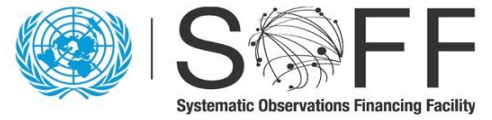


03.04.2024



GBON National Gap Analysis

Systematic Observations
Financing Facility

**Weather
and climate
data for
resilience**





Screening of the National Gap Analysis (NGA) of St. Vincent and the Grenadines

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: 11/03/2025

Signature:

Albert Fischer

Director, WIGOS Branch, Infrastructure Department, WMO

GBON National Gap Analysis Report

St. Vincent and the Grenadines

Beneficiary Country Focal Point and Institute	Mr. Billy H. Jeffers, Manager, Meteorological Services, Ministry of National Security, St. Vincent and the Grenadines
Peer Advisor Focal Point and Institute	Mr. Giora G.H. Gershtein, Ms. Veronika Krieger, GeoSphere Austria – Federal Institute for Geology, Geophysics, Climatology and Meteorology

1. Country information from the GBON Global Gap Analysis

Small Island Developing States (SIDS) are a group of 39 States and 18 Associate Members that share common challenges and vulnerabilities, including climate change, biodiversity, limited resources and natural disasters. They have been recognized by the United Nations since the 1992 U.N. Conference on Environment and Development held in Rio de Janeiro, Brazil.

The National Meteorological Service of St. Vincent and the Grenadines (SVG), namely the Meteorological Services was established in the 1970's at the decommissioned E.T Joshua Airport (Arnos Vale). However, the services moved to the Argyle International Airport in February of 2017 with the establishment of a new station. The country is not yet a Member of WMO. Nevertheless, the GBON Global Gap Analysis conducted by WMO in June 2023 (Table I) also took SVG into account. Considering SVG a SIDC, the analysis states that the country is responsible for providing data from a single surface station as well as a single upper air station.

As SVG is not a member of WMO, no stations were designated for GBON. Currently, all five Meteorological Stations operated by the National Meteorological Service of SVG are not GBON-compliant and the Service does not operate upper air stations.

Table I. WMO GBON Global Gap Analysis (June 2023).

A. GBON horizontal resolution requirements	B. Target	C. Reporting (GBON compliant) ¹	D. Gap to improve	E. Gap new	F. Gap total
	[# of stations]				
Surface stations Standard density ² 500 km	1	0	1	0	1
Upper-air stations over land Standard density ² 1000km	1	0	0	1	1

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

Surface stations

As mentioned above, SVG did not design any surface station to be an international GBON Station. All four existing stations from the Meteorological Services are not GBON-compliant and are mostly unable to transmit data on a real-time base to the headquarters or/and to the GTS, due to communication challenges (mostly, due to non-functioning or outdated communication equipment, which requires an upgrade – radios, sim cards and antennas). So, there is an urgent need to designate an existing or a future station as the country’s GBON station (Table II) and perform all the required upgrades or a station purchase.

Upper-air stations

The Meteorological Service currently does not operate any upper-air stations.

¹ 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.

² 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.

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 (GBON compliant) ³	To improve	Reporting (GBON compliant) ³	To improve
Surface land stations Standard density ⁴ 200km Variables: SLP, T, H, W, P, SD	0	1	0	0
Upper-air stations operated from land Horizontal resolution ⁴ : 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	1	0	0
Upper-air stations operated in Exclusive Economic Zones: ⁵ 1000 km Vertical resolution: 100m, up to 30 hPa Variables: T, H, W	0	0	0	0

³ 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.

⁴ 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.

⁵ 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.

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 ⁶)	Owner (NMHS /3rd party)	Funding source	GBON variable measured						Reporting cycle (obs/day)	GBON Compliant (Y/N)	
				SLP	T	H	W	P	SD			SST
Arnos Valle (*)	S	NMHS	Gov	X	X	X	-	X	-	-	24	N

* Currently no stations designated to GBON. Arnos Valle is recommended to be designated3.

3. Results of the GBON National Gap Analysis

Surface stations

According to the GBON low-resolution criteria (Tables IV&V) SVG should operate at least a single surface station, providing hourly measurements on a 24/7 basis (with the following requirements:

- a. The minimum number of internationally available reports should be not less than 80% of the total number of reports for the period.
- b. Delayed reports should not constitute more than 5% of the total number.
- c. Rejected reports, due to insufficient quality, should not constitute more than 5% of the total number of reports).

As aforementioned, since SVG is not a member of WMO, it does not have designated stations for international data exchange. The best station for international data exchange seems to be the already existing old station in Arnos Valle (former international airport, Table III). This station is selected for two main reasons: a. the station is located in between Arnos Vale and Kingstown, practically in the middle of the main urban area of the country. Thus, presenting the relevant meteorological data for a large percentage of the population and therefore being essential in terms of Early Warnings. b. This is the only station which has a (more or less) continuous measurement history since 1979. That makes it the only one relevant for potential climate services.

However, instead of upgrading, due the missing sensors (pressure and wind), communication issues and the age of the station, it would be highly recommended to replace it with a brand-new AWS, together with the provision of a sustainable solution for the

⁶ Please see guidance on marine stations in Section 2 on Scope.

communication issues (applies also to the other AWSs of the country). Such a station can provide a GBON coverage for the entire country, as can be seen in Figure 1.

However, there are several additional major challenges associated with installing and maintaining such a station:

- a. Data communication and transmission – the current AWS is unable to transmit its data to the headquarters in real-time.
- b. Spare parts – currently, the Meteorological Services has neither spare resources nor the financial resources to purchase such
- c. Technical Staff – the Meteorological Services relies currently on a single technician, expected to retire in three years, without any proper replacement in sight.
- d. Harsh Environmental Conditions – A combination of tropical conditions (high humidity and temperatures), hurricane-prone regions (strong winds and intensive precipitation) and the vicinity of the ocean (high salinity) require a durable and suitable equipment.

Upper-air stations

Despite the fact, the GBON standard requires SVG to operate at least one upper air station, it is recommended to consider the already existing upper-air operational station in Barbados. The spatial resolution required for SIDCs is 1000 km, whereas the distance between the countries is less than 200 km. Thus, the upper air station in Barbados also covers the requirements of SVG (as can be seen in Figure 2). Thus, it is recommended to waive SVG from this requirement while maintaining GBON compliance for surface stations

Marine surface and upper-air stations

SVG possesses, relative to its land size, quite a large marine Exclusive Economic Zone and therefore, it might be of great benefit for a future project to install at least one marine surface station in the sea surrounding SVG.

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	Global GBON target	Approved national target	Reporting	Gap	
				To improve	New
[# of stations]					
Surface land stations	1	1	0	1	0
Upper-air stations operated from land	1	1 (Barbados)	0	0	0

Surface marine stations in Exclusive Economic Zones: ⁷ Density 500 km Variables: SLP, SST Observing cycle: 1h	1	0	0	1	1
Upper-air stations operated in Exclusive Economic Zones: ⁸ Density 1000 km Vertical resolution: 100 m, up to 30 hPa Variables: T, H, W Observing cycle: twice a day	0	0	0	0	0

3.1 Recommended existing surface, upper-air and marine¹⁰ 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 ¹¹)
Arnos Valle	S
(Barbados)	UA

⁷ 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.

⁸ 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.

⁹ 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.

¹⁰ 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.

¹¹ Please see guidance on marine stations in Section 2 on Scope.

Figure 1. A map with the existing surface station for a low-resolution GBON (500 km). The Green Circle is surrounding the entirety of SVG (and most of St. Lucia)

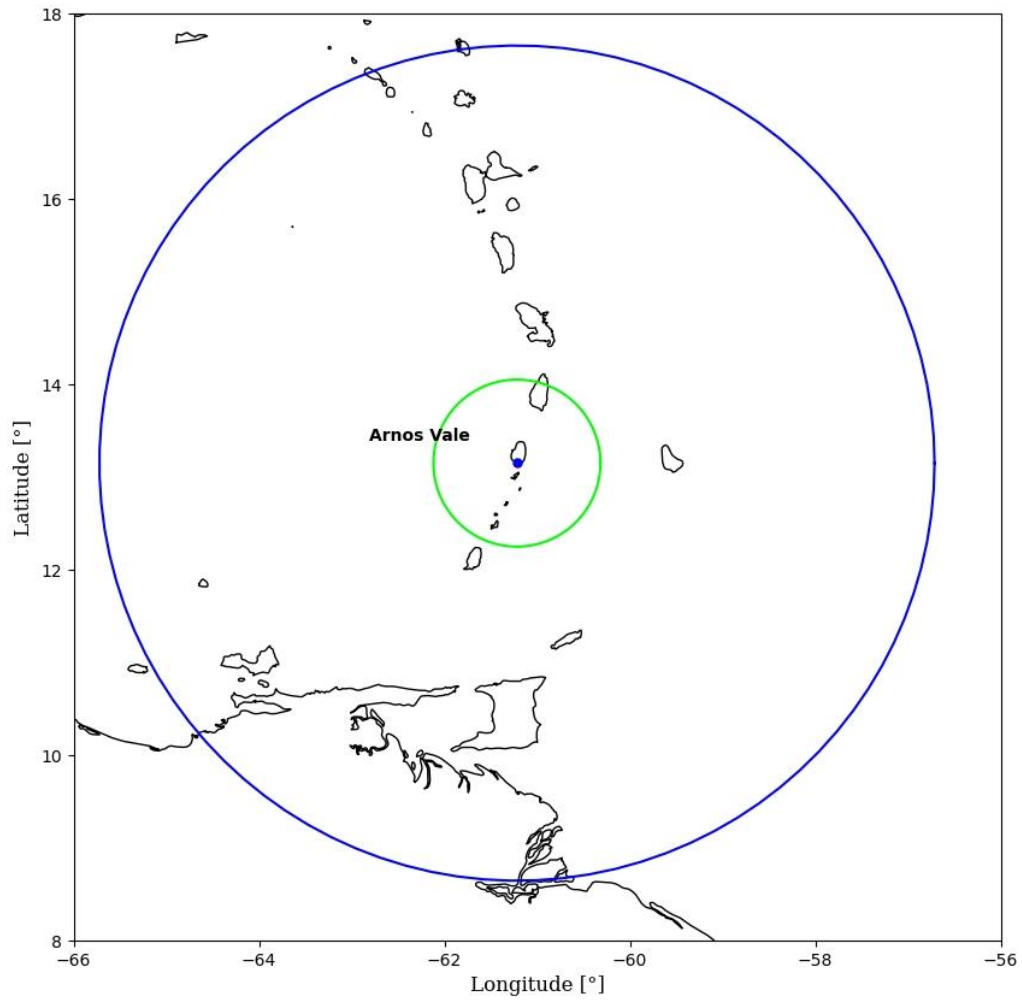
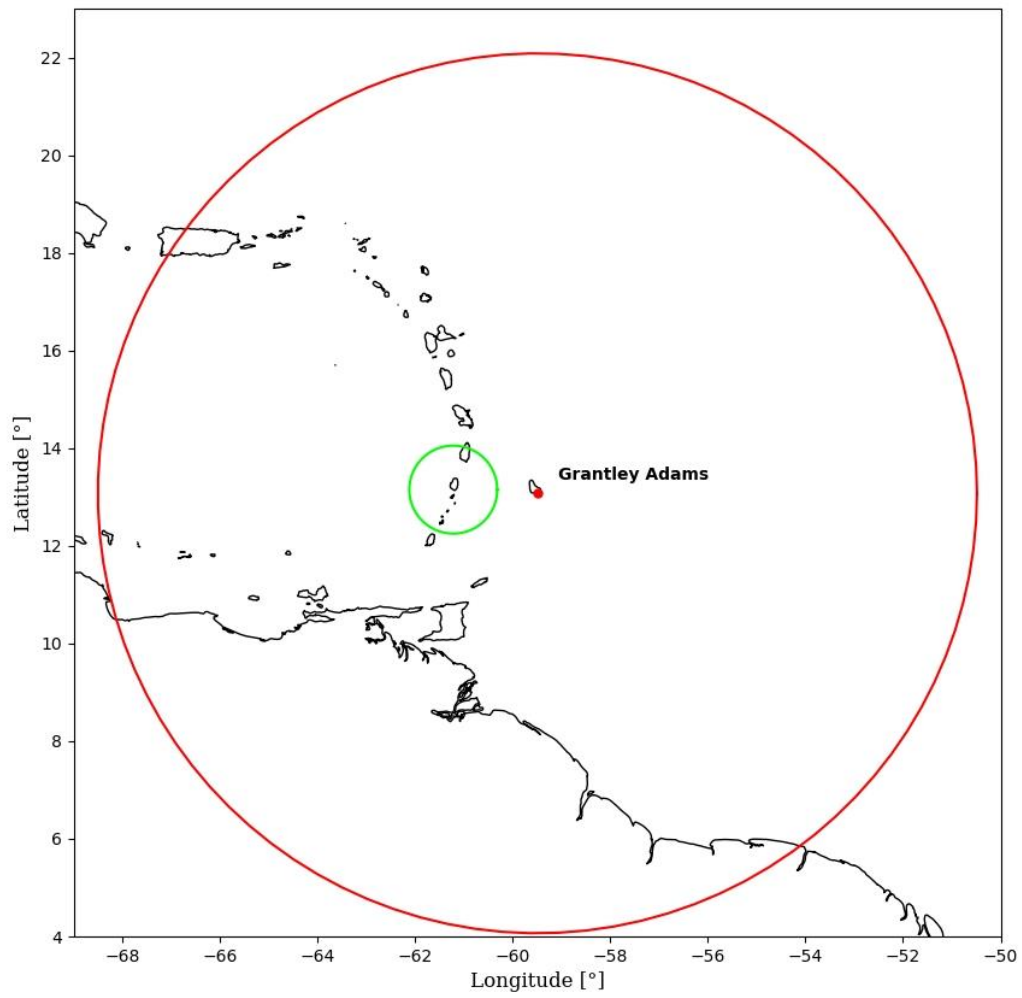


Figure 2. A map with the existing upper-air station for a low-resolution GBON (1000 km). The Green Circle is surrounding the entirety of SVG.



4. Report completion signatures

Peer Advisor signature

Andreas Schöffhauer

Beneficiary Country signature



B H Jeffers
Manager Meteorological Services
Saint Vincent and the Grenadines



WMO Technical Authority screening signature

Altaffish