Systematic Observations Financing Facility

Fifth Steering Committee
20-21 June 2023

Expanding SOFF support to all Early Warnings for All priority countries and third batch SOFF Readiness programming

Decision 5.4

Systematic Observations
Financing Facility

Weather and climate data for resilience

Decision 5.4: Expanding SOFF support to all Early Warnings for All priority countries and third batch SOFF Readiness programming

The SOFF Steering Committee

Adopts

- the proposal to expand SOFF support to all UN Early Warnings for All Initiative (EW4All) initial group of countries and to further accelerate SOFF implementation as a foundational element and delivery mechanism of the initiative.

- the third batch of SOFF programming countries.

Welcomes

- the nomination of the Nordic Development Fund Managing Director as a Member of the advisory panel for the UN Secretary-General's EW4All Initiative alongside the WMO Secretary-General and other global leaders

Notes

- The importance of the UN EW4All Initiative and the crucial role that SOFF provides as a foundational element and delivery mechanism of the initiative.

- That three countries (Bangladesh, Barbados, and Jamaica) show GBON compliance according to the WMO Global GBON Gap Analysis as of January 2022 but have been included for Readiness support given their relevance for SOFF regional implementation and their need for a detailed GBON National Gap Analysis as well as a Country Hydromet Diagnostic in preparation for the implementation of the EW4ALL activities.

Requests

- the SOFF Secretariat to conduct the necessary actions following the process stated in the SOFF Operational Manual, including coordinating the preparation of Readiness funding requests for the third batch of programming countries for consideration by the Steering Committee through an intercessional decision-making process by 19th September for the announcement at the UN Climate Ambition Summit.

- the Implementing Entities, SOFF peer advisors, SOFF Advisory Board members, and the SOFF Secretariat to ensure that the Early Warnings for All initial priority countries take full advantage of SOFF to leverage additional resources to strengthen the whole early warnings value chain.

- the SOFF Secretariat to prepare an analysis of projected available funds and funding requirements across the SOFF portfolio to inform future programming decisions and present this analysis at the sixth Steering Committee meeting

Table of contents

1. SOFF Programming approach

1.1. SOFF work programme

At its first meeting, the Steering Committee adopted the preliminary SOFF work programme (Table 1), which articulates how SOFF will deliver support to beneficiary countries in terms of the planned allocation of resources for the SOFF First Implementation Period from July 2022 to June 2025 (Decision 1.6). The table below presents a summary of the SOFF work programme for 2022-2025 in terms of targets.

Table 1. SOFF Work Programme

Phase		Target[1]			Total
		Y1	Y2	Y3	
Readiness phase		15 countries	20 countries	20 countries	55 countries
Investment phase			15 countries	20 countries	35 countries
Compliance phase	GBON data internationally shared and results-based finance provided			Up to 150 stations	Up to 150 stations
	On-demand advisory services				10 countries
	SOFF impact report[2]				2 reports

1.2. Expanding SOFF support to all UN Early Warnings for All (EW4All) initial priority countries

The EW4All Initiative identified 30 countries as its initial priority group. As a foundational element and delivery vehicle of EW4All, it is critical that SOFF programming be aligned with the overall EW4All approach. Of the 30 priority countries, SOFF has already programmed 19 in the first and second batch. The proposed countries for the third batch (see Section 2.1) include the remaining 11 countries.

The third batch programming proposal includes Small Island Developing States (SIDS) in the Caribbean and Indian Ocean. This responds to two requests: (i) the outcomes of the SOFF Caribbean Programming workshop held in Jamaica on 8-9 February 2023, where countries requested a SOFF Caribbean regional programme; and (ii) a request from the Indian Ocean countries to access SOFF support to close remaining gaps and ensure the sustainability of ongoing investments supported by CREWS and the Green Climate Fund. This batch also includes two non-SIDS-LDC countries, i.e., Guatemala and Tajikistan.

[1] The countries' targets for the Readiness and Investment phase refers to the number of countries with funding requests approved and resources committed.
[2] https://www.un.org/africarenewal/magazine/april-2023/fast-tracking-global-early-warnings-systems

If the proposed third batch is approved, SOFF will support 62 countries. This includes Sudan, where the preparation of the Readiness phase funding request was put on hold due to the political situation in the country.

This proposed expansion, along with the SOFF Fourth Steering Committee Decision 4.4 on accelerated SOFF implementation, responds to the demands to increase the level of ambition and accelerate the delivery of SOFF support in the context of the EW4All Initiative as well as the need for an overhauled climate finance architecture (see Decision 5.5).

2. Programming criteria

All programming proposals are based on the SOFF programming criteria, as per the Operational Manual. Based on these criteria and the information provided by the beneficiary countries, WMO Technical Authority, peer advisors and Implementing Entities, the SOFF Secretariat prepared the proposal for the third batch of countries for the Steering Committee's consideration and decision.

1. **Close the most significant data gaps:** Emphasis on geographic areas with the poorest observational coverage, where strengthening the observing network would yield the largest results regarding the quality of numerical weather prediction products
2. **Target "easy fixes":** Countries where through relatively small interventions, stations and related infrastructure could be fixed to start quickly delivering the data into the global system per GBON regulations
3. **Maximize delivery capacity:** Countries where IEs and peer advisors can operate and deliver SOFF support efficiently and effectively
4. **Create leverage:** Opportunities for complementarity of SOFF with larger operations under implementation or preparation by the IEs and other funds, including by the Advisory Board Members
5. **Sub-regional gains:** Opportunities to create economies of scale and optimize the design of the observing networks through multi-country/sub-regional implementation
6. **Ensure country balance:** Balanced support among Small Island Developing States (SIDS) and Least Developed Countries (LDCs) and across regions, including Fragile and Conflict-affected States (FCS).

Section 3 presents how the SOFF programming criteria were considered for the SOFF programming proposal for the third batch.

3. SOFF programming proposal: Third batch

Table 2 below illustrates the 22 countries proposed for the third batch of SOFF programming.

Table 2. Proposed SOFF third batch programming

Region	Country	EW4All
Africa and Indian Ocean	1. Comoros	Y
	2. Djibouti	Y
	3. Mauritius	Y
	4. Niger	Y
	5. Seychelles	
	6. Somalia	Y
Asia	7. Bangladesh	Y
	8. Tajikistan	Y
Latin America and the Caribbean	9. Antigua and Barbuda	Y
	10. Bahamas	
	11. Barbados	Y
	12. Cuba	
	13. Dominica	
	14. Dominican Republic	
	15. Guatemala	Y
	16. Haiti	Y
	17. Jamaica	
	18. Saint Kitts and Nevis	
	19. St Lucia	
	20. St Vincent and Grenadines	
	21. Suriname	
	22. Trinidad and Tobago	

4. Considerations on SOFF programming criteria

4.1. Close most significant data gaps

The programming proposal is driven by the goal of maximizing the critical input from observations to the Numerical Weather Prediction (NWP) models. Determining which observations have the highest priority and largest impact on NWP is not a simple process.

However, there are a set of basic principles to try to ensure the largest impact in NWP from additional investments in observations. The SOFF Secretariat worked with WMO Technical Authority to explore the most significant opportunities[3] based on the initial estimations from

[3] The GBON gap analysis opportunities in this section focus on the GBON gap in SIDS and LDCs given the relevance and nature of SOFF support in these countries. The third batch includes two countries that do not belong to this category, Guatemala and Tajikistan.

the WMO GBON Global Gap Analysis undertaken in January 2022[4] and guided by the principles described below.

Highest priority to areas from which few or no observations are currently available, addressing the biggest consistent data gaps. Getting a given country from 0 to 20% GBON compliance is likely to have a higher impact than getting its neighbor from 80% to 100%. Half of the proposed third-batch countries are missing 100% of the GBON-required surface stations, and the large majority of the third batch countries are missing nearly 100% of their GBON-required upper air stations of high importance for NWP (see Figure 1). The third batch focuses on SIDS in the Caribbean and Indian Ocean but also makes progress in Africa, the region with the largest GBON gap. This batch includes Niger and Somalia, countries with relatively large geographic areas, both missing 100% of the required surface and upper-air GBON stations and located in under-observed areas in Africa.

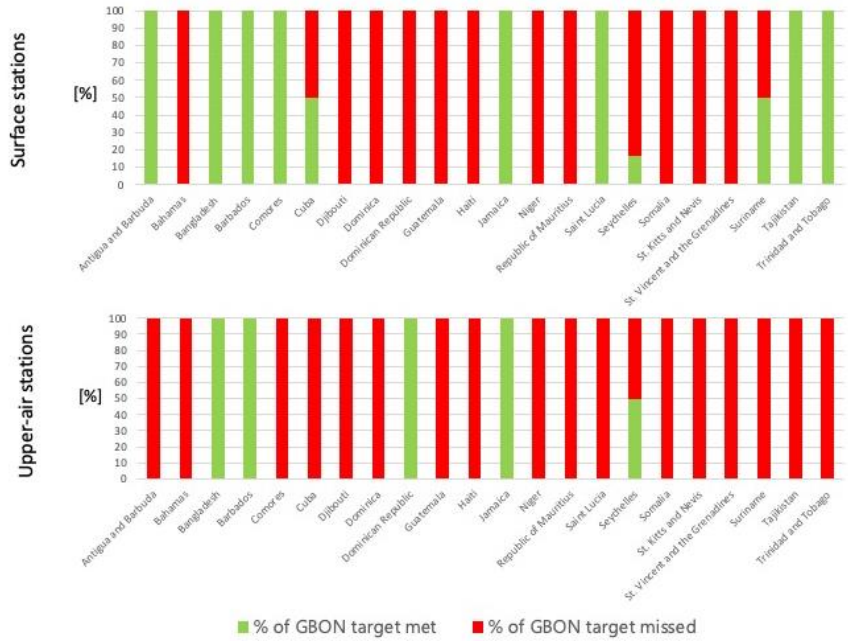


Figure 1. GBON gap per SOFF third batch countries against 2022 baseline of GBON Global Gap Analysis (as of January 2022).

Bangladesh, Barbados and Jamaica are GBON-compliant according to the WMO GBON Global Gap Analysis. Barbados and Bangladesh are part of the EW4All Initiative priority countries and are included in this batch to ensure that through the SOFF Readiness phase a detailed GBON assessment as well as a Country Hydromet Diagnostics is undertaken to identify country gaps and investment needs in order to ensure effective implementation of the EW4A initiative. Jamaica and Barbados are part of the SOFF Caribbean Regional request, and as part of the

[4] The WMO GBON Global Gap Analysis was conducted with the rationale for classifying stations as reporting based on the WIGOS Data Quality Monitoring System (WDQMS) for January 2022. Stations that were either green (GBON compliant), or orange ("potentially GBON compliant") on at least 60% of days, are considered as reporting. Other listed stations are counted as having the possibility to be improved. The WMO as Technical Authority will run a new June 2023 global gap analysis, using now-adopted GBON station compliance criteria, as a new baseline for SOFF, to be adopted by the Steering Committee later.

SOFF Readiness phase an assessment is undertaken on how these countries could contribute to a coordinated and standardized implementation of GBON in the Caribbean.

Upper air observations have a higher NWP impact than surface observations. Most countries proposed in the third batch are SIDS in the Caribbean and the Indian Ocean. Upper-air observations from these areas are essential for NWP models. With this batch, almost all SOFF-eligible SIDS will be receiving SOFF support. Most SIDS in the Caribbean and the Indian Ocean in the third batch are missing 100% of the upper-air GBON-required stations.

If this third batch is adopted, the 62 countries included in SOFF portfolio represent all the GBON gap for upper-air stations in SIDS and LDCs in the Pacific, Latin American and the Caribbean and above 70% of the upper-air GBON gap in Africa and close to 50% of the upper-air GBON gap in Asia (see Figure 2).

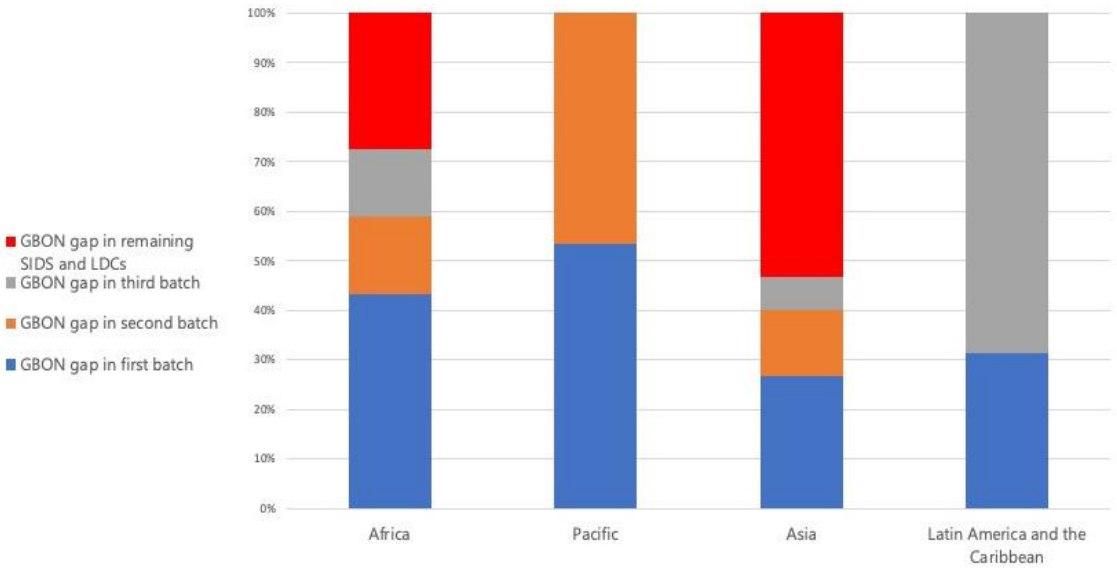


Figure 2. GBON gap percentages of upper-air stations in SIDS and LDCs and per region and the respective share of the SOFF batches according to the WMO GBON Global Gap Analysis (as of January 2022). Source: WMO Secretariat and SOFF Secretariat.

Surface observations also have applications beyond NWP and are essential for forecast verification. With the proposed third batch, the total 62 SOFF-supported countries represent all the GBON gap for surface-based stations in SIDS and LDCs in the Pacific, Latin American, and the Caribbean and above 70% of the GBON gap in Africa and well above 20% of the GBON gap in Asia (see Figure 3).

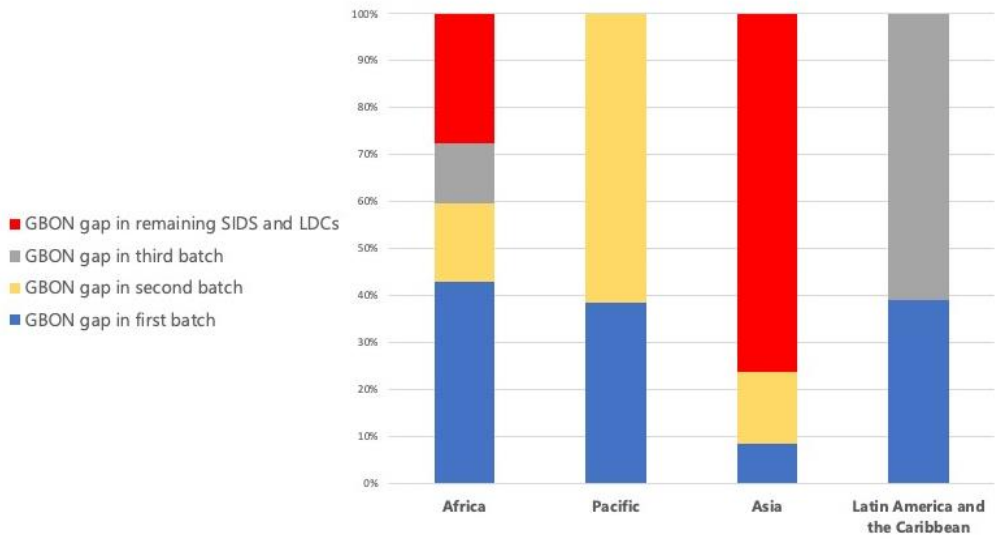


Figure 3. GBON gap percentages of surface stations in SIDS and LDCs, per region and the respective share of SOFF batches according to GBON Global Gap Analysis (as of January 2022). Source: WMO Secretariat and SOFF Secretariat.

Regionally coordinated action can have substantial benefits in terms of better NWP products and efficiencies due to the coordination of network design and maintenance.

The proposed additional countries allow SOFF to advance rapidly toward sub-regional implementation (Figure 4). With the approval of the third batch, SOFF Caribbean and Indian Ocean Programmes would be in place and ready for standardized and coordinated implementation of GBON. The East and Central Africa and Africa Atlantic SIDS sub-regional SOFF programming is nearly completed, and these countries will also have the opportunity to optimize the regional design of the networks and collaborate.

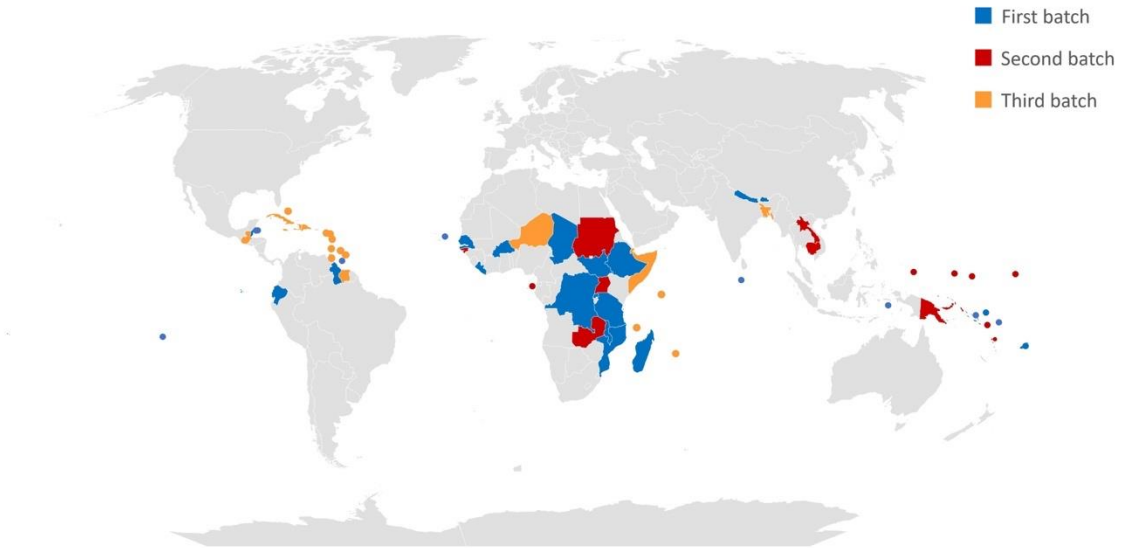


Figure 4. Geographic distribution of SOFF three batches. Dots represent countries and not stations. Source: SOFF Secretariat and WMO Secretariat.

Based on these principles and the WMO GBON Global Gap Analysis from January 2022, the countries included in this proposal reflect a geographic coverage focused on the areas with the largest data gaps, in particular for upper air observations; opportunities to rehabilitate or improve existent upper air and surface stations; and a high potential for regionally coordinated action to optimize observing network design.

4.2. Target "easy fixes"

A wealth of observation infrastructure is already installed in several countries. However, due to resources and capacity constraints, much of this infrastructure is currently failing to generate and internationally share GBON data. SOFF aims to close the largest data gaps through new infrastructure but also by rehabilitating and improving infrastructure previously supported by other partners in projects with limited lifetimes.

According to the WMO GBON Gap Analysis, about 30% of upper-air stations and 66% of surface stations needed for the countries in the third batch are existing stations that could be improved or rehabilitated (see Figure 5). The specific types of improvements needed will depend on each country. These needs will be detailed in the national GBON Gap Analysis and GBON National Contribution Plan as part of the SOFF Readiness phase. It is expected that in several cases, the improvements are related to increasing the reporting frequency, while in other cases, it will require more complex actions such as installation or upgrade of telecommunication equipment; software upgrade to convert data to standard WMO formats; providing consumables (radiosondes, balloons); repair/procure hydrogen generators; staff training; transition from manual to automated stations; and institutional capacity building.

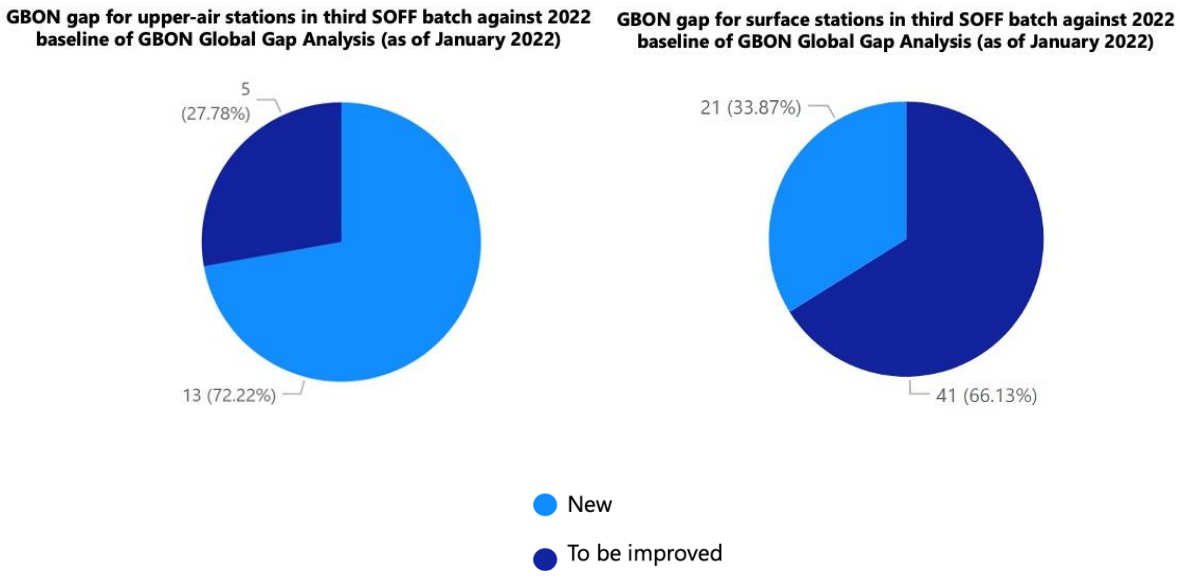


Figure 5. Distribution of surface and upper-air new and to be improved stations needed to close the GBON gap in the proposed third batch countries. Estimations based on the WMO GBON Global Gap Analysis results as of January 2022. Source: SOFF Secretariat, WMO Global GBON Gap Analysis.

4.3. Maximize delivery capacity

The proposal is based on the indication of availability and readiness of peer advisors and SOFF Implementing Entities to support beneficiary countries. For all regions, there are peer advisors and Implementing Entities with a track record and ongoing activities in the specific countries. Some examples are provided in the next section.

4.4. Create leverage

SOFF support will be aligned with larger operations of the SOFF Implementing Entities and other partners. This proposal reflects consultations with the major climate and environment funds, the Climate Risk and Early Warning Systems (CREWS) Initiative and other development partners on their current portfolios and pipelines of activities of relevance for SOFF. The following aspects were considered.

- **Opportunities from 'low hanging fruit**: In many countries, previous investments in observations have been made, but data are not internationally exchanged. SOFF is designed to provide specialized long-term technical and financial support for GBON observations that other funds cannot offer. For instance, a GCF-financed project in the Indian Ocean implemented by Agence Française de Développement (AFD) supports Comoros, Madagascar, Mauritius, and Seychelles to implement a multi-hazard early warning system and increase capacity in the region to manage risks and impacts of climate-induced disasters. The project intends to support the implementation of GBON and counts on SOFF support to close the remaining GBON gap and ensure the sustainability of the activities.
- **Complementarity:** Nearly all the proposed countries for the third batch have CREWS projects ongoing or in the pipeline. For instance, in the Caribbean, CREWS has just closed a Caribbean regional project to strengthen hydro-meteorological early warning services in the CARICOM member countries, including Barbados, Antigua and Barbuda, Jamaica, Sant Kitts and Nevis, St Lucia, Bahamas, Dominica, St Vincent and Grenadines, Suriname and Trinidad and Tobago. Additional funding in the region is under consideration and subject to approval of the CREWS Steering Committee in June 2023. CREWS is also supporting Haiti to ensure sustainable operability and the implementation of an efficient hydrometeorological warning system. In the Horn of Africa, a CREWS project including Ethiopia, Sudan and Somalia is focused on enhancing the capacities for regional and national entities to produce and use climate, weather, and hydrological services, including early warning systems. In the Indian Ocean, a CREWS project complementary to the GCF-funded programme implemented by AFD is focusing on supporting regional cooperation to strengthen seamless operational forecasting and multi hazard early warning systems at national level in the South-West Indian Ocean including Comoros, Mauritius and Seychelles.

4.5. Regional and sub-regional gains

SOFF promotes regional and sub-regional approaches to programming and to optimize implementation. The table below summarizes the regional configuration of the SOFF portfolio for the three batches of programmed countries.

Table 3. Regional and sub-regional configuration of the SOFF portfolio (in bold the proposed 22 countries for the third batch)

Region	First, Second, Third batch countries	
Africa	West Africa	Burkina Faso, Senegal, Liberia, **Niger**
	Central and East Africa	Chad, Ethiopia, United Republic of Tanzania, Democratic Republic of Congo, South Sudan, Rwanda, Uganda, Sudan[5]
	Southern Africa	Madagascar, Malawi, Mozambique, Zambia
	Atlantic	Cabo Verde, Sao Tome and Principe, Guinea-Bissau
	Indian Ocean	**Djibouti, Somalia, Comoros, Mauritius, Seychelles**
Asia	Bhutan, Maldives, Nepal, Timor-Leste, Cambodia, Lao People's Democratic Republic, **Bangladesh, Tajikistan**	
Pacific	Fiji, Kiribati, Samoa, Solomon Islands, Tuvalu, Federated States of Micronesia, Marshall Islands, Nauru, Palau, Papua New Guinea, Tonga, Vanuatu	
Latin America and the Caribbean	Central and South America	Ecuador, **Guatemala**
	Caribbean	Belize, Grenada, Guyana, **Haiti, Barbados, Antigua and Barbuda, Bahamas, Cuba, Dominica, Dominican Republic, Jamaica, Sant Kitts and Nevis, St Lucia, St Vincent and Grenadines, Suriname, Trinidad and Tobago**

The Caribbean and Indian Ocean programme will allow countries to proceed to SOFF implementation in parallel, ensuring economies of scale and an optimal design of the observing networks. The benefits of regional and sub-regional implementation are further explained below:

- **GBON regional coordinated implementation:** Investments in observational infrastructure require coordination between neighboring countries, e.g., on the placement of upper air and surface stations to ensure cross-border efficiency; as well as the involvement of entities outside the countries such as Regional

[5] Sudan was programmed as part of the second batch but SOFF activities were put on hold until stability is restored and the international community agrees to restart operations in the country.

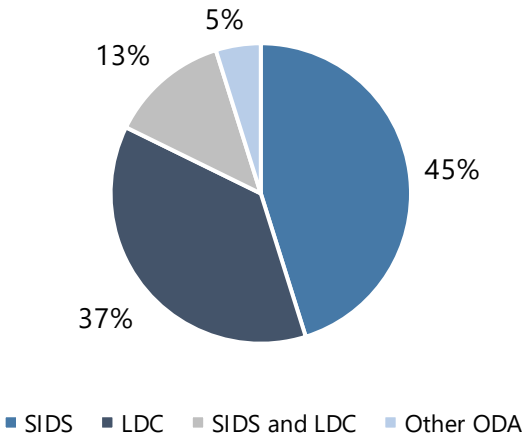
Telecommunication Hubs, Global Information System Centres and Regional WMO Integrated Global Observing Systems (WIGOS) Centres.

- **Regional procurement and operation and maintenance:** the Caribbean and Indian Ocean Programmes would facilitate the implementation of GBON with a standardized approach for procurement of equipment and technology, better spare parts availability, and economy of scale for GBON implementation. They allow for the possibility of exploring options for regional operation and maintenance practices and collaboration. For instance, in the Caribbean, countries can tap into the support provided by the Caribbean Meteorological Organization (CMO), the Caribbean Institute for Meteorology and Hydrology (CIMH), and the Caribbean Community Climate Change Centre (CCCCC). CMO and CIMH provide regional support for instruments' calibrations as well as operations and maintenance. In the Indian Ocean, countries receive support from the Indian Ocean Commission as well as from regional institutions that strive to ensure economies of scale and optimal coordination at the regional scale.
- **Regional fora for learning exchange:** interaction and consultations among SOFF partners are facilitated at the regional level. SOFF learning and evaluation, WMO technical training related to GBON implementation, and other consultations will strive to maximize regional collaboration and coordination.

4.6. Country balance

The 22 countries proposed for the third batch include 20 Small Island Developing States (SIDS) and Least Developed Countries (LDCs) and 2 ODA recipient countries. 4 countries are classified as Fragile Conflict-afflicted States (FCSs).

Balance of SIDS, LDCs and other ODA Recipients across the three batches



Regional Distribution of all three batches programming countries