C A R I B B E A N

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

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

**CARIBBEAN METEOROLOGICAL COUNCIL** **Doc. 5**

FIFTY-SEVENTH SESSION

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##### SPECIAL CMO AND WMO ISSUES

(Submitted by the Coordinating Director)

**Introduction**

1. This document is designed to keep the Council informed on significant regional or international issues of special interest to the CMO. Some of these, particularly those emanating from the World Meteorological Organization (WMO) or other relevant organizations, will require decisions or actions by Council to ensure that CMO Member States understand their roles and adhere to commitments and requirements. Some other items will likely be presented verbally. The Agenda item covers primarily the following topics:

1. Outcome/Highlights of the 2017 Executive Council (EC) of the World Meteorological Organization
2. WMO Integrated Global Observing System – Pre-Operational Phase
3. Reception of new Geostationary Satellite Imagery in CMO Member States
4. The Global Framework for Climate Services (GFCS)
5. Issues emerging from the 16th session of WMO Commission for Basic Systems
6. Aeronautical Meteorological Services – Priority Activities
7. Progress in the Implementation of Quality Management Systems (QMS)
8. Staff Competency Standards and Training
9. Tropical Cyclone Programme and Regional Severe Weather Forecasts and Warning Systems
10. The 2017 session of the WMO Regional Association IV.

**5(A): Outcome/Highlights of the 2017 Executive Council (EC) of the World Meteorological Organization**

2. The 69th session of the WMO Executive Council was held at the Headquarters of the World Meteorological Organization in Geneva from 10 to 17 May 2017. It was chaired by the President of WMO, *Mr David Grimes* of Canada. The Executive Council (EC) is the executive body of the Organization, which meets annually, implements decisions of the supreme body – the WMO Congress – coordinates the Programmes, decides on the allocation of budgetary resources, provides guidance and takes action on recommendations of Regional Associations and Technical Commissions and on matters affecting international meteorology and related activities.

3. The Coordinating Director of the CMO is a member of the WMO Executive Council, having been first elected in 1999 and then serving as the Second Vice-President of the WMO for the maximum two terms between 2003 and 2011. The Coordinating Director was accompanied to this session by a team of advisers and experts, comprising *Dr. David Farrell*, Principal of the CIMH, *Mr Glendell De Souza,* Science & Technology Officer at the CMO Headquarters and *Mr Keithley Meade,* Director of the Meteorological Service of Antigua and Barbuda.

4. The 69th session of the Executive Council was unusual from the point-of-view that, for the first time in its history, there were no WMO Vice-presidents in attendance. It will be recalled that, just prior to the 68th session in 2016, the position of the Third Vice-President became vacant when the incumbent resigned to become the Secretary of the *Intergovernmental Panel on Climate Change* (IPCC). In the months before the 69th session, the First Vice-President from Brazil retired and the Second Vice-President resigned his post in his homeland Poland. According to the WMO regulations, separate and consecutive elections by correspondence to these posts must take place, commencing with the First Vice-President. An attempt to fill this position early in 2017 was unsuccessful as a quorum was not reached. A second attempt in the second half of the year was expected to be concluded in November 2017. If successfully concluded, elections for the other two positions will likely be conducted in 2018.

5. This 2017 session of the Executive Council continued the implementation process for the programmes set out by the WMO Congress in 2015, particularly the seven priorities for the period 2016-2019. Of particular relevance to the CMO Member States are:

1. WMO’s ***Disaster Risk Reduction*** (DRR) programmes and activities to improve the accuracy and effectiveness of impact-based forecasts and multi-hazard early warnings of high-impact hazards;
2. Enhancing the implementation of the **Global Framework for Climate Services** GFCS, particularly for countries that lack adequate climate services;
3. Promoting the full and mandatory implementation of the **WMO Integrated Global Observing System** (WIGOS) and the ***WMO Information System*** (WIS) in order to strengthen the global observing systems;
4. Measures to improve the ability of National Meteorological Services to provide sustainable high-quality **Aviation Meteorological Services**;
5. ***Capacity Development*** for developing and least developed countries aimed at the delivery of improved weather, water and climate predictions;
6. Improving the **Governance of WMO** based on a strategic review of WMO structures, operating arrangements and budgeting practices.

6. The WMO Executive Council made several decisions that affect CMO Member States on the seven priorities above and other related matters, with greater details provided on some of these in the sections below. The Executive Council also held a special dialogue with senior representatives of the aviation sector. Aviation, which is one of the most weather-sensitive of all economic sectors, is changing rapidly. With air traffic doubling every 15 years, competition increasing and air safety more important than ever, the demand for an expanded array of national and regional weather services is rising. Thus, with major changes are taking place in the aviation sector, Meteorological Services globally and regionally have to monitor and adapt to the sector’s requirements.

5(B) WMO Integrated Global Observing System – Pre-Operational Phase (2016-2019)

7. Council will recall its substantial discussions on the *WMO Integrated Global Observing System* (WIGOS), which is an all-encompassing approach to the improvement and evolution of WMO’s global observing systems, and which is needed in all countries to consolidate progress in meteorological research, numerical modelling, and computer and communication technologies. Closely tied to WIGOS is the implementation of the new *WMO Information System* (WIS). WIGOS, together with WIS, form the basis for the provision of accurate, reliable and timely weather, climate, water and related environmental observations and products by all Members and WMO Programmes, which would lead to improved service delivery. Both WIGOS and WIS were very essential to all technical and scientific activities of Meteorological Services in the Caribbean and worldwide.

8. WIGOS moved into its *Pre‑operational Phase* in 2016. This Phase will end in 2019, with WIGOS becoming fully operational from 2020. This meant that the global level preparatory work had moved toward implementation activities at the regional and national levels. The goal therefore is to have WMO Member States and their partners benefit from a fully operational system from 2020. In this regard, considerable training at regional levels has been taking place. The concept for regional WIGOS Centres, as endorsed by the WMO Executive Council, was still being discussed.

5(C) Reception of new Geostationary Satellite Imagery in CMO Member States

9. Council will recall that the new Geostationary Operational Environmental Satellite - R Series (**GOES-R**) was successfully launched from Cape Canaveral in Florida on November 19, 2016. This GOES-R is the first of a new generation of geosynchronous environmental satellites that will provide atmospheric and surface measurements of the Earth’s Western Hemisphere for weather forecasting, severe storm tracking, space weather monitoring and meteorological research. Since its launch, the satellite has been renamed GOES-16 and has been going through its testing phase. Between November 30 and December 11, 2017, it will be repositioned from its test location to its final operational location of 75.2 degrees West, which is the GOES-East location that includes the Caribbean footprint. On December 14, 2017, GOES-16 will officially become the new GOES-East. In early January 2018, the old GOES-East satellite will stop transmitting data and will be moved to its storage position at 60 degrees West.

10. GOES-16 marks a massive technological advance in geostationary observations. National Weather Services will have unprecedented new capabilities that allow for a wide range of forecast improvements.Compared to the outgoing GOES system, the advanced instruments and data processing provides:

* Three times more spectral information
* Four times greater spatial resolution
* Five times faster coverage
* Real-time mapping of total lightning activity
* Increased thunderstorm and tornado warning lead time
* Improved hurricane track and intensity forecasts.

11. The lightning mapping capability will allow forecasters to track lightning over the entire hemisphere, almost instantaneously. This is important because intensification in lightning activity may indicate a storm is becoming increasingly severe.

12. Due to the data volume, faster coverage and a change in broadcast frequency, all Meteorological Services which had an existing direct readout satellite system would need to replace the complete system. Three pathways were explored to receive satellite data and/or imagery, namely:

1. Direct readout from the GOES ReBroadcast(GRB);
2. Various commercial data services via the Internet;
3. Imagery via GEONETCast-Americas - the western hemisphere component of a near real-time, global network of satellite-based data dissemination systems.

13. Personnel from the CMO Headquarters and the CIMH have been directly involved with the US National Weather Service in preparing for the operational use of GOES-16 among CMO Member States. By mid-October 2017, several Meteorological Services have made their choice of systems to access the GOES-16 data and imagery on the cost of the system, latency and resolution of the data. Those that have not yet decided on operational systems should complete the process with urgency before the end of transmission of the current satellite.

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

14. The Council will recall that the ***Global Framework for Climate Services*** (GFCS), which is a 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. The governing structure for the GFCS is an *Intergovernmental Board on Climate Services* (IBCS), which is accountable to the WMO Congress. The Management Committee of the IBCS is determined by the various WMO Regional Associations. Membership for North America, Central America and the Caribbean (WMO Region IV) is through the British Caribbean Territories (BCT), Canada, Costa Rica and the USA. *Dr. David Farrell* is the BCT/CMO representative on the Management Committee with *Mr**Adrian**Trotman* as the alternate.

15. The priority areas for the GFCS are (i) Agriculture and food security (ii) Disaster risk reduction, (iii) Energy (iv) Health and (v) Water. It has been found that a number of countries, particularly developing ones and Small Island Developing States (SIDS), do not provide adequate climate services. Therefore the GFCS is, at the moment, being implemented through eight global projects, many with an emphasis on developing countries and Small Island Developing States. Several of the GFCS Projects involve or would involve the CIMH. For example, the "*Programme for Implementing the Global Framework for Climate Services (GFCS) at Regional and National Scales*" is funded by a grant from Canada to implement GFCS in the Pacific, the Caribbean, South Asia and the Arctic. This will be achieved by providing improved climate information, predictions, products and services to support climate risk management and adaptation strategies, decision making and actions at national and regional levels.

16. In this regard, there is a special role for the *Caribbean Institute for Meteorology and Hydrology* in the implementation of the GFCS, which is discussed in section **5(E)** paragraph 18 and 19 below. A mechanism has also been created to guide WMO contributions to the GFCS in line with a country-focused, results-based framework. As part of this mechanism, a checklist for the implementation of climate services has been developed in mid-2017 to provide step-by-step guidance to Member States on the implementation of climate services and to assist in identifying areas where support is needed.

5(E) Issues emerging from the 16th session of WMO Commission for Basic Systems

17. The WMO ***Commission for Basic Systems*** (CBS) is the WMO Commission with a leading role in the development, implementation and operation of integrated technical systems and infrastructure in support of all WMO Programmes and priority areas. CBS oversees the global development, implementation and operation of integrated systems for observing, data processing, data communication and data management. CBS guides the work of the World Weather Watch, Public Weather Services and WMO Space Programmes. The sixteenth session of the Commission was held in Guangzhuo, China from 23-29 November 2016. This was preceded by a two-day CBS Technical Conference on the topic "*Emerging Trends in Information and its Use*". CMO Member States that participated in CBS were Trinidad and Tobago (*Mr Marlon Noel*) and the British Caribbean Territories/CMO (*Dr. David Farrell* and *Mr Adrian Trotman* of the CIMH and the CMO Coordinating Director). CBS-16 made important decisions on strategies for future development of these programmes above and made recommendations for amendments to WMO technical regulations. Key topics that have implication for the National Meteorological Services in CMO Member States include the following, with details of some given separately below:

* *Global Data Processing and Forecasting System (GDPFS) and WMO Regional Climate Centres (RCC)*:

18. The *Global Data-processing and Forecasting Systems* (GDPFS) is set up to prepare and make meteorological analyses and forecast products available to Member States in the most cost-effective way. The design, function, organizational structure and operations of the GDPFS is done in accordance with Members' needs and their ability to contribute to and benefit from the system. CBS, through the GDPFS, strongly supports the implementation of the *Global Framework for Climate Services* (GFCS) (section 5D above). An integral component of the GDPFS, in this regard, is a network of WMO-designated ***Regional Climate Centres*** (RCCs). The WMO RCCs are *Centres of Excellence* that create regional products including long‑range climate forecasts that support regional and national activities and thereby strengthen capacity of WMO Members in a given region to deliver the best climate services to national users.

19. The Caribbean Meteorological Council will recall that CIMH has been functioning as a *WMO Regional Climate Centre “in demonstration phase*”for the Caribbean since 2013. Once the CIMH and the CMO Headquarters were satisfied that the Caribbean RCC in Barbados was ready for full operational designation, a formal application to WMO was made by the CMO Headquarters. After a series of reviews by the WMO *Commission on Climatology* (CCl), CIMH had to undertake a detailed technical demonstration of its capabilities to the full CBS-16 session in China. After a very successful demonstration, CBS-16 recommended to the WMO Executive Council, the formal recognition of the CIMH as a WMO RCC. This process was later completed and formalized at the 69th session of the Executive Council and therefore, **effective May 2017**, the CIMH became the *WMO Regional ClimateCentre (RCC) for the Caribbean* – the first such designation in the North America, Central America and the Caribbean region.

* *Election of CBS Officers*

20. The WMO Technical Commissions usually meet once every four years, except for the Commission for Basic Systems, which holds an extraordinary session in between. The President and Vice-President of each Commission are elected at these main sessions. Outgoing President and Vice-President of CBS were *Mr Fredrick Branski* of the USA and *Dr. Sue Barrell* of Australia. At this CBS-16, *Mr Michel Jean* of Canada was elected as the new President of CBS and *Ms Meiyan Jiao* of China as the new Vice-President of CBS.

5(F) Aeronautical Meteorological Services – Priority Activities

21. The Caribbean Meteorological Council will recall that, for several years, it has examined the vital issue of Meteorological Services for the aviation sector. Aeronautical meteorology has always been vital for the efficiency, safety and environmental sustainability of civil aviation, and a major or even prime focus for many National Meteorological and Hydrometeorological Services around the world, including the Caribbean. A fundamental factor in the provision of meteorological services to the aeronautical sector is the implementation of a ***Quality Management System* (QMS)** for all types of service to civil aviation, imposed by the *International Civil Aviation Organization* (ICAO), in collaboration with the *World Meteorological Organization* (WMO). Closely tied to a QMS for aeronautical meteorological services is the requirement for **Staff Competency Standards and Training.**

22. The National Meteorological Services in most CMO Member States have been making some progress towards implementation of a QMS for aeronautical meteorology, but the overall pace of progress is still somewhat difficult to fully ascertain. During 2016 and into 2017, a number of Meteorological Services reported back to WMO on their compliance with staff competency standards and training for their Aeronautical Meteorological Observers (AMO) and Aeronautical Meteorological Forecasters (AMF). Those that have not yet done so are urged to inform WMO as soon as possible on their status of their implementation of the competency and qualification requirements, noting that the entry into force of the WMO standard on required qualifications for the Forecasters (AMF) was 1 December 2016. In addition, it must be emphasised that ICAO is preparing an amendment to its prime publication *Annex 3- Meteorological Service for International Air Navigation* which, among other things, will call for a “*Demonstration of compliance of the quality system” by National* Meteorological Services. This amendment is expected to come into effect from November 2018.

5(G) Tropical Cyclone Programme and Regional Severe Weather Forecasts and Warning Systems

23. The Caribbean Meteorological Council is aware that activities within the WMO *Tropical Cyclone Programme* (TCP) are among the most important to the Caribbean and other tropical basins. The TCP is essential to help reduce the disaster risk associated with the tropical cyclones. The most critical regional activity under the TCP is the WMO *Hurricane Committee*, serving the *North Atlantic and Caribbean Basin*. The Hurricane Committee has at its core, *the US National Hurricane Center*, which is one of WMO’s primary*Regional Specialized Meteorological Centres* (RSMCs) for tropical cyclones.

24. Most Meteorological Services in CMO States are represented on the Hurricane Committee which, along with the relevant regional and national disaster management community, work continuously towards the reduction of disaster risks by tropical cyclones, particularly in terms of loss of lives. The WMO Hurricane Committee defines and routinely updates the entire warning system for tropical cyclones in the North America, Central America and the Caribbean region, including the areas of responsibility of the Meteorological Services in each Member State in the provision of tropical cyclone forecasts and warnings.

25. It must be recognized that there will always be areas that could be improved in any warning system. This is particularly true when one considers that many episodes of severe weather and thus potential natural disasters may not always be the result of a tropical cyclone. In November 2015, Council therefore endorsed a proposal being pursued 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, the CMO Headquarters has pursued this matter with WMO. In December 2016, a planning meeting of the Expert Group on the SWFDP took place in Martinique, then in May 2017, the first full meeting of the Expert Group on the SWFDP was held at the US National Hurricane Center in Miami, Florida.

26. Mr Keithley Meade of Antigua and Barbuda, Ms Kathy-Ann Caesar of the CIMH and the Coordinating Director of the CMO (Co-chair) are members of the Expert Group, which will bring in various personnel from the relevant Meteorological Services as required. The WMO Severe Weather Demonstration Project is 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* 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.

27. The SWFDP is also 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. The Miami meeting focussed on the Development of a Regional Sub-Project Implementation Plan (RSIP) for the SWFDP. The RSIP is expected to be completed by the end of 2017. The demonstration phase is expected to begin in June-July 2018. At the Miami meeting, the Expert Group sought to identify a regional entity to manage the program in phase IV and agreed that the *Caribbean Meteorological Organization* (CMO), through its Headquarters and organs, will be the regional entity to support SWFDP in the operational phase.

**5(H) The 2017 session of the WMO Regional Association**

28. The WMO Regional Association IV (North America, Central America and the Caribbean) met for its 17th Session on 27-31 March 2017 in San José, Costa Rica. Sessions of the Region Associations are held every four years. Twenty Members of RA IV attended the session, six of which are also Members of CMO (Antigua and Barbuda, Barbados, Belize, the British Caribbean Territories, Jamaica and Trinidad and Tobago). The Association examined the implementation of the regional components of the global programmes set in motion by the WMO Congress. These included the following *six Regional priority areas*:

* Global Framework for Climate Services (GFCS);
* Aviation Meteorological Services;
* Capacity Building for the Developing and Least Developed Countries;
* Implementation of the *WMO Integrated Global Observing System* (WIGOS) and the *WMO Information System* (WIS);
* Disaster Risk Reduction (DRR); and
* Maritime Meteorology.

29. In this regard, the session adopted seven Resolutions, took 31 Decisions concerning the six regional priority areas, including support for the SWFDP referred to in paragraph 25, and made three Recommendations on the following matters:

(i) Enhancing support to WMO activities and facilitating bilateral and multilateral assistance from Members;

(ii) Identification of regional priorities for education and training;

1. Enhancing the performance of WMO Regional Training Centres in Region IV.

30. Election of Officers of the Regional Association takes place at every regular session. At this 17th session, the Association re-elected Mr Juan Carlos Fallas Sojo (Costa Rica) as its President and Dr. Albert Martis (Curaçao and Sint Maarten) as its Vice-president for the next four-year period.

**ACTION PROPOSED TO COUNCIL**

31. **Council** is asked to:

1. **Note** the key issues emanating from the 2017 session of the Executive Council (EC) of the **World Meteorological Organization**;
2. **Urge** CMO Member States to ensure that their NMHSs accelerate activities within in the Pre-Operational Phase of WIGOS (2016-2019) period;
3. **Urge** Member States to **complete the process** for reception of the new GOES-16 weather satellite data and products before the termination of transmission of the current satellite.
4. **Continue** its strong support for the *Global Framework for Climate Services* and to urge Member States to actively participate in GFCS projects and activities as appropriate;
5. **Note** the important issues emerging from the 16th session of WMO *Commission for Basic Systems*(CBS-16);
6. **Recognize and commend** the formal designation of the CIMH as a WMO Regional Climate Centre (RCC) for the Caribbean, and to **provide** the CIMH with all the necessary support required to undertake this mandate;
7. **Urge** Member States to review and complete any outstanding matters in their implementation of the ICAO-mandated *Quality Management System* (QMS) for meteorological services to aviation, taking particular note of deadlines set by the *International Civil Aviation Organization* (ICAO);
8. **Strongly support** the participation in the implementation of a WMO *Severe Weather Forecasting Demonstration Project* for parts of the region;
9. **Note** the outcomes of the 2017 meeting of the WMO Regional Association IV for North America, Central America and the Caribbean.

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CMO Headquarters

October 2017