CARIBBEAN METEOROLOGICAL ORGANIZATION

ANNUAL MEETING OF DIRECTORS OF METEOROLOGICAL SERVICES **Doc. 5**
TORTOLA, BRITISH VIRGIN ISLANDS, 20 NOVEMBER 2024

OUTCOME/HIGHLIGHTS OF THE 78TH SESSION OF THE WMO EXECUTIVE COUNCIL & THIRD SESSIONS OF THE WMO TECHNICAL COMMISSIONS

(Submitted by the Coordinating Director)

SUMMARY

The Seventy-Eighth (78th) session of the WMO Executive Council (EC-78) was held in Geneva, Switzerland from 10 to 14 June 2024. Outcomes and highlights relevant to National Meteorological and Hydrological Services include: the *Regional Basic Observation Network*, evolution of *WMO Integrated Processing and Prediction System* (WIPPS), implementation plans for National Drought Early Warning Systems, and *Global Greenhouse Gas Watch*, progress made on WMO Radio Frequency Coordination to Protect Bands Vital for Weather and Climate and changes in *Tropical Cyclone Forecasters Competency Framework*.

A. REGIONAL BASIC OBSERVATION NETWORK (RBON)

1. The Regional Basic Observing Network (RBON) is meant to consist of surface-based meteorological, hydrological, and related observing stations and platforms to address regional priorities and needs and respond to weather, water, climate, and other environmental challenges. The network capabilities respond to observational user requirements at the national and regional levels to bring socioeconomic benefits locally and regionally.

2. At the Third Session of the ***WMO Commission on Observation, Infrastructure and Information Systems*** (INFCOM-3), participants were presented with the updated RBON design process contained in the **Guide to WIGOS (WMO-No. 1165) 2024 (Chapter 12) update and approved by INFCOM-3.** The updated design and operation process of RBON aims to address the observational requirements of the *Early Warnings for All* (EW4All) initiative and now mandate Members to design their RBONs in response to user observational requirements as compiled in the OSCAR/Requirements database, in consideration of the identified regional challenges for RBON.

3. Members shall design RBONs using existing observing systems within WIGOS and shall assign an observing station/platform for inclusion into RBON only if it meets one or more requirements of one or more WMO application areas, according to weather, water, climate, and other environmental challenges to be addressed with RBON data, as decided by the Regional Association. Further, Members assign an observing station/platform to RBON only if it makes observations available for international exchange in real time or near-real time. The Regional Association has to decide on a plan or roadmap for the evolution of RBON to fill the remaining gaps.

4. EC-78 by **Resolution 2—Priority Activities Contributing to the Early Warnings for All Initiative** endorsed the updated RBON work plan in the implementation/action plan for infrastructure components contributing to the EW4All, which considers EW4All observational user

requirements, gaps, and priority hazards. The implementation plan calls for the Regional Association (RA) Management Group (MG) to identify a list of regional priority hazards and for Members to develop a list of national priority hazards and provide their existing observational capabilities as part of the regional implementation plan. Table 1.0 provides the general regional implementation plan with milestones.

Table 1.0 Work Plan for consideration of EW4All observational user requirements and gaps through RBON

Deliverable	Format	Delivered to	Deadline
RA Operating Plan update	Operating Plan	RAs MG	30 Sept 2024
List of national priority hazards	Short document with list	RAs MG	30 June 2024
Identification of regional priority hazards	Short document with map(s) and hazard lists	RA MGs	30 June 2024
Identification of observational requirements for the region	Table of observing system types	RA MGs	31 March 2025
Collect existing observational capabilities from each Member	List of observing stations, location, variables measured & observing cycle		30 June 2025
RBON Gap analysis for the region and the considered hazards	Tables	INFCOM, RAs	30 June 2025
Station list in each region/sub-region	Table of station list	RAs	31 December 2025
Midterm plan for evolution of RBON per region/ sub-region to further improve the gaps	Implementation Plan	RAs	December 2025

5. RA IV Management Group has already approved the RA IV list of priority hazards (Figure 1.0.) that will guide its RBON design process. This list will require attention for national early warning systems as part of the EW4All initiative. As a next step, RBON implementation at the national level will require CMO Members NMHS to:

- Develop a list of national priority hazards.
- Identify national observational requirements (required variables and criteria).
- Develop National WIGOS Implementation Plan.
- Ensure the national observation network has agrometeorological, hydrological, environmental, marine, energy, health, and remote sensing data components to satisfy the priority list of hazards.

RA IV "Priority Hazards List"

	RA IV Priority Hazards	Risk Levels
1	Hurricanes	
2	Extreme Temperature & Heat Waves	
3	Tropical Storms	
4	Flash and Riverine Floods	
5	Droughts and Dry Spells	
6	Potential tropical Cyclones	
7	Coastal Flooding and storm surge	
8	Severe Precipitation Storms	
9	Forest, wild and bush fires	
10	Landslides	
11	Lightning and Thunderstorms	
12	Cold waves	
13	Severe Winter conditions	
14	High Winds	
15	Dust Haze	
16	Hail	
17	Sea Level Increases	

Risk Levels Rank	Colour Code
5	
4	
3	
2	
1	

Figure 1.0 WMO RA IV approved list of priority hazards

B. WMO INTEGRATED PROCESSING AND PREDICTION SYSTEM (WIPPS)

6. EC-78 approved **Resolution 18-Amendments to the Manual on the WMO Integrated Processing and Prediction System (WMO.NO-485) for Weather Prediction** to evolve the WMO Integrated Processing and Prediction System (WIPPS) to meet user requirements, support the needs of the Early Warnings for All initiative, and the WMO Unified Data Policy by improving the accessibility and usability of global and regional Numerical Predictions products. The major upgrades of WIPPS include:

1) Significant increases in the amount of core data from World Meteorological Centers (WMC) Numerical Weather Prediction (NWP) were made available to Members.
2) An increase in the number of analysis and forecast products provided at higher temporal and spatial resolution, including some impact-based indexes and additional tropical cyclone products that will be beneficial for Members to provide better quality forecasts and warnings.
3) Introduction of the following five new WIPPS activities: global climate reanalysis; vegetation fire and smoke pollution forecasts (VFSP); marine emergency response; and global storm surge prediction, to serve more user communities to support their services.
4) Approved designations of eleven (11) new WIPPS-designated centers, including four centers for sub-seasonal prediction and one center for global ensemble NWP.

Taken together, these efforts will expand the range of products available to CMO Members, and introduce new ways for Members to access the wide and growing range of WIPPS products, including data for use in boundary conditions for limited area local NWP.

C. CLIMATE MONITORING AND EARLY WARNING SYSTEMS

7. Recognizing the importance of including National Drought Early Warning Systems (NDEWS) as a key component for the implementation of the Early Warnings for All Initiative (EW4All), EC-78 approved **Resolution 5 – Implementation Plan on National Drought Early Warning Systems**. The Implementation Plan (IP) includes seven objectives that will be needed for WMO Members to successfully address National Drought Early Warning Systems (NDEWS). These objectives are centred around the three pillars of integrated drought management:

1) Drought Monitoring and Early Warning;
2) Drought Risk and Impact Assessment;
3) Drought Risk Mitigation, Preparedness and Response

The seven objectives of the Implementation Plan on NDEWS are:

1) Establish a methodology to collate national and regional drought monitoring EWS and data-flows that are consistent with WMO standards based on existing infrastructure managed by Members and/or regional centres;
2) Develop and strengthen drought monitoring and DEWS capacities of WMO Members through national, regional and global centres
3) Strengthen drought impact collection and drought vulnerability assessments;
4) Develop and strengthen drought prediction and verification systems in the context of DEWS, in collaboration with the research and academia communities;
5) Increase visibility and use of drought alerts;
6) Develop and strengthen national drought action plans, including effective drought mitigation planning, response mechanisms and supporting guidance; and
7) Cooperate with Disaster Risk Reduction (DRR) and MHEWS communities on national/regional/global levels.

8. EC-78 also endorsed the Third Session of the ***WMO Commission for Weather, Climate, Hydrological, Marine and Related Environmental Services and Applications*** (SERCOM-3) **Resolution 6 – Additional drought indicators and indices for use by National Meteorological and Hydrological Services**, which require NMHSs to use a minimum set of drought indicators and indices to adequately monitor droughts and all their associated impacts on agricultural, hydrological, urban, and ecological sectors/systems.

9. The Resolution updates WMO's previous recommendation, and now recommends that, in addition to the Standardized Precipitation Index (SPI), all NMHSs should use and apply the Standardized Precipitation and Evapotranspiration Index (SPEI) for characterizing meteorological droughts nationally, alongside drought indicators and indices already in use, while exploring the usage of the Combined Drought Index (CDI) to further advance drought characterization and monitoring at the national level, where data permits. This resolution aims to support and strengthen Members capacities to further develop national and regional drought monitoring and warning systems as a component of the EW4All and request that the WMO Secretariat provide training on the recommended drought monitoring indices and indicators.

10. EC-78 adopted the amendments to the **Manual on WMO Integrated Global Observing System (WIGOS)—Annex VIII to the WMO Technical Regulations (WMO-No. 1160) updated 2024).** Two of the key changes include updated climate monitoring principles of the Global Climate Observing System (GCOS) and the addition of DAYCLI reporting practices. WMO-No 1160 now require Members designing and operating observing systems for monitoring the climate to adhere to the principles specified in **Appendix 2.2.** The principles provide guidance in the design, development, deployment, and management of observing systems for climate-related needs across all domains (surface, above surface, and subsurface), all observing platforms, and all Essential Climate Variables (ECVs).

11. Members are also now required to operationalize the implementation of international exchange of daily climate data (DAYCLI) and provide both daily and monthly summaries (DAYCLI and CLIMAT reports) of observations made at their surface land stations on a monthly basis. DAYCLI and CLIMAT reports are to be transmitted by the fifth day of the month.

D. GLOBAL GREENHOUSE GAS WATCH

12. The WMO initiated Global Greenhouse Gas Watch (G3W) aim is to provide actionable information to assist Members in their Long-Term-Low greenhouse gas Emission Development Strategies contained in their Nationally Determined Contributions (NDCs).

13. EC-78 approved Resolution 3- Implementation Plan for the Global Greenhouse Gas Watch to strengthen the monitoring of heat-trapping gases, which are driving climate change, and to inform climate mitigation. The implementation plan contains a staged approach, starting with a pre-operational phase from 2024-2027 as shown in figure 2.0. The initial focus will be on the three most important greenhouse gases influenced by human activities, namely carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O), and take into consideration both human and natural influences on the levels of greenhouse gases in the atmosphere.

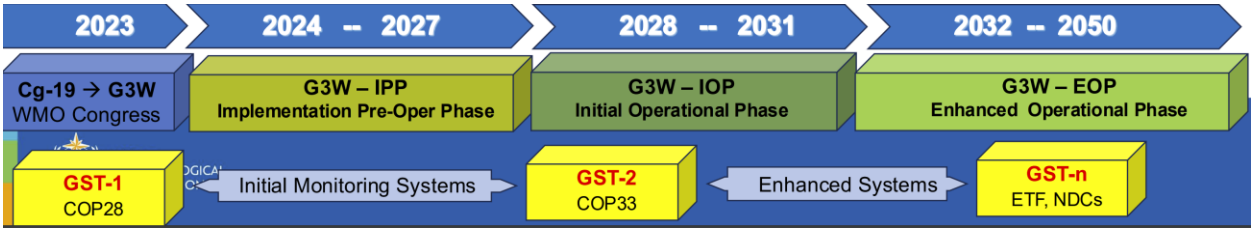

Figure 2.*0*. G3W infographic of the Implementation timeline and scope

E. WMO RADIO FREQUENCY COORDINATION TO PROTECT BANDS VITAL FOR WEATHER AND CLIMATE

14. Access to the radio spectrum is crucial for WMO global infrastructure. WMO has increased coordinated efforts to ensure the protection of radio frequency bands, which are vital for weather forecasts and life-saving early warnings. The outcome of the most recent World Radio Communication Conference, WRC-23, in Dubai in November-December 2023 was generally positive.

15. INFCOM-3 decided to establish a network of national focal points in order to enhance the capacity and knowledge of the Radio Frequency Regulatory framework within the National Meteorological and Hydrological Services (NMHSs) and related environmental service centers. The aim is to use the new network of national focal points to enhance the meteorological community's ability to safeguard critical access to the radio spectrum.

16. WMO, through its Expert Team on Radio Frequency Coordination, actively participated at the **World Radio Communication Conferences 2023 (WRC-23)** in Dubai, December 2023, to negotiate updates to the radio regulations and global treaty, which govern the radio spectrum. From a meteorological and climate-monitoring perspective, the most critical issues concern the measurement of sea surface temperature and the observations of space weather. The 6/7 gigahertz (GHz) frequency range - corresponding to peak SST sensitivity - is currently being utilized for passive ocean remote sensing from satellites.

17. Under WRC-23 agenda item 1.2, the 6 425-7 075 MHz and 7 075-7 250 MHz frequency bands were identified for International Mobile Telecommunications (IMT). Studies demonstrated that SST measurements could be severely hindered by such deployment. WMO has identified other

potential bands for SST measurement that could be used in combination with the 6/7 GHz range. At WRC-23, a new agenda item for WRC-27 was obtained to study possible new primary allocations to the Earth Exploration Satellite Service (passive) in the bands 4 200-4 400 MHz and 8 400-8 500 MHz. This new agenda item provides a lifeline to the Sea Surface Temperature measurements that are critical for Numerical Weather Prediction.

18. WRC-23 recognized space weather sensors in the Radio Regulations with space weather observations now defined in the Radio Regulations with a new resolution on the importance of space weather sensor systems incorporated in a new Article 29B Radio Service related to space weather observations.

F. TROPICAL CYCLONE COMPETENCY FRAMEWORK

19. SERCOM-3 approved Decision 6: Tropical Cyclone Forecasting Competency Framework (TCFCF), which adds the five regional Tropical Cyclone Forecasters (TCF) competencies consolidated as a single framework to the *Compendium of WMO Competency Frameworks* (WMO-No. 1209) and requested that Members be encouraged to make use of the TCFCF within their regions. There are two levels of TCF competency in TCFCF. The first is for Senior TC Forecasters at Regional Specialized Meteorological Centres (RSMC)/Tropical Cyclone Warning Centres (TCWC). The second, which is relevant to most CMO Member States NMHSs, is for the TC Forecaster working in a forecasting office that receives guidance from an RSMC or TCWC to provide tailored forecasts and warnings for their areas of responsibility.

20. Unique only to the RA IV TCF competency is a third level of TC competency for non-forecast office personnel. This competency targets preferably a trained forecaster or at least a Meteorological Technician tasked with liaising with the regional forecasting center, who can receive and interpret the watches, warnings, and forecasts, deliver and explain TC information, and can interpret and communicate impact-based hazard information for disaster managers and other local stakeholders. This latter competency is included to satisfy operational practices within less developed CMO Member States Meteorological Offices.

November 2024