations that keep networks operating: metadata, quality management, resilience planning, workforce capability and lifecycle sustainability.

2.1 Data policy considerations

This Strategy considers the issue of data sovereignty and concerns regarding unauthorised use by aligning with the WMO Unified Data Policy Resolution (Res.1).

The **WMO Unified Data Policy** is a comprehensive update of international agreements guiding the exchange of Earth System data among the 193 WMO Member States and Territories. It consolidates previous resolutions on weather, hydrology, and climate into a single, integrated policy that addresses the growing demand for data to support monitoring, prediction, and decision-making across multiple sectors. The policy emphasizes that data exchange must be free and unrestricted, forming the core principle of WMO's approach.

The policy covers all WMO-relevant Earth system data, including:

- Weather and climate
- Hydrology
- Oceans and atmospheric composition

Data are classified into two categories:

- **Core Data**: Standard practice data that **shall be exchanged** globally. This includes essential observational and satellite data critical for global Numerical Weather Prediction (NWP) and Earth system monitoring.
- **Recommended Data**: Best practice data that **should be exchanged** to enhance monitoring and prediction capabilities. Conditions may be applied to their use.

2.1.1 Pacific regional observation network context

In the Pacific, the principles of the WMO Unified Data Policy can be operationalised through the tiered station approach adopted by this Strategy.

Under this framework:

- **Reference** (Tier 1/Core Data)) stations correspond to GBON and GCOS sites and provide globally exchanged data essential for NWP and climate monitoring.
- **Operational** (Tier 2/Recommended Data) stations form the regional backbone, supporting operational forecasting, warnings, and climate services, with data shared across the Pacific.
- **Supplementary** (Tier 3) stations operate primarily at the national level, providing localised information for specific applications and are not routinely shared regionally.

This tiered structure supports consistent classification, improves interoperability planning, and allows other application areas, such as geological hazards, hydrology, marine observations and aviation services, to be incorporated in future phases of the regional observing plan.

3 Design Framework

The WMO Guide to the WMO Integrated Global Observing System (WIGOS) (WMO-No. 1165) provides a structured, requirements-based framework for designing and improving observing networks. It emphasises that strong network design is not simply about adding more stations; it is about making the right set of coordinated observations to meet user needs efficiently, sustainably and with appropriate quality management.

In the Pacific, network design must be adapted to regional realities: small and dispersed land areas, large Exclusive Economic Zones (EEZs), limited siting options, harsh coastal exposure, and constrained maintenance and supply chains. The design approach therefore prioritises essential capability, resilience and long-term sustainability.

The following design principles guide this Strategy (summarised rather than reproduced verbatim from WMO-No. 1165):

- Requirements-driven design: Define what is needed (accuracy, resolution, frequency, coverage) and identify gaps between current and required capability.
- Fit-for-purpose observations: Select instruments and configurations suited to the parameter, environment and required quality, recognising trade-offs in cost, power, access and communications.
- System-of-systems integration: Design the network as an integrated whole across surface, upper-air, marine, satellite and partner observations where appropriate and quality-controlled.
- Redundancy and resilience: Minimise single points of failure through overlap, diversified communications and practical resilience planning for extreme events.
- Optimisation and cost-effectiveness: Prioritise stations that deliver the greatest value for NWP, warnings and climate monitoring; implement improvements in phases.
- Quality management: Maintain standardised siting, calibration, maintenance, metadata completeness and monitoring of data availability and timeliness.
- Sustainability and lifecycle planning: Plan for long-term funding, spare parts, workforce capability, replacement cycles and risk-resilient infrastructure.
- Collaboration and partnerships: Strengthen coordination across NMHSs, regional mechanisms and partners, ensuring partner data meets interoperability and metadata expectations.

Environmental sustainability is a key consideration. This can be achieved by minimising the environmental footprint of observation networks by prioritising low-power, renewable-energy and cyclone-resilient systems suited to remote islands and atolls. Reduce hazardous materials and unnecessary transport demands, favouring designs that limit ecological disturbance to sensitive coastal, forest and marine environments. Plan for responsible end-of-life management in places with limited waste-handling infrastructure, and support operations that are low-emission, culturally respectful, and aligned with the long-term climate resilience priorities of Pacific communities.

Examples include

- Use of high-efficiency solar panels and deep-cycle batteries to avoid reliance on electricity or diesel, which is expensive to ship and difficult to store safely on small islands. Systems should be optimised for frequent cloud cover and tropical humidity.

- Design sensor masts and enclosures to withstand Category 5 tropical cyclones, using corrosion-resistant materials and secure foundations suitable for sandy atoll soils or remote volcanic terrain.
- Carefully select sites to avoid sensitive coastal dunes, mangroves, nesting areas, or culturally significant sites. Use lightweight, low-impact footings and elevated platforms to limit disruption to vegetation and reduce erosion.
- Choose compact, modular equipment that can be transported by small inter-island vessels or aircraft. Reduce the number of maintenance trips needed by using remote diagnostics and low-maintenance designs where possible.
- Prioritise hardware and enclosures with high resistance to salt spray and tropical moisture to reduce premature failure and the need for frequent replacements.
- Minimise the use of lead-acid batteries and other hazardous components where possible. When unavoidable, ensure clear plans exist for safe storage, shipping, and disposal, acknowledging that many islands lack local waste-management facilities.
- Establish agreements with regional partners to return equipment and batteries to countries with appropriate recycling capabilities, avoiding accumulation of e-waste.
- Engage with local communities, landowners, and traditional leaders to ensure installations respect local environmental values, land use practices, and customary stewardship principles.
- Align siting and technology choices with community needs such as supporting coastal inundation monitoring, drought-early-warning systems, or sea-level stations critical for adaptation planning.

Appendix A provides a Pacific-optimised observing network design checklist aligned to these principles, with a quick checklist provided in **Appendix B**.

4 Methodology

This Strategy was developed using a structured process combining national inputs, WIGOS tools and regional design principles to ensure the proposed regional backbone aligns with Pacific needs and WMO requirements.

4.1 Compile the regional baseline

- A regional stocktake of stations was compiled, including operational status to instrument level where information was available.
- WMO reporting and visualisation tools were used to assess registration status and performance, including OSCAR/Surface and the WIGOS Data Quality Monitoring System (WDQMS).
- National questionnaires and country inputs were used to supplement tool-based assessments and provide operational context.
- Relevant project documentation and planning outputs were reviewed, including SOFF gap analyses and national contribution planning, and other complementary initiatives.

4.2 Requirements alignment and gap considerations

- Observing coverage and performance were assessed in the context of WIGOS network design principles and the requirements implied by GBON/RBON expectations.
- Known inconsistencies in station identifiers, names and metadata across systems (e.g., OSCAR and CliDE) has been identified as a key limitation and a priority area for coordinated improvement.
- The assessment recognises that many stations installed under projects are not currently shared internationally through the GTS/WIS pathways, and that sustainability arrangements after project completion vary significantly. These stations will add value to the network.

4.3 Construct the initial draft regional backbone

- An initial draft station set was assembled as the proposed regional backbone, focusing on stations intended for international exchange and/or regional backbone functions (NWP, warnings and climate monitoring).
- The resulting draft station tables are provided by country in Annex A. These will be refined iteratively as metadata discrepancies are resolved and national priorities are confirmed through WRP governance processes.

5 Proposed Pacific Regional Observation Network

5.1 GBON and RBON in the Pacific context

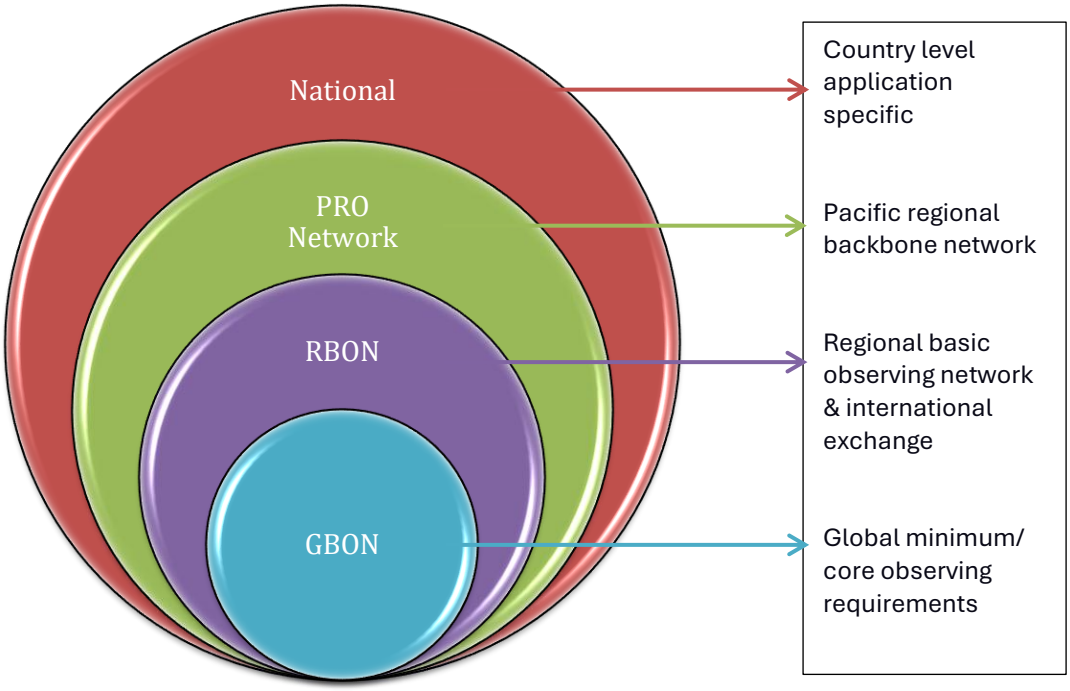
In the Pacific, GBON and RBON provide the internationally agreed stations for exchanging observations that support global and regional weather, climate and early warning services. GBON defines the minimum set of surface and upper-air observations that Members are expected to make available globally, particularly for numerical weather prediction. RBON builds on WIGOS by identifying the regional subset of stations that WMO Regional Association V agrees should be exchanged internationally to meet regional forecast, warning and climate monitoring needs. Together, GBON and RBON establish the core observing obligations and performance expectations that the Pacific regional backbone must support.

RBON stations intended for international exchange must be registered in OSCAR/Surface with complete and accurate metadata. This Strategy notes that OSCAR discrepancies and incomplete metadata currently limit confidence in some station status assessments and will require coordinated correction. The Pacific Regional Observation Network (PRO Net) is specifically addressed to the Pacific Island Countries in the RA-V region. This PRO Net supplements the GBON and RBON through identified targeted regional support from the Weather Ready Pacific Programme (WRP)

5.2 Backbone network/ PRO network

The initial backbone network consists of stations that contribute to global and regional observing programmes under the WMO Unified Data Policy, together with selected national stations that provide critical support for regional forecasting, warnings and climate monitoring.
The backbone network also recognises the importance of retaining staffed stations, whose manual observations provide an essential quality assurance reference for co-located AWS,

helping to verify data integrity and sustain high quality measurements when automated systems malfunction or drift.



Within this Strategy, the Pacific Regional Observation Network (PRO Network) is the practical regional layer that connects WMO global and regional observing requirements with country-level observing priorities. It does not replace GBON or RBON. Rather, it provides a Pacific-specific coordination mechanism for identifying, supporting and sustaining the stations and systems that are most important for regional early warnings, NWP, climate monitoring, aviation weather services and multi-hazard decision support.

The PRO Network should be understood as a managed regional backbone for Pacific Island Countries and Territories. Its purpose is to help countries and partners prioritise stations where regional support will deliver the greatest operational benefit, especially where national observing networks are exposed to common constraints such as remoteness, cyclone damage, salt corrosion, limited technical workforce capacity, intermittent communications and constrained maintenance funding.

In practical terms, the PRO Network should include: Tier 1 reference stations that meet or support GBON, RBON, GSN or GUAN functions; Tier 2 operational stations that are essential for national and regional forecasting, warnings and climate services; and selected Tier 3 supplementary stations where they provide critical local information for high-risk communities, priority sectors or specific hazards. This tiered approach allows the region to distinguish between stations required for international exchange, stations needed for regional service delivery, and stations primarily serving national or local applications.

The PRO Network also provides a basis for regional support services under WRP. These may include coordinated procurement specifications, preferred equipment standards, regional spares arrangements, calibration and field verification support, shared technical training, metadata improvement, communications troubleshooting, and routine monitoring of data

availability and timeliness. These functions are intended to strengthen long-term operational performance rather than create a parallel observing programme.

Data exchange remains central to the PRO Network. Stations included in the regional backbone should have clear metadata ownership, WIGOS Station Identifiers where applicable, updated OSCAR/Surface records, aligned national database records such as CliDE, and agreed pathways for real-time or near-real-time reporting. Where stations are not currently shared internationally, the Strategy should identify whether they are candidates for future RBON nomination, regional exchange, national-only use, or phased improvement before exchange.

Governance of the PRO Network should remain country-led and regionally coordinated. NMHSs retain responsibility for national observing assets and data stewardship, while WRP, SPREP, PMC, WMO RA-V and technical partners can support regional prioritisation, investment alignment and performance review. The station list in Annex A should therefore be treated as a living baseline that is periodically reviewed through WRP governance, informed by national confirmation, OSCAR updates, WDQMS performance evidence, project commitments and evolving service requirements.

5.3 How the initial station set was defined

For the purposes of this initial draft, the proposed regional backbone includes:

- Stations with an RBON designation in OSCAR
- Stations with a GBON designation in OSCAR
- Proposed GBON stations, including those not yet registered in OSCAR
- Stations affiliated to the Global Observing System (GOS) but not currently marked RBON/GBON
- Stations affiliated to GCOS Surface Network (GSN) and GCOS Upper-air Network (GUAN)
- Long-term climate reference stations
- Other stations with contractual/project requirements for registration and/or international sharing (e.g., CIS-Pac5, ClimSA)
- Aviation observing sites and radar where relevant to regional backbone functions

Stations across the wider region (including territories not supported by WRP) have been included in the baseline view to provide a complete regional picture, while recognising that WRP support eligibility may differ.

5.4 Caveats and future network expansions

This initial draft is primarily land-based and weather/climate focused. It is yet to fully incorporate:

- Rainfall-only networks and hydrometric stations that are essential for flood forecasting in priority catchments
- Marine/ocean observing systems, geohazards and other special data types
- ICT infrastructure or potential backup systems for key infrastructure for example WIS backup systems in the event a WIS node is not functioning.

These exclusions do not imply lower importance. Rather, they reflect the current scope and available baseline information. Integration of hydrological, marine, and geological hazards systems should be treated as a priority for subsequent phases of regional observing planning.

5.5 Station tables (country lists)

The draft station lists are presented by country in Annex A. These tables summarise stations currently registered, or planned, for international exchange and/or inclusion in the proposed backbone. The lists should be treated as a working draft and will be updated as OSCAR metadata is updated and national confirmation processes are completed as per the RA-V RBON implementation plan.

6 Implementation

Delivering a sustainable regional observing backbone requires coordinated action across four enabling pillars:

6.1 Metadata, identifiers and interoperability

- Assign and maintain station identifiers appropriate for relevant programmes and databases (e.g., WIGOS Station Identifiers (WSI), CliDE, Marine platforms) for all backbone stations.
- Ensure OSCAR/Surface metadata is complete, accurate and actively kept up to date.
- Ensure national observation databases (e.g., CliDE, hydrometric, geological hazards) contain aligned station metadata and enable reliable ingestion and QC.
- Support standardised data exchange pathways and ensure reporting meets timeliness requirements for warnings and NWP.

6.2 Data quality management and performance monitoring

- Implement practical maintenance and calibration schedules suited to Pacific operating conditions.
- Use WDQMS and other monitoring tools to track availability, timeliness and quality issues.
- Establish regional support mechanisms for troubleshooting, field verification and targeted performance improvement.

6.3 Resilience and sustainability

- Design and retrofit stations for climate resilience and low-emission operation by using cyclone-rated structures, corrosion-resistant materials, redundant communications, renewable and hybrid power systems, low-power equipment, remote diagnostics, and responsible battery and e-waste management.
- Apply green procurement criteria to station upgrades, including lifecycle emissions, repairability, modular components, supplier take-back arrangements, reduced hazardous materials and suitability for remote Pacific operating conditions.
- Use remote diagnostics, regional spares pools and consolidated maintenance planning to reduce unnecessary travel, shipping, downtime and operational emissions.

- Plan for lifecycle costs: spare parts, consumables, replacements, and logistics lead-times.
- Balance infrastructure investment with workforce capability development and retention, including regional training approaches.

6.4 Governance and coordination

- Use WRP governance mechanisms (in coordination with PMC, SPREP and WMO RA-V) to agree and maintain the regional backbone definition, priorities and performance expectations.
- Incorporate the Pacific Islands Communications and Infrastructure Panel to provide guidance and oversight support for the biennial review of strategy and specifically the stations list in Annex C
- Align partner investments and project deliverables with the Strategy to avoid fragmentation and to strengthen long-term sustainability.

7 Strategic priorities

The following actions are recommended to progress from a draft station baseline to a resilient, operational and environmentally sustainable regional backbone, with decarbonisation and greening embedded in infrastructure planning, procurement and lifecycle support.

1. Standardise where possible, observing technology for inter-operability and regional support. This may include the establishment of preferred supplier lists for observation equipment and instruments, maintenance and training.
2. Coordinate an OSCAR/Surface metadata improvement sprint across the region, supported by the WMO Regional Office and WRP partners, to resolve station identifiers, names, locations, operational status and instrument metadata.
3. Establish clear metadata stewardship roles for backbone stations (who updates OSCAR and when).
4. Confirm which project/programme stations (e.g., CIS-Pac5, ClimSA) have formal expectations for international exchange and ensure registration and exchange pathways align with those expectations.
5. Identify reference or operational stations at risk of failure due to obsoletion; minor parts, power, or comms issues and prioritise rapid stabilisation actions.
6. Expand the regional strategy scope to integrate aviation, hydrology, rainfall-only networks, geological hazards, and marine observing into a single “system-of-systems” Pacific observing plan.
7. Strengthen regional approaches to calibration and field verification (including regional kits and shared training).
8. Implement routine monitoring and reporting using WDQMS (availability/timeliness/quality indicators) and agree a process for acting on persistent issues.

9. Develop and fund practical resilience upgrades for cyclone-prone and remote stations (including redundant communications and cyclone-rated installations).

10. Embed decarbonisation and greening in station upgrades by prioritising renewable and hybrid power systems, low-power equipment, remote diagnostics to reduce travel, green procurement criteria, and responsible battery and e-waste management.
11. Clarify and implement post-project sustainability plans for stations installed under short-term initiatives.

12. Formalise and support a regional lifecycle support model for critical backbone stations, including supply chain arrangements, spares pooling, shared maintenance mechanisms, and the safe removal and disposal of hazardous items such as expired batteries.

13. Refresh the regional backbone definition periodically through WRP governance to reflect evolving requirements, technology and climate risk.

8 Glossary of abbreviations and terms

Accuracy (of measurement)	Closeness of agreement between a measured quantity value and a true quantity value of a measurand. Note: "Accuracy" is a qualitative concept: it is not expressed as a quantity value (number).
CIS-Pac5	Enhancing Climate Information and Knowledge Services for resilience in 5 Pacific Island countries of the Pacific Ocean (UNEP).
ClimSA	Intra-ACP Climate Services and Related Applications Programme
Core data	Data required to meet minimum agreed observing requirements (e.g., GBON/RBON or national regulatory expectations). (*WMO Unified Data Policy*)
COSPPac	Climate and Oceans Support Program in the Pacific
GBON	Global Basic Observing Network
GCOS	Global Climate Observing System
GOS	Global Observing System
GSN	GCOS Surface Network
GTS	Global Telecommunication System
GUAN	GCOS Upper-air Network
NWP	Numerical Weather Prediction
OSCAR	Observing Systems Capability Analysis and Review Tool
PICTs	Pacific Island Countries and Territories
PMC	Pacific Meteorological Council
RBON	Regional Basic Observing Network
Recommended data	Data that enhance service delivery but are not part of the minimum "core" requirements. (*WMO Unified Data Policy*)
SOFF	Systematic Observations Financing Facility
SPC	The Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WDQMS	WIGOS Data Quality Monitoring System
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organisation
WRP	Weather Ready Pacific

9 References

World Meteorological Organization, (2023, 2024 update). Manual on the WMO Integrated Global Observing System. (WMO-No. 1160), Geneva.

World Meteorological Organization, (2024). Guide to Instruments and Methods of Observation. Volume I – Measurement of Meteorological Variables (WMO-No. 8, Vol I), Geneva.

World Meteorological Organization, (2024). Guide to Instruments and Methods of Observation. Volume III – Observing Systems (WMO-No. 8, Vol III), Geneva.

World Meteorological Organization, (2024). Guide to the WMO Integrated Global Observing System. (WMO-No. 1165), Geneva.

World Bank, (2022). Charting a Course for Sustainable Hydrological and Meteorological Networks in Developing Countries. Washington, DC: World Bank.

Appendix A - Pacific regional observing network design checklist

The following is on observing network design checklist that is optimized for the Pacific, aligned to WIGOS yet equally applicable to regional and national networks.

Establish Regional & National Requirements

- Identify regional and national priorities such as:
  - Cyclone early warning
  - Drought and water security
  - Ocean–atmosphere interaction monitoring
  - Coastal inundation, sea-level rise, and wave climate
  - Climate services for agriculture, health, aviation, and fisheries
- Confirm alignment with WIGOS/WMO regulatory expectations.
- Conduct a gap assessment considering **land scarcity** and **large Exclusive Economic Zones (EEZs)**.
- Coordinate requirements regionally through WRP, SPREP, WMO Regional Association V (RA V), SOFF and other existing Pacific forums.

Assess Environmental & Geographic Constraints

- Account for **low elevation**, **coastal exposure**, and vulnerability to:
  - Storm surge
  - Salt corrosion
  - Tropical cyclones
  - Volcanic activity (e.g., Tonga 2022-type events)
- Prioritize sites representing key microclimates such as:
  - High islands vs low atolls
  - Windward/leeward gradients
  - Mountain-induced rainfall zones (flooding)
- Ensure siting aligns with WMO representativeness and exposure principles. (Use the WMO Siting Classification Scheme)

Select Fit-for-Purpose Observing Systems

- Use robust instruments suitable for remote tropical marine environments (corrosion-resistant, low-power).
- Balance in situ and remotely sensed systems (satellites, HF radar, buoy networks, tide gauges).

- Consider shared or mobile platforms (ship-based, drifting buoys) where land is limited.
- Ensure selected systems meet performance expectations.

Apply Pacific-Appropriate Network Design Principles

- Design for **sparse land networks** complemented by ocean-based platforms.
- Integrate coastal, marine, hydrological, and meteorological networks as a unified system.
- Prioritize stations essential for NWP data assimilation, early warnings, and climate monitoring.
- Build redundancy for critical cyclone-prone regions and tsunami-affected coastlines.
- Consider renewable energy (solar + battery) systems for remote island stations.
- Validate network adequacy using WMO-recommended modelling or simplified gap analysis tools. (e.g., wdqms.wmo.int, gbon-compliance.wmo.int)

Metadata & Documentation (Critical for Global and Regional Coordination)

- Ensure all stations are fully registered and metadata updated in **OSCAR/Surface**.
- Ensure all stations are fully registered and metadata updated in **CliDE**
- Maintain metadata for:
  - Site descriptions, inspections, site visits, field verification, instrument calibration
  - Station relocations due to coastal erosion
  - Instrument changes
  - Communication pathway constraints

Data Quality Management

- Implement simplified but robust maintenance, field verification, and calibration schedules (regional calibration centres where possible).
- Ensure Marine and hydrological sensors undergo regular fouling checks.
- Maintain quality monitoring—especially for systems exposed to:
  - Power disruptions
  - Communications outages
  - Corrosion impacts
- Integrate with the WIGOS Data Quality Monitoring System where feasible. (wdqms.wmo.int)
- Integrate with the CliDE/CliDEsc Quality Monitoring System.

Data Exchange & Interoperability

- Assign WIGOS Station Identifiers (WSI) to all sites.
- Standardize formats for aviation, NWP, and climate exchange.
- Ensure data are ingested into CliDE.
- Prioritize **real-time** reporting for cyclone and tsunami monitoring.
- Establish reliable communication backups:
  - HF radio
  - Satellite uplinks (Inmarsat, Iridium, VSAT)
  - Regional data hubs
- Align data sharing with the WMO Unified Data Policy.

Sustainability & Lifecycle Planning

- Plan for harsh tropical conditions: salt spray, insects, corrosion, cyclones.
- Build spare-part stockpiles regionally where possible to overcome long supply-chain delays.
- Develop maintenance capacity through regional training.
- Integrate renewable power systems to support off grid operation.
- Prioritize durable designs over high tech, maintenance heavy options.
- Implement risk resilient infrastructure (elevated platforms, cyclone rated masts).
- Ensure long term financial stability via regional funding partnerships.
- Include clear decommissioning or relocation protocols for climate impacted sites.

Partnerships & Integration Across the Pacific

- Coordinate with:
  - SPREP
  - Pacific Met Council (PMC)
  - SPC
  - BoM, ESNZ, Met Service, NOAA
  - JICA
  - National Disaster Management Offices
  - UNESCO/IOC sea level networks
- Integrate hydrological, marine, and meteorological observations into national multi hazard early warning systems (MHEWS).

- Develop shared maintenance contracts where feasible.

Continuous Review & Improvement

- Evaluate performance annually—especially after cyclone seasons.
- Seek feedback from NWP centres and national forecasters.
- Maintain alignment with the evolving WMO/WIGOS guidance.
- Maintain alignment with evolving regional and national requirements.
- Update observing strategies as technology evolves.

Appendix B - Network design (quick) checklist

- ☐ Requirements defined for each priority application and variable
- ☐ Tier 1/Tier 2/Tier 3 station set agreed and documented
- ☐ Siting/exposure assessed and recorded
- ☐ Resilience measures defined (power, comms, cyclone hardening)
- ☐ WIGOS Station Identifiers assigned
- ☐ OSCAR/Surface metadata completed and steward nominated
- ☐ CliDE metadata completed
- ☐ Calibration and maintenance schedules documented
- ☐ QC and network performance monitoring in place
- ☐ Data exchange pathways defined and tested – including CliDE ingestion
- ☐ Lifecycle costs and resourcing plan documented
- ☐ Partnership arrangements documented
- ☐ Annual review and change management process defined

Annex A - Station lists by country of stations registered, or planned, for international exchange

Cook Islands

	Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
1	Aitutaki Airport AWOS	0-20000-0-91831	y					☐	Y	Y	Y	1
2	Atiu AWOS	0-184-0-91838							Y		Y	2
3	Mangaia AWS	0-20000-0-91848	y						Y	Y	Y	2
4	Manihiki	0-20000-0-91809	y						Y	Y	Y	2
5	Mauke AWS	0-20000-0-91841	y						Y	Y	Y	2
6	Mitiaro AWS	0-184-0-91834							Y		Y	2
7	Nassau AWS	0-184-0-91815							Y		Y	2
8	Nikao (Panama FAD)											
9	Palmerston AWS	0-20000-0-91826	y						Y	Y	Y	2
10	Penrhyn (decommissioned)	0-20000-0-91801										
11	Penrhyn AWOS	0-20000-0-91802	y					☐	Y	Y	Y	1
12	Pukapuka (decommissioned)	0-20000-0-91811										
13	Pukapuka AWOS	0-20000-0-91812	y						Y	Y	Y	1
14	Rakahanga AWS	0-184-0-91805							Y		Y	2
15	Rarotonga (sea level)											
16	Rarotonga	0-20000-0-91843	y	y				☐		Y	Y	1
17	Rarotonga (CTBTO)	0-20000-0-91844										3
18	Rarotonga AWOS	0-20000-0-91845									Y	1
19	Suwarrow (decommissioned)	0-20000-0-91819							Y			

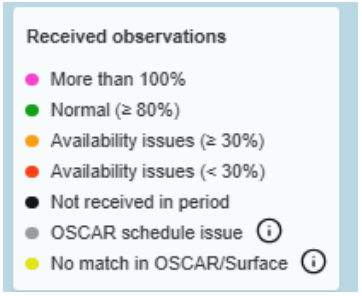
20	Suwarrow AWS (proposed for decommission)	0-20000-0-91819									Y	
21	Tikioki (Tikioki FAD)											
22	Titikaveka AWS	0-184-0-91846 (TBC)										2
23	Radar (proposed)											2

Notes:

1. For this list, the name shown refers to the location. It may be a manual station, AWS, or combination.
2. The WIGOS Identifier is what is currently listed in OSCAR. The station name (and/or number) may be required to be updated in OSCAR. May potentially refer to a closed station, or obsolete manual station.
3. Y in a blank cell indicates that a station is proposed for that programme but is not registered in OSCAR.
4. ☐ Used for suggested CRS. Status in CliDE uncertain. These stations are adapted from Salinger/McGree et al.
5. Other stations are those where there is a project requirement for the stations to be registered in OSCAR and data shared either globally of regionally such as the CIS-Pac5 and ClimSA projects.
6. Y in a cell indicates a station is currently designated in OSCAR as RBON.
7. Suggested potential RBON stations
8. Priority of station/ Tier level (1 – Reference, 2 – Operational, 3 – Supplementary)

Colour coding:

Note that a blank/white cell indicates that the station is currently not registered for that programme.



Federated States of Micronesia

Name[1]	State	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Eauripik, Caroline Is (closed)	Yap	0-20000-0-91315									Y	
Fananu	Chuuk	0-20000-0-91329	Y							Y	Y	1
Losap	Chuuk	91336							ESNZ/WRP			2
Falalop Island (CG), Ulithi Atoll	Yap	0-20000-0-91203	Y							Y	Y	1
Falalop Island, Ulithi Atoll AWS	Yap	0-20000-0-91204								Y	Y	3
Faraulep Island AWS, Caroline Is	Yap	0-20000-0-91319									Y	3
Kapingamaragi Atoll, Caroline Is	Pohnpei	0-20000-0-91434	y							Y	Y	1
Kosrae Airport AWS, Caroline Is	Pohnpei	0-20000-0-91355	Y					□		Y	Y	3
Kosrae Airport Vice Lelu, Kosrae Atoll, Caroline Is	Pohnpei	0-20000-0-91356		Y					ESNZ/WRP	Y	Y	1
Lukunoch Atoll, Caroline Is	Chuuk	0-20000-0-91339	Y							Y	Y	1
Mwoakilloa, Caroline Is	Pohnpei	0-20000-0-91350							ESNZ/WRP	Y	Y	1
Ngulu Atoll AWS	Yap	0-20000-0-91411								Y	Y	3
Nukuoro Atoll, Caroline Is	Pohnpei	0-20000-0-91425	Y							Y	Y	1

Onoun/ Ulul	Chuuk	0-20000-0-91320							ESNZ/WRP	Y	Y	2
Oroluk Atoll AWS, Caroline Is	Pohnpei	0-20000-0-91343								Y	Y	3
Pingelap Atoll AWS, Caroline Is	Pohnpei	0-20000-0-91352								Y	Y	2
Pingelap Atoll, Caroline Is	Pohnpei	0-20000-0-91353	y							Y	Y	1
Pulusuk, Caroline Is (remove)											Y	x
Polowat Atoll AWS, Caroline Is	Chuuk	0-20000-0-91324	Y							Y	Y	1
Satawall AWS, Caroline Is	Yap	0-20000-0-91321	Y							Y	Y	1
Satawan Atoll AWS, Caroline Is (to be decommissioned)	Chuuk	0-20000-0-91338								Y	Y	x
Ulithi AWS, Caroline Is	Yap	0-20000-0-91202									Y	3
Ulul AWS, Caroline Is ()		0-20000-0-91326										3
Ulul AWS, Caroline Is *		0-20000-0-91328								Y	Y	3
Weather Service Office, Chuuk, ECI	Chuuk	0-20000-0-91334	Y	y				☐		Y	Y	1
Weather Service Office, Pohnpei, Caroline Is	Pohnpei	0-20000-0-91348	Y	y				☐		Y	Y	1
Weather Service Office, Yap, Caroline Is	Yap	0-20000-0-91413	y	y				☐		Y	Y	1
Woleai Atoll, Caroline Is	Yap	0-20000-0-91317	Y							Y	Y	1

Fiji

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Ba (Rarawai Mill) AWS										Y	
Keiyasi AWS										Y	
Koro Is AWS										Y	
Korolevu AWS										Y	
Kubulau AWS										Y	
Labasa	0-20000-0-91656			Y						Y	
Labasa AWS	0-20000-0-91657									Y	
Lakeba	0-20000-0-91691	Y		Y			☐		Y	Y	1
Lakeba AWS	0-20000-0-91691									Y	
Laucala Bay	0-20000-0-91690						☐			Y	
Lautoka	0-20000-0-91679						☐			Y	
Levuka AWS										Y	
Lodoni AWS										Y	
Lomaivuna AWS										Y	
Matei	0-20000-0-91665									Y	
Matuku	0-20000-0-91697	Y		Y					Y	Y	1
Matuku AWS										Y	
Momi AWS										Y	
Nabouwalu	0-20000-0-91659						☐		Y	Y	
Nadarivatu AWS										Y	
Nadi	0-20000-0-91688									Y	
Nadi Airport	0-20000-0-91680	Y	Y	Y	Y	Y	☐		Y	Y	1
Nadi AWS / NRL										Y	

Nausori	0-20000-0-91683	Y		Y			☐		Y	Y	1
Nausori Intl Aerodrome AWOS										Y	
Ono-I-Lau	0-20000-0-91699				Y		☐		Y	Y	1
Ono-I-Lau AWS										Y	
Penang Mill							☐			Y	
Rakiraki	0-20000-0-91669			Y						Y	
Rotuma	0-20000-0-91650	Y		Y	Y		☐		Y	Y	1
Rotuma AWS										Y	
Saqani AWS										Y	
Savusavu	0-20000-0-91663									Y	
Seaqaqa AWS										Y	
Sigatoka	0-20000-0-91682	Y		Y						Y	
Sigatoka AWS	0-20000-0-91682									Y	1
SRIF Drasa Station AWS										Y	
Suva	0-20000-0-91689									Y	
Suva AWS										Y	
Tokotoko	0-242-3-88214						☐			Y	
Tokotoko Navua AWS										Y	
Udu Point	0-20000-0-91652	Y		Y	Y		☐		Y	Y	1
Udu Point AWS										Y	
Vanuabalavu	0-20000-0-91676	Y		Y					Y	Y	1
Vanuabalavu AWS										Y	
Vaturekuka AWS										Y	
Viwa	0-20000-0-91670	Y		Y					Y	Y	1
Viwa AWS										Y	
Vunisea	0-20000-0-91693			Y			☐		Y	Y	2
Vunisea AWS										Y	

Wainikoro AWS										Y	
Yaqara AWS										Y	
Yasawa-i-Rara	0-20000-0-91660	Y		Y					Y	Y	1
Yasawa-I-Rara AWS										Y	
Labasa Radar											2
Nausori Radar											2
Nadi Radar											2

Kiribati

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Abaiang AWS								CLIMSA		Y	2
Abemama AWS		Y								Y	
Aranuka AWS (new)								CLIMSA			2
Arorae	0-20000-0-91629	Y					☐			Y	1
Banaba	0-20000-0-91533	Y					☐			Y	1
Beru	0-20000-0-91623	Y					☐			Y	
Betio Tarawa (KMS Office)	0-20000-0-91610	Y					☐	SOFF	Y	Y	1
Butaritari	0-20000-0-91601	Y					☐	SOFF		Y	1
Christmas Island (91490-0)	0-20000-0-91490	Y	Y				☐	SOFF	Y	Y	1
Fanning Island (91487-0) (Tabuaeran)	0-20000-0-91487	Y						SOFF	Y	Y	1
Kanton Island	0-20000-0-91701	Y	Y				☐		Y	Y	1
Kuria AWS								Y		Y	
Maiana AWS		Y								Y	1
Makin AWS (new)								UNDP			2
Marakei AWS								WHO			2
Nikunau AWS (new)								CLIMSA			2
Nonouti AWS		Y						SOFF		Y	1
Onotoa AWS		Y						SOFF		Y	1
Tabiteuea North AWOS											2
Tamana AWS		Y						SOFF		Y	1

Tarawa (Bonriki Aerodrome)	0-20000-0-91612	Y							y	Y	1

Nauru

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Nauru (Aiwo Tide Gauge)	0-20000-0-91531									Y	
Nauru Airport	0-20000-0-91530	Y	Y	Y			☐		Y	Y	
Nauru AWOS	0-520-0-91532	Y		Y						Y	

Niue

Name	**WIGOS Identifier**	**Proposed GBON Surface (SOFF)**	**Proposed GBON Upper-air (SOFF)**	**GOS / NWP**	**GSN**	**GUAN**	**CRS** (daily rain, max/min temp)	**Other** (e.g. CIS-PAC5, ClimSA)	**Designated RBON6**	**Potential RBON7**	**Tier**
Alofi Wharf (Tide Gauge)	0-20000-0-91823							COSPPac			2
Alofi (Closed)	0-20000-0-91822										
Hanan Airport AWOS	0-20000-0-91825	y					☐		Y	Y	1
Hanan Airport (manual)	0-20000-0-91824	y					☐		Y	Y	1
Liku AWS	0-570-0-82208							Y		Y	2
Vaipapahi AWS	0-570-0-82209							Y		Y	2
Radar (planned)								CISPac-5			2

Palau

Name[1]	**WIGOS Identifier**[2]	**Proposed GBON Surface (SOFF)**[3]	**Proposed GBON Upper-air (SOFF)**[3]	**GOS / NWP**	**GSN**	**GUAN**	**CRS**[4] (daily rain, max/min temp)	**Other**[5] (e.g. CIS-PAC5, ClimSA)	**Designated RBON**[6]	**Potential RBON**[7]	**PRO Network Tier**[8]
Aimeliik AWS	0-585-0-74451							Y		Y	
Airai Airport AWOS								Y		Y	
Airai AWS	0-585-0-74351	Y									
Angaur AWS	0-585-0-64911							Y		Y	
Ngaraard AWS	0-585-0-74661							Y			
Ngarchelong AWS	0-585-0-74761							Y			
Ngaremlengui AWS	0-585-0-74551							Y			
Sonsorol, Caroline Is	0-20000-0-91314	Y								Y	
Tobi Island, Caroline Is	0-20000-0-91410	Y							Y	Y	
Weather Service Office, Koror, Palau WCI	0-20000-0-91408	Y	y				☐		Y	Y	

Papua New Guinea

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Agaun	0-20000-0-92068			Y						y	
Aiyura	0-20000-0-92016										
Ambunti	0-20000-0-92017										
Bipi	0-20000-0-92040										
Bulolo	0-20000-0-92023										
Dami	0-20000-0-92075										
Daru W.O.	0-20000-0-92003	Y		y			y		Y	y	
Erave	0-20000-0-92051										
Feni (92084-0)	0-20000-0-92084										
Girua Airport AWS											
Goroka Ats	0-20000-0-92010	Y		y						Y	
Green River	0-20000-0-92045										
Gurney W.O.	0-20000-0-92077	Y		y			Y		Y	Y	
Hoskins W.O.	0-20000-0-92072	Y		Y			Y		Y	Y	
Jinjo	0-20000-0-92090										
Kavieng Airport AWS											
Kavieng W.O.	0-20000-0-92076	Y		y					Y	Y	
Kerema	0-20000-0-92012										
Kiunga W.O.	0-20000-0-92001	Y		y			Y		Y	y	
Koinambe	0-20000-0-92006								Y	y	
Kundiawa	0-20000-0-92011										

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Kundiawa AWS (Chimbu Airport)											
Kurada	0-20000-0-92069										
Lake Kutubu	0-20000-0-92031										
Lombrum, Manus Island	0-20000-0-92036										
Madang Airport AWS											
Madang W.O.	0-20000-0-92014	Y		y	y		Y		y	Y	
Mendi	0-20000-0-92021										
Misima W.O.	0-20000-0-92087		Y	y			Y		Y	y	
Momote	0-20008-0-MAN										
Momote W.O.	0-20000-0-92044	Y	Y	y	y		Y		y	Y	
Mt Hagen Ats	0-20000-0-92005			Y						Y	
Nadzab Airport AWS											
Nadzab W.O.	0-20000-0-92047	Y					Y		Y	y	
Namatanai	0-20000-0-92083										
Nimowa	0-20000-0-92092										
Nuguria	0-20000-0-92082									Y	
Orobiga	0-20000-0-92013										
Port Moresby Airport AWOS											
Port Moresby Airport AWS											

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Port Moresby W.O.	0-20000-0-92035	Y	Y	Y	y	y	Y		y	Y	
Safia	0-20000-0-92057										
Salamo	0-20000-0-92080										
Saramandi	0-20000-0-92026										
Sideia	0-20000-0-92070										
Tokua W.O.	0-20000-0-92100	Y		Y						Y	
Tufi	0-20000-0-92058										
Uvol	0-20000-0-92071										
Vanimo	0-20000-0-92022			Y						Y	
Wewak Airport AWS											
Wewak W.O.	0-20000-0-92004	y		Y			Y		Y	y	

Republic of Marshall Islands

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Ailinglaplap Atoll	0-20000-0-91367								Y		
Ailuk AWS	0-584-0-AIM01							Y		Y	
Airok AWS	0-584-0-AIC01							Y		Y	
Arno AWS								Y		Y	
Aur AWS	0-584-0-AUL01							Y		Y	
Ebon Atoll AWS	0-20000-0-91442								Y		
Ebon AWS	0-584-0-EBO01	Y						Y		Y	
Elenak AWS	0-584-0-EAL01							Y		Y	
Enewetak AWS	0-584-0-ENT01	Y						Y		Y	
Enewetok WSO	0-20000-0-91250		Y							Y	
Eniwetok Atoll AWS	0-20000-0-91251									Y	
Enyu AWS	0-584-0-BII01							Y		Y	
Jabot AWS	0-584-0-JAT01							Y		Y	
Jaluit	0-20000-0-91369								Y	Y	
Jaluit AWS	0-584-0-UIT01							Y		Y	
Kwajalein/Bucholz AAF	0-20000-0-91366	Y	Y				☐		Y	Y	
Lae AWS	0-584-0-LML01							Y		Y	
Lib AWS	0-584-0-LIB01							Y		Y	
Likiep AWS	0-584-0-LIK01							Y		Y	
Majaro	0-20000-0-91375										
Majkin AWS	0-584-0-MJE01							Y		Y	
Majuro (Rairok)	0-20000-0-91376	Y	Y				☐		Y	Y	
Majuro AWS	0-584-0-MAJ01							Y		Y	

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Maloelap Atoll AWS	0-20000-0-91374								Y		
Mejit AWS	0-584-0-MJB01							Y		Y	
Mili Atoll	0-20000-0-91378								Y	Y	
Mili Atoll AWS	0-20000-0-91377								Y		
Mili AWS	0-584-0-MIJ01	Y						Y		Y	
Namorik AWS	0-584-0-NDK01							Y		Y	
Rongelap AWS	0-584-0-RNP01	Y						Y		Y	
Taroa AWS	0-584-0-MAV01							Y		Y	
Ujae AWS	0-584-0-UJE01	Y						Y		Y	
Utirik Atoll	0-20000-0-91258								Y		
Utirik AWS	0-584-0-UTK01	Y						Y		Y	
Wotho AWS	0-584-0-WTO01							Y		Y	
Wotje Atoll	0-20000-0-91371								Y	Y	
Wotje AWS	0-584-0-WTE01	Y						Y		Y	

Samoa

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Afiamalu AWS								Y		Y	2
Afiamalu							☐			Y	1
Alafua AWS											3
Apia Observatory	0-20000-0-91762	Y					☐		Y	Y	1
Apia AWS	0-882-0-76219							Y		Y	1
Apia Wharf	0-20000-0-91756									Y	
Asau AWS	0-882-0-76023	Y								Y	1
Fagalií Airport AWOS											2
Faleolo Intl	0-20000-0-91759		Y				☐		Y	Y	1
Faleolo Int East	0-20000-0-91738									Y	2
Faleolo Int West	0-20000-0-91739									Y	2
Le Mafa	0-20000-0-91743									Y	2
Le Piu Tai	0-20000-0-91735									Y	2
Lufilufi	0-20000-0-91741									Y	2
Maota Int Airport	0-20000-0-91736									Y	2
Manono Is. AWS											2
Mt Talu	0-20000-0-91737									Y	2
Nafanua AWS	0-882-0-76225									Y	2
Nuu AWS	0-882-0-76215									Y	2
Salailua AWS											3
Saoluafata AWS	0-882-0-76241									Y	2
Sataua AWS								Y		Y	2
Togitogiga SYNOP	0-20000-0-91742									Y	2
Vaiaata AWS	0-882-0-76046							Y		Y	2

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Vailoa Aleipata AWS	0-882-0-76246							Y		Y	2
Vailoa Palauli AWS								Y		Y	2
Vaipouli AWS	0-882-0-76049							Y		Y	2

Solomon Islands

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Afio AWS										Y	2
Auki	0-20000-0-91507	Y					☐		Y	Y	1
Avu Avu AWS										Y	2
Garanga AWS										Y	2
Gizo AWS										Y	2
Haura CHS AWS										Y	2
Hirobuka CHR AWS										Y	2
Honiara / Vavaya Ridge	0-20000-0-91517	Y					☐			Y	1
Honiara/Henderson AWOS										Y	2
Honiara/Henderson MO	0-20000-0-91520	Y					☐		Y	Y	1
Kira Kira	0-20000-91527	Y					☐			Y	1
Kira Kira AWS										Y	1
Mono AWS										Y	2
Munda	0-20000-0-91503	Y					☐		Y	Y	1
Munda AWOS										Y	2
Ringgi AWS										Y	3
Santa Ana AWS										Y	2
Santa Cruz	0-20000-0-91541	Y	Y				☐		Y	Y	1
Sape Farm AWS										Y	3
Taro AWS										Y	1
Taro Island	0-20000-0-91502	Y	Y				☐		Y	Y	1
Tiggoa AWS										Y	2

Name[1]	**WIGOS Identifier**[2]	**Proposed GBON Surface (SOFF)**[3]	**Proposed GBON Upper-air (SOFF)**[3]	**GOS / NWP**	**GSN**	**GUAN**	**CRS**[4] (daily rain, max/min temp)	**Other**[5] (e.g. CIS-PAC5, ClimSA)	**Designated RBON**[6]	**Potential RBON**[7]	**PRO Network Tier**[8]
Tikopia AWS										Y	2
Tingoa	0-20000-0-91546	Y								Y	1
Tulagi			Y							Y	1
Tuwo AWS										Y	1
Yandina CHS AWS										Y	2
Tatamba RF2 (*new AWS)*											2
Radar											2

Tokelau

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Nukunonu AWS	0-20000-0-91723	y		y	y		y		y	y	1
Nukunonu							y			y	1
Atafu											2
Atafu AWS										y	2
Fakaofo											2
Fakaofo											2

Tonga

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Atele College AWS										Y	
‘Eua Manual Climate Station											2
Fangatongo AWS										Y	
Fatai AWS										Y	
Fua'Amotu	0-20000-0-91792	y	Y				☐		y	y	1
Fua'amotu Airport AWOS								Y		Y	2
Fua'amotu Airport AWS										Y	1
Ha'ano AWS										Y	
Ha'apai	0-20000-0-91784						☐		Y	Y	1
Hango AWS										Y	
Houma AWS										Y	
Kaufana AWS										Y	2
Keppel/Mata'Aho Airport	0-20000-0-91776	Y					☐		Y	Y	1
Koloa AWS										Y	
Kolovai AWS										Y	
Lapaha AWS										Y	
Lifuka AWS										Y	
Longomapu AWS										Y	
Lupepau'u	0-20000-0-91779	Y					☐		Y	Y	1
Lupepau'u Airport AWOS								Y		Y	2

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Lupepau'u Airport AWS										Y	1
Mo'unga Olive AWS (Afaa AWS)										Y	
Niuafoou	0-20000-0-91772	Y					☐		Y	Y	1
Niuafo'ou Airport AWS										Y	1
Niuatoputapu AWS										Y	1
Nomuka AWS										Y	
Nuku'Alofa	0-20000-0-91789						☐		Y	Y	1
Nukualofa AWS										Y	
Pilolevu Airport AWS										Y	
Tofua AWS										Y	1
Toloa AWS										Y	2
Vavau	0-20000-0-91780									Y	
Tonga Radar								Y		Y	2

Tuvalu

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Funafuti	0-20000-0-91643	Y	Y				☐		Y	Y	
Funafuti AWOS								Y		Y	
Nanumunga AWS	0-798-0-63401							Y		Y	
Nanumea	0-20000-0-91631	Y					☐		Y	Y	
Nanumea AWS	0-798-0-63101							Y		Y	
Niulakita AWS	0-798-0-64801							Y		Y	
Niulakita	0-20000-0-91648	Y					☐		Y	Y	
Niutao AWS	0-798-0-63301							Y		Y	
Nui	0-20000-0-91636	Y					☐		Y	Y	
Nui AWS	0-798-0-63601							Y		Y	
Nukufetau AWS	0-798-0-64101							Y		Y	
Nukulaelae AWS	0-798-0-64601							Y		Y	
Vaitupu AWS	0-798-0-63802							Y		Y	

Vanuatu

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Aneityum (Anelghaohat)	0-20000-0-91568			Y	Y		☐		Y	Y	
Aneityum AWS	0-20000-0-91569									Y	
Bauerfield (Efate)	0-20000-0-91557	Y	Y	Y		Y	☐		Y	Y	
Bauerfield AWS	0-548-0-VAN07005									Y	
Bauerfield AWOS										Y	
Dillon's Bay AWS										Y	
Epau, Efate AWS	0-20000-0-91560									Y	
Lajmoli Airport AWS										Y	
Lamap (Malekula)	0-20000-0-91555			N			☐		Y	Y	
Lambumbu AWS										Y	
Loltong Village AWS										Y	
Longana Airport AWS	0-20000-0-91552									Y	
Lonorore Airport AWS										Y	
Namplontafo AWS										Y	
Norsup Airport AWS	0-20000-0-91562									Y	
Olal AWS										Y	
Pekoa Airport (Santo)	0-20000-0-91554	Y		Y	Y		☐		Y	Y	

Name[1]	WIGOS Identifier[2]	Proposed GBON Surface (SOFF)[3]	Proposed GBON Upper-air (SOFF)[3]	GOS / NWP	GSN	GUAN	CRS[4] (daily rain, max/min temp)	Other[5] (e.g. CIS-PAC5, ClimSA)	Designated RBON[6]	Potential RBON[7]	PRO Network Tier[8]
Pekoa AWOS (Santo)										Y	
Pekoa AWS	0-548-0-VAN25005									Y	
Port Resolution AWS										Y	
Port Vila	0-20000-0-91558						☐			Y	
Port Vila AWS	0-20000-0-91559									Y	
Rovo Bay AWS										Y	
Saratmata	0-20000-0-91553			Y						Y	
Sola (Vanua Lava)	0-20000-0-91551	Y		Y			☐		Y	Y	
Sola Airport AWS	0-20000-0-91550									Y	
Torres Aero AWOS										Y	
Vanuatu Agriculture Research Technical Centre (VARTC)										Y	
White Grass Airport	0-20000-0-91565	Y		Y			☐		Y	Y	
Whitegrass Airport AWOS										Y	
Whitegrass Airport AWS	0-20000-0-91564									Y	
Vanuatu Radar											

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