CARIBBEAN METEOROLOGICAL ORGANIZATION

CARIBBEAN METEOROLOGICAL COUNCIL **Doc. 11**
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PORT OF SPAIN, TRINIDAD AND TOBAGO
16-17 NOVEMBER 2023

PROJECT UPDATES AND PROPOSALS

(Submitted by the Coordinating Director)

Introduction

1. As we commemorate the fiftieth (50th) anniversary of the establishment of the *Caribbean Meteorological Organization* (CMO), it is crucial to acknowledge that weather, climate, and water-related issues remain pivotal for sustainable development and disaster risk reduction. National Meteorological and Hydrometeorological Services (NMHSs) are increasingly being sought for guidance and support by national governments, societies, and economic sectors, especially in our ever-evolving, multi-hazard environment that is exacerbated by climate variability and change. Given the focus on climate resilience in our region's policy, NMHSs must continue to provide the essential data and scientific foundation for informed decision-making. The CMO Headquarters Unit (HQ) is fully committed to its obligations under the Agreement that established it, as legislated by its Member States. It is dedicated to supporting meteorology, climatology, and related sciences, driving these efforts through the development of projects, programs, and partnerships outlined in our Strategic Plan 2020-2023, which identified four (4) regional Strategic Priorities:

(i) Enhance disaster preparedness and reducing losses of life and property from extreme hydrometeorological events and severe weather
(ii) Support climate-smart decision-making to build resilience and adaptation to climate risk
(iii) Support the strengthening and maintenance of observation networks and information services, and
(iv) Enhance the socioeconomic and national security value of weather, climate, hydrological and related environmental services

2. In alignment with these approved strategic priorities, the CMO HQ has continued the efforts reviewed at the November 2022 Caribbean Meteorological Council Meeting in George Town, Grand Cayman, Cayman Islands (CMC63). The CMO HQ remains mindful that many CMO Member States still lack the necessary legislative, strategic, and institutional frameworks to deliver forecast and warning services across various sectors effectively. Innovative solutions are still required, particularly in light of the mandate to implement "*Early Warnings for All*" by 2027.

3. This report serves the purpose of keeping Council informed about the current status and ongoing progress of various projects that involve collaboration with CMO Member States, Caribbean Institute for Meteorology and Hydrology (CIMH), World Meteorological Organization (WMO), and development agencies such as the World Bank and Green Climate Fund, academic institutions, and others.

(a) WMO Severe Weather Forecasting Programme (SWFP) *(Strategic Priority 1)*

4. Council will recall endorsing a proposal by CMO and partners in 2015 to implement a WMO *Severe Weather Forecast Demonstration Project* (SWFDP), within a domain bounded by Trinidad to the south, Puerto Rico to the north, and Haiti in the west, aimed at improving early warnings for non-tropical cyclone severe weather. In June 2019, the 18th WMO Congress designated the transition of the SWFDP to be designated as the **Severe Weather Forecasting Programme (SWFP) –** Eastern Caribbean (EC)**.** Details of the administrative and operational arrangements for the SWFP were aired at CMC63 as well as the plans for the period 2022 to 2023. These included a NOAA/WMO RA IV Satellite Training workshop; a new high-resolution ensemble AROME weather model; a EUREC4A-UK/CMO-SWFP workshop; a technical Workshop on the use of the SWFP-EC Extranet; development of a severe weather case study catalogue; forecaster exchange and attachment at Regional Forecast Support Facility (RFSF) Martinique.

5. Since CMC63, the SWFP Regional Subprogramme Management Team (RSMT) met on 28 March 2023 on the side of the 45th Hurricane Committee in San Jose, Costa Rica. The RSMT is co-chaired by the CMO Headquarters and Météo-France Martinique. The RSMT welcomed the new Regional Director of Météo-France Antilles Guyane, ***Mr Emmanuel Cloppet***. In addition to ***Dr. Arlene Laing*** as Co-Chair, other CMO representatives on the RMST include ***Ms Kathy-Ann Caesar*** of the CIMH, as the training lead, and ***Mr Dale Destin***, Director (Ag) of Antigua and Barbuda Meteorological Service, as representing CMO National Meteorological Services.

6. Presentations were made by the WMO Standing Committee on Disaster Risk Reduction on the UN ***Early Warnings for All*** and on the MHEWS Interoperable Environment, to coordinate among the SWFP, the Coastal Inundation and Forecasting Initiative (CIFI), and Flash Flood Guidance System (FFGS). RFSF Martinique reported on the new AROME model, the first operational high-resolution ensemble model for explicit convection prediction in the region. The model has a 1.3km grid for deterministic model and a 2.5km grid for the ensemble, able to resolving small island circulations. The RSFP continues provision of automatic products and to develop other automatic products that can satisfy needs of the SWFP. However, Météo-France is unable to commit to assignment of individual forecasters to the SWFP, which represents a major shift from the original role for the Regional Forecast Support Facility. At the meeting, the RSMC-Miami made an offer to provide human forecaster guidance, in particular with regard to quantitative precipitation forecasts. The Management Team is working with WMO, NOAA, and Météo-France to find an optimal way forward.

7. Co-Chair, Dr Laing, reported to the 45th Hurricane Committee and the RSMT meeting on the following activities of the SWFP, achieved through direct support to the SWFP and leveraging related workshops:

- NOAA/WMO RA IV Virtual Satellite Training workshop in December 2023
- EUREC4A-UK/CMO-SWFP workshop – 20-23 February 2023, focusing on weather during the EUREC4A field study and three case studies from the December 2023 satellite workshop
- WMO Education and Training Program Competency Assessor and On-the-Job mentor workshop
- Development of a severe weather case database for the Caribbean, to enhance severe weather forecasting skill and contribute to monitoring of losses and damages. The Severe Weather Database is hosted by CIMH at https://cswd.cimh.edu.bb/ and mirrored on a server at CMO Headquarters
- Expansion of the severe weather case catalogue and addition of a forecaster reporting and evaluation form by two interns supported by CCRIF-SPC, hosted by CMO Headquarters and mentored by CMO Headquarters and CIMH.

8. Council is asked to urge Members participating in the SWFP to nominate a SWFP focal point. Forecasters trained under the SWFP are encouraged to train fellow forecasters to use the SWFP-EC

platform. Council is reminded that in 2021, it was agreed that products on the Extranet could be made available to NMHSs in Caribbean states outside of the EC domain.

9. In February 2023, the Coordinating Director met with *Ms Virginie Schwarz*, Executive Director of Météo-France, on the side of the 19th WMO Congress in May 2023, to review the SWFP-EC and other collaborative activities, per the formal *Working Arrangements* between CMO *and* Météo-France.

10. Plans for the Severe Weather Forecasting Programme Eastern Caribbean for 2023 to 2024, include:

- NOAA/WMO RA IV Satellite Training workshop, to be held virtually 2024
- 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

The next meeting of the RSMT is being planned for 14 December 2023.

(b) CREWS Caribbean: *Strengthening Hydro-Meteorological and Early Warning Services in the Caribbean* *(Strategic Priorities 1, 2 & 4)*

11. Council will recall discussions from CMC58 to CMC63 about the *Climate Risk and Early Warning System* (CREWS) Caribbean Project, including the sub-projects undertaken via an Implementing Arrangement (IA) between the CMO Headquarters and the WMO signed in April 2020, with funding of USD $263,000.

12. The CREWS-Caribbean Project's first phase had three components:

- Component (1): Development of a regional strategy and roadmap for EWS; led by World Bank /Global Facility for Disaster Risk Reduction (GFDRR) and implemented together with WMO, UN Disaster Risk Reduction (UNDRR) and regional partners, in coordination with national disaster management and national meteorological services.
- Component (2): Institutional strengthening and streamlining of early warning and hydro-met services; led by WMO
- Component (3): Support for piloting high priority activities at the national level with regional involvement as well as at the regional level, informed by the regional strategy; led by WB/GFDRR

A formal wrap-up of the CREWS was hosted by the World Bank on 15-17 February 2023 in Kingston, Jamaica, including the launch of the "*Strategic Roadmap for Advancing Multi-Hazard Early Warning Systems in the Caribbean 2020-2030*". The CMO HQ contributed to the development of the "*Strategic Roadmap*" under Component 1, and the implementation of activities related to Components 2 & 3.

13. Council will also recall being informed, at CMC63, of a new IA signed in June 2022 and amended in August 2022. Subsequently, the CMO HQ and WMO expanded the scope of the IA in March 2023 to add new activities before the end of the CREWS Caribbean Project in June 2023. Approved funding totaled USD $180,000. Updates on the thematic groups of activities completed by the CMO HQ follow:

- <u>Meteorological Legislation and Policy</u>

  Under the original Implementing Agreement (IA), a Model Hydro-Meteorological Bill and Meteorological Policy for National Meteorological and Hydrological Services (NMHSs) were expertly crafted by a legal consultant and gained endorsement from CMO Member States in June 2021. These Model Bill and Policy Documents were then published and distributed to all

Member States, as well as key entities such as the CIMH, CARICOM Secretariat, Organization of Eastern Caribbean States (OECS), WMO Secretariat, and the CREWS Secretariat.

With the inception of the new IA, the adaptation of an additional Bill, specific to Barbados, began in September 2022. The drafting continued through January and February 2023, resulting in an updated Draft Bill, which was submitted to the Permanent Secretary, Ministry of Home Affairs and Information on 27 February 2023. After persistent advocacy by the Director of the Barbados Meteorological Service and the CMO Coordinating Director, the Permanent Secretary provided comments and instructions to proceed with stakeholder consultations. These consultations were successfully conducted and concluded in May 2023. Following the integration of the feedback received, a final draft Bill, Explanatory Note, and Cabinet Note were presented to the Ministry of Home Affairs and Information for ultimate approval on 12 June 2023.

- National Strategic Plans (NSP) and Framework for Weather, Water, and Climate Services (FWWCS) and Action Plans (APs)

  At CMC63, Council was informed that through the new IA, two (2) additional NSPs, FWWCSs, & APs were in development for the Turks and Caicos Islands (TCI) and the Cayman Islands (CI). Council was also updated on the status of the project, which included the completion of the baseline assessment and first draft of the NSP & FWWCS for the TCI, and stakeholder consultations by the Cayman Islands National Weather Service (CINWS).

  Subsequently, revisions were made to the TCI's draft NSP & FWWCS during December 2022 and February 2023, culminating in a Technical Validation Workshop on 7 March 2023. Additionally, the CMO HQ assisted the TCI Director of Meteorology in crafting a draft Cabinet Paper for the submission of the draft NSP, FWWCS, and AP to the Government. After incorporating input from various stakeholders, the CMO, and the WMO, the final draft documents were formally accepted by the CMO in April 2023. These documents were then submitted to the Government for their consideration by the Director of Meteorology. Following the Government's acceptance of the Final NSP, FWWCS, and AP, along with the newly established Turks and Caicos Islands National Weather Service, were officially launched on 9 May 2023.

  In the context of the Cayman Islands, Council should note that the CINWS had an established Strategic Plan. Therefore, the objective in this instance was to conduct a comprehensive review and update of the existing plan. Through a meticulous and iterative evaluation process during January to May 2023, the CINWS Strategic Plan was transformed into an NSP, FWWCS, and AP, an output that aligned with the strategic planning guidance provided by the WMO. In June 2023, both the CMO HQ and the CINWS formally accepted the final versions of these documents.

- Common Alerting Protocol (CAP) Implementation Training

  In late 2022, the CMO HQ and WMO agreed to plan and deliver two CAP Implementation Workshops for two CMO Member States. This endeavor aimed to strengthen the capacity of beneficiary National Meteorological and Hydrological Services (NMHS) to effectively communicate warnings across multiple channels and platforms. Following the decision by Belize and the Turks and Caicos Islands to host the workshops, CMO HQ provided procurement, logistical, and administrative support to ensure the successful execution of these activities, working closely with the WMO and NMHS Directors.

  Through these collaborative efforts, the teams successfully organized and executed two in-country CAP Implementation Workshops in Belize and the TCI in May 2023, benefitting more than sixty (60) direct participants and multiple key stakeholders in both countries. Both workshops delivered draft action plans for sustaining CAP implementation over the short to

medium term, and built capacity among participants in the knowledge of CAP and its potential benefits.

Post-workshop activities, including the distribution of surveys to participants and the preparation of Workshop Reports, ensured comprehensive documentation and feedback for further refinement. The success of these workshops represented a notable milestone in enhancing the emergency communications capabilities of meteorological services in the Caribbean region, but more importantly, generated an improved implementation model and recommendations for similar interventions already considered for the near future.

- EUREC4A-CMO-SWFP Workshop - Caribbean Weather Forecasting Initiative

  Council will recall the partnership of the University of Leeds and CMO Headquarters, to implement a *Caribbean Weather Forecasting Initiative* in support of *EUREC^{4}A-ATOMIC*, an international field study led by institutions from France, Germany along with the CIMH. The Initiative benefitted CMO Member States**,** whose forecasters improved their capability in numerical weather prediction utilitation and dry season weather and localized storms prediction. At CMC63, Council was informed of two (2) workshops in December 2022 and February 2023 in support of the Initiative.

  In December 2022, a NOAA WMO RA IV virtual workshop on satellite meteorology focused on satellite products and applications, led by NOAA and CIMH, with CMO HQ and University of Leeds as co-organizers and lecturers. The satellite workshop served as a precursor to the EUREC4A-CMO-SWFP workshop held on 20-23 February 2023 at CIMH, led by the University of Leeds and CMO Headquarters, with support from CIMH. The February 2023 workshop brought together forecasters from 10 Caribbean States and distinguished lecturers from the University of Leeds, the UK Met Office, CIMH and CMO Headquarters. The forecasters in the workshop reported significant improvements in their day-to-day forecasting skills. They showcased their enhanced capabilities in weather analysis and interpretation of numerical weather prediction model outputs at global and regional, high-resolution scales.

  The workshop also yielded other remarkable outcomes, including draft sections of a scientific paper and an outline for a forecasters' handbook for the Caribbean. The draft scientific paper includes analysis of the weather during the EUREC4A field study and the synoptic influences on severe weather and the transportation of dust and aerosols. The initiative and associated workshops helped to advance weather science in the Caribbean, enhancing the quality of weather forecasts, and fostering resilience to weather hazards.

- Marine Meteorological and Oceanographic Services Workshop

  In early 2023, the Trinidad and Tobago Meteorological Service (TTMS) expressed a keen interest in organizing a workshop to enhance marine meteorological services. In March 2023 discussions began on the planning and execution of the proposed workshop in Trinidad and Tobago, tentatively scheduled for 16-18 May 2023, with a strong focus on understanding users' needs. This included identical sessions conducted in Tobago and Trinidad on 16 May and 17 May, respectively. The 18th May was reserved for the training and development of TTMS forecasters.

  To ensure the success of this workshop, CMO Headquarters undertook meticulous planning, coordination, and procurement efforts between March and May 2023. These coordinated efforts contributed to the successful execution of the workshops in both Tobago and Trinidad on 16 May 16 and May 17-18, 2023, respectively.

  Furthermore, the support and expertise from NOAA were enlisted to facilitate a capacity-building

session during the workshop. The WMO and NOAA provided invaluable pro bono support for the workshop, eliminating the need for formal engagement of trainers. Following the workshops, a debrief meeting took place in June 2023, resulting in the preparation and submission of a draft Action Plan by the TTMS. Concomitantly, collaborative efforts between the CMO HQ and WMO were ongoing to enhance a *Statement of Users' Needs for Marine Meteorological and Oceanographic Services*, which was submitted to the TTMS for upward communication and follow-up action.

As an adjunct activity to the Marine Meteorological and Oceanographic Services Workshop, the CMO HQ supported the placement of Flood Markers and the conduct of **community flood management capacity-buildin**g in the communities in the Vega de Oropouche River Basin in eastern Trinidad. This activity was led by the Trinidad and Tobago Red Cross Society with the support of the WMO and CREWS Caribbean Project. It involved key partners needed to advance flood management at the community level, namely members of the communities themselves, the Sangre Grande Regional Corporation Disaster Management Unit, the Trinidad and Tobago Meteorological Service, the Office of Disaster Preparedness and Management, and the Water Resources Agency. The CMO HQ supported the development of the activity budget, planning, execution, and post-activity review.

(c) CREWS Caribbean 2.0: *Strengthening Hydro-Meteorological and Early Warning Services in the Caribbean* *(Strategic Priorities 1, 2 & 4)*

14. Council is asked to note that the next phase of CREWS Caribbean will focus on implementing the UN mandated "***Early Warnings for All".*** The project will extend from January 2024 to December 2026 (3 Years), with a total of USD $7 million to achieve the following outcomes:

1. MHEWS Governance strengthened on a regional level.
2. Disaster risk knowledge improved on a regional, national, and community level.
3. NDRMOs capacities strengthened for disaster risk reduction and MHEWS.
4. NMHSs service provision, observations, monitoring, analysis, forecasting of hazards and dissemination capabilities strengthened on a regional and national level in a people-centred manner.
5. Warning dissemination and communication, prevention, anticipatory actions and response capabilities supported at regional, national and community level.
6. Inclusive and gender-responsive approaches ensure those most at risk are engaged meaningfully in the development of EWS to reach the last mile and leave no one behind

15. The main target countries of the project are Members and Associate Members of the Caribbean Community (CARICOM), CMO, and the Caribbean Disaster Emergency Management Agency (CDEMA). CREWS Caribbean 2.0 will be implemented by WMO and UNDRR and regional partners including CDEMA, CMO HQ, and CIMH.

(d) SERVIR-Amazonia *(Strategic Priorities 1 – 4)*

16. Council may recall being informed of a partnership formalized in October 2022 by the CMO HQ and the International Center for Tropical Agriculture (CIAT) to deliver the SERVIR-Amazonia programme in Trinidad and Tobago. That agreement grew out of talks held in April 2022. A series of training workshops were scheduled for January to April 2023, to be hosted primarily in person, at the CMO Headquarters. CMO HQ agreed to be responsible for coordinating all logistical and administrative arrangements for the twelve (12) workshops while also participating in the training as far as practicable.

17. The CMO HQ successfully hosted the training series from 19 January to 27 April 2023 which benefitted up to twenty-seven (27) trainees and ten (10) institutions including the TTMS and trainees from the marine and coastal sector, forestry and agriculture, academia, disaster management, and

environmental management. The CMO HQ was also able to negotiate the hosting of the final 'capstone' session and closing ceremony at the United States Embassy in Port of Spain, and the delivery of a keynote address and certificates to successful candidates by Her Excellency Candace Bond, Ambassador of the United States to Trinidad and Tobago.

18. These workshops served to augment learning through the sharing of new geospatial technologies and innovative approaches and best practices for the generation and use of climate and other relevant geospatial data for Trinidad and Tobago. The programme built national capacity in open-source cloud computing for environmental and climate monitoring and analysis, and facilitated the sharing of data and expertise, as well as the conceptualization of an inter-institutional workflow for the generation of updated land use/land cover information for Trinidad and Tobago – a vital input to flood risk and ecosystem management, and disaster risk reduction efforts. The partnership with CIAT officially came to an end in October 2023.

(e) Hydromet Caribbean 2023: Third Symposium on Operational Hydro-meteorology *(Strategic Priorities 1-4)*

19. During CMC63, Council was informed of the third Caribbean symposium on Operational Hydro-Meteorology that was being planned for January 2023. The symposium was held on 30 January to 2 February 2023 in Jamaica, with emphasis on establishing partnerships to support "*Early warnings for all* in five years", looking at challenges and possible solutions. The symposium was co-organized by CMO Headquarters and co-chaired by the Coordinating Director and the Director of the Meteorological Service of Jamaica. Presentations were made by CMO Members and others with varying hazard profiles and institutional arrangements for early warning systems (EWS), including EWS for multiple hydro-meteorological and geohazards, EWS across many low-lying islands, and EWS with forecasts and warnings from neighbouring state, EWS with community-level input and EWS for hydrological services. The Strategic Roadmap for Multi-Hazard EWS was also presented as a focusing mechanism for developing partnerships. Roundtable discussions discussed data exchange in support of EWS, how to close EWS gaps and the potential role of public-private partnerships, and thoughts on artificial intelligence in the Caribbean hydro-meteorological context.

20. Council will recall that CMO Headquarters co-organized, with a networking firm Varysian Ltd, the first ever Caribbean Symposium on Operational Hydro-Meteorology in November 2019 for Directors of National Meteorological and Hydrometeorological Services to develop and enhance partnerships with public sector, private sector, and academia with a focus on data collection, exchange, integration, and decision-making. A second Caribbean symposium in December 2020 focused on the integration of operational hydrology and meteorology.

21. Council is asked to note the value of these activities by the CMO Headquarters, which ensures that best practices among NMHSs and partners are shared and that the outcomes of the symposia served as inputs to key international meteorological and hydrological policies and strategies being developed regionally and globally by WMO and partner agencies.

(f) Lightning Detection System and Lightning Safety Awareness *(Strategic Priorities 1,3)*

22. Council will recall that at the 59th Session (Anguilla, 2019), Council approved the CMO Headquarters initiating a project to develop a CMO Lightning Detection Network. CMO Headquarters has been seeking funding for a lightning detection system to be owned and operated by CMO for the benefit of all CMO Member States and the region, in general. Lightning detection and safety awareness and protection have come to the forefront, particularly in Jamaica, because of a number of lightning deaths reported since 2020 and several causalities among high school students since 2017.

23. CMO Headquarters is pleased to report to the Council that the next phase of CREWS Caribbean (Phase 2.0) includes as an outcome, "*Capacities on lightning detection and awareness building*

strengthened on a regional level", a subset of the broader output, "*NMHS Service Provision, observation, monitoring, analysis, forecasting and dissemination capabilities of hazards strengthened*". This component of the CREWS is being led by WMO, mainly supported by UNDRR, CMO HQ and CIMH.

24. Council will recall from CMC63 that the Coordinating Director was scheduled to present the results of a study on lightning occurrence and damages in Jamaica and lessons for the Caribbean, at the Annual Meeting of the American Meteorological Society (AMS) in January 2023, on behalf of co-authors ***Mr Ron Holle***, ***Mr John Cramer***, and ***Mr Evan Thompson*** of Jamaica. This study, which used GLD360 and Geostationary Lightning Mapper, bolsters the case for a lightning detection network adapted to the variation in sub-regional risks. Following a well-received presentation at the AMS Annual Meeting, the Coordinating Director was invited to present in the AMS Webinar on "International Perspectives on Lightning Safety" on 10 August 2023.

(g) Upgrading of CMO Radars *(Strategic Priorities 1, 3, and 4)*

As reported to CMC63, the CMO Headquarters is working with the Caribbean Development Bank (CDB) on a project to upgrade the CMO weather radars in Belize, Guyana, and Trinidad and Tobago, with the aim of strengthening hydro-meteorological and early warning services in the Caribbean. The project is being advanced by the CDB, as an Accredited Entity for the *Green Climate Fund* (GCF), through a new *Scaling Up Framework* of the **GCF *Simplified Approval Process* (SAP)** and the ***Climate Risk and Early Warning Systems* (CREWS)** initiative, which aims to develop, scale-up and fast-track financing modalities for early warning systems (EWS), **firmly grounded in country ownership**. Countries that are most exposed to climate change and who have successfully implemented CREWS-funded projects can be fast-tracked to quickly access up to $25 million USDA for early warning systems.

25. Council is asked to note that the new GCF-SAP-CREWS Scaling up Framework is **only available after successful implementation with CREWS**. The fact that the CMO Headquarters can participate in the Framework is a testament to its ability to implement projects on behalf of CMO Member States and for the benefit of the region.

26. Council will note that on 24 July 2023, the CMO Headquarters Unit submitted the project fiche, developed in collaboration with the CREWS Secretariat, to the CDB. After being informed that CDB would be the official accredited entity to advance the project through the GCF, the CMO notified the parent Ministries of the beneficiary Members. On 28 September, the CDB, with the support of CREWS partners—CMO Headquarters Unit, CREWS Secretariat, WMO, UNDRR, and the GCF—held a kick-off meeting with invited representatives from the beneficiary CMO Member States, including the National Meteorological Services and their respective parent Ministries, and the National Designated Authorities (NDAs) for the GCF, to provide a briefing on the project and to receive feedback on how the project should best be designed.

27. Council will be pleased to learn that the representatives express their strong support for the project. In order for the project to advance along the process, the NDAs will be asked to provide an official No-Objection Letter requesting the CDB to support the country with the development of the project. This letter is to confirm the governments' commitment to the project so that CDB can work with partners and stakeholders to move the project forward. This will be followed by a "Write Shop", to be held on 18-19 January 2024, to complete the required documents for submission to the GCF by February 2024. Representatives from all beneficiaries will be invited to participate in the "Write Shop".

ACTION PROPOSED TO COUNCIL

28. The Council is invited to:

(i) **Note**

a. The continued efforts of the CMO Headquarters Unit to advance the implementation of the CMO Headquarters Strategic Plan 2020-2023 through the projects described.

b. 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.

c. The continued drive to advance the adaptation of model meteorological legislation and policy frameworks in CMO Member States, including recently in Barbados

d. 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

e. The completion of workshops under the EUREC^{4}A-UK/CMO Caribbean Weather Forecasting Initiative to build regional capacity through knowledge exchange and collaboration with international researchers

f. The successful completion of training in the forecasting of extreme hydrological events and the monitoring of mangrove ecosystems under the SERVIR-Amazonia programme, which is funded by USAID and NASA

g. The support for early warning systems through training on the Common Alerting Protocol, community flood mapping, and marine meteorology service delivery

h. The successful organization of a third operational hydro-meteorology symposium for Directors of National Meteorological Services in the Caribbean and other key stakeholders;

i. 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.

(ii) **Urge** Members to:

a. 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

b. 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

c. 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

d. Utilize the SWFP Regional Forecast Support Facility and participate in training in the WMO Severe Weather Forecasting Programme.

e. Nominate a National Focal Point for the Severe Weather Forecasting Programme

(iii) **Support the** CMO Headquarters in its role as a regional implementing partner of CREWS Caribbean Phase 2.0

CMO Headquarters
November 2023

ANNEX I

Project Outputs and Supporting Information

Figure 1 - Severe Weather Database for the Caribbean; https://cswd.cimh.edu.bb/

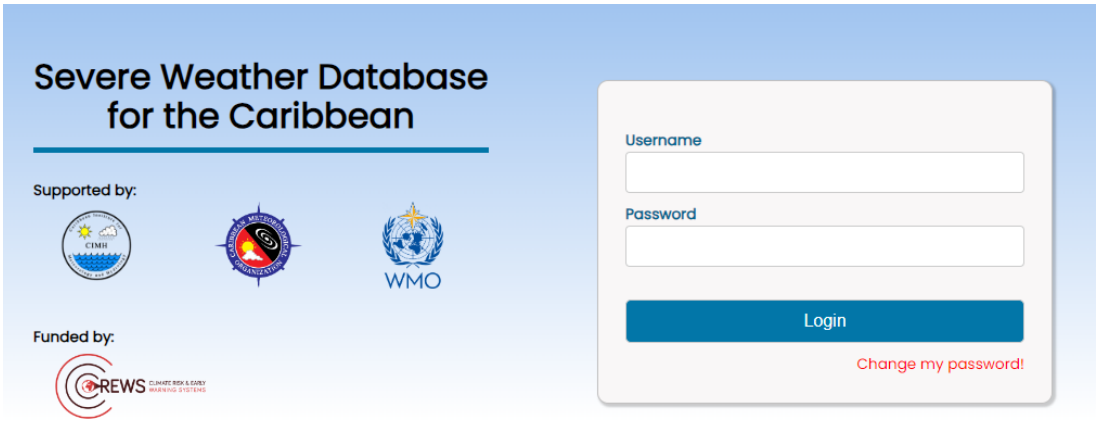
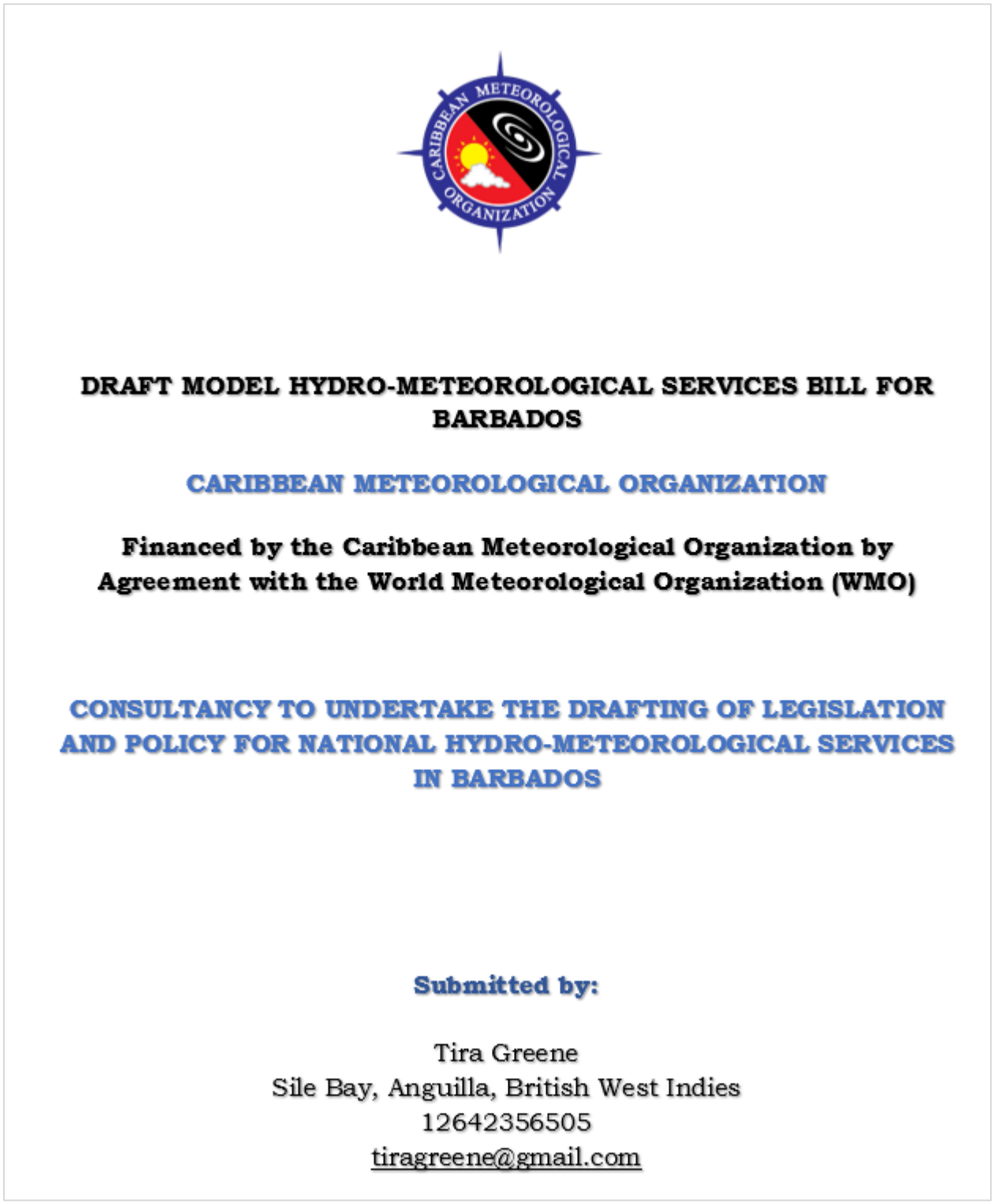


Figure 2 - Site Acceptance Testing of Backup Server Procured for Caribbean Severe Weather Database

Figure 3 - Front Page of Draft Hydro-Meteorological Services Bill adapted for Barbados



DRAFT MODEL HYDRO-METEOROLOGICAL SERVICES BILL FOR BARBADOS

CARIBBEAN METEOROLOGICAL ORGANIZATION

Financed by the Caribbean Meteorological Organization by Agreement with the World Meteorological Organization (WMO)

CONSULTANCY TO UNDERTAKE THE DRAFTING OF LEGISLATION AND POLICY FOR NATIONAL HYDRO-METEOROLOGICAL SERVICES IN BARBADOS

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Figure 4 - Front Pages of National Strategic Plans developed for the Turks & Caicos Islands and Cayman Islands

Figure 5 - Group Photos from CAP Implementation Workshops

Top: Belize CAP Implementation Workshop, 4-5 May 2023, NEMO Headquarters, Belmopan, Belize
Bottom: Turks & Caicos Islands CAP Implementation Workshop, 9-10 May 2023, Beaches Resort, Providenciales, Turks & Caicos Islands

Figure 6 – group Photos from TTMS Workshop on Strengthening Marine Meteorological and Oceanographic Services in Trinidad & Tobago, in Tobago (top) and Trinidad (bottom), 16-18 May 2023

Figure 7 - Community-based Flood Management Activities in Eastern Trinidad, 19-20 May 2023

Figure 8 - CMO Coordinating Director, Providing Remarks at the Opening of the CREWS 2.0 Partners Meeting, 10 November 2023, Port of Spain, Trinidad

Figure 9 – Trainees at the SERVIR Amazonia Capstone & Closing Ceremony, 27 April 2023, US Embassy, Port of Spain, Trinidad

Her Excellency Candace Bond, Ambassador of the United States to the Republic of Trinidad and Tobago, graciously delivered the keynote address at the Closing Ceremony