

12 Jan 2024

GBON National Gap Analysis

Fiji

Systematic Observations
Financing Facility

**Weather
and climate
data for
resilience**





Screening of the National Gap Analysis (NGA) of Fiji

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: 12th January 2024

Signature:

Albert Fischer

Director, WIGOS Branch, Infrastructure Department, WMO

GBON National Gap Analysis Report

Fiji

Beneficiary Country Focal Point and Institute	Mr Bipen Prakash, a/Director Fiji Meteorological Service & Permanent Representative to World Meteorological Organization
Peer Advisor Focal Point and Institute	Andrew Jones, General Manager International Development, Bureau of Meteorology, Australia

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 to req.	D. Gap to improve	E. Gap new	F. Gap total
Surface stations Standard density 200 km	6	7	0	0	0
Upper-air stations over land Standard density 500km	2	1	0	1	1

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

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

GBON Requirements	Existing observation stations (# of stations)			
	NMHS network		Third-party network	
	Reporting to req.	To improve	Reporting to req.	To improve
Surface land stations Standard density 200km Variables: SLP, T, H, W, P, SD	1	41	0	20
Upper-air stations operated from land Horizontal resolution 500km Vertical resolution: 100m, up to 30 hPa Variables: T, H, W	0	1	0	0
Surface marine stations in Exclusive Economic Zones: ⁷ 500 km Variables: SLP, SST	0	2*	0	0

Notes:

- Number of stations "Reporting to Req." was assessed based on stations reporting over the 2023 calendar year from Jan to Oct in the WIGOS Data Quality Monitoring System. Stations that reliably reported >80% of GBON required frequencies in at least 80% of the months in this period were considered to be reporting to requirements.
- Number of stations "To improve" included all existing surface AWS, manual synoptic and climate stations, minus those stations counted in "Reporting to Req." Manual rainfall, automated rainfall and hydrometric stations were excluded. This represents the number of stations that potentially might be improved to comply with GBON.
- *Bureau-operated sea level stations could be improved to report internationally for sea level pressure, temperature and wind.

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).

Station name	Station type (S/UA/M)*	Owner (NMHS/3rd party)	GBON variable measured							Report -ing cycle (obs/day)	GBON Compliant (Y/N)
			SLP	T	H	W	P	SD	SST		
Nadi Airport	UA (R)	NHMS		X	X	X				1.8	N^
Nadi	UA (RWP)	NHMS				X				0	N
Nadi AWS	S (AWS)	NHMS	X	X	X	X	X			272	Y
Lakeba AWS	S (AWS)	NHMS	X	X	X	X	X			22	N^
Rakiraki AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Sigatoka AWS	S (AWS)	NHMS	X	X	X	X	X			21	N^
Udu Point AWS	S (AWS)	NHMS	X	X	X	X	X			21	N^
Vanua Balavu AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Viwa Island AWS	S (AWS)	NHMS	X	X	X	X	X			21	N^
Keiyasi AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Koro Island AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Korolevu AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Kubulau AWS	S (AWS)	NHMS		X		X	X			0	N
Labasa AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Levuka AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Lomaivuna AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Matuku AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Momi AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Nadarivatu AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Ono-I-Lau AWS	S (AWS)	NHMS	X	X	X	X	X			23	N^
Rarawai Mill AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
RKS Lodon AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Rotuma Island AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Saqani AWS	S (AWS)	NHMS		X	X	X	X			0	N
Seaqqa AWS	S (AWS)	NHMS		X	X	X	X			0	N
Suva AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Tokotoko Navua AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Vunisea AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Wainikoro AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Yaqara AWS	S (AWS)	NHMS	X	X	X	X	X			0	N
Yasawa-I-Rara AWS	S (AWS)	NHMS	X	X	X	X	X			24	N^
Nadi Airport	S (S)	NHMS		X	X	X	X			8	N
Nausori Airport	S (S)	NHMS		X	X	X	X			8	N
Udu Point	S (S)	NHMS		X	X	X	X			0	N
Lakeba	S (S)	NHMS		X	X	X	X			0	N

Laucala Bay	S (S)	NHMS		X	X	X	X			0	N
Matuku	S (S)	NHMS		X	X	X	X			0	N
Nabouwalu	S (S)	NHMS		X	X	X	X			0	N
Ono-I-Lau	S (S)	NHMS		X	X	X	X			0	N
Rotuma Island	S (S)	NHMS		X	X	X	X			4	N
Vanuabalavu	S (S)	NHMS		X	X	X	X			0	N
Viwa Island	S (S)	NHMS		X	X	X	X			0	N
Vunisea	S (S)	NHMS		X	X	X	X			4	N
Yasawa-I-Rara	S (S)	NHMS		X	X	X	X			0	N
Matei Airfield	S (S)	Fiji Airports Ltd		X	X	X	X			0	N
Savusavu Airfield	S (S)	Fiji Airports Ltd		X	X	X	X			0	N
Labasa Airfield	S (S)	Fiji Airports Ltd		X	X	X	X			0	N
Ba @ FSC Mill	S (H)	NHMS								0	N
Bagata	S (H)	NHMS					X			0	N
Dewala	S (H)	NHMS					X			0	N
Dreketilailai	S (H)	NHMS					X			0	N
Emuri	S (H)	NHMS					X			0	N
Keiyasi	S (H)	NHMS					X			0	N
Korovou	S (H)	NHMS					X			0	N
Labasa town	S (H)	NHMS								0	N
Mulomulo	S (H)	NHMS								0	N
Nabukaluka	S (H)	NHMS					X			0	N
Nabukelevu	S (H)	NHMS					X			0	N
Nadi bridge	S (H)	NHMS								0	N
Nairukuruku	S (H)	NHMS					X			0	N
Nakawaga	S (H)	NHMS					X			0	N
Naqali	S (H)	NHMS					X			0	N
Nasivi	S (H)	NHMS								0	N
Navala	S (H)	NHMS					X			0	N
Navolau	S (H)	NHMS					X			0	N
Navua Bridge	S (H)	NHMS								0	N
Nayavu	S (H)	NHMS					X			0	N
Qawa	S (H)	NHMS					X			0	N
Rewa Bridge	S (H)	NHMS								0	N
Semo	S (H)	NHMS								0	N
Sigatoka bridge	S (H)	NHMS								0	N
Toge	S (H)	NHMS					X			0	N
Vaileka	S (H)	NHMS								0	N
Vatukaceveceva	S (H)	NHMS					X			0	N
Votualevu	S (H)	NHMS								0	N
Waimanu	S (H)	NHMS					X			0	N
Wairikicake	S (H)	NHMS					X			0	N
Yavuna	S (H)	NHMS								0	N
Dobuilevu Research Station	S (C)	Min of Agric		X	X	X	X			0	N
FSC Lautoka Mill	S (C)	Fiji Sugar Corp		X	X	X	X			0	N
FSC Penang Mill	S (C)	Fiji Sugar Corp		X	X	X	X			0	N

FSC Rarawai Mill	S (C)	Fiji Sugar Corp	X	X	X	X			0	N
Koronivia Research Station	S (C)	Min of Agric	X	X		X			0	N
Legalega Research Station	S (C)	Min of Agric	X	X	X	X			0	N
Monasavu Hydro Dam	S (C)	Energy Fiji Ltd	X	X	X	X			0	N
Nacocolevu Research Station	S (C)	Min of Agric	X	X	X	X			0	N
Nawaicoba Research Station	S (C)	Min of Agric	X	X	X	X			0	N
Seaqaqa Research Station	S (C)	Min of Agric	X	X	X	X			0	N
SRIF Batinikama	S (C)	Sugar Res Inst	X	X		X			0	N
SRIF Drasa Station	S (C)	Sugar Res Inst	X	X	X	X			0	N
Taveuni Coconut Centre	S (C)	Min of Agric.	X	X	X	X			0	N
Tokotoko Research Station	S (C)	Min of Agric	X	X	X	X			0	N
Tutu	S (C)	Marist Brothers	X	X	X	X			0	N
Vaturu Dam	S (C)	Water Auth Fiji	X	X	X	X			0	N
Wainigata Research	S (C)	Min of Agric	X	X	X	X			0	N
Vatuwiri	S (MR)	Estate Manager				X			0	N
FSC Cuvu Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Daku Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Drasa Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Drumasi Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Ellington Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Koronubu Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Kurukuru Kilikoso Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Legalega Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Lomawai Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Malolo Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Meigunyah Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Mota Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Nagigi Bucaisau Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Nanuku Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Naravuka Bulivou Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Natova Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Natua Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Olosara Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Papalagi Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Rokosalase Solove Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Sarava Varoka Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Saweni Sector Office	S (MR)	NHMS				X			0	N
FSC Seaqaqa Sector office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Tagitagi Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Varavu Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Veisaru Sector Office	S (MR)	Fiji Sugar Corp				X			0	N
FSC Vunimoli Vunicuicui Sector Office	S (MR)	Fiji Sugar Corp				X			0	N

FSC Vunivutu Sector Office	S (MR)	Fiji Sugar Corp					X			0	N
FSC Wailevu Sector Office	S (MR)	Fiji Sugar Corp					X			0	N
FSC Wainikoro Sector Office	S (MR)	Fiji Sugar Corp					X			0	N
FSC Waiqele Sector Office	S (MR)	Fiji Sugar Corp					X			0	N
FSC Yaladro Sector Office	S (MR)	Fiji Sugar Corp					X			0	N
Dobuilevu Agriculture TB3	S (AR)	NHMS					X			0	N
Lautoka Mill TB3	S (AR)	NHMS					X			0	N
Monasavu Hydro Dam TB3	S (AR)	NHMS					X			0	N
Nacocolevu Agriculture TB3	S (AR)	NHMS					X			0	N
Nasinu Forestry TB3	S (AR)	NHMS					X			0	N
Penang Mill TB3	S (AR)	NHMS					X			0	N
Seaqaqa Agriculture TB3	S (AR)	NHMS					X			0	N
Tavua Reservoir TB3	S (AR)	NHMS					X			0	N
Suva NTC AWS	M (T)	BOM	X	X		X				0	N
Lautoka NTC AWS	M (T)	BOM	X	X		X				0	N

Notes:

- Station subtype is shown in brackets as follows:
 - UA (R) – Upper-air radiosonde station
 - UA (RWP) – Upper-air radar wind profiler
 - S (AWS) – Surface automatic weather station
 - S (S) – Surface manual synoptic station
 - S (H) – Surface hydrometric station
 - S (C) – Surface manual climate station
 - S (MR) – Surface manual rainfall station
 - S (AR) – Surface automated rainfall station
 - M (T) – tide gauge
- Reporting cycle is based on average reporting frequency in June 2023 from the WIGOS Data Quality Monitoring System.
- GBON compliance was assessed based on stations reporting over a review period of Jan-Oct 2023 in the WIGOS Data Quality Monitoring System. Stations that reliably reported >80% of GBON required frequencies in at least 80% of the months of this period were considered to be GBON compliant.
- [^]These stations were GBON compliant in June 2023, but were non-compliant in at least three other months in the review period.

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.

GBON requirements	GBON target (# of stations)	GBON Compliant stations (#)	Stations gap	
			To improve	New
Surface land stations Standard density 200km Variables: SLP, T, H, W, SD Observing cycle: 1h	6	1	5	0
Upper-air stations operated from land Standard density 500km Vertical resolution: 100m, up to 30 hpa Variables: T, H, W Observing cycle: twice a day	2	0	1	1
Surface marine stations in Exclusive Economic Zones: Density 500 km Variables: SLP, SST Observing cycle: 1h			2*	

Notes:

- *Bureau-operated sea level stations will be improved to report internationally for sea level pressure, temperature and wind.

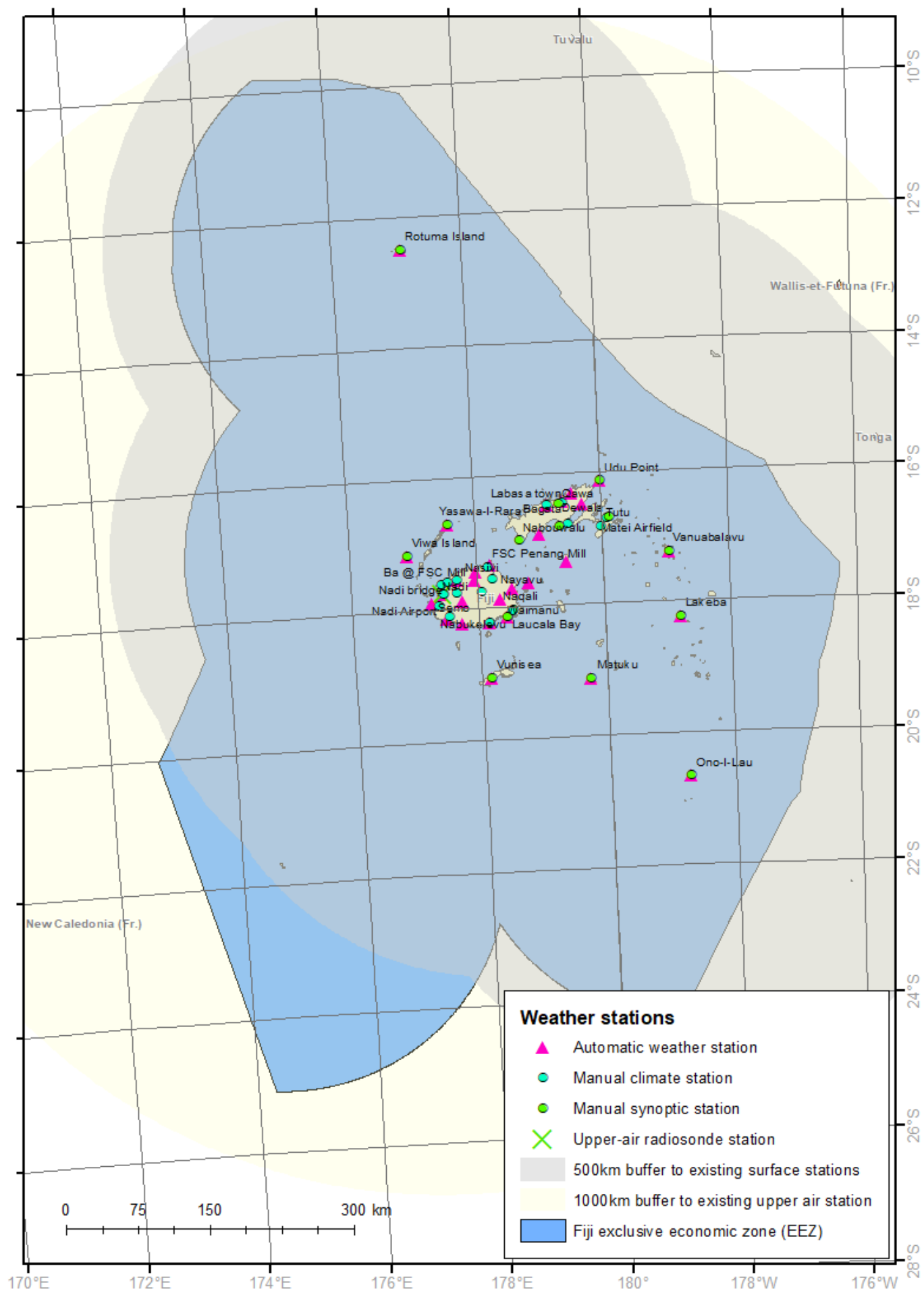
3.1 Recommended existing surface, upper-air and marine stations to be designated to GBON

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

Station name	Station type (S/UA/M)
Nadi AWS	S

Notes:

- The Nadi upper air station and several surface stations are close to GBON compliance and can be designated as GBON stations following early investments during the Investment Phase.



4. Report completion signatures

Peer Advisor signature



Dr Andrew Jones
General Manager International Development
Bureau of Meteorology

WMO Technical Authority screening signature



Beneficiary Country signature

