CARIBBEAN METEOROLOGICAL ORGANIZATION

ANNUAL MEETING OF DIRECTORS OF METEOROLOGICAL SERVICES **Doc. 5**
George Town, CAYMAN ISLANDS, 23 NOVEMBER 2022

OUTCOME/HIGHLIGHTS FROM MEETINGS OF WMO EXECUTIVE COUNCIL, TECHNICAL COMMISSIONS, OTHER SUB-COMMITTEES AND EXPERT TEAMS
(Submitted by the Coordinating Director)

SUMMARY

1. The *World Meteorological Organization* (WMO) Seventy-Fifth session of the Executive Council (EC-75) was held in a hybrid format from 20-24 June 2022 in Geneva, Switzerland, while the second session of the *Commission for Weather, Climate, Water and Related Environmental Services and Application*s (SERCOM-2) and the *Commission for Observation, Infrastructure and Information Systems* (INFCOM-2) were held in Geneva, Switzerland, as in-person meetings with online participation, from 17 to 21 October 2022 and 24 to 28 October 2022, respectively.

2. The following are key summary points informing of the outcomes and highlights from these meetings that are likely to impact operations of National Meteorological and Hydrological Services for the foreseeable future.

A. Implementation of Global Basic Observing Network (GBON)

3. The Meeting is asked to recall that at the 2021 Extraordinary World Meteorological Congress (Cg-Ext 2021), the WMO adopted Resolution 2 (Cg-Ext 2021) - Amendments to the Technical Regulations related to the establishment of the Global Basic Observing Network. The Meeting is reminded of the discussion on the WMO Global Basic Observing Network (GBON) during the 2021 Annual Meeting of Directors of Meteorological Services (**DMS2021 Doc 4(b),** Guyana, Virtual Platform), where it was highlighted that GBON is a new observing network, which introduces more stringent requirements that WMO Members **shall** meet. Further, the list of GBON stations is drawn from the list of all available stations in WIGOS as registered in OSCAR/Surface by the Members. Pursuant to Resolution 2 (Cg-Ext 2021), the WMO initiated the following GBON activity:

- GBON Implementation according to the Manual on the WMO Integrated Global Observing System (WMO-No. 1160), section 3.2.2 Global Basic Observing Network, with the Technical Regulations for GBON set to come into force on January 01, 2023.

4. To prepare for the GBON taking effect on 01 January 2023, INFCOM has developed a GBON Implementation Operating Plan, provided guidance materials for the initial composition of GBON, Members' GBON compliance and GBON global gap analysis. GBON implementation guidance materials can be found at **References to GBON material**. On September 08, 2022, WMO assigned stations for initial seeding to GBON in OSCAR/Surface with **"Pending Approval"** status, based on activity reporting stations depicted as green or orange on the WDQMS web tool. Members were asked to review the status of their station on the GBON Network using the WMO GBON web application at the GBON **Webtool**.

5. Members are required to prepare for the initial composition of GBON stations by taking the following actions:

- Conduct a national gap analysis against GBON requirements.
- Set national targets for GBON and develop a national GBON contribution plan.
- Nominate a National Focal Point (NFP) for OSCAR/Surface who has the authority to designate GBON stations.
- Consider the proposals of the WMO Secretariat on the initial seeding of GBON stations and have the NFP for OSCAR/Surface remove the assignment of such stations from GBON in OSCAR/Surface, if they did not agree. No action by the NFP before November 15, 2022, was understood as concurrence of the designation of a station as a GBON station. However, Members still have until mid-January 2023 to designate GBON stations.

6. WMO at its 19th Congress May 22 – June 02, 2023, is expected to adopt the initial composition of GBON. GBON compliance will come into effect after June 2023. It was agreed that for the initial phase of GBON, a subset of the compliance criteria would be used to assess station compliance.

B. Regional WIGOS Centre

7. WMO held a Regional WIGOS Centre (RWC) Global Workshop in Geneva in hybrid format, from 25 - 27 July 2022 with representatives from already established Regional WIGOS Centres (RWCs), Members that have expressed their interest in hosting RWCs, members of the Expert Team on WIGOS Tools (ET-WT), as well as, representatives of other WMO Centres and organizations that are relevant to RWCs functions. The workshop agreed on thirty-eight (38) recommendations with various levels of priority on both technical, as well as, procedural aspects of RWCs operations. Some of the recommendations are addressed to the National Meteorological and Hydrometeorological Services (NMHSs) themselves, while others are addressed to RWC-affiliated Members and others to the WMO Secretariat.

8. Critical to Members are the following recommendations from the workshop:

- WMO to improve the knowledge and information communication with Members and their NFPs on WIGOS and WDQMS in order to make sure NFPs are nominated and that the correct persons are sent to training courses related to WIGOS and the RWC;
- WMO to provide more training courses for Members to increase knowledge and experience in using the WIGOS tools through dedicated training material for Members;
- WMO to provide guidance related to WDQNS Incidence Management System at the national level; and,
- Schedule regular face-to-face meetings with NFPs for information sharing and increased engagement.

9. RA IV Infrastructure Committee agreed on an update of a RA IV WIGOS Centre Concept and a Roadmap for the establishment of the RA IV Regional WIGOS Center. The original Concept and Roadmap had been approved by the RA IV Management Group (MG) in January 2020. At the 31st meeting of the RA IV MG, held in hybrid mode on 22nd June 2022, the updated Concept and Roadmap for RA IV RWC were approved and the MG agreed to reactivate the implementation of the RA IV RWC.

10. Preliminary steps towards starting operations of the RWC involve engaging and enlisting Members NFPs focal points (WDQMS, WIGOS, and OSCAR) to become familiar with the existing guidance material, their roles, and with the RWC functional tools when established.

C. Action plan for "Early Warning for All"- mandate from United Nations Secretary-General

11. On March 23, 2022, World Meteorological Day 2022, the United Nations Secretary-General ***António Guterres*** announced that the United Nations will spearhead new action to ensure every

person on Earth is protected by early warning systems within five years. The Secretary-General called on the WMO to lead this effort and present an Action Plan to achieve this goal at the twenty-seventh session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC/COP27) in November 2022. On this basis, at its seventy-fifth session, the WMO Executive Council (EC 75) by Resolution 3-UN Early Warning/Adaptation Initiative:

- Requested the Services Commission, in consultation with other WMO bodies and with the support of the Secretariat, to develop an initial action plan to respond to the UN Early Warning/Climate Adaptation Initiative.

12. WMO noted that the "Early Warning for All Initiative" was an opportunity for all Members to reaffirm their roles as a single authoritative voice and delivery of early warning services as their core mandate. It further noted that all the Members, particularly those who are still struggling to establish effective end-to-end early warning services, should be fully engaged and consulted throughout the whole process of the development of actions. It also noted that this was an outstanding opportunity for WMO and its Members to leverage, scale up financing and accelerate current developments such as:

- Enhancing Global Basic Observational Network through the Systematic Observations Financing Facility (SOFF);
- Scaling up Multi-Hazard Early Warning Systems (MHEWS) through the CREWS initiative to bridge the capacity gap in life-saving EWS for vulnerable countries;
- MHEWS-related coordination developments, including the WMO GMAS framework strategy and implementation plan; and
- The global water information component and action plan through the Water and Climate Coalition.

D. *Systematic Observations Financing Facility (SOFF)*

13. Members will recall that the WMO adopted Resolution 3 (Cg-Ext 2021)- Establishment of the Systematic Observations Financing Facility (SOFF): Supporting Members in the implementation of the Global Basic Observing Network (GBON). SOFF is a dedicated funding mechanism established as the primary vehicle to provide the necessary financial and technical support for the sustained GBON implementation and compliance in Small Island Developing States (SIDS), and Least Developed Countries (LDCs). SOFF will provide long-term grant financing and technical assistance, using data exchange as a measure of success, towards addressing the long-standing problem of missing weather and climate observations from SIDS and LDCs.

14. SOFF support will be provided in three phases. In the Readiness phase, the country's hydrometeorological status will be assessed, the GBON gap defined and a plan developed to close the gap. The Investment phase enables countries to close the GBON investment and capacity gap. The Compliance phase supports sustained GBON compliance and enables access to improved weather forecasts and climate analysis products.

15. In its initial five-year implementation period, SOFF aims to support 65 SIDS and LDCs with technical assistance, investments, and open-ended results-based funding to achieve sustained GBON compliance. SOFF became operational and officially opened its doors to business with the first Steering Committee meeting on 30 June 2022 and it is expected that by the end of 2022, SOFF will be able to allocate resources to about 20 initial countries. During its initial three-year implementation period, SOFF will prioritize support to 55 SIDS and LDCs. the complete list of SOFF-eligible countries are provided in SOFF **Terms of Reference,** Annex 2 (dated October 2021).

E. WMO Integrated Processing and Prediction System (WIPPS), formerly GDPFS

16. INFCOM at its second session (24-28 October 2022) decided to adopt WMO Integrated Processing and Prediction System (WIPPS) as the new name and acronym of the future Global Data-processing and Forecasting System (GDPFS). The activities carried out under WIPPS are to ensure

that WMO Members have access to advanced Numerical Weather Prediction (NWP) products and services, which will enable them to meet the needs of a variety of users and for applications related to weather, climate, water, and environment.

17. The meeting is asked to recall Resolution 1 Cg-Ex (2021)-WMO Unified Policy for the International Exchange of Earth System Data-for all WMO domains and disciplines and covers Earth system data exchanged among Members. Pursuant to this resolution, the WMO requested INFCOM to implement the WMO Unified Data Policy. Under WIPPS (formerly GDPFS), World Meteorological Centres (WMCs) and Global Producing Centres (GPCs) have been providing an agreed set of NWP data and products, known as mandatory products, to WMO Members. INFCOM has recommended to Congress 19 the adoption of amendments to the Manual on the Global Data Processing and Forecasting System (WMO-No. 485) to bring it in alignment with WMO Unified Data Policy.

18. Under this recommendation, INFCOM proposes to redefine certain mandatory products for short to long-range numerical prediction as “core data” products to ensure commitment to the free and unrestricted exchange of data. INFCOM has developed a draft list of core data in weather and climate domains through dialogue among WMO members, Commissions, and World Meteorological Centres. INFCOM recommended the draft list of core data be included in the Manual on the GDPFS (WMO-No. 485) in alignment with the WMO Unified Data Policy.

F. WMO Information System 2.0 (WIS 2.0) Implementation

19. Members are asked to recall that the Executive Council by resolution 4.2(18)/1 (EC-73) endorsed the WMO Information System 2.0 (WIS 2.0) implementation plan to replace the Global Telecommunication System (GTS), which can no longer support current requirements for data exchange. WIS 2.0 will use web services for data exchange and provides a framework for WMO data sharing for all WMO Members, disciplines, and domains to embrace the earth system approach to enable the WMO Unified data policy, and support the WMO Global Basic Observing Network. A video on how WIS 2.0 works is available at **How WIS 2.0 Works.**

20. WIS 2.0 will be implemented according to the schedule provided in the implementation plan in Figure 1. A one-year pilot phase will start in 2023, with several Countries collaborating in building the WIS 2.0 infrastructure with each volunteering Member having a different role in the WIS 2.0 framework and will implement a specific component. WIS 2.0 will then go into pre-operational phase in 2024 and operational phase in 2025. Early adopters of WIS 2.0 can start implementing WIS 2.0 during the pilot phase by contacting wis@wmo.int. According to the WIS 2.0 implementation plan (see Figure 1), the Global Telecommunication System (GTS) will be decommissioned by 2030, and National Meteorological and Hydrological Services (NMHSs) will use the WIS 2.0 platform for data exchange.

21. To facilitate the adoption of WIS 2.0 by Members during the implementation process and to provide a common base for the further development of WIS 2.0 components, the SC-IMT has established the project “WIS 2.0 in a box” as the open-source reference implementation of the WIS 2.0, which provides cloud-ready or on-premises software for data exchange in the WIS 2.0 framework for Members willing to adopt open-source solutions. At INFCOM 2 Members were asked to volunteer and participate in the pilot phase of the WIS 2.0 implementation.

G. Climate Data Management Outlook and future work

22. Noting the importance of effective climate data management, Cg-18 requested the development of a reference open-source climate data management system to support members and to provide a reference implementation of a climate data management system that meets the specifications. The WMO OpenCDMS project was subsequently established in 2019-2020 with a 5-year timeline for development, implementation and training up to 2026.

23. Parallel to the work within the WMO OpenCDMS project and to meet their national needs, the **National Meteorological Service of Belize** has developed a climate data management system (SURFACE), using the WMO CDMS specification (WMO-NO. 1131) as a template. This system is

currently used operationally in Belize and has recently been shared with the international community, with the source code made available through the OpenCDMS code repository (https://github.com/opencdms/surface).

24. Given the mature state of the SURFACE CDMS, ongoing work within the WMO OpenCDMS project is focused on a convergence between the SURFACE CDMS and the OpenCDMS project. Where applicable, components from the data and logic layers of the OpenCDMS project will be integrated into SURFACE to develop a new production-ready system, OpenCDMS SURFACE.

25. The provisional OpenCDMS SURFACE, together with the proposed OpenCDMS reference implementation architecture, will be presented to Congress-19. Testing of the system will begin in 2024 with an installable, production-ready system aimed to be available during 2025.

26 Integration of the OpenCDMS SURFACE into the WMO Information System (WIS) 2.0 will also be developed as part of the WIS 2.0 pilot project. In order to test and demonstrate the interoperability of the OpenCDMS project and integration of climate data in the WIS2.0 framework, a project focused on climate data is planned for the WIS 2.0 pilot phase.

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CMO Headquarters
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