05<sup>th</sup> November 2024



# **GBON National Gap Analysis**

Systematic Observations Financing Facility

Weather and climate data for resilience







### Screening of the National Gap Analysis (NGA) of Micronesia

WMO Technical Authority screens the GBON National Gap Analysis to ensure consistency with the GBON regulations and provides feedback for revisions as needed. *The screening of the NGA is conducted according to the SOFF Operational Guidance Handbook, version:* 04.07.2023 and the provisions in Decision 5.7 of the SOFF Steering Committee.

Following iterations with the peer advisor and beneficiary country, WMO Technical Authority confirms that the National Gap Analysis is consistent with GBON regulations.

Date: 13 November 2024

Signature:

Fish

Albert Fischer Director, WIGOS Branch, Infrastructure Department, WMO

### **GBON National Gap Analysis Report Federated States of Micronesia (FSM)**

Beneficiary Country Focal Point and Institute	Johannes Berdon, Official in Charge, Chuuk, FSM
Peer Advisor Focal Point and Institute	Tim Donovan, Senior International
	Development Manager, Met Office, UK

#### **1. Country information from the GBON Global Gap Analysis**

 Table I. WMO GBON Global Gap Analysis (June 2023). Illustration of the information that the WMO

 Secretariat provides to each country

A. GBON horizontal resolution requirements	B. Target	C. Reporting (GBON compliant) <sup>1</sup>	D. Gap to improve	E. Gap new	F. Gap total	
	[# of stations]					
<b>Surface stations</b> Standard density <sup>2</sup> 200 km	13	0	13	0	13	
Upper-air stations over land Standard density <sup>2</sup> 500km	4	2	1	1	2	

<sup>&</sup>lt;sup>1</sup> The rationale for classifying surface and upper-air stations as reporting is based on the WIGOS Data Quality Monitoring System (WDQMS) for the chosen time period (WMO GBON Global Gap analysis, June 2023). Stations with data availability more than 80% on at least 80% of days, are considered as reporting. Other listed stations are counted as having the possibility to be improved.

<sup>&</sup>lt;sup>2</sup> For SIDS, for the WMO GBON Global Gap Analysis in June 2023, the EEZ area has been added to the total surface area which is the basis for the target number of stations. The standard density requirements for SIDS have been calculated with 500 km for surface stations and 1000 km for upper-air stations.

### 2. Analysis of existing GBON stations and their status against GBON requirements

	Existing observation stations (# of stations)									
CPON Dequirements	NMHS n	etwork	Third-party network							
	Reporting (GBON compliant) <sup>3</sup>	To improve	Reporting (GBON compliant) <sup>3</sup>	To improve						
<b>Surface land stations</b> Standard density <sup>4</sup> 200km Variables: SLP, T, H, W, P, SD	0	13	0	0						
Upper-air stations operated from land Horizontal resolution <sup>4</sup> : 500km Vertical resolution: 100m, up to 30 hPa Variables: T, H, W	3	0	0	0						
Surface marine stations in Exclusive Economic Zones: <sup>7</sup> 500 km Variables: SLP, SST										
<b>Upper-air stations operated</b> <b>in Exclusive Economic</b> <b>Zones</b> : <sup>5</sup> 1000 km Vertical resolution: 100m, up to 30 hPa Variables: T, H, W										

#### Table II. Assessment of existent stations per their operational status and network ownership

**Table III. Assessment of existing GBON stations per station characteristics.** Station type: S: Surface, UA: Upper-Air; M: Marine; Owner of the station: NMHS or name of third-party; GBON variables: SLP: Atmospheric pressure; T: Temperature; H: Humidity; W: wind; P: Precipitation; SD: Snow depth; SST: Sea surface temperature; Reporting cycle: Number of observation reports exchanged internationally per day (0-24); GBON compliance: whether the station is GBON compliant or not (see GBON guide on compliance criteria).

<sup>&</sup>lt;sup>3</sup> The rationale for classifying surface and upper-air stations as reporting is based on the WIGOS Data Quality Monitoring System (WDQMS) for the chosen time period during the development of National Gap Analysis Stations with data availability more than 80% on at least 80% of days, are considered as reporting. Other listed stations are counted as having the possibility to be improved.

<sup>&</sup>lt;sup>4</sup> For SIDS, for the WMO GBON Global Gap Analysis in June 2023, the EEZ area has been added to the total surface area which is the basis for the target number of stations. The standard density requirements for SIDS have been calculated with 500 km for surface stations and 1000 km for upper-air stations.

<sup>&</sup>lt;sup>5</sup>Although GBON marine stations and stations in EEZ are not part of initial SOFF scope, peer advisors are encouraged to analyze in this step when considered relevant e.g. SIDS, the status of current marine stations for future GBON marine observations investments.

Station	Station type	Owner (NMHS	Funding	GBON variable measured							Reporting cycle (obs/day)	GBON Compliant (Y/N)
name	(S/UA/ M <sup>6</sup> )	/3rd party)	source	S L P	т	н	w	Р	SD	SST		
Yap WSO (Yap state)	S+UA	NMHS	NOAA	X	х	х	х	x	N A	NA	24	Surface N / UA Y
Woleai (Yap state)	S	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	N
Ulithi/Falalop (Yap state)	S	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	N
Chuuk WSO (Chuuk state)	S+UA	NMHS	NOAA	Х	х	х	х	x	N A	NA	24	Surface N / UA Y
Polowat Atoll (Chuuk state)	S	NMHS	NOAA	Х	х	x	х	x	N A	NA	24	N
Fananu (Chuuk state)	S	NMHS	NOAA	Х	х	х	х	x	N A	NA	24	N
Lukunor (Chuuk state)	S	NMHS	NOAA	Х	х	x	х	x	N A	NA	24	N
Losap (Chuuk state)	S	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	N
Onoun (Chuuk state)	S	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	N
Pohnpei WSO (Pohnpei state)	S+UA	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	Surface N / UA Y
Nukuoro (Pohnpei state)	S	NMHS	NOAA	Х	х	х	х	x	N A	NA	24	N
Mokil (Pohnpei state)	S	NMHS	NOAA		х			x	N A	NA	24	N
Kapingamarangi (Pohnpei state)	S	NMHS	NOAA	Х	х	x	х	x	N A	NA	24	N
Pingelap (Ponhpei state)	S	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	N
Kosrae	S	NMHS	NOAA	Х	х	х	х	х	N A	NA	24	Ν

<sup>&</sup>lt;sup>6</sup> Please see guidance on marine stations in Section 2 on Scope.

### 3. Results of the GBON National Gap Analysis

**Table IV. Results of the GBON national gap analysis.** SLP: Atmospheric pressure; T: Temperature; H: Humidity; W: wind; P: Precipitation; SD: Snow depth; SST: Sea surface temperature.

	Global GBON	Approved national		Gap		
GBON requirements	target	target	Reporting	To improve	New	
		[#	of stations]			
Surface land stations	13	13	0	13	0	
Upper-air stations	4	4	3	0	1	
operated from land						
Surface marine stations in Exclusive Economic Zones: <sup>7</sup> Density 500 km Variables: SLP, SST Observing cycle: 1b						
Upper-air stations operated in Exclusive Economic Zones: <sup>8</sup> Density 1000 km Vertical resolution: 100 m, up to 30 hPa Variables: T, H, W Observing cycle: twice a day						

\* – these 13 stations are currently manual and will require an AWS upgrade to be GBON compliant – see National Contribution Plan Section 3.

\* – the existing station at Mokil only reports limited parameters and is too close to another station to benefit from an upgrade, so we are recommending the installation of a new station at an alternative location to satisfy GBON.

 <sup>&</sup>lt;sup>7</sup> Although GBON marine stations are not part of initial SOFF scope, peer advisors are encouraged to analyze in this step when considered relevant e.g. SIDS, the need for future GBON marine observations investments according to the GBON requirements.
 <sup>8</sup> Although GBON marine stations are not part of initial SOFF scope, peer advisors are encouraged to analyze in this step when considered relevant e.g. SIDS, the need for future GBON marine observations investments according to the GBON requirements.

## **3.1 Recommended existing surface, upper-air and marine<sup>10</sup> stations to be designated to GBON**

 Table V. Recommended existing surface, upper-air and marine stations to be designated to GBON.

Station name	Station type (S/UA/M <sup>11</sup> )
Yap WSO (Yap state)	S+UA
Woleai (Yap state)	S
Ulithi/Falalop (Yap state)	S
Chuuk WSO (Chuuk state)	S+UA
Polowat Atoll (Chuuk state)	S
Fananu (Chuuk state)	S
Lukunor (Chuuk state)	S
Mokil	S
Pohnpei WSO (Pohnpei state)	S+UA
Nukuoro (Pohnpei state)	S
Kapingamarangi (Pohnpei state)	S
Pingelap (Ponhpei state)	S
Kosrae	S

<sup>&</sup>lt;sup>9</sup> Although GBON marine stations are not part of initial SOFF scope, peer advisors are encouraged to analyze in this step when considered relevant e.g., SIDS, the need for future GBON marine observations investments according to the GBON requirements.

<sup>&</sup>lt;sup>10</sup> Although GBON marine stations are not part of initial SOFF scope, peer advisors are encouraged to analyze in this step when considered relevant e.g., SIDS, the need for future GBON marine observations investments according to the GBON requirements.

<sup>&</sup>lt;sup>11</sup> Please see guidance on marine stations in Section 2 on Scope.



Figure 1 – Proposed surface GBON stations with 250km radius circles. Exclusive Economic Zone (EEZ) shown in yellow.



Figure 2 – Proposed upper air GBON stations with 500km radius circles. Exclusive Economic Zone (EEZ) shown in yellow.

### 4. Report completion signatures

Peer Advisor signature the l Rola **Beneficiary Country signature** WMO Technical Authority screening signature Alluffich