

30 March 2023

Decision item 4.4

Adoption of Accelerated SOFF
implementation and second batch of
SOFF programming countries

Fourth Steering Committee meeting

Systematic Observations
Financing Facility

**Weather
and climate
data for
resilience**





Decision item 4.4: Adoption of Accelerated SOFF implementation and second batch of SOFF programming countries

The SOFF Steering Committee:

Endorses the proposal to advance the programming decisions for all initial 55 countries to the 4th and 5th Steering Committee meetings in order to speed up SOFF implementation as a foundational element and delivery mechanism of the UN Early Warning for All initiative.

Adopts the second batch of SOFF programming countries.

Requests the SOFF Secretariat to conduct the necessary actions following the process stated in the SOFF Operational Manual

- to coordinate the preparation of Readiness funding requests for the second batch of programming countries for consideration at the 5th Steering Committee meeting
- to coordinate the preparation of the third batch of SOFF programming countries for consideration at the 5th Steering Committee meeting

Accelerated SOFF implementation and second batch of SOFF programming countries

1. SOFF Programming approach

1.1. SOFF work programme – raising ambition

At its first meeting, the Steering Committee adopted the preliminary SOFF work programme, which articulates how SOFF will deliver support to beneficiary countries in terms of 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 2022-2025 in terms of targets.

Phase		Countries target ¹			Total
		Y1	Y2	Y3	
Readiness phase		15	20	20	55
Investment phase			15	20	35
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				3 reports

At its third meeting, the Steering Committee adopted the first batch of programming countries ([Decision 3.4](#)). The approach underlining the programming decision reflected an effort to increase the level of ambition and accelerate the delivery of SOFF support in line with the increasing momentum of the UN Early Warnings for All Initiative. The Steering Committee decided that the programming decisions for all the 55 target countries for Readiness phase support would be made by October 2023 rather than spread decisions across the three years of the First Implementation Period.

However, given the evolving ambition for the implementation of the UN Early Warning for All Initiative, it is proposed to advance all 55 countries' programming decisions to June 2023. This responds to a request from the Special Adviser to the Secretary-General and Assistant Secretary-General for Climate Action to increase SOFF ambition and consider further

¹ The countries' targets for the Readiness and Investment phase refers to the number of countries with funding requests approved and resources committed.

² Report to assess the impact of observations in the Numerical Weather Prediction models to be prepared by WMO in collaboration with selected Global Producing Centers.

accelerated implementation. SOFF is a fundamental element of the Early Warning for All Initiative – warnings can only be as good as the data they are built upon.

The proposal to program 55 countries by June 2023 is also based on the availability of SOFF UNMPTF financial resources and the readiness and ability of peer advisors and SOFF Implementing Entities to deliver in these countries.

This programming proposal reflects the request for accelerated implementation and the outcomes of consultations with SOFF partners and beneficiary countries, including the SOFF Pacific Programming workshop in Fiji held 13 October 2022 and SOFF engagement with African countries in the context of the WMO Africa Regional Association conference that took place 13 to 17 February 2023 in Addis Ababa.

1.2. Programming criteria

The programming proposal is based on the programming criteria presented below, which were adopted at the first Steering Committee meeting ([Decision 1.4](#)). Based on these criteria and the information provided by the beneficiary countries, WMO Technical Authority, peer advisors and Implementing Entities, the SOFF Secretariat prepared this proposal for the second 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 the 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 2.2 presents how the SOFF programming criteria were considered for the preparation of the SOFF programming proposal for the second batch.

2. SOFF programming proposal: Second batch

2.1. Proposed countries

The table below illustrates the 14 countries proposed for the second batch of SOFF programming for consideration of the 4th SOFF Steering Committee.

Regions	Countries
Pacific	Federated States of Micronesia, Marshall Islands, Nauru, Palau, Papua New Guinea, Tonga, Vanuatu
Africa	Sao Tome and Principe, Guinea-Bissau, Zambia, Uganda, Sudan
Asia	Cambodia, Lao People's Democratic Republic

2.2. Considerations on SOFF programming criteria

2.2.1. 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, based on the initial estimations from the WMO GBON Global Gap Analysis undertaken in January 2022, the most significant opportunities following these principles:

- **General principle:** 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 neighbour from 80% to 100%.

According to the WMO GBON Global Gap Analysis 2022, the Pacific and Sub-Saharan Africa are areas with significant data gaps. With the additional 14 proposed countries, SOFF's first and second batches cover all the eligible countries in the Pacific and support many of the countries with the largest gaps in Africa and Asia. The next challenge is to bring the remaining countries with the largest GBON gaps in Africa, Asia, the Caribbean, and Latin America into SOFF support, acknowledging complex operational and political situations in some of these countries.

The vast majority of the first and second-batch countries are missing nearly 100% of both the GBON-required upper-air and surface stations (see figure 1). Some countries meet the surface stations GBON targets while missing upper air observations of high importance for NWP.

GBON gap per SOFF first and second batch countries against 2022 baseline of GBON Global Gap Analysis (as of January 2022)



Figure 1. Percentage of GBON target met by the SOFF 40 countries included in the first and second batch, according to the WMO GBON Global Gap Analysis, 2022. Source: WMO Secretariat and SOFF Secretariat.

- **Upper air observations have a higher NWP impact than surface observations.** In particular, as per the current observing coverage, radiosondes (upper-air stations) in the Pacific have an over-proportionally high effect among all observations.

The second batch proposal focuses on getting all SOFF-eligible Pacific SIDS programmed to address this critical need for the NWP. The first and second batches also aim at making significant progress in Africa by covering close to 60% of the region's GBON upper-air gap, including in countries like the Democratic Republic of Congo, Sudan, South Sudan and Chad, which face large upper-air gaps and represent a big GBON gap in Central and East Africa (see figure 2). The 40 countries in the first and second batches represent nearly 60% of the GBON upper-air stations gaps in SIDS and LDCs (see figure 3).

GBON gap of upper-air stations in SIDS and LDCs and per region and the respective share of SOFF first and second batch

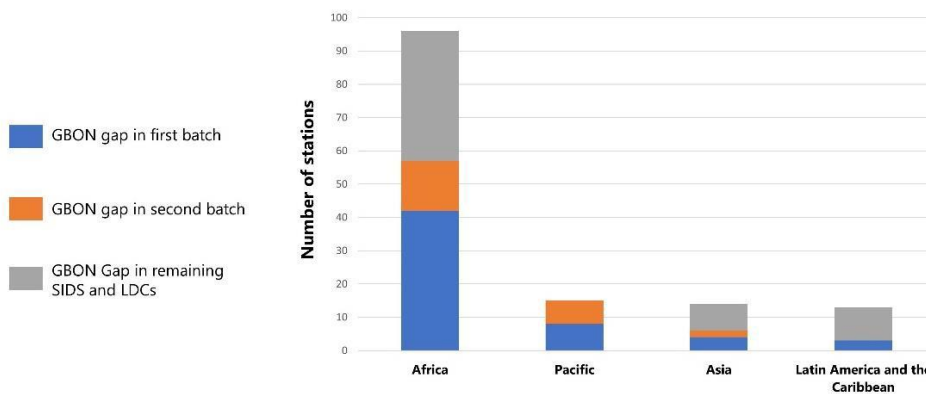


Figure 2. GBON Gap for upper-air stations in SIDS and LDCs per region, and in SOFF first and second batch programmed countries according to the WMO GBON Global Gap Analysis as of January 2022. Ecuador is part of the first batch but it is not considered here since this graph focuses only on the gaps for SIDS and LDCs. Source: WMO Secretariat and SOFF Secretariat.

GBON gap for upper-air and surface stations in SIDS and LDCs and the respective share (%) in the SOFF first and the second batch

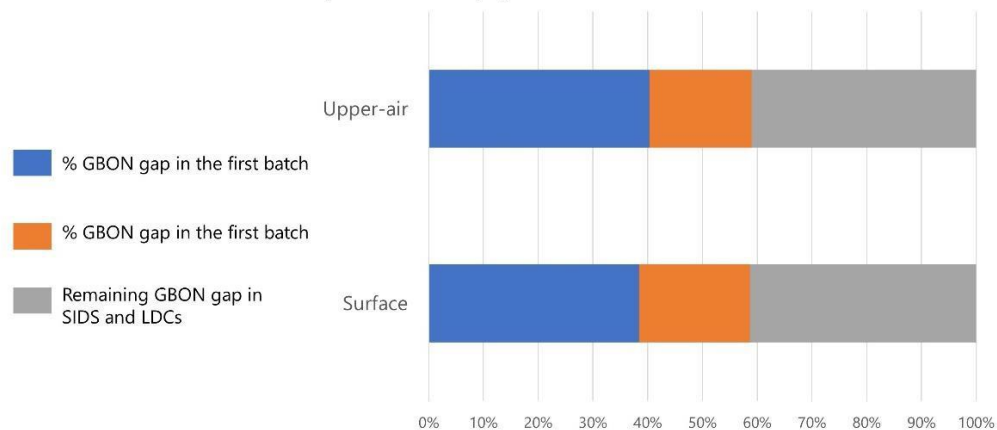


Figure 3. GBON gap for upper air stations in SIDS and LDCs and share (in percentage) of SOFF first and second batch according to the WMO GBON Global Gap Analysis as of January 2022. Ecuador is part of the first batch but it is not considered here since this graph focuses only on the gaps for SIDS and LDCs. Source: WMO Secretariat and SOFF Secretariat.

- Surface observations also have applications beyond NWP** and are essential for forecast verification. The GBON surface observations gap in the SOFF first and second batch cover the top 20 countries with the largest GBON surface stations gap. The 40 countries in the first and second batches represent nearly 60% of the total GBON surface stations gap in SIDS and LDCs (see figure 3).
- Regionally coordinated action** can have substantial benefits in terms of better NWP products and efficiencies due to coordination of network design and maintenance. The proposed additional countries allow SOFF to advance rapidly towards sub-regional implementation. With the approval of the second batch, the SOFF Pacific Programme would be fully in place and ready for standardized and coordinated implementation of GBON in this region. 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 for regional design of the networks and collaborate.

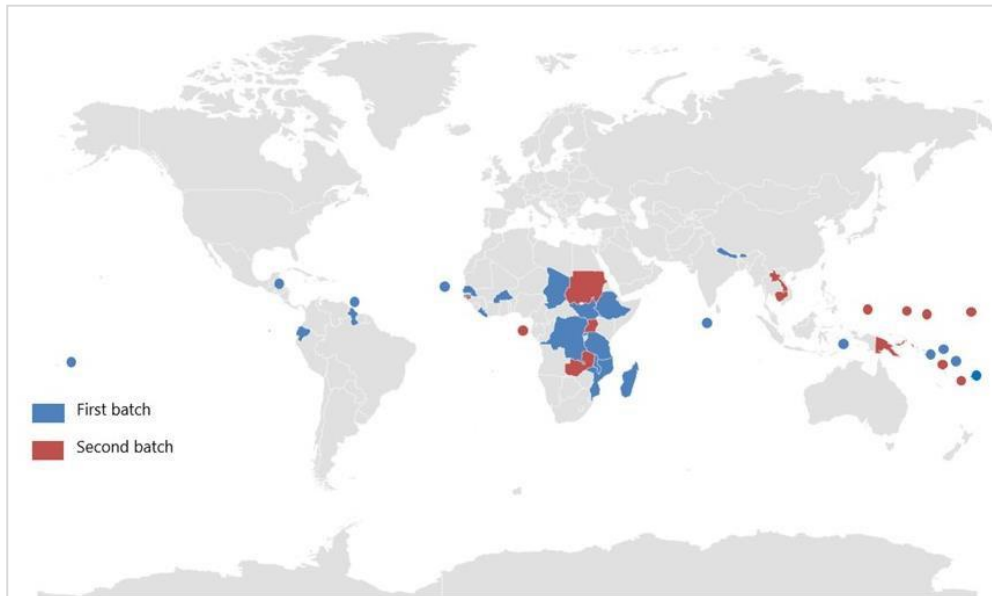


Figure 4. Geographic distribution of first and second batches of SOFF programming. Dots represent countries and not stations. Source: SOFF Secretariat.

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.

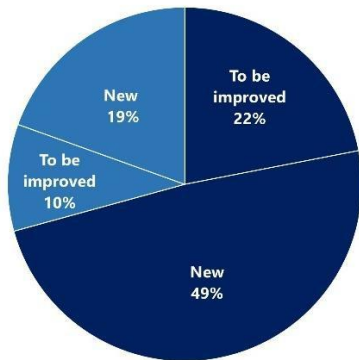
222 Target "easy fixes"

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 the 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.

About 30% of the upper-air stations and close to 70% of surface stations needed for the countries in the first and second batch are existing stations that could be improved or rehabilitated (see figure 5).

The specific types of improvements needed will depend on each country and will be detailed in the national GBON gap analysis as part of the SOFF Readiness phase. In several cases, the improvements are related to increasing the reporting frequency, while in other cases, it requires 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.

GBON gap for upper-air stations in first and second batch



GBON gap for surface stations in first and second batch

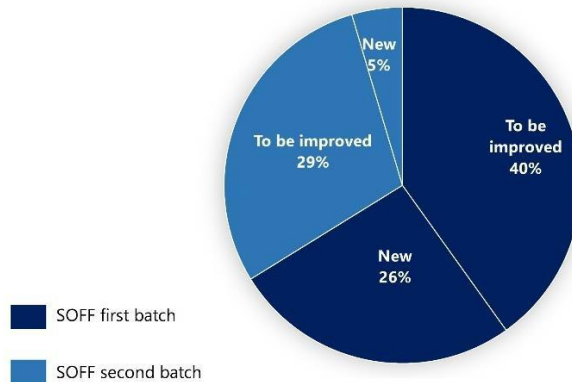


Figure 5. Distribution of surface and upper-air new and to be improved stations needed to close the GBON gap in the proposed second batch countries. Estimations based on the WMO GBON Global Gap Analysis results as of January 2022. Source: SOFF Secretariat, WMO Global GBON Gap Analysis.

2.2.3 Maximize delivery capacity

The proposal is based on the indication of the 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.

2.2.4 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 fruits':** 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, the Green Climate Fund (GCF) and other partners have been supporting observing networks in SIDS and LDCs, including a GCF-UNEP programme to boost the observational network in five Pacific SIDS (four of which will be supported by SOFF). These countries rely on SOFF support to be able to operate and maintain the new networks in the long-term.
- **Complementarity:** All proposed countries in the second batch had CREWS investments in the past or are part of the CREWS pipeline. CREWS has several regional projects in Africa that include the proposed countries (Central Africa, West Africa, East Africa, Horn of Africa) and a project in Zambia in the pipeline. Similarly, a CREWS drought monitoring project for the 2021-2025 period encompasses both Cambodia and Lao People's Democratic

Republic. In the Pacific, CREWS is implementing a regional project to enhance the capacity of the national hydrometeorological agencies to provide impact-based forecasts and to enhance the effectiveness of Pacific Islands and Regional Early Warning Systems. This regional project includes all the proposed Pacific islands both in the first and second SOFF batch of programming countries, except Papua New Guinea, which has a national CREWS project. Both the CREWS regional Pacific and Papua New Guinea projects are expected to request additional funding for the extension of their operations, complementing SOFF support. UNEP is considering to develop a GCF proposal for climate services and early warning systems for the Atlantic SIDS. Complementing Cabo Verde, which is part of the SOFF first batch programming, SOFF support for Guinea Bissau and Sao Tome Principe could provide the foundation for such a larger UNEP-GCF initiative, ensuring that basic observations are 'up-and-running' by the start of the GCF program implementation. The Australian Bureau of Meteorology is engaged in the Climate and Oceans Support Program (COSPPAC) and the Weather-Ready Pacific Programme, supporting NHMSs to enhance their hydro-meteorological, ocean, and other related environmental infrastructure networks and systems. A joint proposal to the Dutch Ministry of Foreign Affairs led by IFRC, UNDRR, WMO and SOFF includes a SOFF component to provide support to four African countries, two of which were programmed in the first batch (South Sudan, Ethiopia) and two are proposed in this batch (Sudan, Uganda). This proposal constitutes a five-year support program strengthening all parts of the value chain from observations to humanitarian action.

2.2.5 Regional and sub-regional gains

Sub-regional approaches to SOFF programming and implementation are favored wherever possible. This programming proposal includes seven Pacific countries, which, combined with the five Pacific countries previously included in the first batch of programming, complete the SOFF Pacific Programme.

The SOFF Pacific Programme is the result of a SOFF programming workshop where Pacific countries urged SOFF to speedily advance with the creation of a SOFF Pacific Programme. Having all Pacific countries ready for SOFF implementation in parallel is crucial to ensure economies of scale and optimal design of the observing networks. If the countries proposed for the second batch are approved, all eligible Pacific SIDS and LDCs will be supported by SOFF.

Multi-country and regional programs allow to optimize SOFF implementation and take advantage of the following:

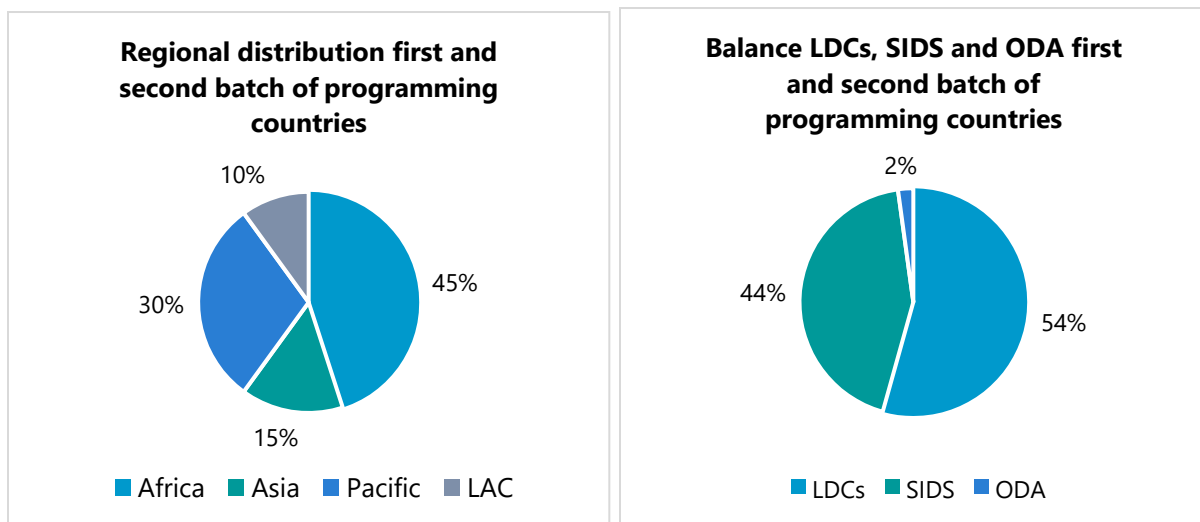
- **GBON regional coordinated implementation:** Investments in observational infrastructure require coordination between neighbouring countries e.g. on the placement of upper air and surface stations to ensure cross-border efficiency; as well as the involvement of entities outside the countries such as Regional Telecommunication Hubs, Global Information System Centres and Regional WMO Integrated Global Observing Systems (WIGOS) Centres. For instance, in the Pacific, countries can tap into the support provided by the Pacific Meteorological Council and Pacific Islands Communication and Infrastructure Panel.

- **Regional procurement and operation and maintenance:** the Pacific and Atlantic SIDS Programs would allow the implementation of GBON with a standardized approach for bulk 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.
- **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.

The SOFF Secretariat is already exploring with beneficiary countries and partners the subsequent batches of SOFF programming. The third batch of countries for consideration by the Steering Committee could include a Caribbean regional programme as suggested by countries at the SOFF regional programming workshop in Jamaica that took place 8-9 February 2023.

2.2.6 Country balance

The **14 countries** proposed for the second batch include **only Small Island Developing States (SIDS) and Least Developed Countries (LDCs)**. **5 of the 14 countries** are classified as Fragile Conflict-afflicted States (**FCSs**).



3. Looking ahead

According to the proposed accelerated implementation approach, the table below provides an overview of the next Steering Committee meetings and the respective programming decisions.

To advance programming decisions, the 15 remaining countries for the third batch of SOFF programming would be considered at the 5th Steering Committee meeting. The first investment Phase funding requests are expected to be considered by the 6th Steering Committee meeting.

Date	Meeting	Decisions
30 March 2023	4th Steering Committee	<ul style="list-style-type: none"> • Approval of first batch of readiness funding requests • Programming decision on second batch of countries to prepare readiness funding requests
20 - 21 June 2023	5th Steering Committee	<ul style="list-style-type: none"> • Approval of second batch of readiness funding requests • Programming decisions on third batch of countries to prepare readiness funding requests
27 November 2023*	6th Steering Committee	<ul style="list-style-type: none"> • Approval of first batch of investment funding requests • Approval of third batch of readiness funding requests

*Subject to Steering Committee adoption of Decision 4.5