C A R I B B E A N

M E T E O R O L O G I C A L

O R G A N I Z A T I O N

**CARIBBEAN METEOROLOGICAL COUNCIL** **Doc. 8**

SIXTIETH SESSION

18-19 NOVEMBER 2020, VIRTUAL PLATFORM

##### SPECIAL CMO AND OTHER WMO ISSUES

(Submitted by the Coordinating Director)

## Introduction

1. This document is designed to keep the Council informed on significant regional or international issues of special interest to the CMO. Some of these will require decisions or actions by Council to ensure that CMO Member States understand their roles and adhere to commitments and requirements, particularly those emanating from the World Meteorological Organization (WMO) or other relevant organizations. Some other items will likely be presented verbally. The agenda item covers primarily the following topics:
2. Arrangements for Meteorological Forecast and Warning Services among CMO Member States
3. WMO Regional Concepts and Approaches (Outcomes/Highlights of *18th Regional Association IV (RA IV)* and *WMO Extraordinary Congress* 2021)

* B(1) Other Highlights of WMO *Extraordinary Congress* 2021

1. Outcomes/Highlights of *73rd and 74th Sessions of the WMO Executive Council* (EC)

* C(1) WMO Awards

1. WMO Integrated Global Observing System – Initial Operational Phase
2. The Global Framework for Climate Services (GFCS)
3. Issues emerging from the WMO Technical Commission and Research Board sessions in 2021
4. Disaster Risk Reduction and Regional Severe Weather Forecasts and Warning Systems

* Tropical Cyclone Programme

## Arrangements for Meteorological Forecast and Warning Services among CMO Member States

1. From the inception of the CMO in 1973, the Council agreed on the responsibilities of the NMHS of the States with Forecast and Warning Offices for those States without such offices. The arrangements have been modified in the intervening years but the fundamental premise of major cooperation and collaboration among all nations, on which the CMO was established, remains. The 50th session of the Council re-formalized the forecast and warning arrangements. The 51st Session of the Council reiterated Resolution 2 of the 50th Session of Council and reconsolidated the interface between its own arrangements and those of the WMO-led Regional Hurricane Operational Plan.
2. Resolution 1 taken at the 51st Council replaced Resolution 2 of the 50th Council, which is no longer in effect. CMC51 Resolution 1 is provided in **ANNEX I**.
3. Questions arose in 2020 about the provision of forecast and warning services by the Antigua and Barbuda Meteorological Services to the four neighbouring Member States, the resources required, and the formalities involved in the process. The Coordinating Director and the Principal of CIMH were asked to advise on the matter.
4. Council is also asked to note that Barbados, Dominica, St Vincent and the Grenadines have requested a review of their forecasting arrangements. Barbados has been transitioning some forecast responsibilities to Dominica and St Vincent and the Grenadines, during a test phase that started in 2020.
5. Since the forecasting and warning arrangements were agreed to by the Council, the Council is being asked to review, and modify, if necessary, the arrangements.

## WMO Regional Concept and Approaches

1. Council is reminded that in the 18th WMO Congress (June 2019) indicated that **priority should be placed on increasing regional capability**, which is outlined under WMO *Long-term Goal 4* and its associated Strategic Objectives for 2020-2023. The *Climate Coordination Panel*, the *Hydrological Coordination Panel*, and the *Capacity Development Panel* are vehicles for WMO *Regional Associations* to input their priorities and needs across both Commissions and the Research Board. Coordination among WMO bodies is needed to ensure that they are supporting, systematically and seamlessly, the **full value chain of systems and services to support Members**.
2. Council is asked to note that the *President Evan Thompson (*Jamaica*)*, and *Vice President* *Luz Graciela Calzadilla* (Panama) of ***WMO Regional Association IV*** (RA IV, North America, Central America, and the Caribbean) and the RA IV Management Group, with the support of the WMO RA IV Sub-regional Office, have set regional priorities for 2020-2023 and revised the working structures of RA IV. The revision was in alignment with the decisions of the *18th Congress* and *72nd Executive Council* (EC-72) regarding governance reform.
3. The new RA IV working structures were approved at the ***18th Session of RA IV*** held in 8‑11 February 2021, with regional bodies and focal points reflecting the WMO subsidiary bodies (see **ANNEX II**). Members of RA IV nominated experts who could be Chairs and Vice-Chairs for the new subsidiary bodies and focal points to conduct the tasks of the regional work programme. The RA IV Management Group selected the Chairs and Co-Chairs from the nominated experts.
4. Council is asked to commend the CMO experts, who are serving as Chairs and Vice Chairs of the *RA IV Infrastructure Committee* and *Services Committee*; Chairs and members of the Expert Teams of the two Committees, and as a Focal Point. Members States of the CMO are **urged** to nominate experts for the RA IV Committees, based on their relevant expertise within the Member State, and, should note that nominations are not restricted to the National Meteorological Services.
5. The 73rd *WMO Executive Council* recommended and the *2021 Extraordinary Congress* approved the *Comprehensive Review of the WMO Regional Mechanisms and Approaches* as part of the second phase of the WMO Reform. The reform is intended to make Regional Associations more efficient and effective and to enhance intra and inter-regional cooperation and partnerships. They have been asked to engage with regional economic and political organs and to participate in regional high-level events, thus promoting a stronger regional policy. They are to coordinate on regional activities with UN organizations, other inter-governmental regional organizations, private sector, academia, and donor organizations. With these partner organizations, regional associations can focus on thematic areas of common interest, such as disaster risk reduction, sustainable development and climate change.
6. An example of this new approach is the issuance of a [*Regional State of Climate for Latin America and the Caribbean* *for 2020*](https://library.wmo.int/index.php?lvl=notice_display&id=21926) (WMO No. 1272) that is based on the annual State of the Climate issued for the globe. The report found that 2020 was among the third warmest for the Caribbean. Council should note that the WMO Regional Climate Centre at CIMH was a major contributor to the Regional State of the Climate report, which was launched in August 2021 in conjunction with a High-level Conference, “*Working together for weather, climate and water resilience in Latin America and the Caribbean”* hosted by WMO, UN ECLAC, and UNDRR. The Coordinating Director, *Dr Arlene Laing*, was an invited panelist at the High-Level Conference, speaking on the value of multi-hazard early warning systems and the importance of strong regional and national institutions that cooperated and coordinated to save lives as the region faced volcanic eruption, tropical cyclones, a 7.2 earthquake, and the COVID-19 pandemic. Another example is the *Regional Platform on Disaster Risk Reduction for the Americas*, held on 1-4 November 2021, which featured sessions organized by the WMO, including a Learning Lab on Lightning and Wildfires to which the Coordinating Director was an invited presenter, speaking on improving lightning safety in the Caribbean.

### B(1) Other Highlights of WMO *Extraordinary Congress* 2021

#### Country Hydromet Diagnostics and Alliance for Hydromet Development

1. Council will recall learning of the *Alliance for Hydromet Development, a* partnership of WMO with the World Bank and other development partners, during CMC59 (Anguilla, 2019). Through the Alliance, WMO Members have the opportunity for resource mobilization, with help from the WMO. Via the Country Support Initiative, WMO is providing its advisory services to Member States and development partners.
2. The [Country Hydromet Diagnostics](https://alliancehydromet.org/country-hydromet-diagnostics/) for peer-evaluation, is a standardized, integrated and operational way of benchmarking National Meteorological Services, their operating environment, and their contribution to high-quality weather, climate, hydrological, and environmental information services, and warnings. The results of the Diagnostics evaluation will help to guide development partners in implementing capacity development investment. WMO Extraordinary Congress 2021 welcomed the implementation of the Country Hydromet Diagnostic, which was “road-tested” in 16 WMO Member States during 2020-2021.

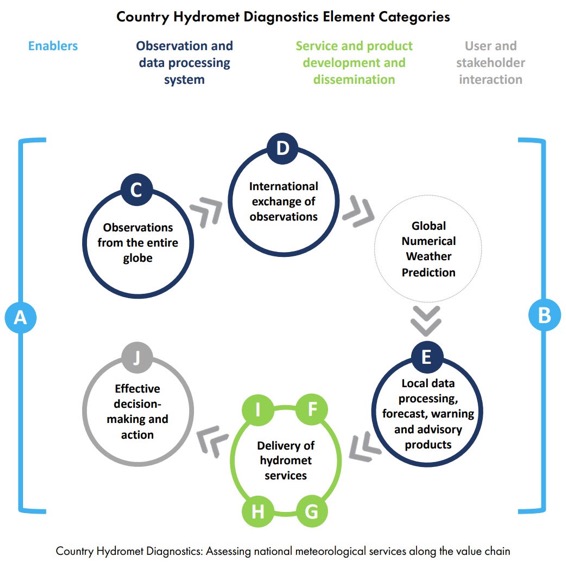


Figure 1. WMO Country Hydromet Diagnostics, a tool for assessing National Meteorological Services

1. The WMO response to global crises was also considered by the Extraordinary Congress — with the WMO Subsidiary bodies being requested to lead development of processes and guidance for Members on ways to maintain the operational systems and sustain the continuity and quality performance of the essential services.

## Outcomes/Highlights of 73rd and 74th Sessions of the WMO Executive Council (EC)

1. The *73nd Executive Council (EC-73)*, took place on a virtual platform from 14-25 June 2021 under the chairmanship of Professor *Gerhard Adrian* (Germany). The Coordinating Director, *Dr Arlene Laing*, an elected Member of the Executive Council, led a strong delegation, comprising *Dr. David Farrell*, Principal of the CIMH, *Mr Glendell De Souza* of the CMO Headquarters, and *Dr Garvin Cummings* of Guyana. The involvement of this team, along with President of RA IV, *Mr Evan Thompson*, increased the regional input to the session and facilitated the critical follow-up actions to prepare our region for the Extraordinary Congress.
2. EC-73 endorsed and approved key decisions, such as the [**unified policy on the international exchange of Earth system data**](https://public.wmo.int/en/media/press-release/wmo-executive-council-endorses-unified-data-policy), provision of a **Global Basic Observation Network** (GBON), and the proposed **Systematic Observation Finance Facility** (SOFF) to support the implementation of GBON by filling the gaps, and the proposed [WMO Vision and Strategy for Hydrology and its associated Action Plan](https://public.wmo.int/en/media/news/executive-council-approves-hydrology-action-plan), and a Water Declaration and Water and Climate Coalition (see details in CMC61 Doc 3). EC-73 also decided to adopt the updated Guide to the *WMO Integrated Global Observing System* (WIGOS, WMO-No. 1165), which became effective from 1 October 2021. Also approved were recommendations on the Comprehensive Review of the WMO Regional Mechanisms and Approaches. The resolutions emanating from EC-73 were then approved by the *WMO Extraordinary Congress* in October 2021.
3. The 74th *Executive Council (EC-74)* was held on 25 October 2021 as a short session following the WMO Extraordinary Congress. The Coordinating Director, *Dr Arlene Laing*, an elected Member of the Executive Council, was accompanied to EC-74 by *Mr Glendell De Souza*. Given the ongoing uncertainties related to COVID-19 and its impacts, the EC-74 decided to pursue a flexible approach to meetings, including physical, hybrid and virtual meetings; to adopt the revised schedule of meetings for 2022, with a view to ensure consequentiality of decision-making and avoid overlapping meetings; and to consider the progress regarding the plans for applying efficiencies gained in support of the WMO Strategic Plan and budget execution. The 75th Executive Council (EC-75), is tentatively scheduled for June 2022.
4. The Coordinating Director was asked to serve on the *EC Task Force on the Evaluation of the WMO Reform*; a Task Force chaired by the President of the WMO.

### C(1) WMO Awards

1. **The 66th International Meteorological Organization (IMO) Prize** winner is ***Professor In-Sik Kang*** from the Republic of Korea. He was lauded for his lifetime of scientific achievements, particularly in climate modelling and prediction, and his pioneering contributions to operational and research climate centres, and for nurturing the next-generation scientists, including those from developing countries. Prof Kang authored more than 170 papers in scientific journals.
2. **The Professor Dr Vilho Väisälä Award for an Outstanding Research Paper on Instruments and Methods of Observation** was awarded to Julian Gröbner (Switzerland) and Natalia Kouremeti (Switzerland) for their paper entitled “*The Precision Solar Spectroradiometer (PSR) for direct solar irradiance measurements*” published in Solar Energy 185 (2019), p. 199-210.
3. The **Professor Dr Vilho Väisälä Award for the Development and Implementation of Instruments Methods of Observation in Developing Countries** was awarded to *Duong Van Khanh, Do Huy Duong, Nguyen Xuan Tuan,* and *Mai Hai Tung* (Viet Nam) for their paper entitled “*Automation solution to manage technical operations and transfer the real-time information from manual stations of Meteorological and Hydrological in Viet Nam*” published in Viet Nam Journal of Hydro- Meteorology, No. 691, dated 25 July 2018.
4. The **2021 WMO Research Award for Young Scientists**was granted to ***Dr Hoang-Minh Nguyen*** (Viet Nam) for his paper entitled “*An approach for improving the capability of a coupled meteorological and hydrological model for rainfall and flood forecasts*” published in the Journal of Hydrology, 577, 2019, 124014. Council is asked to encourage nominations of young Caribbean scientists to help advance and promote regional research and development; enhance their professional development; give them confidence on the global stage, and raise the profile of the region in the global scientific community. Council will recall that the 2020 RA IV nominee, who is from Jamaica, received high commendation for her research paper. This year only one nomination was submitted from a CMO Member State to RA IV.

Council is also asked to note that *Dr `Arlene Lain*g has been a Member of the Committee for the WMO Research Award for Young Scientists since the 71st Executive Council in 2019.

## WMO Integrated Global Observing System – Initial Operational Phase

1. Over the last several years, the Caribbean Meteorological Council has held significant discussions on the *WMO Integrated Global Observing System* (WIGOS), an all-encompassing approach to the improvement and evolution of WMO’s global observing systems, which is needed in all countries to consolidate progress in meteorological research, numerical modelling, and computer and communication technologies. Closely tied to WIGOS is the implementation of the *WMO Information System* (WIS). WIGOS, together with WIS, form the basis for the provision of **accurate, reliable and timely weather, climate, water and related environmental observations and products** by all Members and WMO Programmes, which would lead to improved service delivery. Both WIGOS and WIS are very essential to all technical and scientific activities of Meteorological Services in the Caribbean and worldwide.
2. Council is asked to note that WIGOS became operational in 2020, after a *Pre‑operational Phase* in 2016-2019. As with all Member States of WMO, CMO Member States should currently be in full preparation for implementation. The goal is for all Member States and their partners to benefit from a fully operational system. In the Caribbean region, the focus has been on getting the Meteorological and Hydrometeorological Services fully ready in the first instance, while efforts continue to bring partner institutions and organizations on board as contributors to WIGOS.
3. As decided by the 73rd WMO Executive Council, Member States are to adopt the updated *Guide to the WMO Integrated Global Observing System* (WMO-No. 1165), with effect from 1 October 2021.
4. WMO has recognized that significant capability gaps and other challenges remain. Those will need to be addressed during the strategic period 2020-2023, in order for the system to fully serve all WMO application areas and help Members exploit the full potential of partnership agreements. The highest priorities for WIGOS during this period will be:
   1. National WIGOS implementation, including necessary capacity development, partnership agreements and integration of observing systems for all application areas;
   2. Fostering a culture of **compliance** with the WIGOS technical regulations;
   3. Implementation of the Global Basic Observing Network (GBON) and the Regional Basic Observing Networks (RBON);
   4. Operational deployment of the WIGOS Data Quality Monitoring System (WDQMS);
   5. Operational implementation of Regional WIGOS Centres (RWC);
   6. Further development of the Observing Systems Capability Analysis and Review (OSCAR) databases.

High priority will be given to activities that will assist Members in developing and implementing their national WIGOS plans, with special emphasis on the Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States where the needs are the greatest.

1. Per the requirement for WIGOS implementation, National Meteorological Services (NMS) are required to develop a **National WIGOS Implementation Plan** (N-WIP). The N-WIP must describe how the NMS will partner with other national entities to create a comprehensive strategy for the implementation of a national observing system, to collect, manage and store meteorological and hydrological and other forms of data. The CMO Headquarters provided NMSs with a self-assessment template for the identification of gaps in their observing systems and examples of completed assessment to assist in the completion of their assessment. Further, NMSs of Members States that are not Members of WMO were provided with a form for the input of their data, which is required for the updating of their observational metadata which is stored on the WMO metadata database called Observing Systems Capability Analysis and Review (OSCAR)/Surface. The updating of the database is a requirement of establishing their N‑WIP. Member States are **urged to support their NMS in the development of a National WIGOS Implementation Plan** by facilitating and enabling the necessary data policies and partnerships to integrate information about data related to weather, climate, and water and the environment.
2. The concept for *Regional WIGOS Centres* (RWCs), as endorsed by the WMO Executive Council, is a vital part of the implementation of WIGOS. The WMO *Executive Council* has recognized the critical role that RWCs will play in advancing the implementation of WIGOS at the regional level by providing regional coordination, technical guidance, assistance and advice to Members and partner organizations, through regional WIGOS performance monitoring and incident management. A Concept Note for a ***Virtual Regional WIGOS Centre in RA IV*** (North America, Central America and the Caribbean), was developed as a collaborative effort of the United States National Weather Service, Environment Canada, the CMO Headquarters Unit, and the Trinidad and Tobago Meteorological Service.
3. The RWC functions are to monitor and evaluate the availability, timeliness, and quality of observation data, where the CMO HQ and TTMS will cover the English-speaking Caribbean. The RWC Concept Note was endorsed by the RA IV Management Group at its meeting in January 2020, Boston, USA. The RWC working group is currently developing an implementation plan to be presented in 2021.

## The Global Framework for Climate Services (GFCS)

1. The Council will recall that the ***Global Framework for Climate Services*** (GFCS), a United Nation (UN)-led initiative spearheaded by WMO, is being implemented throughout the world to guide the development and application of science-based climate information and services in support of decision-making. Via Resolution 20 (Cg18), the governing structure for the GFCS was changed to the *Climate Coordination Panel* (CCP) which reports to the WMO Executive Council. The CCP includes the following: (i) Subgroup on the WMO contribution to the GFCS, (ii) Subgroup on climate policy and (iii) GFCS Partners Advisory Committee (PAC), the mechanism for stakeholder engagement in GFCS.
2. As a framework with broad global participation and reach, GFCS enables the development and application of climate services to assist decision-making at all levels in support of addressing climate-related risks and outcomes at national, regional and global levels. The priority areas for the GFCS are (i) Agriculture and food security (ii) Disaster risk reduction, (iii) Energy (iv) Health and (v) Water. The GFCS is currently being implemented through eight global projects, many with an emphasis on developing countries and Small Island Developing States.
3. In this regard, several of the GFCS Projects involve the CIMH, which has been implementing the five GFCS pillars plus other sectors of importance such as tourism, at the regional level. One such project is the *ACP-EU Climate Services and Related Applications* (ClimSA) that the CIMH is implementing on behalf of the CMO. That project will benefit a number of CMO Member States through the development of National Frameworks for Climate Services (see the CIMH Principal’s report for further details). The CMO Headquarters is supporting the CIMH in this project.
4. Council will also recall that, through a WMO-CMO Implementing Arrangement (CMC61, Doc 11), *National Frameworks for Weather, Water, and Climate Services* and *complementary Action Plans* are included in newly developed *Strategic Plans* for the National Meteorological and Hydrometeorological Services of eight beneficiary CMO Member States. The strategic periods are 2021 to 2025, except for Guyana, which is 2022 to 2026. Implementation of this project was supported by CIMH to ensure compatibility and complementarity in Member States in which they are developing national framework for climate services.

## Issues emerging from the WMO Technical Commissions and Research Board in 2021

1. Council is asked to note that Part II of the First Session of the *Commission for Weather, Climate, Water and related Environmental Services and Applications* (Services Commission, SERCOM-1 (II)) was held during 22-26 February 2021. The meeting was attended by *Dr Arlene Laing*, who led the British Caribbean Territories (BCT) delegation, which included *Mr Glendell De Souza*, *Mr John Tibbetts* of theCayman Islands, *Mr Adrian Trotman, Ms Kathy-Ann Caesar,* and *Dr Cedric Van MeerBeeck* of CIMH*.*
2. SERCOM-1 initially focused on establishing its working structures and their Terms of Reference and development of a Workplan. CMO experts in SERCOM are noted in the list below:
3. Standing Committee on Services for Aviation (SC-AVI);

*Expert Team: Ms Kathy Ann Caesar/BCT, Mr Lyndon Alves/Guyana*

1. Standing Committee on Services for Agriculture (SC-AGR);

*Expert Team: Ms Shontelle Stoute/BCT, Ms Shanea Young/Belize,*

*Ms Arlene Aaron-Morrison/Trinidad & Tobago*

1. Standing Committee on Climate Services (SC-CLI);

*Expert Team: Mr Adrian Trotman/BCT*

1. Standing Committee on Hydrological Services (SC-HYD);
2. Standing Committee on Marine Meteorological and Oceanographic Services (SCMMO);

*Expert Team: Dr Teddy Allen/BCT*

1. Standing Committee on Disaster Risk Reduction and Public Services (SC-DRR);

*Expert Team: Mr John Tibbetts/BCT, Mr Glendell De Souza/BCT*

1. Study Group on Integrated Health Services (SG-HEA);

*Dr Roche Mahon/BCT*

1. Study Group on Integrated Energy Services (SG-ENE);
2. Study Group on Integrated Urban Services (SG-URB);

SERCOM Management Group

*Mr Evan Thompson, President RA IV/ Jamaica*

National Focal Point for Severe Weather Forecasting Programme

*Dr Arlene Laing/BCT*

National Marine Services Focal Point

*Mr Dale Destin/Antigua and Barbuda, Ms Carol Surbath-Ali/Trinidad & Tobago, Eron McPherson/Guyana*

National Focal Point for Climate Information Systems

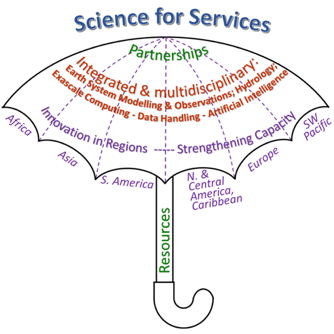
*Mr Glenroy Brown/Jamaica, Mr Komalchand Dhiram/Guyana, Mr Kenneth Kerr/ Trinidad & Tobago, Mr Avalon Porter/BCT, Ms Annie Carrette Joseph/Dominica,*

1. Decisions of SERCOM-1 that are of interest to CMO Member States include:

* Resolution 6 - Decides to approve the publication of the additional chapters as *WMO Guidelines on Multihazard Impact-based Forecast and Warning Services* – *Part II: Putting Multi-hazard IBFWS into Practice* (WMO-No. 1150);
* Resolution 7 - Decides to promote the use of Common Alerting Protocol (CAP) in public alerting for hydrological hazards;
* Resolution 8 - Decides to adopt the concept note for the establishment of WMO Hydrological Centres in the Global Data-Processing and Forecasting System;
* Resolution 9 – Decides to endorse the final draft of the *Guidelines on Seasonal Hydrological Prediction;*
* Resolution 12 - Requests the joint WMO–WHO Study Group on Integrated Health Services to explore the strengthening of the links with the Global Heat Health Information Network (GHHIN), to promote the implementation of integrated climate health services in coordination with GHHIN, and to consider the future recommendations of GHHIN with respect to stronger integrated applied science and scale-up of heat–health warning systems in coordination with the Study Group on Integrated Urban Services, Standing Committee on Climate Services, Standing Committee on Services for Disaster Risk Reduction and Public Services, and other relevant bodies;

1. Part III of the First session of the *Commission for Observation, Infrastructure and Information Systems* (INFCOM-1) was held virtually on 12-16 April 2021 and attended by *Dr Arlene Laing* and *Mr Glendell De Souza*, representing the British Caribbean Territories (BCT). After lengthy discussions, the session approved the draft resolution for the Unified Data Policy, draft amendments to the WMO *Technical Regulations, Volume I - General Meteorological Standards and Recommended Practices* (WMO-No. 49), Part I - WIGOS, and the *Manual on the WMO Integrated Global Observing System* (WMO-No. 1160).
2. Delegates of INFCOM-1 recognized the huge challenge of implementing WIGOS and **requested the WMO Secretariat to provide support to Members and Regional Associations in implementing WIGOS through its operational phase, especially to least developed countries**. Also extensively discussed were the requirements for the Global Basic Observation Network (GBON), a critical part of WIGOS that specifies the contribution of Members to a baseline surface and upper-air observing network.
3. The Infrastructure Commission also recommended the collection and publication of the ***new Climate Normals for 1991-2020***. CMO Headquarters facilitated the participation of National Meteorological Services in WMO Training on *Climatological Standard Normals*. CMO Members are urged to:
   1. Start calculating and publishing 1991-2020 Climatological Standard Normals nationally as soon as possible with the aim of completion of the Global climate normals (CLINO) (WMO-No. 847), ideally not later than end of 2023;
   2. Launch a broad communication campaign to promote the updated Climatological Standard Normals and to clearly communicate Normals’ update implications to NMHS internal and external users as well as the general public;
   3. Contribute to the WMO collection of Climatological Standard Normals 1991-2020.
4. INFCOM-1 reaffirmed the goal of achieving gender balance, geographic and expert areas balance within INFCOM and gender-sensitive weather, hydrological, climate and related infrastructures and services that will contribute to an improved response to the specific needs and social and economic circumstances of women and men. INFCOM decided to establish an INFCOM Gender Balance Focal Point with the collaboration and support of the INFCOM Management Group, and in close consultation with the SERCOM Gender Focal Point.

1. The ***WMO Research Board*** (RB) met by videoconference on 28-29 January 2021 to discuss and review membership of the Research Board, WMO Research Programme activities, the status of RB Concept Notes on research goals, and an *Open Science Conference on the Earth System* being planned for 2025. Council is reminded that the Coordinating Director, *Dr Arlene Laing*, is a member of the WMO Research Board representing RA IV (North America, Central America, and the Caribbean). Research Board Management meetings were held on 1 June and 6 October 2021. The Research Board is currently in holding elections for a new Chair and Vice-Chair.



1. The Concept Notes articulate the high-level scientific priorities and key activities needed in a manner that is attractive and accessible to the broad scientific community and to partners who are not familiar with WMO, including funding agencies and stakeholders; facilitate interactions within WMO; enable the research programmes to work more effectively on cross-cutting aspects; and provide an inclusive framework for partners of WMO. The *Science for Services* Concept is the overarching umbrella for the other concept notes. Council is asked to note that *Dr Arlene Laing* has been leading the Concept Note on “*Innovation in Regions*”. During 2021, a Concept note on “*Exascale Computing and Data Handing and Artificial Intelligence”* (led by *Dr Veronique Bouchet)* and a “*Hydrology Research Strategy for the WMO*” (led by *Dr Aaron Salzberg*) were drafted and reviewed.

Credit, WMO

The RB agreed that the Hydrology drafting team, in collaboration with the Secretariat, will coordinate the draft Research Strategy on hydrology for the WMO with inputs from the three WMO Research Programme Chairs, other leading and representing key constituencies within the WMO, IAHS, and UNESCO as well as critical stakeholder groups. The group and the Secretariat will work jointly with UNESCO to develop a workplan with specific activities through a series of solicitations/consultations throughout 2021 that support implementation of the WMO Strategy and IHP***.***

1. In response to the COVID pandemic and the questions about seasonal and environmental impacts, the WMO Research Board convened a ***Task Team, WMO SARS-CoV-2/COVID-19 TT*.** The Task Team responded to the real-time challenge of providing decision support and relevant knowledge on climate-weather-air pollution drivers and determinants of the SARS-CoV-2/COVID-19 pandemic. The TT has published their report and a journal article. They also hosted a roundtable on *COVID-19 Seasonality: current understanding and relevance to decision-making* in September 2021.

## Disaster Risk Reduction and Regional Severe Weather Forecasts and Warning Systems

### G(1) Tropical Cyclone Programme

1. The Caribbean Meteorological Council is aware that activities within the WMO *Tropical Cyclone Programme* (TCP) are among the most important to the Caribbean and other tropical basins. The TCP is essential to help reduce the disaster risk associated with the tropical cyclones. The most critical regional activity under the TCP is the *Hurricane Committee*, serving the *North Atlantic, East Pacfic and Caribbean Basin*. The Hurricane Committee has at its core, *the US National Hurricane Center*, which is one of WMO’s primary *Regional Specialized Meteorological Centres* (RSMCs) for tropical cyclones.
2. Most Meteorological Services in CMO States are represented on the Hurricane Committee which, along with the relevant regional and national disaster management community, work continuously towards the reduction of disaster risks by tropical cyclones, particularly the loss of lives. The Hurricane Committee defines and routinely updates the warning system for tropical cyclones in the North America, Central America and the Caribbean region, including the areas of responsibility of the NMHSs in each Member State in the provision of tropical cyclone forecasts and warnings. The warning system includes back-up arrangements between Meteorological Services with warning responsibilities.
3. The ***43rd Hurricane Committee*** met via videoconference, on [15-17 March 2021 (Part I)](https://wmoomm.sharepoint.com/:b:/s/wmocpdb/EZkzjESVWe5OrJMU3rvYWXcB7X6Mi_V-Wenay_6aul3NZg?e=TQLzmb) , and [4-5 May 2021 (Part II)](https://wmoomm.sharepoint.com/:b:/s/wmocpdb/ETpAvNzPYo9HoyOIVHF-v4oBaZhkELv8Vn8ty3Zv45I8jw?e=MX8Ku5). Part I was a review of the record-breaking 2020 Hurricane Season and its impacts, which had the additional challenges presented by the COVID-19 pandemic. Cape Verde, previously an observer, became a new Member of the Hurricane Committee. The Operational Plan was updated for 2021.
4. Mr Dan Brown, RSMC Miami, presented the forecast successes, challenges, and statistics of the record-breaking 2020 season including:

* 30 named storms, 13 hurricanes (6 major), 639 forecast advisories issued by the RSMC (average is 322), 22 of the 30 storms had watches or warnings for land areas or made landfall, 25 total landfalls (five hurricane landfalls in the Caribbean, two Category 4 landfalls in Nicaragua, two weeks and 15 miles apart), subtropical storm landfall in Portugal, direct impacts in nearly every country in the Atlantic basin, 11 landfalls in the United States (4 in Louisiana, eight along the Gulf Coast), two storms prior to 1 June, the sixth straight year with at least one pre-season storm
* Some progress was noted in forecasts of intensity and rapid-intensification and coordination within the Region was deemed as outstanding despite staffing challenges and restrictions due to COVID-19

1. During Part II, the Technical Plan was updated. Information was provided on programmatic elements, such as the upper air observation network and training. High-resolution storm surge modeling developed through the Coastal Inundation Forecast Initiative (CIFI), which had become operational in Dominican Republic and Haiti in 2019, has been expanded to the Yucatan and Belize and will next be implemented in the Bahamas, in collaboration with the USAID and National Weather Service (NWS) International Affairs. Scientific lectures were presented on Multi-radar Multi-Sensor mosaic products for hurricane applications; changes in hurricane risk in Bermuda; and Hurricane Education and Technology Development in COMET.
2. The prospect of geohazards being compounded by a forecasted active hurricane season and the ongoing COVID-19 pandemic was at the fore-front of discussions during Part II of the 43rd Hurricane Committee Session. With the explosive eruptions of La Soufrière on the island of St Vincent, which began on 9 April 2021, and its related hazards being aggravated by floods, RSMC forecasters agreed to, where possible, to extend lead times for warnings on heavy rainfall, which triggers lahars and other volcanic hazards.
3. For the first time, the Hurricane Committee featured a special session on Social Science aspects of hurricanes.

* *Dr Katy Sherman-Morris*, Mississippi State University, spoke on hurricane risk perception and the influence of the characteristics of the individual (culture, personality, demographics), the characteristics of the event (how recent, how frequent, and how intense), and the presentation of information (amount and type of imagery).
* “Psychological and social aspects in meteorological disasters: a Cuban experience” was presented by *Dr Alexis Lorenzo Ruiz*, who described health programmes, with specialized medical attention that fully incorporated psychological care alongside a multidisciplinary approach in which the psychosocial aspect is considered central to crisis intervention.
* *Ms Sally Edwards and Mr Leonardo Hernández*, WHO/PAHO, spoke on decision making during a disaster or emergency, including decision-making influencers (missing or incomplete information, urgent deadlines, limited emotional resources, lack of sleep, etc.) and the need to be extremely well prepared. Ms Edwards described a Health Sector Multi-Hazard response framework that improves the capacity of countries to manage their response to emergencies and disasters in a more efficient and timely manner.
* *Dr Gina Eosco*, Social Science Programme Coordinator, and *Jennifer Sprague-Hildebrand*, Social Science Programme Manager, presented on preliminary findings from the Hurricane Supplemental Social and Behavioural Science Projects in the US National Weather Service. These included, assessing how the public consumes and processes changing tropical cyclone forecasts over time; a study of NHC public web user experience to help improve the NOAA’s hurricane web presence; assessing numeracy skills of forecasters, partners, and the general public to improve TC product uncertainty communication.
* *Ms Lina Sjaavik*, WMO, presented the Climate Risk and Early Warning Systems (CREWS) Caribbean initiative to support LDCs and SIDS to increase the capacity to generate and communicate effective, impact-based, multi-hazard, gender-informed early warnings to protect lives, livelihoods, and assets.

1. A session on making the linkages: discussion about the multiple hazards and the linkages needed for effective response was organized by the CREWS Caribbean and the Coordinating Director.

* *Ms Donna Pierre*, WMO, presented the outcomes of the CREWS Caribbean May 2020 workshop on linkages between Impact-based forecasting (IBF) and Risk Scenario Planning (RSP) and the role of gender in that context.
* *Dr Arlene Laing*, CMO HQ, gave an overview of the regional and national coordination on multi-hazard early warning system (MHEWS), applied to the eruption of La Soufrière volcano on St. Vincent, focusing on the Meteorological Service of St Vincent and Grenadines (supported National Emergency Council, National Emergency Management Organization, the UWI Seismic Unit, water agency, marine sector, etc…) and the Barbados Meteorological Service (provided forecast and warnings for St Vincent and the Grenadines, support to water agency, wind forecasts for airport cleanup, support to Ministry of Agriculture, the public), assistance from NOAA/NESDIS with GOES mesoscale rapid-scan.
* *Dr David Farrell*, CIMH, spoke of the pre-eruption, eruption and post eruption activities by a range of national, regional and international organizations in response to the evolving multi-hazard challenge, complicated by COVID-19 pandemic. Challenges were presented by the need to shelter displaced persons and the loss of infrastructure and destruction of the economic base of St Vincent. He described CIMH volcanic ash and gas atmospheric transportation modeling was used to support Saint Vincent emergency management, with model runs performed daily using a predefined set of eruption parameters. He also spoke on the impacts of the eruption on the energy sector, the environment, including water quality, and the economy.

1. A major decision by the 43rd Hurricane Committee was the discontinued use of the Greek alphabet in favour of a supplemental name list to be used when a seasonal name list is exhausted. The record-breaking numbers of hurricanes in 2020, led to the use of the Greek alphabet, which had last happened in 2005. In 2020, two category 4 hurricanes which devastated Central America, were named for Greek letters, Eta and Iota. They were two of the four major hurricane names to be retired, along with Dorian (2019), and Laura (2020).
2. The CMO Headquarters supported the Principal of the CIMH, to facilitate the entry of the “Hurricane Hunter” aircraft and crew into Barbados during the 2021 hurricane season. Also provided information to CIMH in support of the meeting of the Honourable Prime Minister of Barbados with senior NOAA officials, in particular the benefits of extending the range of the reconnaissance flights farther east of the current limit, which had been requested in previous Hurricane Committee sessions.

**ACTIONS PROPOSED TO COUNCIL**

1. **Council** is asked to:
   * + - 1. **Discuss**, and modify, if appropriate, the regional forecast and warning arrangements in **Resolution 1 of CMC51**, given in **ANNEX I**.
         2. **Note** the decisions of the WMO Extraordinary Congress 2021 and the 73rd session of the Executive Council (EC) on regional concepts and approaches of theWMO; and **support** the work of WMO Regional Association IV;
         3. **Encourage** WMO Member States to take advantage of resources available through the Alliance for Hydromet Development
         4. **Note** the activities of the WMO Commissions and Research Board
         5. **Urge** WMO Members to nominate experts to RA IV subsidiary bodies and the WMO Expert database to expand Member participation in WMO constituent bodies.
         6. **Urge** CMO Member States to ensure that their NMHSs complete activities for the Operational Phase of WIGOS, which began in 2020;
         7. **Note** the activities on the proposed Virtual *Regional WIGOS Centre* (RWC) as a collaboration among the US, Canada, CMO Headquarters and the Trinidad and Tobago Meteorological Service;
         8. **Continue** its strong support for the *Global Framework for Climate Services* and to **urge** Member States to actively participate in GFCS projects and activities;
         9. **Note** and **support** the important work of the regional Hurricane Committee

CMO Headquarters,

November 2021

# ANNEX I



**CARIBBEAN METEOROLOGICAL COUNCIL**

RESOLUTION 1, CMC51, 2011 - REGIONAL ARRANGEMENTS FOR METEOROLOGICAL FORECAST AND WARNING SERVICES AMONG CMO MEMBER STATES

**THE CARIBBEAN METEOROLOGICAL COUNCIL,**

**Noting** that the National Meteorological and Hydrometeorological Services (NMHS) of the CMO Member States have developed to various scientific and technical levels over the years,

**Considering** that the ***Weather Forecast and Warning Offices*** of Member States, with the higher scientific and technical levels and functions, operate round-the-clock and year-round and that the ***Aeronautical Meteorological Offices*** of Member Statesoperate according to aeronautical requirements,

**Taking into account** the existing arrangements made under the auspices of the Caribbean Meteorological Organization in which the Member States with the Weather Forecast and Warning Offices provide the same weather forecast and warning services to those States without such offices, as well as the back-up arrangements between Services,

**Noting further** that these arrangements form the basis for many other international arrangements or agreements, such as the responsibilities of Member States for forecasts and warnings within the Regional Hurricane Warning System of the *World Meteorological Organization* (WMO) and the provision of aeronautical meteorological forecasts and warnings under the auspices of the *International Civil Aviation Organization* (ICAO),

**Recognizing** the major importance of these arrangements and **having reviewed** the scientific and technical capacities of the NMHSs of Member States,

**Decides** that the following arrangements shall apply:

| **Member States with Weather Forecast and Warning Offices** | **States and Areas of Responsibility for Forecasts and Warnings** |
| --- | --- |
| Antigua & Barbuda | The islands and coastal waters of Antigua & Barbuda, Anguilla, British Virgin Islands, Montserrat, St. Kitts & Nevis |
| Barbados | The islands and coastal waters of Barbados, Dominica, St. Vincent and the Grenadines |
| Belize | The islands, coastal waters and inland areas of Belize |
| Cayman Islands | The islands and coastal waters of the Cayman Islands |
| Grenada | The islands and coastal waters of Grenada and its dependencies (weather forecasts) |
| Guyana | The coastal waters and inland areas of Guyana |
| Jamaica | The island and coastal waters of Jamaica |
| Saint Lucia | The island and coastal waters of Saint Lucia |
| Trinidad and Tobago | The islands and coastal waters of Trinidad and Tobago; tropical cyclone warnings responsibility for Grenada and its dependencies |
|  | |
| *By agreement between CMO and The Bahamas* (non-CMO Member), the Bahamas area of responsibility for forecasts and warnings includes the islands and coastal waters of the Turks and Caicos Islands | |

**Also decides** that, having consulted with the WMO Hurricane Committee for the region, the following backup arrangements for tropical cyclone watches and warnings, Aerodrome Forecasts (TAF) for main airports and agreed upon essential products, as determined under the auspices of the WMO and ICAO, shall apply:

1. Antigua will take over the responsibility of Barbados with respect to the island and coastal waters of Dominica;
2. Barbados will take over the responsibility of Antigua and/or Saint Lucia;
3. Barbados will take over the responsibility of Trinidad and Tobago;
4. Jamaica will take over the responsibility of the Cayman Islands;
5. Trinidad and Tobago will take over the responsibility of Barbados with respect to the islands and coastal waters of Barbados and St. Vincent and the Grenadines. Trinidad and Tobago will serve as a secondary backup to Barbados with respect to Saint Lucia;
6. The USA will take over the responsibility of Jamaica;
7. The Cayman Islands will take over responsibility for Belize, with Jamaica serving as a secondary backup to the Cayman Islands with respect to Belize.

**Further decides**

1. that the NMHSs of all Member States should ensure that all stakeholders at the national level are aware of these arrangements and that the CMO Headquarters should make this Resolution permanently available on its Website;
2. that variations in the international arrangements or agreements emanating from the above should be made in collaboration with and coordinated by the Headquarters of the Caribbean Meteorological Organization,
3. to review this Resolution whenever significant changes in the arrangements are proposed.

**This Resolution replaces Resolution 2 of CMC50, which is no longer in effect.**

# ANNEX II

# Working Structure of Regional Association IV

## Draft Resolution 4.2/1 (RA IV-18)

## Regional Association IV Management Group

REGIONAL ASSOCIATION IV (NORTH AMERICA, CENTRAL AMERICA AND THE CARIBBEAN),

**Recognizing** the increased importance of effective management and oversight of the activities of the Association and the need for a mechanism to address cross-cutting issues and issues not handled by other subsidiary bodies, in particular activities related to WMO long-term goals (LTGs): LTG 4 – Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens; and LTG 5 – Strategic realignment of WMO structure and programmes for effective policy- and decision-making and implementation,

**Decides:**

(1) To re-establish a Management Group (MG) of RA IV to advise the president and make recommendations on relevant matters with the following terms of reference:

(a) *Act as the* High-level Task Team on the Regional Concept;

(b) Establish and monitor the implementation of the RA IV Operating Plan 2020-2023 for the Enhancement of National Meteorological and Hydrological Services (NMHS) in RA IV, and provide the Association’s input to the WMO Strategic and Operating Plan 2024-2027;

(c) Establish and guide the structure, work and recommendations of the subsidiary bodies of the Association and to disband or reorganize these bodies as needed;

(e) Collaborate with the Secretariat on resource mobilization, advise on alignment of resources with regional priorities and implementation of the Operating Plan;

(f) Identify RA IV focal points for the following areas: Disaster Risk Reduction, Capacity Development, Education and Training, and Satellite Data Requirements; to ensure coordination with WMO programmes, Regional Associations and other organizations as appropriate including strengthening of strategic partnerships with regional organizations, development agencies and other partners;

(g) Appoint a RA IV focal point on Research and Modelling to represent RA IV on the Research Board to ensure coordination between the research priorities in RA IV with the Research Board, and the WMO sponsored and co-sponsored research programmes, and liaise with the Standing Committee on Earth System Modelling.

(2) Appoint a Regional Hydrological Adviser (RHA) to serve as focal point on hydrological matters;

(3) Designate the RA IV president as chair of the MG which is composed of the president, vice-president, three permanent representatives (or their designated alternates) invited by the president, and RA IV EC members. The RHA and the chair of the Hurricane Committee to serve as ex officio members. The president may invite other permanent representatives and chairs of RA IV subsidiary bodies to participate in MG meetings, as needed;

**Requests** the president to ensure that the Group meets at least annually, or as needed, preferably in conjunction with other meetings or events;

**Also requests** the MG, with input from RA IV Permanent Representatives, to set up and find members for the initial RA IV subsidiary bodies by no later than May 2021;

**Authorizes** the president to take the necessary decisions on behalf of the Association on important matters, after consultation with the MG and to report to the Association during the intersessional period and at its next regular session on the activities of the MG and relevant decisions taken on behalf of the Association;

**Requests** the Secretary-General to support the work of the MG.

Note: This resolution replaces [Resolution 3 (RA IV-17)](https://library.wmo.int/index.php?lvl=notice_display&id=19874#.X-GtGNhKiUk), which is no longer in force.

Reference:

(1) *Abridged Final Report of the Eighteenth World Meteorological Congress* ([WMO-No. 1236](https://library.wmo.int/index.php?lvl=notice_display&id=21440#.X_bRZNhKiUk)),

(2) *Abridged final report of Seventeenth session of Regional Association IV* ([WMO-No. 1193](https://library.wmo.int/index.php?lvl=notice_display&id=19874#.X_bRkdhKiUk)),

(3) Reports of the sessions of the Regional Association IV (RA IV) MG,

(4) The *WMO Strategic Plan 2020–2023* ([WMO-No. 1225](https://library.wmo.int/index.php?lvl=notice_display&id=21525#.X_bR0thKiUk)),

(5) The Regional Association IV Operating Plan 2020–2023,

(6) [Resolution 6 (Cg-18)](https://library.wmo.int/index.php?lvl=notice_display&id=21440#.X-GtXdhKiUk) – WMO Regional Associations,

(7) [Resolution 1 (EC-72)](https://library.wmo.int/index.php?lvl=notice_display&id=21788#.X-GtgNhKiUk) – Effective coordination between regional associations, technical commissions and the Research Board,

(8) [Resolution 2 (EC-72)](https://library.wmo.int/index.php?lvl=notice_display&id=21788#.X-GtgNhKiUk) – Activities and working mechanisms of the regional associations,

(9) [RA IV-18/INF. 4.2](https://meetings.wmo.int/RA-IV-18/InformationDocuments/Forms/AllItems.aspx)

## Draft Resolution 4.2/2 (RA IV-18)

## RA IV Hydrological and Water Coordination Panel

REGIONAL ASSOCIATION IV (NORTH AMERICA, CENTRAL AMERICA AND THE CARIBBEAN),

**Decides:**

(1) To establish the RA IV Hydrological and Water Coordination Panel with the following terms of reference:

(a) Assist the president of RA IV in ensuring that the hydrological contributions to the Region’s priority needs and activities are coordinated with weather and climate within the RA IV management structure;

(b) Track best practices in the operational activities of the National Hydrological Services in the Region, acting as a mechanism for the exchange of scientific and technical expertise;

(c) Develop a Road map for the Region, implement the corresponding Plan of Actionand contribute toits implementation at national level, based on Art 9 and Art 18 of the Convention;

(d) Undertake, under the guidance of the RA IV MG, activities that strengthen hydrological monitoring, service delivery and capacity-building; hydrological inputs on the priority issues of the Association; and ensure linkage with the relevant meteorological and climatological activities within the Region;

(e) Liaise with the Hydrological Coordination Panel (HCP) and establish coordination with other regional associations and committees and expert teams of RA IV;

(f) Promote regional projects and contribute to WMO initiatives[[1]](#footnote-1) and report on their progress to the RA IV MG;

(g) Promote the commitment of the public and private sector in matters related to operational hydrology;

(h) Define the agenda of the online RA IV Hydrological Advisers Forums, held every three months, to share experiences, maintain the engagement of the hydrological community and promote its linkage with other WMO communities;

(i) Identify education, training and research needs and inform the corresponding RA IV focal points in order to assure proper interactions with the Capacity Development Panel and the Research Board;

(j) Liaise and seek cooperation with appropriate scientific, technical and development organizations such as the International Hydrological Programme of UNESCO, the United Nations Environment Programme (UNEP) Regional Office for Latin America and the Caribbean, the Regional Committee for Water Resources, the Caribbean Institute for Meteorology and Hydrology, the Global Water Partnership for Central America and the Caribbean and the Water Resources Centre for Central America and the Caribbean;

(k) Submit to the MG, no later than May 2021, a road map (and corresponding work plan) for 2021-2023, including proposals for the establishment of special teams and their mandate taking due account of the activities described in the RA IV Operating Plan, as well as an annual progress report;

(2) That the Hydrological and Water Coordination Panel shall be composed of seven members: The Regional Hydrological Adviser (RHA), who will also serve as the chair, and six members appointed by the president of the Association in consultation with the RHA and the Association’s MG. Of the six members, two should be from North America, two from Central America and two from the Caribbean, to ensure appropriate regional representation. The RHA may invite chairpersons (or their representatives) of other RA IV subsidiary bodies to participate in the Panel meetings as needed, subject to the availability of financial resources;

Note: This resolution replaces [Resolution 4 (RA IV-17)](https://library.wmo.int/index.php?lvl=notice_display&id=19874#.X-GtGNhKiUk), which is no longer in force.

## Draft Resolution 4.2/3 (RA IV-18)

## Regional Association IV Hurricane Committee

REGIONAL ASSOCIATION IV (NORTH AMERICA, CENTRAL AMERICA AND THE CARIBBEAN),

**Noting:**

(1) [Resolution 23 (Cg-XVI)](https://library.wmo.int/index.php?lvl=notice_display&id=6907#.X-Gvf9hKiUk) – Tropical Cyclone Programme and the reports of the sessions of the RA IV Hurricane Committee (hereafter the Committee),

(2) Resolutions of the General Assembly of the United Nations – International Strategy for Disaster Reduction (ISDR) and United Nations General Assembly (UNGA) Resolution 69/15 concerning the Small Island Developing States (SIDS) Accelerated Modalities of Action (S.A.M.O.A.) Pathway,

**Considering:**

(1) The need for the countries affected by tropical cyclones to continue to work together and increase action to reduce the loss of human life and damage caused by tropical cyclones and associated storm surgeand coastal inundation, floods and landslides,

(2) The need for coordination in the implementation of the regional cooperation programme elaborated by the Committee,

**Decides:**

(1) To re-establish the RA IV Hurricane Committee with the following terms of reference:

(a) Coordinate tropical cyclone forecast and warning operational procedures;

(b) Review annually the Hurricane Operational Plan and Technical Plan *[Canada]* for North America, Central America and the Caribbean (NCAC) and recommend any amendments to the president of the Association for approval;

(c) Make recommendations on improvements in facilities and procedures to ensure efficient and effective early warning systems including fit-for-purpose impact-based forecast and warning services (IBFWS);

(d) Advise the Association on the possible sources of technical and financial support;

(e) Engage the appropriate experts in areas such as integrated observing systems, the WMO Information System, hydrology, disaster risk reduction and service delivery;

(f) Serve as a forum for exchange of information on new developments in the science and technology of tropical cyclone observation, tracking and forecasting and disaster prevention and preparedness activities appropriate to meteorological and hydrological services in close coordination with SERCOM, INFCOM, the Research Board and other relevant WMO bodies;

(g) Encourage Members to adopt measures to mitigate the potential harmful impacts of tropical cyclones;

(h) Foster cooperative efforts of WMO and other international bodies in those aspects of tropical cyclone disaster preparedness and prevention that can benefit from meteorological and hydrological assistance;

(i) Promote greater emphasis on training activities through the provision of appropriate facilities and financial support as necessary;

(2) That the Committee will be composed of the following members:

(a) Directors of Meteorological, Hydrological and Hydrometeorological Services, or those individuals responsible for tropical cyclone forecasting, from all Members of RA IV and Cabo Verde, affected by the tropical systems and their associated hazards. The RHA and chairpersons (or their representatives) of RA IV subsidiary bodies are ex officio members;

(b) In accordance with *Basic Documents No. 1* ([WMO-No. 15](https://library.wmo.int/index.php?lvl=notice_display&id=14206#.X-GwqdhKiUk)), General Regulation 3, the Director of the National Hurricane Center (United States of America) as chair;

(c) Two vice-chairs, one English-speaking and one Spanish-speaking;

**Requests the Secretary-General:**

(1) To accord very high priority to the convening of an annual session of the Committee prior to the hurricane season;

(2) To take the necessary steps to assist the Committee and ensure the provision of appropriate Secretariat support to its activities;

(3) To ensure the necessary cooperation with the United Nations Office for Disaster Risk Reduction (UNDRR), the International Federation of Red Cross and Red Crescent Societies (IFRC), the Caribbean Disaster Emergency Management Agency (CDEMA), the Coordination Centre for the Prevention of Natural Disasters in Central America, the Office of the United States Foreign Disaster Assistance, and such other organizations;

(4) To promote strong links with the other regional tropical cyclone bodies under the Tropical Cyclone Programme and relevant scientific institutions.

Note: This resolution replaces [Resolution 5 (RA IV-17)](https://library.wmo.int/index.php?lvl=notice_display&id=19874#.X-GtGNhKiUk), which is no longer in force.

## Draft Resolution 4.2/4 (RA IV-18)

## Regional Association IV Infrastructure Committee

REGIONAL ASSOCIATION IV (NORTH AMERICA, CENTRAL AMERICA AND THE CARIBBEAN),

**Decides:**

(1) To establish the RA IV Infrastructure Committee with the following terms of reference:

(a) Coordinate and support the development and implementation of the Operational Implementation Plans of Integrated Observing and Information Systems of RA IV members (including the Regional Basic Observing Network (RBON) and the hydrological observing and information systems, in accordance with WMO Integrated Observing Systems (WIGOS) and WIS), supporting and facilitating the effective application of the Earth system approach and exchange of data, products and information in a timely manner among the members of RA IV and globally, including good practices of interoperability, quality, opportunity and security;

(b) Coordinate and oversee the integrated design of observation and information systems of members in terms of standardization, interoperability, technology, data management practices, to access and provide high-quality meteorological, climate, hydrological and environmental services that are cost-effective and adequate for identified for identified users following regional and global guidelines;

(c) Oversee the promotion and implementation of strategies to strengthen the operational, technical, and infrastructure capacity of integrated observing and information systems and data management practices in areas with least coverage and for the under-represented domains;

(d) Liaise with the Infrastructure Commission (INFCOM), establish effective coordination with other WMO and RA IV subsidiary bodies, and oversee the activities of the Regional WIGOS Centres;

(e) Encourage the application and compliance with WMO guidelines on calibration and traceability of instruments, data processing, and observation methods, to improve the certification of the products and services of members, in coordination with RA IV RICs (Regional Instrument Centres);

(f) Oversee the promotion, development and sustainable implementation of the regional plan of the WIGOS and WMO Information System (WIS);

(g) Coordinate and oversee establishment of the RBON, promoting its contribution to Global Basic Observing Network (GBON);

(h) Promote the implementation of the regional Aircraft Meteorological DAta Relay (AMDAR) based on the agreement between the International Air Transport Association (IATA) and WMO, and other systems for acquiring meteorological data through aircraft;

(j) Coordinate regional activities in the field of radio frequencies, acting as liaison with the Steering Group on the Coordination of Radio Frequencies of INFCOM and monitoring the related activities of the Inter-American Telecommunication Commission (CITEL) of the Organization of American States;

(k) Identify the advanced education, research and professional training needs in the field of information and communication technologies, observation systems in conjunction with the RA IV RTCs;

(l) Promote technical solutions to support the engagement of the private sector in the elements of the value chain connected to integrated information systems and observation of the Earth System;

(m) Prepare and submit to the MG, no later than May 2021, a work plan for 2021-2023 that advances regional implementation of WIGOS, WIS and the effective use of geostationary satellites, including proposals for the establishment of special teams and their mandate;

(n) Coordinate regional activities to enable Members to improve their own predictive capabilities benefiting from the GDPFS;

(2) That the Committee shall be comprised of a chair, a vice-chair, the chairs of other pertinent RA IV subsidiary bodies, a representative of the Regional WIGOS Centre (RCW), a representative of the Regional Training Centres (RTCs), RA IV invited experts participating at relevant working bodies of the INFCOM, the SERCOM and the Research Board, and three experts from other organizations in RA IV, including those in the academic and research institutions and the private sector. The experts should be registered in the WMO expert database and the selection process must ensure appropriate regional representation and gender balance;

(3) To designate Ms/Mr [xx] (Member State or Territory) as chair of the Committee, and Ms/Mr [xx] (Member State or Territory) as vice-chair.

## Draft Resolution 4.2/5 (RA IV-18)

## Regional Association IV Services Committee

REGIONAL ASSOCIATION IV (NORTH AMERICA, CENTRAL AMERICA AND THE CARIBBEAN),

**Decides:**

(1) To establish the RA IV Services Committee with the following terms of reference:

(a) Determine the needs for new and improved services, and analyse the capabilities of members to inform the development of the RA IV Integrated Services Operational Implementation Plan (including weather, climate, hydrological and relevant environmental services) for review and approval by the RA IV MG;

(b) Develop, promote and oversee the implementation of strategies to strengthen the capacity of RA IV members to provide quality and adequate weather, climate and hydrological services tailored for the specific user and purposes;

(c) Provide guidance to members for appropriate user-interface actions with the relevant stakeholders, intended to address priorities and the need for an improved services’ provision in aviation, agriculture, hydrology, marine and oceanography, disaster risk reduction and public services, health, energy and urban integrated services, in coordination with the RA IV Hurricane Committee and the RA IV Hydrological and Water Coordination Panel;

(d) Promote and provide technical support strategies for the development and implementation of (public, private or joint) multi-hazard early warning systems at local, national and regional level, as appropriate, keeping the exchange of products and experiences as the highest priority, in collaboration with the RA IV Hurricane Committee and the RA IV Hydrological and Water Coordination Panel;

(e) Liaise with SERCOM and establish effective coordination with the other WMO Bodies, other regional associations, and the subsidiary bodies of RA IV;

(f) Encourage and follow international financing projects related to weather, climate and water services in the region (e.g. Intra-ACP [African, Caribbean, Pacific Group of States], Weather-Ready Nation (WRN), EUROCLIMA);

(g) Promote collaboration and engagement of the public and private sectors in service delivery where appropriate;

(h) Prepare and submit to the MG, no later than May 2021, a work plan for 2021-2023 that advances towards the development of Early Warning Systems (EWS) and Global Framework for Climate Services (GFCS) activities, including proposals for the establishment of special teams and their mandate;

(i) Coordinate the implementation of the RA IV DRR Implementation Plan at national level;

(2) That the Committee shall be comprised of a chair, vice-chair, the chairs of other pertinent RA IV subsidiary bodies, a representative of the Regional Climate Centres (RCCs), a representative of the Regional Training Centres (RTCs), RA IV invited experts participating at relevant working bodies of the INFCOM, the SERCOM and the Research Board, including those in the academic and research institutions and the private sector. The experts should be registered in the WMO expert database and the selection process must ensure appropriate regional representation and gender balance;

(3) To designate Ms/Mr [xx] (Member State or Territory) as chair of the Committee, and Ms/Mr [xx] (Member State or Territory) as vice-chair.

# Officers and Experts of RA IV

* + - Evan Thompson – President of RA IV (PRA IV)
    - Luz Graciela Calzadilla – Vice-President of RA IV (VPRA IV)
    - Jose Alberto Zuñiga – Regional Hydrological Adviser (RHA) / Chair, RA IV Hydrological and Water Coordination Panel (RA IV-HCP)
    - Peter Clarke – Vice-chair, RA IV Hydrological and Water Coordination Panel (RA IV-HCP)
    - Kenneth Graham – Chair, RA IV Hurricane Committee (RA IV-HC)
    - Jose Rubiera – Vice-chair, RA IV Hurricane Committee (RA IV-HC)
    - John Parker, Vice-chair, RA IV Hurricane Committee (RA IV-HC)
* Kerry Powery – Chair, RA IV Infrastructure Committee (RA IV-INF)
* Avalon Porter – Vice-chair, RA IV Infrastructure Committee (RA IV-INF)
* Glendell De Souza - Chair, RA IV Services Committee (RA IV-SER)
* Arlene Aaron-Morrison – Vice-chair, RA IV Services Committee (RA IV-SER)
* Elizabeth Page – RA IV Focal Point on Education and Training (FP-ETR)
* Mark Guishard – RA IV Focal Point on Disaster Risk Reduction (FP-DRR)
* Arlene Laing – RA IV Focal Point on Research and Modelling (FP-REM)
* Marcial Garbanzo – RA IV Focal Point on Satellite Data Requirements (FP-SDR)





# ANNEX III

# Comprehensive review of the WMO regional concept and approaches

## Draft Resolution 2.2(1)/1 (Cg-Ext(2021))

THE WORLD METEOROLOGICAL CONGRESS,

**Recalling:**

(1) [Resolution 6 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=37) – WMO Regional Associations,

(2) [Resolution 11 (Cg-18)](https://library.wmo.int/doc_num.php?explnum_id=9827#page=63) – WMO Reform – Next Phase,

(3) [Resolution 1 (EC-72)](https://library.wmo.int/doc_num.php?explnum_id=10504#page=10) – Effective coordination between Regional Associations, Technical Commissions and the Research Board,

(4) [Resolution 2 (EC-72)](https://library.wmo.int/doc_num.php?explnum_id=10504#page=12) – Activities and Working Mechanisms of the regional associations,

**Having considered** the overall rationale, the key current challenges and opportunities as articulated in [Annex 1](#_Annex_1_to) and **agreed** [Recommendation 1 (EC-73)](https://meetings.wmo.int/EC-73/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-73/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/EC-73-d03-2-WMO-REGIONAL-CONCEPT-AND-APPROACHES-approved_en.docx&action=default) – Comprehensive review of the WMO regional concept and approaches,

**Decides** to adopt the following decisions on the Comprehensive review of the WMO regional concept and approaches:

(1) To uphold and focus on the core basic functions of the regional associations as outlined in Article 18 of the WMO Convention and General Regulation 130 (Annex II of the General Regulations) which remain highly relevant;

(2) To pursue enhanced working modalities for the organization of the regional associations’ business with a view to enhancing efficiency and effectiveness by:

(a) Including a standing agenda item on “Implementation of Congress and the Executive Council decisions and resolutions” in each session of the regional associations to review and assess the degree of implementation of decisions and resolutions relevant to the Regions;

(b) Adopting a phased approach for the organization of regional association sessions, as appropriate and allowed by resources, and having more regionally focused agendas;

(c) Addressing critical issues of interest to the Regions that will promote initiatives and activities of interest to the Members in support of and in alignment with the WMO Strategic and Operating Plan, increasing implementation of decisions and resolutions of Congress and the Executive Council;

(d) Sequencing the strategic and operational planning of WMO to start with the identification of the key capacity gaps and priorities from the regional associations, which should be communicated to the Executive Council and Congress to form the basis of and start of the process for the development of the strategic and operational plan of WMO in support of concrete actions related to regional priorities;

(e) Leveraging and/or formalizing relations with groupings based on language/geographical/economic/political commonalities, such as these listed in Annex 2 to this resolution as platforms for addressing groups/region-specific issues and promoting cooperation through specific activities for WMO Members in those constituencies;

(f) Promoting more technical and thematic meetings of regional associations and discussions in the intersessional period, availing of online meeting facilities, to address specific priorities for Regions as well as to regularly monitor and evaluate progress of implementation of their work plans;

(g) Strengthening the interaction of the regional associations, technical commissions, and the Research Board through improved working arrangements and communication, including consultations and sharing of their workplans, participation of the presidents and chair of each body in the sessions of other bodies, and participation of experts serving under the substructure of the regional associations in the work of the technical commissions and the Research Board;

(h) Facilitating the development of subregional, regional and interregional communities of practice on issues of major interest to the regional associations such as observation networks, service provision, research priorities, and multi-hazard early warning systems implementation and operations;

(i) Developing strategies to determine the impact and risks associated with the proposed decisions and resolutions relevant to the Region;

(j) Strengthening the function of the available WMO Centres in the Region and using them in implementing regional priority activities in the Region ;

(3) To enhance the engagement with the United Nations System, Regional Economic Communities, regional organizations, and other international partners by:

(a) Formalizing and effectively monitoring MoUs for the implementation of joint initiatives and/or activities with the United Nations Economic Commissions in all regions, regional organizations such as the Regional Economic Communities, Regional Intergovernmental Organizations, development partners, regional development financial institutions, etc.;

(b) Participating actively, with the support of the Regional Offices, in relevant issue‑based coalitions of the United Nations Economic Commissions and high-level events organized by regional partners;

(c) Promoting the induction of Resident Coordinators and key officials of partner organizations to increase their awareness of the role of WMO and the role and contribution of National Meteorological and Hydrological Services (NMHSs) and promote closer cooperation with the NMHSs;

(d) Organizing ministerial and/or high-level events associated with the sessions of the regional associations and other WMO bodies at the appropriate time according to the expected results, focusing on hydrometeorological hazards and impacts, multi‑hazard early warning systems, socioeconomic benefit studies to promote the role of NMHSs and the value of weather, water and climate services, and other strategic and important emerging issues*,* as appropriate and relevant to the Region;

(e) Fully utilizing WMO Senior Secretariat Officials in advocacy and diplomatic engagement with United Nations entities and Regional Economic Commissions and in regional ministerial meetings, etc., as appropriate;

(f) Launching, through high-level events co-organized with key United Nations and regional partners, annual reports on the state of regional climate documenting critical regional weather/climate extremes and their socioeconomic impacts, and identifying critical gaps in Member capacities, as appropriate;

(g) Exploring and proposing regional-specific ways for enhancing the visibility and authoritative voice of NMHSs in the Regions with the support of the Regional Offices;

(4) To adopt measures to enhance the role of the presidents and vice-presidents of regional associations and the effectiveness of their work, in accordance with and consistent with the Terms of Reference of the regional associations and their presidents and vice-presidents by:

(a) Distributing leading roles and tasks among Management Group members of regional associations, EC members, and a set of Permanent Representatives to lead specific/thematic tasks, with support from leads of the regional association’s subsidiary bodies, as appropriate, to enable enhanced engagement and implementation of regional priorities in alignment with Congress and the Executive Council decisions and resolutions;

(b) Using numerical indicators (i.e. key performance indicators (KPIs)) for tracking the progress of the implementation of Congress and the Executive Council decisions and resolutions relevant to the Regions, regional associations’ decisions and plans as well as for tracking status changes in Members’ capabilities, with the support of the Regional Offices. The regional associations shall review and assess the degree of implementation of decisions and plans using the KPIs which shall be reported by the president of the regional associations together with experiences and best practices in addressing critical capacity gaps by the regional association to Congress and the Executive Council Sessions;

(c) Strengthening the staffing, technical and coordination capacities of the Regional Offices to provide support to the President of Regional Associations (PRAs) in fulfilling their duties, as appropriate;

(5) To strengthen and enhance educational and training capacities in the Regions, especially Regional Training Centres (RTCs) in the respective Regions, and to promote the participation of early career and female experts in WMO work;

(6) To strengthen the engagement of the private sector and academia by allowing participation, as associate members and/or observers, of regional industry bodies representing WMO stakeholders’ interests, e.g. regional farmers associations, association of air transporters, etc.;

(7) To promote the use of the new WMO Community Platform and the regular updating of information as an essential tool for the regional associations to identify needs for capacity development of Members, to track progress of implementation of Congress and the Executive Council decisions and resolutions, and to facilitate planning or formulating regional priorities as well as the targeting of investments by WMO and partner organizations;

**Requests:**

**1. Presidents of Regional Associations**:

(a) To submit to the Secretary-General, within six months after each session of Congress, decisions of the regional associations with regards to its regional implementation plan based on regional priorities and focusing on key decisions and resolutions of relevance to the Regions;

(b) To apply measurable KPIs and milestones for the regional implementation plan, with the support of Regional Offices, to enable an effective review of progress of the implementation of Congress and the Executive Council decisions and resolutions relevant to the Regions. These KPIs should be based upon coordinated working plans of the regional associations, technical commissions, Research Board and of the relevant departments of the Secretariat;

(c) To update the regional implementation plan within three months after each Executive Council session taking into consideration new decisions and resolutions relevant to the regional associations;

(d) To coordinate the organization of regional meetings, as appropriate using videoconferencing to address specific issues of interest to the Regions and Members with the support of Regional Offices, and ensure that progress and decisions taken are adequately documented and communicated to the regional associations, other WMO bodies and partners as appropriate;

(e) To facilitate, to the extent possible, the link between regional associations, technical commissions, the Research Board and other bodies and partners of the Organization, by promoting the participation of experts, especially early career and female experts, involved in the work of the WMO bodies in the activities of the regional associations;

(f) To encourage enhanced cooperation between the National Meteorological Services (NMSs) with National Hydrological Services (NHSs) for an improved delivery of integrated products and services for the benefit of impacted sectors such as disaster risk reduction, energy, etc.;

(g) To consult and engage the Management Group in the distribution of leading roles and tasks among Management Group members, EC members from the Region, and Permanent Representatives to lead specific/thematic tasks, with support from leads of the regional associations’ subsidiary bodies as appropriate, to enable enhanced engagement and implementation of regional priorities in alignment with Congress and the Executive Council decisions and resolutions;

(h) To *[New Zealand]* coordinate and convene regular structured engagement sessions with Management Group members, EC members, and Permanent Representatives from the Region in efforts to promote collective ownership on agreed decisions and resolutions of the Congress, EC and the Regional Association;

(i) To facilitate more subregional, regional and interregional cooperation through collaboration among regional centres and lead centres to enhance capacity development within and across the Regions;

(j) To develop regional priorities as the start to the Strategic and Operational Planning process and to form the basis for the WMO Strategic and Operating Plan and to communicate these to the Secretary-General;

(k) To encourage NMHSs engagement in Public and Private Engagements (PPEs) to support their capacity development activities and to supplement their limited budgets by using mechanisms such as the Open Consultative Platform (OCP) on business models and partnerships between public and private sector;

**2. The Secretary-General:**

(a) To engage an independent review of the effectiveness of WMO regional and subregional offices with a view to improving support to Members and coordination of regional activities, identifying requirements for WMO, maximizing WMO’s participation in partner activities and enhancing the effectiveness, visibility and/or impact of these offices. This should take into consideration *inter alia* their strategic location vis-à-vis United Nations regional hubs and/or regional political/economic agencies’ locations, opportunities offered by online meetings, and existing resources;

(b) To develop measurable KPIs and milestones for the regional implementation plans, under the guidance of the presidents of regional associations, to enable an effective review of progress of the implementation of Congress and Executive Council decisions and resolutions. These KPIs should be based upon coordinated working plans of the regional associations, technical commissions, Research Board and of the relevant departments of the Secretariat;

(c) To assess in consultation with the presidents of regional associations staff requirements for the regional and representative offices, based on regional characteristics and requirements of the Region, to enable more effective support to the work of the presidents of regional associations, enhanced engagement with United Nations and regional partner organizations, enhanced support to Members in implementing Congress and the Executive Council decisions and resolutions, and WMO initiatives;

(d) To strengthen the Regional Offices and Regional Associations activities, as appropriate, through the allocation of regional‑specific technical expertise, including human resources as appropriate, and other means for their more effective functioning, including more systematic support to their work and support to the presidents and vice-presidents of regional associations in fulfilling their duties;

(e) When aligned with regional priorities and needs, ensure a further strengthening of the WMO Secretariat’s engagement in advocacy and diplomatic/policy-related meetings with United Nations entities, Regional Economic Commissions and relevant regional ministerial meetings;

(f) To develop guidelines to enable the use of measurable KPIs and milestones for the development of the regional implementation plans by the regional associations pragmatically and taking into account their needs, requirements and available resources*,* and facilitate the provision of training for the use of the guidelines, as appropriate;

(g) To facilitate the induction of incoming Permanent Representatives (PRs), Hydrological Advisors and senior NMHS staff on WMO matters, including the development of an online self-induction module for use by Members, and updating and disseminating the “[*Reference Guide for Permanent Representatives of Members with the World Meteorological Organization on Relevant Procedures and Practices of the Organization*](https://library.wmo.int/?lvl=notice_display&id=7846#.YNCAPmj7SUk)” (WMO‑No. 939) and the “[*Guidelines on the Role, Operation and Management of National Meteorological and Hydrological Services*](https://library.wmo.int/index.php?lvl=notice_display&id=20172#.YNCAo2j7SUk)” (WMO‑No. 1195) in the context of the WMO Reform;

(h) To facilitate the support of the Regional Offices to the regional associations in the identification of key capacity gaps and priorities to inform the development of the WMO strategic and operational planning, the formulation of measurable KPIs and milestones to enable the monitoring of progress as well as facilitating the liaison of the regional associations with the Secretariat for more effective support in addressing regional associations’ needs;

(i) To facilitate enhanced communication from the Secretariat, from the presidents and hydrological advisors of the regional association, and from other WMO bodies to Members, as well as to experts*,* on matters of interest to the Regions, including the strengthening of the use of tools and platforms for communication, and including repositories for information, as appropriate;

(j) To support regional associations in developing priorities which form the basis for the WMO Strategic and Operating Plan, and communicating regional associations priorities to other Constituent Bodies and WMO programmes; and to prepare a WMO Strategic and Operating Plan based on these regional associations’ priorities as the start to the Strategic and Operational Planning process;

(k) To further support the continued work of the EC Task Force on the Comprehensive Review of the WMO Regional Concept and Approaches in accordance with the Task Force’s approved Terms of Reference and for it to report with recommendations to the nineteenth World Meteorological Congress in 2023;

(l) To develop guidelines to facilitate NMHSs engagement in Public and Private Engagements (PPEs) to support their capacity development activities and to supplement their limited budgets;

(m) To develop and maintain, in consultation with Regional Associations, a list of important regional meetings (see [Annex 2](#_Annex_2_to) as a living document), and seek opportunities to establish linkages with these meetings in order to encourage regional cooperation and activities;

(n) To assist with resource mobilization efforts to enable designated regional institutions/centres such as Regional Training Centres (RTCs), Regional Telecommunication Hubs (RTHs), Regional Specialized Meteorological Centres (RSMCs) to effectively deliver on their mandates and positioning them in line with WMO reform packages*;*

**Also requests** the Secretary-General to provide the needed support and resources for the effective implementation of these decisions;

**Requests** the regional associations, the technical commissions, the Research Board, and other bodies of the Organization to actively support the implementation of these decisions.

[Annex 1](#_Annex_1_to): The overall rationale, the key current challenges and opportunities for the comprehensive review of the WMO regional concept and approaches

[Annex 2](#_Annex_2_to): Important meetings WMO could leverage to encourage and promote regional cooperation

## Annex 1 to Draft Resolution 2.2(1)/1 (Cg-Ext(2021))

## The overall rationale, the key current challenges and opportunities for the comprehensive review of the WMO regional concept and approaches

**Overall Rationale:**

Following Cg-18 and EC-72 decisions, the overall rationale for undertaking a comprehensive review of the WMO regional concept and approaches can be viewed as a ‘back to basics’ approach to ensuring the continued delivery and implementation of the priorities of WMO Members. The role and function of the regional associations are outlined in the WMO Convention. The Convention states that the regional associations should: *1. Promote the execution of the resolutions of Congress and the Executive Council in their respective Regions; 2. Consider matters brought to their attention by the Executive Council; 3. Discuss matters of general interest and coordinate meteorological related activities in the Regions; 4. Make recommendations to Congress and the Executive Council on matters within the purpose of the Organization.*

WMO General Regulation 130 and Annex II — Regional Associations General Terms of Reference, articulate important fundamental features and core values which ***remain highly relevant*** and can be summarized as follows:

 Coordinating Members’ activities in the planning, implementation, monitoring and evaluation of agreed programmes, strategies and activities at regional and subregional level.

 Ensuring visibility of WMO and engaging key stakeholders in regional initiatives and projects related to the strategic priorities of the Organization for capacity development and sustainability of long-term modern services and addressing critical deficiencies.

 Identifying requirements and any impediments of the timely implementation of planned programmes and activities to the technical commissions; collaborating with Members, technical commissions and other bodies to support, monitor and review all the regional centres established by WMO bodies.

 Ensuring the identification of common expertise and gaps with technical commissions and sharing regional priorities.

 Engaging Members in achieving the expected results in the strategic plan.

 Building and promoting partnerships with Regional Economic Commissions, United Nations bodies, etc.

 Advocating to regional political and economic entities and supporting PRs in financial and political support to Members’ vital capabilities in information and services.

There is a critical need to ensure that regional associations are refocused on their basic mandate envisaged in the Convention and General Regulations. It is important to clearly outline how these basic roles and functions will be achieved by the President and the association members and be fully supported by the WMO Secretariat. The underlying core values remain highly relevant, however the modalities on how they are achieved should be clearly enhanced.

This comprehensive review plus the Survey of Members identifies the current challenges and opportunities. Proposed practical enhancements and recommendations are made to ensure that WMO initiatives in support of enhancing Members’ capabilities are at the heart of the business of regional associations. Enhanced advocacy with regional economic and political bodies will also ensure the necessary investments in priority areas.

**Key Current Challenges:**

There are a number of important challenges and current weaknesses in the way that regional associations function, which could be identified as gaps in substantive support, engagement and connection with the strategic initiatives identified as important by Congress and the Executive Council.

These challenges can be summarized as follows:

 The implementation of Congress resolutions and Executive Council decisions is limited.

 There are important gaps in observations or multi-hazard early warning systems and services.

 The heterogeneous nature of some regions and differences/diversity of processes both politically and economically is not sufficiently recognized and adjusted.

**Key Current Opportunities:**

There are several important benefits and opportunities for making changes to the way the regional associations function and how the WMO Secretariat’s expertise, convening power and advocacy can be fully utilized in support of Members in addressing existing gaps through identified priorities. In particular:

 The regional associations will have a higher impact by focusing on the implementation of selected strategic priorities.

 There should be a more systematic use of numerical indicators tracking the changes of the capabilities in observations and early warning systems and services.

 We should ensure opportunities for connections to important regional meetings such as CIMHET, League of Arab States, SIDS Pacific, EUMETNET, among others, to promote cooperation and regional activities.

 The benefits of a more extensive use of videoconferencing technology thereby encouraging a wider participation in meetings, could be further explored.

 The need for a greater utilization of senior Secretariat officials such as the Secretary-General and WMO Executive Management for engagement in United Nations and political processes to advocate for regionally focused attention and investments could be pursued.

 Enhancing partnership and cooperation with the United Nations development system, regional coordinators and the private sector and academic institutions, could be strengthened.

 Regional and interregional cooperation through the use of regional specialized centres such as regional training centres and regional climate centres in support of capacity development of Members in the Regions could be enhanced.

## Annex 2 to Draft Resolution 2.2(1)/1 (Cg-Ext(2021))

## Important meetings WMO could leverage to encourage and promote regional cooperation

 The Ibero-American NMHS Directors Conference (CIMHET)

 The Arab League

 The Pacific Small Island Developing States (PSIDS)

 The European Meteorological Services Network (EUMETNET)

 The ASEAN Sub-Committee on Meteorology and Geophysics (SCMG)

 Informal conferences of National Meteorological and Hydrological  
Services directors

 Informal Conference of South-East European Directors of NMHSs (ICSEED)

 Informal Conference of Central European Directors of NMHSs (ICCED)

 Informal Conference of Western European Directors of NMHSs (ICWED)

 Commonwealth of Independent States/Interstate Council on Hydrometeorology (CIS/ICH)

 Caribbean Meteorological Organization (CMO) *[BCT]*

 Archipelagic and Island States (AIS) Forum

 Pacific Meteorological Council (PMC)

 Intergovernmental Oceanographic Commission (IOC-UNESCO)

 Meteorological Association of Southern Africa

 African Ministerial Conference on Meteorology (AMCOMET)

1. For example, data exchange activities based on phase II of the WMO Hydrological Observation System (WHOS), Hydro-SOS, Hydro-Hub, hydrometeorological early warning and forecasting systems and the Flash Flood Guidance System; regional hydrological projections based on seasonal forecasts or regional drought warning systems, in coordination with the regional committees for services and for infrastructure and information management; and other projects that have the potential to promote hydrology actions in the region. [↑](#footnote-ref-1)