



FINAL REPORT OF THE SIXTY-FIFTH MEETING OF THE CARIBBEAN METEOROLOGICAL COUNCIL



CHAIRPERSON:

The Honourable Minister **Marvin Gonzales**,
Minister, Ministry of Public Utilities and
Acting Attorney General of **Trinidad and
Tobago**

VENUE AND DATE:

Hyatt Regency Hotel, Port of Spain
TRINIDAD and TOBAGO
16-17 NOVEMBER 2023

1 OPENING OF THE SESSION AND ELECTION OF CHAIRPERSON

1.1. The Sixty-fifth Session of the *Caribbean Meteorological Council* (CMC65) was hosted by the Government of the Republic of Trinidad and Tobago at the Hyatt Regency Hotel, Port of Spain, Trinidad and Tobago on 16-17 November 2023. The Caribbean Meteorological Council (CMC) is the supreme organ, governing and policy-making body of the *Caribbean Meteorological Organization* (CMO).

1.2. **Mr Hans Des Vignes**, the Master of Ceremony for the Opening Ceremony, commenced the Session by extending words of welcome, after which the National Anthem was rendered as an instrumental on the steel pan, the national instrument of Trinidad and Tobago, followed by the invocation delivered by **Baba Neil Rawlings**.

1.3. **Dr Arlene Laing**, Coordinating Director of the CMO Headquarters Unit, thanked the Government of Trinidad and Tobago for hosting CMC 65 and welcomed all participants to the Council Session. Dr Laing then outlined a brief history of the CMO, and its role in fostering scientific and technical cooperation among the CMO's Member States and regional institutions, which helps to build resilience to extreme weather, climate change, and other hazards. She highlighted the National Meteorological and Hydrometeorological Services (NMHSs) of CMO Member States as vital services whose primary mission is to save lives, livelihoods, and property, and who are key to the implementation of the *Early Warnings for All by 2027*, which is a call to Action by the UN Secretary-General, **Mr Antonio Guterres**, as a climate adaptation mechanism. Dr Laing stressed that the NMHSs also add value to the economies of the region and help the public and private sectors to make better decisions. She illustrated the weather, climate, and water prediction value chain and the role of Caribbean hydro-meteorological institutions and their benefit to societal decisions.

1.4. **Mr Felipe Lucio**, WMO Director of Member Services and Development, delivered remarks on behalf of the WMO Secretary-General, Prof Petteri Taalas. He spoke of the susceptibility of the Caribbean to weather and climate-related hazards and the impacts these were having. He highlighted that actions embedded within the Early Warning for All initiative seek to address these and other programmes, which the WMO was collaborating such as CREWS, SOFF, SWFP and the RA IV Hurricane Committee are meant to assist Members and the region as a whole in becoming more resilient.

1.5. **Dr Celeste Saulo**, WMO Secretary General-Elect, provided a video message in which she congratulated the CMO on the 50th Anniversary of its establishment. She highlighted the beneficial collaboration between the CMO and WMO, including the role of the Coordinating Director and the Regional Training Centre at CIMH. She expressed the sentiment that if other regions had organizations like CMO, the WMO would be much more effective. She also noted that the SIDS are vulnerable in these times of increasing global warming. She ended by saying that she looked forward to working with CMO during her tenure.

1.6. **Ms Mami Mizutori**, Special Representative to the Secretary General (SRSG) for UN Disaster Risk Reduction (DRR) also delivered a video message, also offered congratulations to the CMO on its 50th anniversary. The SRSG emphasized the value of regional cooperation that exists among institutions and nations of the Caribbean, especially the Regional Early Warning Consortium. She expressed the need for continued investment to facilitate a multi-sectoral risk resilient future.

1.7. The feature address was delivered by **The Honourable, Marvin Gonzales**, Minister of Public Utilities and Acting Attorney General. The Honourable Minister reminded those present of the devastating effects of extreme weather and climate in the Caribbean and the essential role of National Meteorological Services in the building of resilience to climate change. He emphasized the strong

commitment of his government to the Trinidad and Tobago Meteorological Service (TTMS), noting the recent delivery of a GOES satellite receiver system, the refurbishing of the Doppler weather radar (which was deployed by CMO Headquarters in 2009), approved expansion of the TTMS human resources and the planned new facility for the TTMS to be built in 2024. The Honourable Minister thanked CMO for the notable work being done within the Caribbean.

1.8. The Meeting elected **The Honourable, Marvin Gonzales**, Minister of Public Utilities and Acting Attorney General as the **Chair of the Caribbean Meteorological Council** for its 65th session and the intersessional period until the next annual meeting of the Council.

1.9. After the feature address **Mr Shakeer Baig**, Director, of the TTMS delivered the Vote of Thanks to all speakers. He thanked all of the speakers, particularly the Honourable Minister for being a champion for meteorological services in Trinidad and Tobago. He thanked all invited guests and delegates for joining the opening of the 65th Council Session.

1.10. Due to the increase in the portfolio of the Honourable Minister Gonzales, which placed additional obligations on him, the remainder of the Session was chaired mostly by **Ms Nicolette Duke**, Permanent Secretary, Ministry of Public Utilities and in part by the Honourable Minister.

2 ADOPTION OF AGENDA AND PROCEDURAL MATTERS

2.1 The Agenda adopted by the Meeting is shown in **ANNEX I** of this Report. The Meeting fixed its hours of work and determined the order in which it would conduct its business. The list of Delegates attending the Meeting is attached as **ANNEX II** to this Report.

3 CMO EXECUTIVE REPORTS

3(a) Coordinating Director's Report

3.1 The Coordinating Director reported on the activities and issues concerning the CMO Headquarters Unit since the previous session of the Council. The Council noted and discussed these activities and issues, particularly the follow-up to the 19th World Meteorological Congress (WMO), as it related to the Caribbean region, in general, and CMO Member States, in particular. The most pressing issue noted was the *Early Warnings for All* UN Global Initiative. Also noted were other contributions to disaster risk reduction, Member States to implement the *WMO Integrated Global Observing System (WIGOS)*, including the *Global Basic Observation Network (GBON)* and the *Systematic Observations Financing Facility (SOFF)*, which will allow Caribbean SIDs to be able to implement and sustain their contribution to GBON.

3.2 The Council briefly reviewed the impacts of weather and other natural hazards in the region in 2023. It noted that this hurricane season, was not as devastating to the region. The influence of El Nino was evident in that most of the tropical cyclones of 2023 have curved northward over the tropical Atlantic rather than crossing through the Caribbean. Thus Barbados, being the easternmost island, saw most of the impacts of 2023 from tropical cyclones or their precursors. Guadeloupe and other Leeward Islands were also affected by storms curving towards the north. Hurricane **Philippe**, brought heavy rain, flooding, landslides, strong winds, and rough seas to Guadeloupe and other neighbouring islands. The track of Philippe was difficult to forecast because of the Fujiwhara Effect with Tropical Storm Rina. That effect occurs when two storms are close together and one storm can weaken and be drawn into the circulation of the other or they can move around each other before separating. In October, TC Tammy made landfall in Barbuda after bringing heavy rain, strong winds, and storm surge to La Désirade, a small island east of Guadeloupe.

3.3 The report noted that many of the storms and hurricanes that affected the Caribbean in 2023 were asymmetric in terms of where the strongest thunderstorms were located. Some were 100s of km away from the eye and their effects were sometimes experienced after the storm, which presented challenges for warnings where persons were focused on the location of the eye.

3.4 The Council noted other types of high-impact weather and climate events of 2023 including localized flooding in Barbados on 26 October. Guyana and Jamaica reported record droughts in 2023, which may have been related to El Niño conditions in the tropical Pacific. Council was asked to note episodes of poor air quality and visibility due to Sahara dust outbreaks.

3.5 The report informed that through coordination with the US National Weather Service Weather Prediction Center's International Desk, the region and CMO Headquarters received excessive rainfall outlooks associated with tropical cyclones and other disturbances. The rainfall outlooks are supplementary information that is also shared with the NHC and critical for understanding and preparing for heavy rainfall impacts.

3.6 Council was informed of a special session at the *45th Hurricane Committee*, particularly focused on dissemination and communication of early warnings to the last mile, with the CD serving as a panelist.

3.7 Council noted that the CMO Headquarters through an agreement with the WMO was supporting National Meteorological and Hydrometeorological Services with Model Hydro-Meteorological Legislation and Policy that was endorsed by CMO Member States. In 2023, legislation was drafted for the Barbados Meteorological Service. This brought to nine (9), the number of Member States that received support to adapt the model legislation for their national meteorological services, including defining their roles and responsibilities, the extent of their authority, their organizational structure, and funding mechanisms. The development of meteorological legislation was supported by the *WMO Climate Risk and Early Warning Systems (CREWS) Caribbean* project for the period 2022-2023 and Environment and Climate Change Canada in 2020-2021.

3.8 Council noted the CMO Headquarters support for strengthening the capacity at the national level, by collaborating with the WMO CREWS Caribbean Project to develop Strategic Plans, National Frameworks for Weather, Water, and Climate Services, and complementary Action Plans for the National Meteorological Services in eight Member States. Council further noted that this was expanded and now includes the Turks and Caicos Islands National Meteorological Service and the Cayman Island National Weather Service in 2023. Project details are under Agenda Item 11.

3.9 It was also noted by Council that the CMO Headquarters contributed to the development of a *Strategic Roadmap for Multi-Hazard Early Warning Systems in the Caribbean 2020-2023*, through the CREWS Caribbean Project, and contributed to the Priority Activities, including as lead coordinator on the development of a multi-sensor precipitation grid over the Eastern Caribbean with the Barbados weather radar as one of the primary data sources. The project includes CIMH, as the technical lead, and the National Meteorological Services of Barbados, Saint Lucia, and St Vincent and the Grenadines.

WMO Matters

3.10 Council noted that the Coordinating Director, the Permanent Representative of the British Caribbean Territories with WMO, led a 3-person delegation to the *19th World Meteorological Congress*, held in Geneva, Switzerland, 22 May – 2 June 2023. The Congress is the supreme body of the WMO. Delegates of its Member States and Territories assemble every four years to set out the policies and programmes that impact on matters relating to weather, climate and water in every country of the world, whether large or small, developed or developing. Over the years, primarily because of

cost, it has not been easy for some CMO Member States to actively participate routinely in WMO activities at the Congress level. It has, therefore, always been imperative for the Caribbean Meteorological Organization Headquarters Unit, as one of the pillars of its mandate, to actively participate in WMO activities at the highest level; to ensure that the interests of the Caribbean Small Island Developing States are accounted for and to guide and advise the CMO Member States in their own related activities. The Coordinating Director was accompanied to Congress by the Science and Technology Officer of the CMO Headquarters and the Principal, CIMH.

3.11 Council noted that, as part of the preparation for effective participation of CMO Members at the 19th Congress, the Coordinating Director provided information about the major items and decisions to be made to the Governments of the WMO Members of CMO Member States and encouraged the participation of their Permanent Representatives and Hydrological Advisers in the Congress. Council was asked to note that two Members are not compliant with WMO General Regulation 6, with regard to the formalizing of their Permanent Representative with WMO. Council **urged** to WMO Members to formalize their Permanent Representatives and Hydrological Advisers with WMO.

3.12 The Council noted the Coordinating Director, as a member of the **WMO Executive Council** (EC) since 2018, participated in the 76th Session of the EC in Geneva during 27 February to 3 March 2023 along with advisors from CMO Headquarters, CIMH, Cayman Islands and Grenada. The implications of a number of the decisions of the Executive Council are critical for CMO Member States, including the implementation of the UN *Early Warnings for All*, *WMO Integrated Global Observing System* (WIGOS) and the *Global Basic Observation Network* (GBON). After being re-elected to the Executive Council by the 19th WMO Congress, the Coordinating Director also attended the 77th Session of the EC in Geneva on 5-6 June 2023.

3.13 Council noted that the Coordinating Director continues to serve as the RA IV representative to the **WMO Research Board** (RB), having been selected as the RA IV Research and Modelling Focal Point at the 18th Session of RA IV in February 2021. In that capacity, she has advanced activities that support the research priorities of North America, Central America and the Caribbean. She also serves on the *WMO Staff Pension Committee* and attended UN Joint Staff Pension Board meetings in 2023 as an alternate representative for the WMO.

3.14 Council recalled many activities of the CMO Headquarters and CIMH aimed at regional implementation of global programmes and initiatives, particularly those initiated by the WMO as they relate to the Caribbean region, in general, and CMO Member States, in particular. Among these is support for WMO regional activities related to the *WMO Integrated Global Observing System* (WIGOS).

3.15 Council was pleased to note the leading role of the CMO Headquarters Unit in the Caribbean's implementation of the new WMO Information System (WIS2.0). In June 2023, CMO Headquarters hosted the WIS2.0 in a Box Workshop for 19 participants from 15 countries, where participants learnt how to install and configure the software to **enable ease of local and international data exchange**. CMO and WMO have since signed a Letter of Agreement whereby WMO will provide cloud services to support a CMO Node of WIS for four years. The CMO is among the first regional group to pilot this new technology.

3.16 Council was reminded that CMO Headquarters and Trinidad and Tobago Meteorological Service will be responsible for the data quality management system for the English-speaking Caribbean as components of virtual **Regional WIGOS Centre** in Regional Association IV (North America, Central America and the Caribbean) (RA IV). The centre is a collaboration with the United States National Weather Service, Environment Canada, Costa Rica, the CMO Headquarters Unit, and the Trinidad and Tobago Meteorological Service, and was endorsed by the RA IV Management Group in January 2020. The Coordinating Director and the Science and Technology Officer (STO)

participated in a training workshop in Costa Rica on 12-15 December 2022 and STO attended the online RWC Global Workshop in July 2023. Council noted that the RWC is planned to start functioning in pilot mode in the last quarter of 2023.

3.17 Council noted that **Mr Kenneth Kerr**, STO, was selected to serve as the Chair of the RA IV Services Committee at the meeting of the RA IV Management Group in Geneva on 3 June 2023.

3.18 Council learnt that in 2023, CMO Headquarters continued to work with Director of Meteorology of the Turks and Caicos Island (TCI) Airport Authority, **Dr Holly Hamilton**, on the development of their National Meteorological Service, including assistance with. A Strategic Plan, including a National Framework for Weather, Climate, Water, and Ocean Services, was implemented by CMO Headquarters with funding from CREWS Caribbean and accepted by the Ministry and launched in May 2023 in conjunction with a WMO/CMO Training workshop on the Common Alerting Protocol.

3.19 Council was informed that CMO Headquarters responded to the request from **Honourable Minister Kye Rymer**, Minister of Communications and Works, British Virgin Islands (BVI) to assist BVI with the development of a National Meteorological Service in the BVI. In June, the Coordinating Director and STO met with Ministry officials, the BVI Airport Authority, and the Department of Disaster Management (DDM) to understand the goals of the BVI with regard to meteorological services and their current capabilities. A meeting on operational matters was held with the BVIAA, DDM, and Antigua and Barbuda Meteorological Service, which provides forecasts and warnings for BVI under the CMO Regional Forecasting Arrangements. Council noted that CMO Headquarters (CMO HQ) is now working with the Ministry and other key stakeholders in BVI on a roadmap towards the development of a National Meteorological Service in BVI, with a draft roadmap having been shared with the Ministry in October. CMO HQ also coordinated with CIMH on the provision of appropriate operational training for the meteorologist at the BVI DDM.

3.20 Council was informed of various activities undertaken by the CMO Headquarters in support of the regional and global water agenda, including the organization of a third symposium on hydro-meteorology. CMO Headquarters, in collaboration with Varysian Ltd, organized the Third Caribbean Symposium on Operational Hydro-Meteorology, from 31 January – 2 February 2023, in Jamaica. This symposium followed the success of the first two held in December 2020 and November 2019, respectively. The 2023 symposium focused on Early Warning Systems and the partnerships needed to ensure *Early Warnings for All*.

3.21 Council recalled that a major responsibility for the CMO Headquarters with regard to DRR is the Severe Weather Forecast Programme (SWFP) Eastern Caribbean, which focuses on severe weather (heavy rain, strong winds, rough seas/swells) that can occur at any time of year. The Regional Subprogramme Management Team is co-chaired by *Météo-France-Martinique* and CMO Headquarters and supported by CIMH. The SWFP Eastern Caribbean is in pre-operational test phase, with global and regional model forecast guidance provided by the *Regional Forecast Support Facility* (RFSF)–Martinique. In March 2023, the Coordinating Director and *Météo-France* Co-Chair reported on SWFP activities to the 45th Hurricane Committee and in March and June 2023, the Coordinating Director and her adviser met with the Director of *Météo-France*, in Geneva, to review collaborative activities, in accordance with the formal *Working Arrangements* between CMO and *Météo-France*.

3.22 Council noted that since the 63rd Session of the CMC, the CMO Headquarters has embarked on a number of activities to support the regional and global water agenda, including supporting the development of the WMO HydroSOS Caribbean Implementation Plan, by facilitating nominations of national focal points with WMO and assisting Members with completion of the meteorological information required for their national assessment and the Plan. This effort will synergize with the Early Warnings for All and CREWS Caribbean initiatives.

3.23 Additionally, in May 2023, CMO Headquarters collaborated with the WMO, the Red Cross, and local disaster management agencies in Trinidad and Tobago to implement Community Based Flood Management Activities in Trinidad and Tobago, activities noted by the Council.

3.24 Council noted that the Coordinating Director participated in discussions with CARICOM Secretariat, CIMH, and other stakeholders on the jumpstarting of a Consortium of CARICOM Institutions for water. The Coordinating Director continues to urge CMO Member States to formalize their Hydrological Adviser with WMO and to participate in the RA IV Hydrological Forum. Council was asked to **ensure that each WMO Member has a formally designated Hydrological Adviser with WMO.**

3.25 Council noted that CMO Headquarters is working with the Caribbean Development Bank on a project to upgrade the CMO radar network to dual-polarization systems, which is the current standard for operational meteorology. CMO HQ continued to support the operations of the CMO Radar Network through the collection and disbursement of funds to radar host countries. Additionally, CMO HQ hosted four virtual meetings of the CORG since CMC63. Council was reminded that the CORG comprises radar technicians and IT personnel from radar host countries and CIMH, and is co-chaired by **Mr Brian Murray** of the Barbados Meteorological Service and **Dr Ashford Reyes** of CIMH. An abstract on the CORG, as a community of practice to support early warnings, has been accepted for presentation at the 2024 Annual Meeting of the American Meteorological Society. Details of the radar network and CORG were presented under Agenda item 10.

3.26 Council noted that CMO Headquarters partnered with the *International Centre for Tropical Agriculture* (CIAT), as part of the *SERVIR-Amazonia* expansion to the Caribbean, to deliver capacity building in the generation and use of climate data and other relevant geospatial data to agencies in Trinidad and Tobago. *SERVIR-Amazonia* is part of a joint initiative of the *National Aeronautics and Space Administration* (NASA) and the *United States Agency for International Development* (USAID). CMO Headquarters together with *SERVIR-Amazonia*, organized 12 training sessions during January to April 2023 on the [use of geospatial tools to monitor hydrometeorological events and mangrove ecosystems](#), for 23 representatives from government, academia, research, and non-governmental organizations in Trinidad and Tobago. CMO and *SERVIR-Amazonia* helped Trinidad and Tobago to develop services and share data focused on (i) increasing resilience to and reducing the risks due to floods and droughts (ii) strengthening the management of fragile mangrove ecosystems. Participants developed enhanced skills in visualizing, mapping, and integrating a variety of data from satellites and radars and in analysing trends in earth observations. Very importantly, they have also begun to develop coordination mechanisms and to integrate information across agencies that will help their nation to make better decisions. Three of the trainees are co-authors on an abstract that was accepted for presentation at the 2024 Annual Meeting of the American Meteorological Society and have been nominated by the CMO Headquarters for potential sponsorship from the US National Weather Service to attend the meeting in person.

3.27 Council recognised that in May 2023, CMO Headquarters co-organized a workshop on *Improving Marine and Ocean Meteorological Services for Trinidad and Tobago*, hosted by the Trinidad and Tobago Meteorological Service (TTMS), with the support of WMO and CREWS. CMO Headquarters continues to coordinate with the WMO in support of capacity development for marine meteorological service delivery in the Caribbean.

3.28 Council noted that the Coordinating Director was invited to participate in three high-level panels at the Latin America and Caribbean Climate Week during 24-27 October 2023 in Panama, including on the role of National Meteorological and Hydrological Services in DRR, early warnings, and climate services. The Coordinating Director also presented at the UNDRR and Caribbean Disaster and Emergency Management Agency (CDEMA) workshop on Climate Change Adaptation and Disaster Risk Reduction held in July in Port of Spain.

3.29 Council recalled that, in addition to the activities reported above, the CMO Headquarters Unit continues to advance disaster risk reduction in cooperation and coordination with CDEMA, CIMH, and other regional institutions. Through the Regional Early Warning System (REWS) Consortium led by CDEMA, CMO HQ aided in the development of a Multi-Hazard Early Warning System Capacity Mapping. Other related activities are described under Agenda Items 5 and 11.

3.30 Council noted that CMO Headquarters continues to supporting the efforts of WMO and others to [protect radio frequencies that are vital for earth observations, weather forecasting, and climate services](#). The CMO noted its gratitude to the Caribbean Telecommunications Union (CTU) and its Members for previously supporting proposals to promote safety and safety-related services, including meteorological and related earth observations in 2019. CMO HQ encouraged Members to work with their spectrum management authorities to ensure that adequate protection is maintained for radiocommunication allocated to meteorological and related earth observation services. A priority for the upcoming World Radio Conference 2023 is the [impact on sea-surface temperature measurements](#) of a new spectrum allocation for the future development of International Mobile Telecommunications (IMT), which will interfere with sea surface temperature measurements up to 2000 km from the coast. This is important because **sea surface temperature measurements help to predict where tropical storms and hurricanes are likely to form**, that is, where the sea-surface temperature reaches or exceeds 26°C. Additionally, rapid **intensification of storms has been observed when they move over warm currents and eddies**.

3.31 Council noted that lightning is the most commonly experienced weather hazard and it poses a danger to wind turbines and solar farms. It recalled that lightning safety promotion was one of the motivating factors for the CMO Headquarters and the WMO to organize the first ever Symposium on Lightning and Lightning Safety Awareness in May 2021, with attendance of 130 participants from 28 countries. Council was informed that the next phase of the CREWS Caribbean programme to be launched in the 4th Quarter of 2023, will include lightning safety as one of the multiple hazards under Pillar 2 of Early Warning for All.

3.32 Council is asked to note that the Coordinating Director or STO participated in various CARICOM related activities in 2023, including the 103rd Special Meeting of the *Council for Trade and Economic Development (COTED) - Environment and Sustainable Development*, on 19 and 27 June and preparatory meetings for the SIDS. CMO Headquarters also provided detailed briefs for High-level Ministerial Meetings such as the Second Caribbean SIDS High-Level Dialogue on Climate Change, the Bahamas Declaration from the High-Level Meeting of Ministers on Climate Finance, and the Fourth SIDS conference preparation.

3.33 The CMO Headquarters Finance and Administrative Officer, **Mrs Natalie Araujo-O'Brien**, continues to serve on the CARICOM RBM Leadership Group and the Finance Committee of the Caribbean Community Administrative Tribunal (CCAT).

3.34 Council noted the update on the Status of the Strategic Plan outcomes and Key Performance Indicators presented in Agenda Item 12. Council is asked to note that these activities are helping to achieve the outcomes under each Strategic Goal; the upgrading of National Meteorological Services; enhancement of early warning systems and disaster risk reduction; support for the implementation of the WMO Integrated Global Observation System (WIGOS); contributions to establishing regional priorities for operationally-directed research, marine meteorology and ocean services; contributions to the development of the WMO Unified Data Policy, and the framework for the Global Basic Observation Network, among other activities.

3.35 Council noted that, by 15 October 2023, the level of financial contributions received from Member States stood at 78%, which is similar to the percentage from the previous year. Details will be discussed under Agenda item 6(c).

3.36 Council noted that the CMO Headquarters is supporting the CIMH in its implementation of the Intra-ACP Climate Services and Related Applications (ClimSA) Programme, on behalf of the CMO. ClimSA is an initiative of the Organisation of the African, Caribbean and Pacific States (OACPS) funded under the 11th European Development Fund (EDF) to strengthen the climate services value chain. See the Principal's report for further details.

3(b) CIMH Principal's Report

3.37 The Principal made a presentation to the Council on the activities of the *Caribbean Institute for Meteorology and Hydrology* (CIMH), ([available for download](#)). The presentation was a condensed version of the report delivered to the CIMH Board of Governors.

3.38 The presentation outlined:

- The technical accomplishments of the CIMH and their regional and global impacts;
- CIMH's significant contributions to global and regional capacity development;
- Restructuring of the CIMH to meet future demands;
- CIMH's multi-hazard and integrative approach in its work programme;
- CIMH's achievements in the area of resource mobilization and project development;
- The Institute's draft strategic plan for the period 2020 – 2024;
- ending with the fiscal challenges facing CIMH due to limit submission of subventions;

3.39 The Principal reminded the Council of the evolving functions of the CIMH which includes (i) Training – WMO Regional Training Centre (RTC) and coordinator of the Bachelor of Science (BSc) in Meteorology programme at The University of the West Indies, (ii) regional centre for research and development in the areas of meteorology, climatology and hydrology/water resources management; (iii) WMO Regional Instrument Centre that supports instrument procurement, maintenance and calibration, observation network design and deployment, (iv) Regional Climate Data Centre responsible for climate data collection, quality assurance, archiving and dissemination, (v) WMO designated Regional Climate Centre (RCC) for the Caribbean responsible for coordinating the implementation of the Global Framework for Climate Services (GFCS) in the region, (vi) Caribbean Centre for Climate and Environmental Simulations (CCCES) which produces among other things daily high-resolution numerical prediction products that support weather, Sahara Dust, volcanic ash and wave forecasts for the region and (vii) the Pan American Node of the WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) and a Regional Marine Forecast Support Centre (RMFCS), which takes advantage of some of the resources already present at the CIMH.

3.40 Council was informed of the key achievements and challenges of the CIMH during 2023. The report identified emerging training, research and business opportunities that the CIMH was pursuing to (i) improve the quantity and quality of products and services it delivers to stakeholders and (ii) enhance revenue generation at CIMH to alleviate the impacts on the work programme of the annual shortfalls in subventions.

3.41 Council noted that the CIMH continued to make significant contributions to the Caribbean and internationally in the areas of disaster risk reduction, water resources management, health, energy, agriculture, and tourism. These contributions were accomplished through CIMH's training, education, innovation, research & development initiatives that have been built through regional and international collaborations.

3.42 Council was informed of CIMH's increasing engagement with US agencies and institutions, including a major NOAA-CIMH Climate workshop attended by the Hon. Prime Minister Mia Mottley and NOAA Administrator, Dr Rick Spinard. Council was also informed of the Principal's participation with the Barbados Water Authority and their engagement with EU and other official on the matter of water.

3.41 The Principal also reported on his visits to Historically Black Colleges and Universities (HBCUs) and new agreement signed with Delaware University.

3.43 The Council was reminded of the USAID Strengthening Disaster and Climate Resilience (SDCR) In the Eastern and Southern Caribbean Project. Council was informed of the outstanding activities under the programme, in particular, the 9-month Caribbean Youth Livelihoods Internship Programme (CYLIP), developed by the CIMH. CYLIP was CIMH's attempt to, in part, to address youth unemployment by fostering innovative entrepreneurship programmes in the earth and atmospheric sciences and related disciplines. Participants in the programme are recent graduates from economically disadvantaged communities.

3.44 Council was reminded of CIMH's collaboration with the International Atomic Energy Agency (IAEA) on collaboration in water resources management and isotope hydrology, including support for Tritium monitoring in rainwater collected across the region.

3.45 The Principal informed the Council that the Regional Climate Center was an example for the world and continued (i) to deliver quality products and services to the region and (ii) to identify ways to enhance the usability of its products and services to sector practitioners.

3.46 Council was informed of new and emerging global and regional activities of CIMH, including SERVIR Amazonia training in Barbados, which is supported by the International Center for Tropical Agriculture (CIAT).

3.47 Council was further reminded that it was Member States contribution that funded the CIMH. Although Members expectation should be adjusted based on the subventions that were received, however, that was not the case. CIMH met Members expectations by conducting low risk commercial consultancies, utilization of project overheads to support operations, and funding received from the University of the West Indies and Cave Hill Campus for training provided. However, there were emerging challenges to these financial operations, which include:

- A need to strengthen fiduciary systems to meet international development standards;
- Staffing needs and organizational structure would have to be addressed to match the increasing opportunities.

3.48 **The Council**

Noted the Principal's Report.

3(c) The CIMH's Board of Governors Report

3.49 The document comprises the decisions made at the 60th Meeting of the Board of Governors (BOG-LX) during the 13–14 November 2023. The Board of Governors (BOG) at the 60th meeting made the following decisions and recommendations:

With reference to Document 3.2 – Appointments and General Purposes Committee:

- (i) The Board **noted** the report of the Appointments and General Purposes Committee and **agreed** that advertisements of vacant technical and academic positions be submitted to the BOG and to the NMHs for the positions to be posted in each Member State to provide for equal opportunities for the respective Member States. The BOG further **noted** that this is in addition to advertising of vacancies on the 'Caribbean Jobs' platform and the local media.

With reference to Document 4.3 – Finances of the Institute: The BOG **discussed** concerns regarding the allocations to Member States in the Contribution Formula.

- (i) The BOG **noted** the report and **agreed** to discuss the Contribution formula with the Coordinating Director of the Caribbean Meteorological Organization (CMO) Headquarters Unit.

With reference to Document 4.6 – Statement of the Accounts:

- (i) The BOG **agreed** at the 59th BOG meeting that the Finance Committee would review the Financial Statements for FY2021 and decide whether to accept/not accept the statements for FY2021. The Statements were restated for FY2021 based on the application of IFRIC 14 standard and the associated actuarial valuation for the operating account. The restated FY2021 Financial Statements were presented with the Financial Statements of FY2022.
- (ii) The CIMH will await the decision of the Finance Committee regarding the acceptance of the Financial Statements.
- (iii) There were queries submitted by Antigua and Barbuda regarding the Financial Statements and many of the questions were addressed in Document 4.6. A wholistic response is to be submitted to Antigua and Barbuda, as well as the BOG, pending any other queries from Member States and input from the auditors.

With reference to Document 4.7 – Staffing matters:

- (i) The BOG **agreed** to hold a meeting, at a date to be decided, within the next 3 to 4 months to review the various documents that make proposals on staffing of the Institute, with a view to identifying specific recommendations and budgetary implications that might be considered at the November 2024 meeting.

With reference to Document 5.1 – Estimates of Expenditure for the Financial Year 2024:

- (i) The BOG **agreed** to
 - a. the Estimates of Expenditure of USD 4,466,053 (BBD 8,904,194) for FY2024. The increase is a 6.7 percent relative to the Estimates for FY2023 to be presented to the Council for approval.
 - b. There was a substantial increase in the Special Payments to the CIMH Pension Plan as per the Actuarial Valuation of FY2023, which was USD 153,630 (BBD 306,300) or 29.28 percent more than FY2023 on the associated budget line item. This was the primary contributory factor that increased the Estimates for FY2024, and it is an obligation of the CIMH to meet the Special Payments recommended by the actuary.

3.44 The Council

Noted the decisions emanating from the 60th BOG meeting.

4 STATUS OF ACTION FROM THE PREVIOUS SESSION

4.1 Following every session of the Council, the CMO Headquarters produces a single document containing an Action Sheet that allows the Council to follow-up on the actions taken on the decisions of its previous session, and to discuss any further actions if required. A summary of the decisions of CMC63 (Cayman Islands) was presented to Council, giving the status of actions taken to implement these decisions of Council, and indicating areas where action as proposed had not materialized.

4.2 Council was informed of decisions from the previous meeting that would be reported on in this Session.

4.3 The **Council**:

(i) **Noted** the Status of Actions from CMC63.

5 SPECIAL WMO ISSUES

5 (a) Outcomes/Highlights of the 19th World Meteorological Service and the 76th and 77th Executive Council sessions of the WMO

5.1 Council noted that the Coordinating Director, *Dr Arlene Laing*, as the Permanent Representative of the British Caribbean Territories (BCT), led a strong delegation comprising *Mr Kenneth Kerr* of the CMO Headquarters and *Dr David Farrell*, Principal of the CIMH and Hydrological Advisor for the BCT with WMO, to the 19th World Meteorological Congress (Cg-19) held from 22 May to 2 June 2023, in Geneva.

5.2 One of the major outcomes of the Congress was the election of officers to serve for the next four (4) years, which resulted in three elected persons from the Caribbean. The Congress:

Elected Professor Celeste SAULO (Argentina) as the Secretary-General of the Organization for the nineteenth financial period

Elected Dr. Abdulla AL MANDOUS (United Arab Emirates) as President of the Organization

Elected Mr Daouda KONATE (Côte d'Ivoire) as First Vice-President of the Organization

Elected Mr Eoin MORAN (Ireland) as Second Vice-President of the Organization

Elected Dr. Mrutyunjay MOHAPATRA (India) as Third Vice-President of the Organization

Elected Dr. Arlene LAING (**British Caribbean Territories**) as a member of the Executive Council (re-elected)

Elected Dr. Garvin CUMMINGS, (**Guyana**) as a member of the Executive Council

Elected Dr. Albert MARTIS, (**Curaçao and Sint Maarten**) as a member of the Executive Council (re-elected)

5.3 The Council was pleased to noted that three CMO experts are serving on the WMO Executive Council after the Elections of the 19th WMO Congress, with *Mr Evan Thompson*, Permanent Representative of Jamaica and *President of WMO Regional Association IV*, as an ex-officio member of the Council.

UN Early Warnings for All

5.4 The WMO Congress [Resolution 4 \(Cq-19\)](#), references the UN global initiative, led by the WMO and UN Disaster Risk Reduction (UNDRR), to protect all persons from hazardous weather, water, or climate through early warning systems by 2027. **Early Warnings for All** is the **highest priority** of the 19th World Meteorological Congress. The WMO *Early Warnings for All: Executive Action Plan 2023–2027* was launched by the UN Secretary-General, **António Guterres**, at the 27th Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC/COP 27) in Sharm El-Sheikh, Egypt in November 2022 and approved by the Parties.

5.5 Council was informed that the 19th World Meteorological Congress held a WMO Leadership and Management Forum on the implementation of the UN [Early Warnings for All](#). In that forum, the Coordinating Director, Dr. Arlene Laing, the Permanent Representative of the British Caribbean Territories with WMO, highlighted the challenges faced by Caribbean Small Island Developing States (SIDS), and the need for resources (human and technical) to strengthen existing institutions and arrangements, in order to achieve early warning for all by 2027. The forum was attended in-person by **Dr Garvin Cummings**, Chief Hydrometeorological Service and Permanent Representative of Guyana with WMO and virtually by **Mr Dale Destin**, Director of Antigua and Barbuda Meteorological Service and the Permanent Representative of Antigua and Barbuda with WMO

5.6 Council noted that the Coordinating Director informed the WMO forum of the cooperation among CMO Members, whereby neighbouring islands provide forecasts and warnings for Member States that do not have those capabilities and also of cooperation among CARICOM Institutions. Also noted was the importance of good working relationships between **National Meteorological and Hydrological Services** and **National Disaster Risk Management Organizations**, who were cited in the *Executive Action Plan 2023-2027*, as **key to the implementation of early warnings for all, as the authorized providers of early warnings**. Dr. Laing indicated that she was pleased that three CMO Members (Antigua and Barbuda, Barbados, and Guyana) are among the initial group of 30 priority countries targeted to receive coordinated support in the new global *Early Warning for All* initiative, while noting that the Initiative is needed by the entire Caribbean, which is prone to multiple hazards that can occur concurrently, in a cascading manner, or in quick succession.

5.7 The Council was reminded of the four pillars of a multi-hazard early warning system (MHEWS), centred on people and having appropriate governance, institutional arrangements, multi-sector partnerships, and cultural context, are:

- Pillar 1 – Disaster risk knowledge and management (led by UNDRR)
- Pillar 2 – Detection, observation, monitoring, analysis, and forecasting (led by WMO)
- Pillar 3 – Warning dissemination and communication (led by ITU)
- Pillar 4 – Preparedness and response capabilities (led by IFRC)

5.8 The Council noted that WMO leads the implementation of Pillar 2, and supports Pillars 1, 3 and 4 and that similar contributions are being made by the National Meteorological and Hydrometeorological Services of CMO Members with the support of the Organs of the CMO and other partners.

5.9 The Council noted **selected** CMO Headquarters activities in support of *Early Warnings for all* including:

- Development of Meteorological Legislation and Policy¹
- Development of Strategic Plans and National Frameworks for Weather, Climate, and Water and Ocean Services¹
- Member, WMO RA IV Hurricane Committee; contributor to the Operational Plan

¹ With funding from the Climate Risk and Early Warning Systems (CREWS) Initiative and Environment and Climate Change Canada (ECCC)

- Co-chairing the Severe Weather Forecasting Programme Eastern Caribbean Management Team, for high-impact severe weather that occur any time of year, including drafting a Severe Weather Operational Plan and supporting the development of a new severe weather case catalogue and database in the Caribbean.
- Contributing to the Regional Early Warning System Consortium that is led by CDEMA
- Contributed to the development of a *Strategic Roadmap for Advancing Multi-Hazard Impact-Based Early Warning Systems and Services in the Caribbean*.
- Co-organized a seven-part webinar series in 2022 on Impact-based Forecasting, in collaboration with the World Bank CREWS and International Weather Ready Nations.
- Supported the development of a prototype Multi-Sensor Precipitation Grid for the Eastern Caribbean (hosted by CIMH), as a resource for decision-making for water, including early warnings, funded World Bank CREWS.
- Co-organized Common Alert Protocol (CAP) implementation workshops with the National Meteorological Services of Belize and the Turks and Caicos Islands; to scale-up work of CAP and integrate into their early warning systems; with the support of WMO and CREWS.
- Co-organized Third Symposium on Operational Hydro-Meteorology in the Caribbean, sponsored by Varysian Ltd. The 2023 Symposium focused on Early Warnings for All and the role of partnerships among public sector, private sector, and academia
- Together with *SERVIR-Amazonia*, organized 12 training sessions during January to April 2023 on the [use of geospatial tools to monitor hydrometeorological events and mangrove ecosystems](#), for 23 representatives from government, academia, research, and non-governmental organizations in Trinidad and Tobago. Thus, improving resilience to extreme weather and protection of fragile mangrove and other ecosystems, with funding from USAID and NASA.

SIDS and Changes in the Cryosphere

5.10 The Council noted that CMO Members joined delegates from other SIDS in voicing concerns about the impact of changes in the cryosphere in polar and high mountain areas on the whole globe, in particular the downstream impacts in small island states and densely populated coastal zones. The Congress passed a resolution requesting more coordinated observations and predictions, data exchange, research and services.

Integrated Flood Management and Integrated Drought Management

5.11 Council noted that CMO Headquarters is supporting various regional hydrological activities, including coordinating among NMHS on the development of the WMO **Hydrological Status and Outlook System (HydroSOS)** Caribbean Implementation Plan. Additionally, in May 2023, CMO Headquarters collaborated with the WMO, the Red Cross, and local disaster management agencies in Trinidad and Tobago to implement Community Based Flood Management Activities in Trinidad and Tobago.

5.12 Council noted that first HydroSOS workshop was held virtually on 19 September 2023 and a face-to-face workshop was held at CIMH on 31 October to 2 November 2023. Members are requested to complete assessment of their national capacities and to identify key needs and gaps, as well as opportunities and challenges related to developing the Caribbean HydroSOS. The implementation plan is expected to focus on implementing HydroSOS at regional, national, and local scales, including developing the capacity of NMHS in the Caribbean to produce hydrological status reports and outlooks. Thus, NMHSs will have better monitoring and forecasting capacities for floods and droughts.

Global Greenhouse Gas Watch

5.13 The 19th *World Meteorological Congress* approved a new [Global Greenhouse Gas Watch](#) (G3W) for systematic monitoring of greenhouse gases to inform implementation of the Paris Agreement on climate change. The new initiative takes advantage of WMO's experience with international cooperation and international data exchange in weather prediction and climate analysis as well as its *Global Atmospheric Watch* and *Integrated Global Greenhouse Gas Information System*, operating since 1989. The proposed components of the G3W result from deliberations of the WMO Congress, WMO Executive Council, and more than 170 participants in the January 2023 International Symposium, which included participants from the research and operational communities, space agencies, meteorological services, the ocean and climate observing communities, academia, and UN partners. The output will be **net monthly measures of CO₂, CH₄ and N₂O on a grid of 100 km by 100 km**, which can be used for various applications, including the Global Stocktake.

5(b) WMO Integrated Global Observing System (WIGOS) – Initial Operational Phase

Implementation of Global Basic Observation Network (GBON)

5.14 Council noted that the CMO Headquarters has been helping Member States to become compliant with WIGOS requirements, thereby supporting real-time sharing and integrating of data, conducive to rapidly-evolving hazards, and in archives, for climate analysis, research, and risk knowledge.

5.15 Council noted that the WMO *Global Basic Observing Network* (GBON) is intended to ensure availability and international exchange of basic surface observation data, which underpin all weather, climate and water services and products for the public good of all nations. The GBON is designed, defined and monitored at the global level, with its implementation having **direct positive effect on the quality of weather forecasts, thus helping improve the safety and well-being of people around the world**.

5.16 Council recalled that GBON implementation started on 1 January 2023, supported by the WMO *Infrastructure Commission* (INFCOM) GBON Implementation Operating Plan, guidance materials for the initial composition of GBON, Members' GBON compliance and GBON global gap analysis (guidelines in [References to GBON material](#)).

Systematic Observations Financing Facility (SOFF): Supporting Members to implement GBON

5.17 Council recalled that the *Systematic Observations Financing Facility* (SOFF) is a financing and technical mechanism to support basic surface observations – GBON. Through the SOFF, developing countries will be able to deliver their contribution to GBON. SOFF investment will focus on providing long-term observational data exchange as a measure of success.

5.18 Council noted that SOFF, a UN fund, was co-created by WMO, UNDP and UNEP to close the most severe gaps, with priority given to Least Developed Countries and Small Island Developing States (SIDS). More than 65 partner institutions are to provide systematic, standardized, and coordinated support to beneficiary countries to achieve compliance with the GBON. Belize, Grenada, and Guyana are the CMO Members in the first batch of beneficiaries of the SOFF. The third batch includes Antigua and Barbuda, Barbados, Dominica, Jamaica, Saint Lucia, St Kitts and Nevis, St Vincent and the Grenadines, and Trinidad and Tobago.

5.19 Council recalled, from CMC63, that during its initial 3-year implementation period, SOFF will prioritize support to 55 SIDS and LDCs, including the CMO Member States listed above. SOFF support will be provided in three phases. In the Readiness phase, the country's hydrometeorological status will be assessed, the GBON gap defined and a plan developed to close the gap. The Investment phase enables countries to close the GBON investment and capacity gap. The Compliance phase

supports sustained GBON compliance and enables access to improved weather forecasts and climate analysis products.

5.20 Council noted that CMO Headquarters has been supporting the implementation of SOFF in the CMO Member States through coordinating with the peer advisor institutions and advising Members during the SOFF Readiness phase, and sharing guidance and regional expertise to SOFF implementing partners such as the World Food Programme in the Caribbean and the Inter-American Development Bank (IDB). The Coordinating Director travelled to Grenada for the launch of the SOFF and supported its Readiness Phase.

5.21 Council was reminded that the CMO Headquarters has been helping CMO Members become compliant with GBON and further reminded of the actions required of CMO Member States, per Resolution 2 of the WMO Extra-ordinary Congress (2021) for GBON.

WMO Information System (WIS) and WIGOS

5.22 Council recalled that the *WMO Integrated Global Observing System (WIGOS)* is an all-encompassing approach to the improvement of WMO's global observing systems, needed in all countries, to consolidate progress in meteorological research, numerical modelling, and computer and communication technologies. WIGOS, together with the *WMO Information System (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.

5.23 The Council also recalled that WIGOS became operational in 2020 and that, as with all Member States of WMO, CMO Member States should be implementing WIGOS and for all Member States and their partners to benefit from a fully operational system

5.24 Council noted that CMO Headquarters hosted the WMO WIS2.0 in a Box Workshop for 19 participants from 15 countries (which included one participant from Cuba and one from Argentina). Participants followed up the workshop by setting up nodes with the support of the CMO and the technical expertise of a core group led by **Dwayne Scott** of Belize, **Kimberly Seaton** of Trinidad and Tobago, and **Shamal Clarke** of Cayman Islands. The result is that by October 2023, the CMO Member States were exchanging data nationally and internationally and thus were among the first to pilot this new technology. As noted earlier in the Coordinating Director's report, CMO and WMO recently signed a Letter of Agreement whereby WMO will provide cloud services for a CMO WIS2.0 node for four years.

Regional WIGOS Centre

5.25 Council noted that the Coordinating Director and the Science and Technology Officer (STO) participated in training workshops as preparation for implementation of a Regional WIGOS Centre (RWC) by the United States, Canada, CMO Headquarters, Trinidad and Tobago, and Costa Rica. CMO Headquarters and Trinidad and Tobago Meteorological Service will be responsible for the data quality management system for the English-speaking Caribbean.

5 (c) The Global Framework for Climate Services (GFCS)

5.26 The Council recalled 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. 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.

5.27 Council noted that, through the CREWS Initiative, CMO Headquarters has been supporting the development of governance frameworks, legislation, and other mechanisms to support Members in developing Climate Services. That includes Strategic Plans and National Frameworks for Weather, Water, and Climate Services and in support CIMH as need in their implementation of the Climate Services and Related Applications (ClimSA) project.

5 (d) Issues emerging from WMO Technical Commissions and Research Board in 2023

WMO Research Board – Seeds of Innovations to support Early Warnings for All

5.28 Council noted that CMO Headquarters helped to organize and lend its scientific and technical expertise to a WMO decision webinar, held on 30 August 2023 and focused on hurricane early warnings. An in-depth, in-person decision workshop is being planned for February 2024 in collaboration with the WMO RA IV and the WMO Research Board.

5 (e) Disaster Risk Reduction and Regional Severe Weather Forecasts and Warning Systems

Tropical Cyclone Programme

5.29 Council recognized that activities within the WMO *Tropical Cyclone Programme* (TCP) were among the most important to the Caribbean and other tropical basins, with the most critical regional activity being the WMO *Hurricane Committee*, serving the *North Atlantic and Caribbean Basin*. The Hurricane Committee has at its core, *the US National Hurricane Center*, which was one of WMO's primary *Regional Specialized Meteorological Centres* (RSMCs) for tropical cyclones. Most Meteorological Services in CMO Member 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 in terms of loss of lives.

5.30 Council noted that the **45th Hurricane Committee** met on 27-31 March 2023 in San Jose, Costa Rica. The [meeting report](#) was finalized after a period of review following the meeting. In addition to the updating of the Operational Plan and report of impacts by Members, extensive discussions were held on the following critical issues:

- Effective communication of forecast and warnings in an era of mis-information and social media
- Artificial Intelligence and its impact on the future of forecasting

5.31 The **Council**:

- (i) **Noted** the decisions of the 19th World Meteorological Congress
- (ii) **Noted** the decisions of the 76th and 77th session of the Executive Council (EC)
- (iii) **Encouraged** Member States to be prepared to leverage resources through the funding mechanisms available to support *Early Warnings for All*

- (iv) **Noted** the activities of the Research Board that support transition of research to operations
- (v) **Urged** CMO Member States to ensure that their NMHSs complete activities for the Operational Phase of WIGOS, which began in 2020.
- (vi) **Urged** CMO Member States to begin the process of compliance with GBON, which became operational at the start of 2023, following the guidelines from WMO
- (vii) **Committed** Members' NMHSs to maintaining their support and participation in the CMO WIS2.0 Node, which requires at least five Members to participate
- (viii) **Noted** the activities of the Virtual *Regional WIGOS Centre (RWC)* as a collaboration among the US, Canada, CMO Headquarters and the Trinidad and Tobago Meteorological Service
- (ix) **Continued** its strong support for the *Global Framework for Climate Services* and **urged** Member States to actively participate in GFCS projects and activities
- (x) **Noted** and **supported** the important work of the regional Hurricane Committee

6 FINANCIAL REPORTS

6(a) Status of Refundable Balances

6.1 Council was reminded of the long-standing arrangement between the CMO and the UK Department of Transport whereby 73% of the BCT contribution paid to the WMO, as well as the full contribution paid to the CMO HQ by the BCT countries, are reimbursed.

6.2 By Members' consent, these funds are held by the CMO HQ to assist Members in attending important Meteorological and/or Hydro-meteorological Meetings, participating in training opportunities and purchasing spare parts. Access to draw-down on these funds is linked to the Member's financial status with the Organization and may be restricted.

6.3 At the 60th session of the Council (2020), it was agreed that a Member in arrears of contribution to the CMO HQ shall, after meeting its full contribution for two successive years, have access to the amount credited to its Refundable Balance account for the first of these years. Access to successive years' refundable balances shall be dependent on liquidating the arrears due for additional years.

6.4 The last reimbursement received from the UK Department of Transport covered 2021. In keeping with a decision made during the 47th session of the Council (2007), the current status of the Refundable Balances held at the CMO HQ on behalf of CMO Member States, as well as, the amount available for drawdown at 30 October 2023 based on the decision taken at CMC60 (2020), is presented below:

6.5 The Council:

- (i) **Noted** the status of the Refundable Balances Account based on the decision taken at CMC60 (2020) with respect to availability of funds for drawdown by Members States in arrears of contribution to the CMO Headquarters.

6(b) CMO HQ – Auditor’s Report

6.6 The Financial Statements for fiscal 2022 were examined by the Auditor General’s Department of Trinidad and Tobago and certified on 28 June 2023. The audited financial statements of the CMO HQ for the year 2022 were presented to Council by the Finance and Administrative Officer.

6.7 The Council

- (i) **Reviewed and accepted** the audited financial statements for 2022
- (ii) **Reaffirmed** the continued use of the Auditor General’s Department of Trinidad and Tobago for the provision of audit services for the CMO HQ, as provided by the Government of the Republic of Trinidad and Tobago.

6(c) Statement of Contributions and Arrears (CMO HQ & CIMH)

6.8 Council was reminded that the financial provisions contained in Article 22 of the CMO Acts, which established the *Caribbean Meteorological Organization* (CMO) in all sixteen Member States, stipulate that the expenses of the Organization shall be borne by Member States as apportioned by the Ministerial level *Caribbean Meteorological Council* (CMC) responsible for approving the budgets of both organs of the CMO, namely the *Headquarters Unit* (CMO HQ) and the *Caribbean Institute for Meteorology and Hydrology* (CIMH). Once approved, it is hoped that all Member States would honour their commitment to meet their annual contributions towards these budgets in a timely manner.

6.9 The Council has repeatedly urged Member States to make regular payments toward the current approved budget and to establish a plan to liquidate arrears in a phased manner. Notwithstanding these pleas, CMO HQ and CIMH continue to experience delays in remittances, part payment and in some cases, non-payment of current contributions by some Member States. This has resulted in an increase in overall arrears year on year which hampers the implementation of programmes and activities planned for both the CMO HQ and the CMH.

6.10 The Council

- (i) **Examined** the detailed Statement of Contributions and Arrears to the CIMH at 30 September 2023 and the CMO HQ at 30 October 2023;
- (ii) **Agreed** that measures should be taken with respect to Member States the CMO HQ and CIMH who appear to make no effort to honour obligations to meet either the current contribution assessed, or to liquidate any portion of the arrears outstanding; and
- (ii) **Directed** the CMO HQ and the CIMH to present a tiered system of consequences to be considered for implementation by a Special Session of the Council.

7 SPECIAL CMO ISSUES

7(a) Review of Caribbean Community (CARICOM) Institutions

7.1 Council recalled that CARICOM conducted a review of its Community Institutions to determine their efficacy and to make them "fit for purpose", as notified by the Coordinating Director and Principal of CIMH during Intersessional Meeting No 1 of the 61st Council, held virtually on 1 February 2022. The Review has the following objectives and purpose:

Overall Objective: To determine the efficacy of Community Institutions and obtain actionable, and timely recommendations which will enable CARICOM to streamline its institutions, making

them 'Fit for Purpose', able to deliver equitable and gender-sensitive services to the Member States; to improve the oversight of Community Institutions by the Community through the rationalisation of their functions, resources, structures and governance arrangements, and to improve effectiveness and efficiency-

Purpose: To improve the efficiency and effectiveness of the 17 Community Institutions.

7.2 Council noted that the consultants were assigned by the Conference of Heads of Governments (CHOG) to review all CIs, with respect to the following three questions:

- Are they fit for purpose?
- Are they effective in delivery?
- Would the Region be harmed were they to be closed?

7.3 The Council recalled that the CMO Headquarters cooperated fully with the process, providing extensive information to the consultants, Baastel, via responses to questionnaires; provisions of many documents and reports; participation in several consultation meetings; and responses to the reports from the Review.

7.4 Council noted that, per the Agreement for the Establishment of the CMO, the CIMH is an Organ of the CMO, and **operates under the legal and governance structure of the CMO**. However, the *Revised Treaty of Chaguaramas* (RTC, 2001) lists both the CMO and the CIMH as **separate** institutions, even though CIMH is an Organ of the CMO by law in each CMO Member State. No reason is provided in the RTC and there is no record of an associated decision by the Council, the supreme body of the CMO. The preliminary first report of the RCCI stated that:

“Among the challenges identified for CMO is the apparent ambiguity regarding the relationship between the CMO and the CIMH, which stems from the inclusion of both the CMO and CIMH as separate Institutions under Article 21 of the RTC, even though the latter is an organ of the former.”

7.5 This ambiguity does not affect the legal status of the CMO Headquarters. However, the listing in the RTC led to an evaluation process that was designed and conducted in a manner that did not reflect the legal structure of the CMO, as a single institution with the following organs:

- the *Caribbean Meteorological Council* as the Governing, Ministerial-Level Body,
- the *Caribbean Institute for Meteorology and Hydrology* (CIMH, formerly Caribbean Meteorological Institute or CMI),
- the *CMO Headquarters Unit* (as the Secretariat) and
- the *Caribbean Meteorological Foundation*.

7.6 Council noted that, **in 2004**, three years after the *Revised Treaty of Chaguaramas*, CMO was **reviewed as a single institution**, i.e., both CIMH and the Headquarters Unit were reviewed together and no changes were made to the boundary of the CMO at the end of that review. However, for this current Review, after an initial joint meeting with CMO Headquarters Unit and CIMH on 3 March 2022, the consultants interacted with each Organ of the CMO separately. Nonetheless, the CMO Headquarters Unit and CIMH exchanged their responses to the Consultants' first preliminary report delivered in July 2022, clarifying various erroneous items and elaborating on the information presented in each respective report

7.7 Council noted that during September and October 2022, consultations were held with stakeholders of each CI and included surveys completed by CMO Headquarters' senior officers and

technical staff. In November 2022, CMO Headquarters completed a survey as input with respect to the CIs with which the CMO Headquarters partners.

7.8 Council also noted that no further report was received from the consultants until the Third Draft report was delivered to the CMO Headquarters on 29 June 2023, following a video conference with the consultants when CMO was informed of their recommendations. A special meeting of the Institutions and the CARICOM Secretariat was convened in response to a media leak of the Third report. The meeting was formally requested by the Caribbean Regional Fisheries Mechanism (CRFM), to discuss the media breach, the impact on the region's reputation and donor agency relations as well as the recruitment, retention and morale of staff at institutions that were recommended for closure or mergers. An oral update on the RCCI was provided at the mid-year meeting of the Council (CMC64) on 14 July 2023. CMO Headquarters shared both the RCCI Third Report and its written response with the Council in August.

7.9 The Council noted that the consultants presented a Final Report Draft 1 of the RCCI to a meeting of the Heads of Caribbean Community (CARICOM) Institutions, the RCCI Project Steering Committee, and the CARICOM Secretariat on **30 August 2023**, having submitted the supporting documents to the Institutions on the evening of 29 August 2023. Community Institutions were given until **6 September 2023** to provide input and feedback for the consultants to consider for inclusion in their Final Report. The allotted period for responding was too short to convene a meeting of the Council. Therefore, the Coordinating Director shared the draft Final Report with the Chair of the Council and notified of the intention of the CMO Headquarters to provide a preliminary written response, until the Council could provide its position on the Report's recommendations. The CMO Headquarters' extensive written response was conveyed to the Chair of the Council, CARICOM Secretariat, and the consultants.

7.10 Council noted that the Final Report of the RCCI was received by CMO Headquarters on 2 October 2023 and shared immediately with the Chair of the Council and later in the month to the other members of Council. At the meeting with the CARICOM Secretariat on 30 August, CIs were told that the recommendations of the RCCI Final report would be considered by the **Caribbean Community Council** in December 2023.

7.11 Council recalled correspondence from CMO Headquarters supporting the scheduling of a special meeting of the Council to review and discuss the RCCI Final Report and determine its position on the recommendations before the Caribbean Community Council's December meeting. Unfortunately, the CMC meeting that was set for 1 November 2023 was cancelled because of a lack of quorum. Council noted that the date of the Caribbean Community Council meeting was not known at the time of the 65th CMC Session.

7.12 The 65th Caribbean Meteorological Council discussed the report from the consultants and the response from the Coordinating Director and the Principal of CIMH. Council decided that additional time was needed to review the documents before decisions could be made and that the review presented an opportunity for the Council to determine a transformation of the CMO. It was decided that the Council would return written comments to the Chair of the 65th Council by 15 December 2023.

7(b) 50th Anniversary of the Agreement to Establish the CMO

7.13 Council recognized that October 2023 marked the 50th Anniversary of the establishment of the CMO, an occasion to be celebrated in conjunction with the 65th Council Session hosted by the Republic of Trinidad and Tobago, the Host Country of the CMO Headquarters. Council recalled that CMO Headquarters established a 50th Anniversary Coordination Committee, comprised of the Coordinating Director and focal points from Member States and CIMH (Table 7.1), to plan commemorative activities.

The committee aided in the choosing of a logo and theme of the year and in connecting with retired members of the CMO community and procuring videos and other remembrances.

Table 7.1 CMO 50th Anniversary Coordination Committee

Denel	Dixon	St. Kitts and Nevis
Cécil	Mitchell	Grenada
Karen	Bazil-Lawerence	Dominica
Kerry	Powery Linwood	Cayman Islands
Arlene	Aaron-Morrison	Trinidad and Tobago
Tia	Browne	Barbados
Eron	McPherson	Guyana
Billy	Jeffers	St Vincent & the Grenadines
Jeffery	Jennings	Anguilla
Tiffany	Hennifield	Turks and Caicos Islands (TCI)
Dr Ashford	Reyes	CIMH
Lynne Marie	Deane	CIMH
Mauricia	Pegus	Trinidad & Tobago, Ministry of Public Utilities,

7.14 Council expressed its gratitude to **Ms Tevonna McDavid** of Trinidad and Tobago, a former temporary staff member of the Trinidad and Tobago Meteorological Service, who designed the 50th Anniversary logo and lapel pin.

7(c) CMO Headquarters Staff Terminal Benefit Fund Trustee

7.15 Council recalled that, due to the small size of the staff complement, the Headquarters Unit does not have a staff pension fund, but instead operates a Headquarters *Staff Terminal Benefit Fund*. The Fund, which was established in 1995, requires three Trustees as signatories. Since inception, the first two have been the Coordinating Director and the Administrative Officer, while, for convenience and expediency, the third Trustee has been the Director of the Trinidad and Tobago Meteorological Service (TTMS), with approval from the parent Ministry. However, since the retirement of the former Director of the TTMS in 2018, the third Trustee position remained vacant. During the 61st CMC Session (Guyana, Virtual Platform), the delegate from Jamaica offered to serve, pending approval by the parent Ministry. Nevertheless, the position remained open, a status that delays the required registration of the Fund as a Pension Plan within Trinidad and Tobago.

7.16 Council recalled that the 63rd Council nominated the **Principal of CIMH** to serve as the third Trustee. Since then, all trustee forms have been completed and signed and the documents are with the legal firm that will register the plan as required.

7(c) Arrangements for Meteorological Forecast and Warning Services among CMO Member States

7.17 Council was reminded that since 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.

7.18 Council recalled that questions were raised by the Antigua and Barbuda Meteorological Service about the formalities of the process and related costs for the services provided. So, Council agreed to form a committee to review and discuss cost recovery as a part of regional forecasting arrangements and make a recommendation to the Council. The Committee met on 25th February 2022 and elected Guyana and Belize to serve as Co-Chairs. The Committee expressed the view that the Antigua and Barbuda Meteorological Service (ABMS) should be having discussions with the respective Civil Aviation Authority of the four States to whom they provide services, instead of the various Meteorological Services, since the Civil Aviation Authorities are end users. The committee presented the draft recommendations for Council to consider (CMC63, Report)

7.19 The Council was reminded of the previous discussions of the matter and the delegation from Antigua and Barbuda was given the floor to provide an update to the Council on the developments since the CMC63.

7.20 After the presentation by the delegate from Antigua and Barbuda, Council held an extensive discussion on the matter and decided that the matter would be tasked to a special committee to make a final recommendation to Council for a decision on the addition of cost recovery to the regional forecasting arrangements. **Annex V** provides a summary of the recommendations following the meetings held with the UK Met Office, representing Air Safety Support International (ASSI), to assess ABMS ability to provide aeronautical service to British Overseas Territories in the Caribbean. The meetings were also attended by Eastern Caribbean Civil Aviation Authority (ECCAA) and one of the UK Met Office representatives held formal discussions with the CMO Headquarters as part of the assessment.

7.21 Council noted that Grenada and Trinidad and Tobago requested that Grenada assume responsibility for its own tropical cyclone forecast and warnings, which are currently provided by Trinidad and Tobago Meteorological Service. It was noted that since Grenada is not a Member of WMO, it cannot have Membership in the Hurricane Committee. Grenada is seeking the support of CMO Headquarters to make representation to the Government of Grenada for its Membership in the WMO.

7.22 **The Council**

- (i) **Recalled** the final report of the Review of Caribbean Community Institutions and the recommendations of the Review with regard to the CMO
- (ii) **Noted** the written response of CMO Headquarters and CIMH to the Final Report of the Review
- (iii) **Noted** the concerns raised by the CMO Headquarters and CIMH about the inadequacies of the review process
- (iv) **Committed to providing** written positions to the Chair of the Caribbean Meteorological Council by 15 December 2023
- (v) **Agreed** that the position of the Council on the findings and recommendations of the Final Report of the Review of Caribbean Community Institutions would be provided to the CARICOM Secretariat for the consideration of Caribbean Community Council

- (vi) **Expressed** its gratitude to the members of the 50th Anniversary Coordination Committee and the graphics artist who designed the logo for the 50th Anniversary
- (vii) **Noted** progress being made towards the registration of the CMO Headquarters Staff Terminal Benefit Fund as a Pension Plan as required by law in Trinidad and Tobago.
- (viii) **Discussed**, and **decided** to form a committee to consider the previous recommendations and deliver a final recommendation with regard to the matter of cost recovery, for aeronautical meteorology, to the regional forecasting arrangements
- (ix) **Noted** that Saint Lucia agreed to chair the committee to provide the recommendation to the Council.
- (x) **Noted** the request of Grenada for the CMO Headquarters to make representation to the Government of Grenada for Grenada to join WMO.

8 CMO BUDGETS (HEADQUARTERS UNIT, CRN AND RADAR, CIMH)

8(a) CMO HQ - Estimates of Expenditure for 2024

8.1 Budget estimates for the operating costs for the CMO Headquarters Unit and contributions to the Caribbean Rawinsonde and Radar Networks for 2024 were presented to the Council.

8.2 The 2024 budget proposed for the CMO HQ did not factor any change in the rates of exchange used in previous years since, in keeping with the decision of Council at CMC55 (Belize 2015) invoices are now issued in USD, therefore any change in the rate of exchange will have an offsetting effect on both revenue and expenditure in local currency.

8.3 Personnel emoluments usually account for 75% of the total operating budget of the CMO HQ. In September 2023, the CARICOM Secretariat advised that in May 2023, the Community Council approved an interim increase of 10% across the board which was to be retroactive with effect from 01 January 2023. All other costs are expected to be in line with prior years.

8.4 Two options for the treatment of retroactive payments were presented to Council since the retroactive salary increase was not budgeted for in 2023. In Option 1, this cost was included in the estimates of expenditure for 2024 whereas in Option 2 it was isolated to 2023. If the retroactive salary payment for the year 2023 could be accrued and/or paid in 2023, utilizing revenue earned by the CMO HQ through project fees and interest income earned for the period, there will be no impact on the budget for 2024 and the true increase in operating expenditure for 2024 would be 5.7% with an overall increase of 4.9%.

8.5 Capital expenditure for 2024 will be increased in order to improve the facilities offered for training workshops and meetings for our Members and other stakeholders as the WMO has expressed an interest in conducting meetings and local and regional training workshops in Port of Spain, Trinidad and Tobago in the future.

8.6 The Council

- (i) **Accepted** the new salary rates provided by the CARICOM Secretariat as approved by the Community Council in May 2023 for payment retroactively from 01 January 2023;
- (ii) **Approved** the payment of retroactive salaries and salary-related payment in 2023, utilizing project fees and other revenue earned for the period;
- (iii) **Approved** Option 2 with a budget of **TTD X.XXX,XXX.xx** or the equivalent of **USD XXX,XXX.xx** as detailed in **Annex III** with Member contributions as indicated in **Annex IV**;
- (iv) **Urged** Members to give priority to meeting annual contributions on a more timely basis, and to make every effort to liquidate arrears to the Organization on a phased basis;
- (v) **Reminded** Members that when forwarding their contributions to CMO Headquarters by bank transfers, to deposit funds into the account noted on the invoice and to advise the CMO HQ of remittance.

8(b) CIMH - Estimates of Expenditure for 2024

8.7 The Estimates of Expenditure of the CIMH for Fiscal Year 2024 (FY2024) were presented for examination and approval by the Council after a detailed consideration by the Board of Governors (BoG) of the CIMH. The estimates cover the finances required to allow the Institute to effectively fulfill its mandate to the region. Significant reductions to the Institute's Estimates of Expenditure may negatively impact planned and ongoing activities.

8.8 The FY2024 Estimates increased by 6.7 % relative to the Estimates approved for FY2023.

8.9 The Council

- (i) **Approved** the budget of **BBD X,XXX,XXX.xx**, equivalent to **USD X,XXX,XXX.xx** for the CIMH, as presented by the Board of Governors with Member contributions as detailed in **Annex III**;
- (ii) **Urged** Members to give priority to meeting annual contributions, as well as liquidating any arrears of contribution due to the CIMH;
- (i) **Also Urged** Members to inform the CIMH of their transfers of funds, including the amount and date.

9 MEETING OF DIRECTORS OF METEOROLOGICAL SERVICES

9.1 The Caribbean Meteorological Council considered the Report of the Annual Meeting of Directors of Meteorological Services, held on 15 November 2023, presented by *Mr Kenneth Kerr*, Science and Technology Officer of the CMO Headquarters. The Report provided the Council with a summary of the highlights of gaps that were closed by Members NMHSs and recommendations to the Directors on key WMO Standards and Recommended practices that would have an impact on future costs, policy decisions, training opportunities and service delivery. The following items were drawn to the attention of Council.

1. Operational Matters

Global Basic Observing Network (GBON)

The Council was informed that the number of CMO Members with stations on GBON registered in OSCAR/Surface increased from seven (7) to sixteen (16), which represent 100% of CMO Members. Further, the number of CMO Member stations exchanging data at hourly frequency increased from two (2) to eleven (11) stations from eight (8) Members, which represents 50% of the 22 GBON stations registered by CMO Members. Seven Members with GBON stations were exchanging data every three (3) hours which is non-compliant with GBON. Council was advised that GBON compliance is particularly important because it is directly linked to the Systematic Observations Financing Facility (SOFF), whose purpose to provide technical and financial support to the implementation and operation of GBON. Further, SOFF will apply compliance with GBON requirements to guide further investments, using international data exchange as a measure of success.

WMO Integrated Global Observing System (WIGOS) Matters

Council noted that regional-wide efforts to fully implement WIGOS, supported by CMO Headquarters, yielded key outcomes and deliverables that were consistent with the CMO's strategic goal to advance regional and national WIGOS implementation. Further, CMO Members made considerable improvements, as more NMHSs had functional WIGOS-related National Focal Points (NFP) who received training relative to their responsibilities and it was likely that Members could fully operational the WIGOS Plan by the end of 2023.

In this regard, the Council was informed that there is a relatively large increase in CMO Members NMHSs exchanging observations successfully on the WDQMS portal. In particular, 63% of the 24 stations from CMO Member States registered in OSCAR/Surface to exchange data internationally were successfully providing critical input to regional and global numerical weather prediction. This has the potential to increase the accuracy of guidance products used to create forecasts and warnings. In line with this, the Council was informed that an action item at the Director's meeting was to seek to find out whether there was any change in the accuracy of the national to regional Numerical Weather Prediction model outputs given the increase regional observation availability.

WMO Information System (WIS) 2.0

Council was notified that the CMO Headquarters, in collaboration with WMO, hosted a WIS 2.0 training workshop that focused on using the WIS2Box software to solve CMO Members data exchange and transmission issues, including building CMO Member States capacity to exchange data in BUFR format. During the workshop it was decided that participants would continue to work as a team following the workshop to implement a regional WIS2box as a WIS2 node with multi-country capability to exchange observations in BUFR and other formats and those Members who had the capacity and resources to implement and manage their own WIS node to do so.

Council was notified that in order to facilitate the implementation of the regional WIS2Box, CMO Headquarters signed a letter of agreement with the WMO to host a WIS2Box as a Caribbean WIS2 node via a cloud server provided by the WMO. Under this agreement, WMO will support CMO Headquarters and its Members in implementing and operating the Caribbean WIS2 node for four years to provide NMHSs with a simple, effective, and inexpensive method to exchange their weather observations nationally, regionally and internationally. Council was informed that this approach yielded significant success.

The Council was advised that the Caribbean WIS2 node is up and running and forms part of the WIS2Box demonstration project with nine (9) CMO NMHSs exchanging data globally on the node. These are: Antigua and Barbuda, Cayman Islands, Dominica, Grenada, St Kitts and Nevis, Guyana, Jamaica, Saint Lucia, St Maarten, St Vincent and the Grenadines, Turks and Caicos Islands. In addition, two members, Belize and Trinidad and Tobago implemented individual WIS2Box nodes and are also part of the demonstration project. Additionally, these CMO Members NMHSs were now exchanging data internationally using BUFR format on WIS2.0 in real time every hour, which represented the closure of a 10-year gap for some Members.

Implementation of a Quality Management System (QMS)

Council was asked to recall that the CMO Headquarters was tasked with the action item to conduct a baseline assessment of the status QMS implementation in CMO Member States agencies providing meteorological services for air navigation. In this regard, Council was notified that the baseline survey result showed that the majority of CMO's Member States' agencies providing meteorological services for international air navigation, have fully or partially implemented an operational Quality Management System or activities related to implementing a QMS. Only one (1) CMO Member indicated that it made no attempt at implementing QMS.

In particular, eleven (11) Members developed QMS quality manuals and indicate they had standard forms, work instructions, and Standard Operating Procedures (SOP) for the provision of meteorological services for air navigation. Six (6) Members have Certified QMS Auditors performing QMS duties, while nine (9) Members indicated they had no trained personnel to perform calibration or possess calibration equipment to perform calibration duties. Also, seven (7) Members indicated that a QMS was implemented, which conforms to ISO 9001 series standards. However, three of these Members implemented the recommended ISO 9001:2015 standards, which replaced the previous version, ISO 9001:2008, while four Members implemented ISO 9001:2008 and have not yet fully made the transition to the new standard. No CMO NMHS is certified as QMS 9001 compliant.

Council was informed that the gap analysis performed against WMO QMS checklist found that many processes used by the NMHSs are based on, and make reference to standard and recommended procedures according to the WMO technical documentation that are complementary to ISO 9001 requirements. Hence, most of the NMHSs have the enabling components to easily commence implementation of a formal QMS to provide the assurance of meeting the WMO and ICAO relevant standards.

Council was notified that inadequate demonstration of senior management commitment to the QMS, insufficient internal audits and insufficient customer satisfaction monitoring and assessment were identified as posing the highest risk that is preventing Members from implementing the QMS. Council was notified that senior management needed to oversee the QMS implementation by taking accountability for its implementation, monitoring progress via frequent internal audits and regular management reviews, closing the Human, financial and instrument calibration resource gaps, while also addressing the associated risks.

9.2 The Council

- (i) **Noted** the progress made across the region with Members becoming more compliant with the Standards and Recommendations of the WMO;

- (ii) **Noted** the importance for National Meteorological Services to be compliant with the WMO Global Basic Observing Network (GBON);
- (iii) **Further noted**, and **urged** Members to encourage Senior Management of NMHSs to take accountability for the implementation of the Quality Management Implementation for provision of aeronautical meteorological services.

10 CMO WEATHER RADAR NETWORK

10.1 The Council was reminded that the CMO Weather Radar Network (CWRN), which comprises six (6) Doppler weather radars, remains a vital component of the Caribbean weather observation and monitoring capability. As such, the CWRN is vital to early warnings for hurricanes and other severe weather forecasts, meteorological services to aviation, disaster risk management, water, and other weather and climate-sensitive sectors, and the sustainable development of the region. However, the majority of radars on the CWRN have reached the mature stage of their mechanical life (typically 10–15 years) and now require more consistent maintenance and repair, updates in technology, and, in some instances, physical infrastructure upgrades. The Council was further reminded that radars are the most expensive observation platforms in which the CMO and radar host members have invested and must be protected.

10.2 The Council was informed that radar outage continued for both Trinidad and Tobago and Jamaica over the entire intersessional period. However, both Members were now in possession of the requisite radar spare parts to perform the repair works and were awaiting manufacturers' experts visits. Further, Trinidad and Tobago refurbishment work at the radar site had been completed while Jamaica' extended contract with the radar manufacture saved it from additional cost, since the expenses incurred were accrued to the manufacturer. Council was also notified that the Cayman Island recently started to experience radar outage and that both Belize and Cayman Islands weather radars came under direct threat from proposals to relocate the weather radars to accommodate airport surveillance radars. Both Members engaged the CMO Headquarters to make interventions on their behalf, which resulted in the cessation of the relocation threat. The Council noted that there were recently installed weather radars in Tobago, Saint Lucia, St Maarten, and Martinique.

10.3 The Council was asked to note that the Barbados Meteorological Service continues to make outstanding efforts in creating the Caribbean radar composite maps of base reflectivity every 15 minutes. Further, the composite maps now include mosaic products for surface rainfall rates and hourly rainfall accumulations derived from nine (9) regional radars. The Council was reminded of the value of the composite maps and recognized that the smaller meteorological radar in Saint Lucia and Tobago could supplement the information in the lower layers of the atmosphere that remain invisible for the large 400-km range radars. Accordingly, all efforts should be made to integrate these radars into the regional radar composite.

10.4 The Council was also reminded that the CMO Headquarters led the coordination on the development of a Multi-Sensor Precipitation Grid dataset, which comprised data from the Barbados radar, rain gauges from multiple islands, and satellite-estimated precipitation. The precipitation grid was implemented under a World Bank CREWS project contracted to the Centro Internazionale in Monitoraggio Ambientale (CIMA) Foundation. It was completed in December 2022 and is easily accessed on a website hosted by CIMH (<https://mospq.cimh.edu.bb/#/home>). The dataset is a valuable regional resource for early warnings and risk analysis for flooding, water resource management, and climate monitoring, which Members are encouraged to utilize.

10.5 The Council recalled that the CMO Operational Radar Group (CORG) is tasked with, inter alia, the responsibility to provide advice and recommendations to the CMO and Directors of Meteorology on methods to improve the use and management of the radars. The Council was also informed that since CMC63, the CORG has held five meetings during which it operated as a community of practice. The CORG established a Slack channel-based workspace as a centralized online repository for its communication, presentations, meeting reports, technical knowledge exchange. So, information is easily discoverable, thereby supporting the building of a collaborative culture among the operational radar members.

10.6 The Council was further informed that the Slack workspace currently has channels that host presentations, videos, meeting minutes, lessons learned, and best practice methods. Some of the channels include best practice content on: radar data archiving; radar monitoring and calibration; retrieving radar data; radar upgrades; and tools for operational radar monitoring. T

10.7 The Council was made aware that the CORG submitted an abstract entitled “*CMO Operational Radar Group: A Model for Capacity Development in Radar Operations and Coordination, Supporting Early Warnings for All*”, which has been accepted for presentation at the American Meteorological Society (AMS) 40th Conference on Environmental Information Processing Technologies, a conference of the 104th AMS Annual Meeting, January 28 to February 1, 2024, in Baltimore, Maryland, USA.

10.8 The Council recognized the information from the CORG that most of the CMO radars have fallen behind in terms of current operational Doppler radar capability and were encountering operational challenges. Additionally, the Council noted that the CORG highlighted that weather radar challenges, threats, and needs were similar across the region and that regional solutions were requisite.

10.9 Council noted that, based on Members' radar status reports, the CORG determined that the biggest operational challenges identified were related to issues external to the actual radar unit. These included problems with electricity supply, telecommunications reliability, availability of spare parts, approved maintenance schedules, radar security, radar site protection, and access to international radar expertise. Among the direct radar-related problems, the dehydrator, transmitter, and pedestal electronics were the leading parts that posed a challenge. As such, the longest periods of radar unavailability were associated with waiting for spare parts.

10.10 The Council was advised of the following CORG recommendations:

1. Improve the management and sustainability of CMO weather radar systems.
2. Enhance radar data transmission, collection, and archiving.
3. Enhance radar cybersecurity and radar site security.
4. Insure weather radars against damage.

10.11 In terms of risk to the CWRN, the CORG further advised the Council that even though Members with operational radars continue to invest in improving their radar systems, there are challenges that remain and may grow in some instances and thus pose additional risks. Apart from this, the Council was informed that underfunding, prolonged wait times for spare parts, deficient maintenance schedules, and limited human resources were identified as core and recurrent risks. Additionally, some radar host countries faced constraints with limited trained radar specialists and inadequate radar data management for archiving and retrieval, while the radar system components were vulnerable to a variety of threats that could be exploited by attackers, such as cyberattacks, radar facility breaches, and vandalism.

10.12 The Council was reminded that the CMO Headquarters proposed project to upgrade the CMO Doppler Weather radars in Belize, Guyana, and Trinidad was advancing. The project, aimed at strengthening hydro-meteorological and early warning services in the Caribbean, is being advanced

under a new Scaling Up Framework between the Green Climate Fund (GCF) Simplified Approval Process (SAP) and the Climate Risk and Early Warning Systems (CREWS) initiative.

10.13 The Council was also reminded that radars can operate for 15 or more years, and cost estimates indicate that the ongoing life-cycle costs of the radar and the radar programme exceeded the initial capital costs. In this regard, the CMO has been seeking resources to support not only the initial cost of the radar network upgrade but also to plan for the funding of ongoing maintenance and development over the expected lifetime of the radars, in line with the WMO [Guide to Operational Weather Radar Best Practices \(2023\)](#). Further, capacity building and radar data utilization are also components of the project to address some of the challenges of the current network and to significantly advance the region's radar-based now-casting, severe weather forecasts, watches, and warnings capabilities.

10.14 The Council was further advised that the project, which is aligned with CMO Headquarters mission, priorities, and strategic goals, required country ownership, which is a fundamental principle of the GCF, so CMO Headquarters and the National Designated Authorities (NDAs) have been engaged in the *Scaling up Framework through the CDB*, which is the Accredited Entity of the GCF engaged with this project.

The Council:

- (i) **Added** to the actions proposed to Council a “further encouraged” action [*CIMH*].
- (ii) **Noted** the status, challenges, and risks faced by weather radars in CMO Member States.
- (iii) **Urged** CMO Members with radars to **commit** to sustainable funding and budgetary allocations for radar preventative and corrective radar maintenance programmes, and human resource capacity.
- (iv) **Supported** the CMO Headquarters in advancing a project to upgrade the radars in Belize, Guyana, and Trinidad and Tobago to dual polarization status through the Green Climate Fund-CREWS Scaling-up Framework, in collaboration with the Caribbean Development Bank.
- (v) **Noted** the progress and initiatives of the CMO Operational Radar Group (CORG), including **actions** to deepen technical and operational cooperation on radar operations across the Caribbean.
- (vi) **Further noted** and **urged** Members with radars to **act on** the recommendations of the CORG to improve management of radars; data transmission, archiving, and retrieval; sharing of core radar products for public safety; and secure the digital assets and the physical radar site.
- (vii) **Requested** the re-establishment of a **Memorandum** of Understanding for the Weather Radar Network Warning System in the Caribbean Region with the Members operating radars and the CMO Headquarters to ensure the sustainability of the network.
- (viii) **Encouraged** CMO Members operating radars on the network to adopt and implement policies and practices to safeguard further deterioration and reduce radar outages, in line with the WMO guidance, including seeking to insure their radars against damage as a protective mechanism.
- (ix) **Further encouraged** CMO Members that are updating their radars to dual-polarization to consider the option of making the older radars available to academic institutions to support research development and training.

11 OTHER PROJECT UPDATES AND PROPOSALS

11.1. Council acknowledged that weather, climate and water-related issues remain pivotal for the sustainable development and reduction of disaster risk in CMO Member States, while recognizing that NMHSs are increasingly being sought for guidance and support by national governments, societies, and economic sectors. These acknowledgements are contextualized within an ever-evolving, multi-hazard environment that is exacerbated by climate variability and change. The CMO HQ reiterated its commitment to the obligations under the agreement that established it, and to continuing efforts detailed in previous Council Meetings to support Member States and NMHS through the development of projects, programmes, and partnerships as guided by its Strategic Plan 2020-2023.

11(a) WMO Severe Weather Forecasting Programme (SWFP)

11.2. Council recalled the need to improve the early weather warning system, particularly for non-tropical cyclone severe weather, and endorsing a CMO proposal to implement a WMO SWF Demonstration Project (SWDFP) for a domain encapsulating the Eastern Caribbean and Haiti in 2015. Since that time, significant strides have been made towards the implementation of what has been designated by the 18th WMO Congress as the **Severe Weather Forecasting Programme (SWFP) - Eastern Caribbean (SWFP-EC)**. The WMO Secretariat, *Météo-France*, the CMO Headquarters, and the CIMH, have been collaborating to develop the SWFP-EC into an operational programme.

11.3. The Regional WMO Management structure established the *Regional Sub-programme Management Team (RSMT)*, for the development and implementation of the SWFP, which is currently co-chaired by **Mr Emmanuel Cloppet** of *Météo-France Antilles Guyane* and **Dr. Arlene Laing**, Coordinating Director, and supported by other CMO representatives, Ms Kathy-Ann Caesar of the CIMH and Mr Dale Destin, Director of the Antigua and Barbuda Meteorological Service.

11.4. Council noted that the RSMT met on 28 March 2023 on the side of the 45th Hurricane Committee in San Jose, Costa Rica, in which the **Regional Forecast Support Facility (RFSF)** Martinique reported on the new, high-resolution AROME model with a 1.3km grid deterministic model and 2.5km grid for ensemble capable of resolving small island circulations, the first operational ensemble at high resolution for the Caribbean. Council was also advised that *Météo-France* continues to provide automatic products and develop other automatic products, but however are unable to commit to the assignment of individual forecasters to the SWFP. At the same meeting, the RSMC-Miami offered to provide human forecaster guidance, in particular with regard to quantitative precipitation forecasts. The RSMT is working with the WMO, NOAA, and *Météo-France* to find an optimal way forward.

11.5. Council further noted that co-chair, Arlene Laing updated the 45th Hurricane Committee on recent SWFP-EC activities including the successful (i) NOAA/WMO RA IV Virtual Satellite Training workshop in December 2023, (ii) EUREC4A-UK/CMO-SWFP workshop in February 2024, (iii) the WMO Education and Training Program Competency Assessor and On-the-Job mentor workshop, (iv) a project to develop a severe weather case database for the Caribbean (now available on the CIMH website, <https://cswd.cimh.edu.bb/>, with a mirrored server at the CMO HQ), and (v) the expansion of the severe weather case catalogue and addition of a forecaster reporting and evaluation form, developed by interns who were hosted and mentored by CMO HQ and CIMH supervisors.

11.6. Council was informed of meetings between the Coordinating Director and Ms Virginie Schwarz, Executive Director of *Météo-France*, on the side of the 76th WMO Executive Council in February 2023 and the 19th WMO Congress in May 2023, to review the SWFP-EC and other collaborative activities, in keeping with the formal Working Arrangement between CMO and *Météo-France*.

11.7. Council noted the SWFP plans for 2023-2024, which include a NOAA/WMO RA IV Satellite Training Workshop in 2024; a technical workshop on the use of the SWFP-EC Extranet; Communication, and Public Weather Service; enhancement of the severe weather case study catalogue including translation to other languages; forecaster exchange and attachments for familiarization with forecast areas of responsibility, and the next RSMT meeting planned for 14 December 2023.

11(b) CREWS Caribbean: Strengthening Hydro-Meteorological and Early Warning Services in the Caribbean

11.8. Council recalled the presentations from Council Sessions since 2018 about the *Climate Risk and Early Warning System (CREWS) Caribbean Project*, co-funded by the CREWS Initiative, and *Environment and Climate Change Canada (ECCC)*. The aim of the CREWS-Caribbean project was to strengthen and streamline regional and national systems and capacity related to weather forecasting, hydrological services, multi-hazard, impact-based warnings and service delivery for enhanced decision-making in CARICOM countries.

11.9. The implementing partners were the WMO, the *Global Facility for Disaster Reduction and Recovery (GFDRR)*, the *United Nations Office for Disaster Risk Reduction (UNDRR)*, and the *World Bank Group (WBG)*. The primary regional implementing partners were the Caribbean Disaster and Emergency Management Agency (CDEMA), CIMH, and CMO Headquarters Unit. The Project had three components:

- Component (1) - Development of a regional strategy for EWS;
- Component (2) -Institutional Strengthening and streamlining of early warning and hydro-meteorological services; and
- Component (3) - Support for Piloting High Priority National Activities.

11.10. Council noted the formal wrap-up of the World Bank component of the CREWS-Caribbean Project on 15-17 February 2023 in Kingston, Jamaica, and the launch of the “*Strategic Roadmap for Advancing Multi-Hazard Early Warning Systems in the Caribbean 2020-2030*” that was developed in consultation with regional stakeholders including CMO HQ. Council recalled that while CMO HQ implemented activities mainly under Component 2, the team also contributed to the implementation of Components 1 & 3. Council also recalled that the WMO and CMO HQ signed an Implementing Arrangement (IA) for “*Building Resilience to High-Impact Hydro-meteorological Events through Strengthening MHEWS in Small Island Developing States (SIDS)*” in 2020, valued at \$263,000. A new IA was signed in June 2022, amended in August 2022 and in March 2023, with funding of \$180,000 approved for activities under five (5) thematic areas.

11.11. Meteorological Legislation and Policy: Council recalled the Model Hydro-Meteorological Bill and Meteorological Policy for NMHSs crafted in 2021, which was endorsed by CMO Member States in June of the same year and adapted for draft national legislation in eight CMO Member States. Continuing the effort to adapt these model governance instruments, Council was informed that a draft Bill, Explanatory Note and Cabinet Note were prepared for Barbados by a legislation drafting consultant, in consultation with the Barbados Meteorological Service, its stakeholders, and CMO Headquarters, and accepted by the Ministry of Home Affairs and Information in June 2023.

11.12. National Strategic Plans and Framework for Weather, Water, and Climate Services: Council was informed that under the new IA, two (2) new National Strategic Plans (NSPs), Frameworks for Weather, Water and Climate Services (FWWCSs), and Action Plans (APs) were successfully developed for the Turks and Caicos Islands (TCI) and the Cayman Islands (CI), to complement the eight (8) previously prepared under the previous IA. Utilizing an iterative review process, and new

NSP, FWWCS and AP was developed for the TCI, which was endorsed by Government, and resulted in the launch of the new TCI National Weather Service (NWS) on 9 May 2023. Council was also informed that the CI already had a Strategic Plan, and as such the intended outcome was a revision and update to a NSP, FWWCS and AP that aligned more closely with the WMO's strategic planning guidance. Council was informed that the final versions of these strategic documents were formally accepted by the CMO HQ and CI National Weather Service in June 2023.

11.13. Common Alerting Protocol (CAP) Implementation Training: Council was informed that the CMO HQ and WMO discussed, the planning and delivery of two (2) CAP Implementation Workshops for two CMO Member States in late 2022. Subsequently, a team was established with representation from the WMO, CMO, and the Belize National Meteorological Service, then the TCI NWS. This team collaboratively planned, organized, and executed in-country workshops in Belize and the TCI in May 2023, directly building capacity for more than 60 participants, and delivering two actions plans to sustain activities after the workshops. Council noted that these workshops represented a notable milestone in the Caribbean region, but more importantly, generated learning and an improved implementation model and recommendations for planned interventions under the CREWS 2.0 Project.

11.14. EUREC4A-CMO-SWFP Workshop: Council was reminded of the Caribbean Weather Forecasting Initiative that the CMO and CIMH supported, a collaborative effort with the University of Leeds, and institutions from France and Germany, and the benefits generated in the development of regional forecaster capacity. Council noted the activities successfully completed since CMC63, including the NOAA WMO RA IV virtual workshop in December 2022 and EUREC4A-CMO-SWFP workshop held in February 2023, as discussed in updates on the SWFP. Council was informed that the workshop brought together forecasters from ten (10) Caribbean States and distinguished lecturers from the University of Leeds, UK Met Office, CIMH, and the CMO HQ. Council was also informed of the outcomes of these activities, namely the further strengthening of forecasting skills, and the generation of inputs to a scientific paper and an outline of a forecasters' handbook for the Caribbean.

11.15. Marine Meteorological and Oceanographic Services Workshop: Council recognized the efforts of the TTMS to strengthen the delivery of marine meteorological and oceanographic services through the conduct of a users' needs and forecaster capacity-building workshop. The CMO HQ, TTMS and WMO co-developed and executed the workshop, which was conducted in two legs in Tobago and Trinidad respectively during 16-18 May 2023, and yielded substantial benefits to Trinidad and Tobago. The WMO and TTMS secured the support of NOAA and WMO Experts, at no additional cost, for the workshops. The CMO HQ utilized its networks to ensure wide and active participation by stakeholders. Council was informed that these efforts generated a "Statement of Users Needs for Marine Meteorological and Oceanographic Services", to inform policy-makers about the marine sector's requirements, and the resources needed by the TTMS to satisfy these expectations.

11.16. Council was also informed of the efforts of the CMO HQ and TTMS to support the Trinidad and Tobago Red Cross Society in the planning, development and conduct of community-based flood management capacity building in eastern Trinidad, and the installation of Flood Markers to support beneficiary communities in the safe navigation of flood waters, among other benefits.

11(c) CREWS Caribbean 2.0: Strengthening Hydro-Meteorological and Early Warning Services in the Caribbean

11.17. Council noted that, following the successes of the first CREWS-Caribbean Project, which officially ended on 30 June 2023, the CMO Headquarters has been involved in project development for the second phase of the Project. This second phase will span three (3) years from January 2024 to December 2026, and is closely aligned to the timeframe and outcomes of the *Early Warnings for All* initiative. Council was asked to support the CMO HQ as it aims to strengthen service delivery capacity

in CMO and CARICOM Member States and Associated Members through their participation in the USD \$7 million-dollar project, along with other regional partners such as the Caribbean Disaster Emergency Management Agency (CDEMA). The project will be implemented by the WMO and UNDRR.

11(d) SERVIR-Amazonia

11.18. Council recalled the CMO HQ entering into a contractual arrangement with the International Center for Tropical Agriculture (CIAT) to deliver the SERVIR-Amazonia programme in Trinidad and Tobago, which was successfully completed during January to April 2023. Training workshops were held in person at the CMO HQ, benefitting twenty-seven (27) participants representing ten (10) public sector and academic institutions, including the TTMS. Council noted that the CMO Headquarters negotiated the hosting of the final sessions at the US Embassy, and was honoured to have the delivery of keynote remarks and certificates by *Her Excellency Candace Bond*, US Ambassador to Trinidad and Tobago. Council was informed that these workshops augmented learning about the generation of climate and other relevant environmental information, needed to support effective decision-making in flood management, mangrove ecosystem protection, environmental monitoring, while fostering an inter-institutional workflow for the generation of much needed land use/land cover information.

11(e) Hydromet Caribbean 2023: Third Symposium on Operational Hydro-Meteorology

11.19. Council was updated on the Third Symposium on Operational Hydro-Meteorology held on 30 January 2023 in Jamaica, which also emphasized partnerships to support the Early Warnings for All Initiative. Council was also informed that the CMO HQ co-organized and co-chaired the session along with the Meteorological Service of Jamaica, with the support of Varysian Ltd. Council was asked to note the value of these activities in ensuring the promulgation of best practices among NMHS and partners, and that the outcomes of these symposia served as inputs to key international policies and strategies being developed by the WMO and other partners.

11(f) Lightning Detection System and Lightning Safety Awareness

11.20. Council recalled that the CMO Headquarters indicated an interest in establishing a ground-based Lightning Detection System in the region. Since Council approved the initiation of a project to develop ground-based lightning detection, the CMO Headquarters has been seeking funding to procure and install the equipment. The CMO HQ was pleased to report to Council that strengthening regional capacities on lightning detection and awareness building was included in the proposal for the second phase of the CREWS-Caribbean Project, under a component being led by the WMO and supported by the UNDRR. Council was also informed that the Coordinating Director presented the results of a study on lightning occurrence and damages in Jamaica at the Annual Meeting of the American Meteorological Society (AMS) in January 2023, then subsequently presented on international lightning safety at an AMS Webinar in August 2023.

11(g) Upgrading of CMO Radars

11.21. Council recalled that the CMO HQ is working with the Caribbean Development Bank (CDB) to upgrade the CMO weather radars in Belize, Guyana, and Trinidad and Tobago to strengthen regional early warning capabilities. Council noted that the project is being advanced by the CDB through the new Scaling Up Framework of the Green Climate Fund (GCF) Simplified Approval Process (SAP), which could only be possible because the CMO HQ successfully completed CREWS projects. Council also noted that in July 2023, the CMO HQ submitted a project fiche to the CDB, developed in collaboration with the CREWS Secretariat. Council was informed that a kick-off meeting was held in September 2023 to provide a briefing on the project and receive feedback on the project design from stakeholders. Representative of the beneficiary states expressed their strong support for the project.

Council was advised of the next steps, which included the CDB reaching out to National Designated Authorities (NDAs) to obtain country support and enable the CDB to work with partners and stakeholders to advance the project; and a “Write Shop” to be held on 18-19 January 2024 to complete the submission documents required by the GCF.

11.22. **The Council:**

- (i) **Noted** the continued efforts of the CMO Headquarters Unit to advance the implementation of the CMO Strategic Plan 2020-2023 through the projects described;
- (ii) **Noted** the progress made in developing regional Early Warning capacity for non-tropical cyclone severe weather through the strengthening of the WMO Severe Weather Forecasting Programme and strongly support regional participation in its implementation;
- (iii) **Noted** the continued drive to advance the adaptation of model meteorological legislation and policy frameworks in CMO Member States, including recently in Barbados;
- (iv) **Noted** the development of strategic and institutional frameworks for weather, water, climate and ocean services and complementary action plans for the Turks and Caicos Islands and the Cayman Islands;
- (v) **Noted** the completion of workshops under the EUREC4A-UK/CMO Caribbean Weather Forecasting Initiative to build regional capacity through knowledge exchange and collaboration with international researchers;
- (vi) **Noted** the continuation of collaborative weather forecasting initiative workshops under the EUREC4A-UK/CMO Caribbean Weather Forecasting Initiative to build regional capacity through knowledge exchange and collaboration with international researchers;
- (vii) **Noted** the successful completion of training in the forecasting of extreme hydrological events and the monitoring of mangrove ecosystems under the SERVIR-Azonnia programme, which is funded by USAID and NASA;
- (viii) **Noted** the support for early warning systems through training on the Common Alerting Protocol, community flood mapping, and marine meteorology service delivery; and
- (ix) **Noted** the successful organization of a third operational hydro-meteorology symposium for Directors of National Meteorological Services in the Caribbean and other key stakeholders;
- (x) **Noted** the successful activities in connection with advocacy and research for lightning safety awareness as part of disaster risk reduction, and support the exploration of options for an operational ground-based lightning detection system;
- (xi) **Urged** Members to enact the draft legislation that has been adapted from the Model Hydro-Meteorological Bill and Policy to their national circumstances to provide a legislative framework for Multi-Hazard Early Warning Systems and the long-term sustainable development of their country/territory;
- (xii) **Urged** Members to develop and/or endorse National Strategic Plans and Frameworks for Weather, Water and Climate Services for Members without an approved strategic and institutional framework for their National Meteorological and Hydrometeorological Services;

- (xiii) **Urged** Members to conduct reviews of existing National Strategic Plans and Frameworks for Weather, Water and Climate Services for National Meteorological and Hydrological Services approaching the mid-term or end of their strategic planning cycle;
- (xiv) **Urged** Members to utilize the SWFP Regional Forecast Support Facility and participate in training in the WMO Severe Weather Forecasting Programme;
- (xv) **Urged** Members to nominate a National Focal Point for the Severe Weather Forecasting Programme; and
- (xvi) **Supported** the CMO Headquarters in its role as a regional implementing partner of CREWS Caribbean Project Phase 2.

12 STRATEGIC AND OPERATIONAL PLANNING

The Council noted the activities accomplished in support of the current Strategic Plan of the CMO Headquarters and the draft strategic planning document initiated by CMO Headquarters for its next strategic period.

12.1 The Council:

- (i) **Noted** the progress on the CMO Headquarters Strategic Plan 2020-2023.
- (ii) **Discussed** the CMO Headquarters Draft Strategic Plan 2024-2029.
- (iii) Requested CIMH to prepare inputs towards a joint draft Strategic Plan comprising parts A and B.
- (iv) **Requested** Members to review the Draft Strategic Plan of the Headquarters Unit and provide their input to the Headquarters Unit by 31 March 2024.

13 OTHER MATTERS

13(a) Renewal of Contract for Coordinating Director

13.1 The Council was reminded of the ending of the current contract of the Coordinating Director on 31 May 2024. After some discussion regarding succession planning for the CMO Headquarters, Council decided to renew the contract of the Coordinating Director for another 3-year term effective 1 June 2024.

13.2 The Council:

- (i) **Decided to** renew the contract of the Coordinating for another 3-year term effective 1 June 2024, when the current contract expires on 31 May 2024, and that the decision be conveyed to the CARICOM Secretariat.
- (ii) **Recommended the** formation of a committee to consider succession planning at the Headquarters Unit at the next Annual Session of the Council.

13(b) Human Resources (HR) Committee

13.3 Two new members are required to reconstitute the HR Committee.

13.4 **The Council**

- (i) **Noted** that the Principal of CIMH will distribute the Terms of Reference to the Council;
- (ii) **Requested** that Council members wishing to serve on the HR Committee notify the Chair of the Council by 15 December 2023.

13(c) HR Salary Matter: CMC63, Item 12 (a)

13.5 The Principal raised the matter of the outstanding HR matter from CMC63, Item 12 (a).

13.6 **The Council**

- (i) **Noted** the outstanding HR matter from CMC63, Item 12 (a).
- (ii) **Noted** that the decision of the 63rd Council on CMC63 Item 12(a) should be conveyed to the relevant party by the Chair of the Council.

13(d) CMO Contribution Formula

13.7 Antigua and Barbuda is requesting a review of the CMO Contribution Formula at the next meeting of the Council.

13.8 **The Council**

- (i) **Noted** the request from Antigua and Barbuda to review the CMO Contribution Formula at the next meeting of the Council

13(d) Any other business

13.9 **The Council**

- (i) **Decided** to approve the Draft CMC65 report, after reviewing the report as an in-session document.

14 DATE AND VENUE OF THE CMC ANNUAL SESSION IN 2024

14.1 Council invited Member States to indicate their willingness to host the next sessions of the CMC. Members that have not hosted in recent times were invited to seek authorization to host, and to extend an invitation to the Council for the meetings in 2024.

14.2 **The Council**

- (i) **Accepted** the generous offer of the **British Virgin Islands** to host the Annual CMC and related meetings in 2024.

Close of Meeting

There being no other business, the Meeting ended at **5:42 pm AST** with an exchange of courtesies.

15 PROVISIONAL AGENDA

1. OPENING OF SESSION AND ELECTION OF CHAIRMAN
2. ADOPTION OF AGENDA AND PROCEDURAL MATTERS
3. CMO EXECUTIVE REPORTS
 - (a) Coordinating Director's Report
 - (b) CIMH Principal's Report
 - (c) CIMH Board of Governors' Report
4. STATUS OF ACTIONS FROM PREVIOUS SESSION
5. SPECIAL WMO ISSUES
 - (a) Outcomes/Highlights of the 19th World Meteorological Congress 2023 and 77th Session of the World Meteorological Organization (WMO) Executive Council (EC)
 - (b) UN Early Warnings for All
 - (c) WMO Integrated Global Observing System, Global Basic Observation Network and Systematic Observation Finance Facility (SOFF)
 - (d) The Global Framework for Climate Services (GFCS) and other Services
 - (e) Issues emerging from meetings of the WMO Technical Commissions and Research Board in 2023
 - (f) Disaster Risk Reduction and Regional Severe Weather Forecasts and Warning Systems
 - Tropical Cyclone Programme
 - Severe Weather Forecasting Programme
6. FINANCIAL REPORTS
 - (a) Report of Ad-hoc Finance Committee
 - (b) Status of Refundable Balances
 - (c) CMO HQ - Auditor's Report
 - (d) Statement of Contributions and Arrears (CMO HQ & CIMH)
7. SPECIAL CMO ISSUES
 - (a) Review of Caribbean Community (CARICOM) Institutions
 - (b) Arrangements for Meteorological Forecast and Warning Services among CMO Member States

8. CMO BUDGETS (Headquarters Unit, CRN and Radar, CIMH)
 - (a) CMOHQ Budget Estimates for 2024
 - (b) CIMH Budget Estimates for 2024
9. REPORT OF ANNUAL MEETING OF THE DIRECTORS OF METEOROLOGICAL SERVICES
10. CMO WEATHER RADAR NETWORK
11. OTHER PROJECT UPDATES AND PROPOSALS
 - (a) Severe Weather Forecasting Programme (SWFP)
 - (b) Climate Risk and Early Warning Systems (CREWS)
 - (c) WMO Information Systems 2.0 (WIS2.0)
 - (d) Lightning Detection and Safety Awareness
12. CMO HEADQUARTERS STRATEGIC AND OPERATIONAL PLANNING
 - (a) Outcomes for the period 2020-2023
 - (b) Draft Proposal and Input for next strategic period
13. OTHER MATTERS
 - (a) Select Committee, Oversight of Contracts under signature authority of the Principal, CIMH
 - (b) Any other matters
14. DATE AND VENUE OF FUTURE CMC SESSIONS

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ANNUAL MEETING OF THE CARIBBEAN METEOROLOGICAL COUNCIL
16-17 NOVEMBER 2023

CMC65
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HEADQUARTERS UNIT ESTIMATES 2024

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REGIONAL CONTRIBUTION TO CMO HEADQUARTERS AND CIMH BUDGETS -
2024

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**EXCERPTS FROM “REVIEW OF AVIATION MET SERVICES PROVIDED TO THE EAST CARIBBEAN
BRITISH OVERSEAS TERRITORIES”**

Tim Donovan, Senior International Development Manager – UK Met Office
Mike Benton, Senior Aerodrome Auditor – UK Met Office

Date of Report: 20th June 2023

Details:

Aviation Forecast Service Provider:

Antigua and Barbuda MET Service – VC. Bird International Airport

Airports in receipt of Aviation Forecast services from the Provider:

British Virgin Islands – Terrance B. Lettsome International Airport

Montserrat – John A. Osborne Airport

Anguilla – Clayton J. Lloyd International Airport

Caribbean Meteorological Organisation (CMO) – Regional Coordination

Port of Spain, Trinidad and Tobago.

Dates of Visit:

Start date: 12th June 2023

End date: 16th June 2023

1. Overview

Purpose

The purpose of the visit was to review the aviation forecast services provided to Terrance B. Lettsome International Airport (TUPJ), John A. Osborne Airport (TRPG) and Clayton J. Lloyd Airport (TQPF) by the Antigua and Barbuda Met Office (ABMS) located at V.C Bird International Airport (TAPA).

Scope

To establish what aviation MET forecast services and products are provided and compliance with:

OTAC 174-1 Meteorological Services to Aviation – Definition of Forecast and Observing Services

OTAR 174 Meteorological Services for Aviation

ICAO Annex 3 Meteorological Service for International Air Navigation

6. Summary

To summarise the technical aspects of the forecast service provision that ABMS provides to the OT's, it is considered that the most effective way is to list the current capabilities (and deficiencies) enabling (or preventing) AMBS in discharging its services.

Capabilities

- Forecasters are suitably qualified to WMO standard.
- Regulatory oversight has now been established. Audits are now being conducted by ECCAA with non-compliances being identified and corrective actions being implemented.
- Internal compliance management is underway with a QMS implemented.
- Forecasters have dedicated workstations and easy/free access to the Internet (including NWP model data for the region).
- TAFs are generally accurate, reliable, and issued on time.
- TAFs are amended when conditions warrant.
- ABMS states it has sufficient resource and capability to provide Aerodrome Warnings and can meet the SDD requirement if mutual agreement is reached in the LoA.
- Sufficient resource is available to provide Take-off-Forecasts if required on demand.
- Phone briefs can be required to the OT's if requested and agreed in the LoA.
- ABMS are equipped to provide information to support ATS, AIS and SAR and willingness to support Safety Related Investigations.
- A customer satisfaction survey mechanism has been established, allowing opportunity for the OT's to provide feedback, thus enabling a culture of continuous improvement.

Deficiencies

- No current Letters of Agreement (LoA) exist between ABMS and the OTs. LoAs have been drafted but are awaiting approval by the Antigua & Barbuda Ministry of Civil Aviation and Transportation.
- QMS needs further development to include clear and documented links between high level mission, goals, and objectives, with individual 'low level processes and procedures in the completion of forecast products.
- ABMS is a small organisation and doesn't have a dedicated forecaster specifically devoted to aviation.
- Receipt of Observation and Forecast data is via the Internet. There is no alert system to enable notification of when forecasts or observations have been updated.
- Extra training would be required for ABMS to be comfortable in providing Wind Shear Forecasts for the OT's.
- Documented 'hard copy' briefing products, if required, would need development.
- Climatology Services will need assistance from the individual OT's. ABMS does not have resource or archives of climatic data relating to the OT's.
- Lack of cost-recovery arrangements with the OTs compromises the ability of ABMS to provide a fully compliant aviation service.