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**CARIBBEAN METEOROLOGICAL COUNCIL** **Doc. 11**

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##### PROJECT UPDATES AND PROPOSALS

(Submitted by the Coordinating Director)

**Introduction**

1. Weather, climate and water are at the heart of the environmental issues affecting the planet. National Meteorological and Hydrometeorological Services (NMHSs) in the Caribbean and the world over must provide accurate information, analyses and timely forecasts of hazardous weather-related conditions that affect the sustainable development of their nations in the short term. At the same time, the NMHSs must provide the appropriate data and scientific-basis for studies on the long-term potential impacts of both natural and human-induced climate change on the environment. The contribution of meteorology and related sciences to these global studies is driven by the constant adaptation to and use of technological changes and opportunities.

2. In this regard, many of the projects being undertaken or planned have observational and scientific data information components involving the use of new or modern technologies. This is primarily an information document intended to keep the Council up-to-date on the status and/or progress of implementation on any projects of this nature, which involve CMO Member States and partner organizations, such as the *World Meteorological Organization* (WMO). The document provides information on the following:

(a) Finland Initiative–COPS - Complementary Project to the SIDS - Caribbean Project and SHOCS I and II - Project Completion

3. Council will recall that, between 2001 and 2004, the Government of Finland funded the **SIDS‑Caribbean Project** titled “*Preparedness to Climate Variability and Global Change in Small Islands States, Caribbean Region*”. This was followed by a project entitled ***“****Strengthening Hydrometeorological Operations and Services in the Central America and the Caribbean (****SHOCS****)”*.

4. Phase I of SHOCS, called SHOCS-I, was implemented between 2010 and 2012 with a budget of 0.5 million Euros. A Phase II, called **SHOCS-II**, was implemented between 2013 and 2015 with a budget of one Million Euros. The Project was implemented by the Finnish Meteorological Institute (FMI) in partnership with the *Association of Caribbean States* (ACS), WMO and CMO. The CMO Member States that participated in SHOCS-II are Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines and Trinidad and Tobago. The other States that participated are Cuba, the Dominican Republic, Haiti and Suriname. The beneficiaries of the Project were the National Meteorological and Hydrological Services (NMHS) and Disaster Management Agencies of the above States, along with the CIMH as a regional institution. Towards the end of SHOCS-II, the funding policies of Finland caused restrictions to the participation of Barbados and Trinidad and Tobago, although the CMO Headquarters was able to minimize the impact because of the regional responsibilities of the NMHSs in those States.

5. At the conclusion of SHOCS-II, there were residual funds available from the components of SIDS and SHOCS, so that the Project Board identified priorities for capacity building during a continuing phase called the ***Complementary Project to the SIDS - Caribbean Project and SHOCS I and II* (COPS)**.

6. In this regard, the COPS Project, with 186,000 Euros available, was implemented from early 2016 and was completed at the end of 2017. The project consisted of several training workshops and also included technical assistance, installation of modern systems and renewal of old equipment. All activities were aimed at contributing to the development of Early Warning Services (EWS) and Disaster Risk Reduction (DRR), thus continuing the work already started in SHOCS. The main activities were:

* + **Activity 1**:The implementation of new tools at the weather forecast services to improve the capacity to analyse severe weather conditions (SmartMet);
	+ **Activity 2**: Development and implementation of solutions for common presentation and communication of early warnings (SmartAlert).

7. In the previous projects, forecaster workstations and weather forecast production systems, called SmartMet, built by the Finnish Meteorological Institute (FMI),were installed in some ten countries in the region. The SmartMet system was installed to provide new technical tools and methods to enhance the capacity of NMHSs to contribute to the Caribbean Early Warning System and to enhance service production. Two types of SmartMet installations were made in the region: ‘Main sites’ and a ‘Remote site’.

8. The 'Main Site' has software with full capability for data editing and post processing to prepare localized service products. A ‘Main site’ system includes a high capacity server to perform data collection to the system database. One of the key-functions of the 'Main Site' SmartMet is the delivery of the data to the 'Remote Site' SmartMet systems. This assures that the remote sites and the main sites have the same data available for forecasting and analysis work and thus the improvements in the main sites benefits also the remote sites.

**(b) WMO *Severe Weather Forecasting Demonstration Project* (SWFDP)**

9. Council has, for several years, recognized that there will always be areas that could be improved in any weather warning system, particularly for episodes of severe weather that may not always be the result of a tropical cyclone and could occur at any time of year. Council will recall that, in November 2015, it endorsed a proposal by CMO and partners to implement a WMO ***Severe Weather Forecasting Demonstration Project*** (SWFDP) in parts of the Caribbean, with an aim, among others, to foster greater collaboration among National Meteorological Services and Disaster Management Agencies. Since that time, significant strides have been made towards the implementation of the SWFDP. The WMO Secretariat, the CMO Headquarters supported by the CIMH, and the Meteorological Service of France, through its centre in Martinique, have been preparing for the official start of the Project.

10. In this regard, the Regional WMO Management structure had established a *Regional Subproject Management Team* (RSMT) for the development and implementation of the SWFDP. Mr Keithley Meade of Antigua and Barbuda, Ms Kathy-Ann Caesar of the CIMH and the Coordinating Director of the CMO serve as members of the RSMT. The Coordinating Director co-chairs the RSMT with an expert from France. It will be recalled that the WMO Severe Weather Demonstration Project was being developed along the following lines:

(i) The SWFDP would cover all the islands from Trinidad in the south to Puerto Rico in the North, with special arrangements for Haiti;

(ii) The Météo-France Centre in Martinique will serve as the *Regional Forecast Support Facility* (RFSF) for the Project;

(iii) The Caribbean Institute for Meteorology and Hydrology (CIMH) which, among other functions, is a WMO Training Centre, a WMO Centre of Excellence for Satellite Meteorology and a WMO Regional Climate Centre, will provide technical support for the SWFDP.

11. SWFDP implementation in the Eastern Caribbean was being made possible by seed funding from Canada through its CREWS (Climate Risk and Early Warning Systems) Project. The SWFDP was being developed in four phases: 1) Overall Planning; 2) Implementation plan development and execution; 3) Demonstration and 4) Operational (no longer a project). Phase 3 and 4 include capacity building through training of meteorologists, public weather service focal points and the media.

12. During 2018, the *Regional Subproject Management Team* reviewed its *Regional Sub-Project Implementation Plan* (RSIP) for the SWFDP and examined the progress made at the *Regional Forecast Support Facility* (Météo-France Martinique), including the preparation for the development of the WEB-Based platform for data/products sharing, to produce severe weather guidance and to ensure real-time coordination. As part of the SWFDP development, a preparatory training workshop was held at the CIMH in March 2018 for the Meteorological Services of participating Member States to develop the capacity of their forecasters in related areas.

13. A pre-operational Demonstration (testing) Phase was planned for the latter part of 2018. However, unexpected changes in technical personnel who had been preparing the WEB-based platform for data/products sharing, meant that this testing phase would be delayed, possibly into early 2019. The *Regional Subproject Management Team* will need to meet in the new year with the WMO Secretariat to iron out issues regarding the test-phase, the mid- to long-term training strategy and plan, R&D needs, observations challenges and other matters.

14. Council will recall that the WMO Expert Group on the SWFDP identified the *Caribbean Meteorological Organization* (CMO), through its Headquarters and organs, as the regional entity to support SWFDP in the operational phase.

(c) Lightning Detection System

15. Council will recall that, in the past, the CMO Headquarters indicated its interest in establishing a ground-based *Lightning Detection System* in the region in partnership with the Meteorological Service of France [Météo-France]. The CMO Headquarters has studied this system in great detail and was of the opinion that such a system was very necessary in the Caribbean. Over the years, the CMO Headquarters reported to the Council, the results of a demonstration period of a long-range lightning detection system that showed its tremendous value to the prediction of severe weather in the region. This section of the document is to provide the Council with an update since its discussions at the 57th session in 2017.

16. In the presentations to Council, it was shown how ground-based systems use triangulation from sensors at multiple locations to determine location of the lightning flash. Therefore, for this higher resolution to be achieved, it would be necessary to install some lightning sensors along the island chain to allow for adequate triangulation using the commonly known phenomenon “lightning spherics”.

17. Over the years, the CMO Headquarters has received several proposals from a number of lightning-detection suppliers. The CMO Headquarters proposed that the Council consider a capital project approach, in which international funding could be sought, in the same way as was done for the CMO Radar Project, through an internationally-tendered process, in which the equipment purchased and installed under such a project would be owned and operated by the CMO for the benefit of all CMO Member States and the region in general.

18. The 57th session of the Council (2017) discussed the matter and endorsed the concept of a *CMO Lightning Detection Network* (CLDN). However, it was felt that more information was required as to the cost of, and a sustainability model for the system. It was also suggested that before a final decision could be made on CLDN, the *Geostationary Lightning Mapper* (GLM), which had just become available on the new GOES satellites, should be evaluated during 2018 prior to deciding on the CLDN. As discussed in CMC58 Doc 5, the new GOES-East satellite was launched in November 2016 and became operational in March 2017, while the new GOES-West was launched in March 2017 and was scheduled to become operational in late 2018. The real-time GOES-East GLM data became available from July 2017, while GOES-West GLM data became available, in test mode, in May 2018. As indicated in Agenda item 5, the NMHSs in CMO Member States had not yet all decided upon their systems for reception of information from the new GOES satellites. Therefore, a proper assessment of the GLM data for operational purposes was still some time away and would therefore impact on discussions by Council on the CLDN issues. It was therefore the intention to carry out a proper assessment of the *GOES Lightning Mapper* output in 2019 before the issue could be brought to the Council.

**ACTION PROPOSED TO COUNCIL**

19. **The Council is invited to**:

1. **Note** the completion of the Finland-funded Project Complementary Project to the SIDS-Caribbean Project and SHOCS I and II (COPS);
2. **Note** the progress made towards the WMO *Severe Weather Forecasting Demonstration Project* (SWFDP) in the Eastern Caribbean and to **strongly support** the regional participation in its implementation;
3. **Note** the recent developments in connection with an operational ground-based lightning detection system.

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CMO Headquarters

October 2018