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Miami, United States, 15 to 17 July 2015

Agenda Item 4: Air Navigation Matters

4.2 Follow-up on the implementation of the NAM/CAR Regional Performance Based Air Navigation Plan (RPBANIP) and the *Port-of-Spain* Declaration Air Navigation Targets in the Eastern Caribbean:

THE CARIBBEAN METEOROLOGICAL ORGANIZATION'S SERVICE TO CIVIL AVIATION IN THE CARIBBEAN

(Presented by E/CAR/CATG Chairperson)

EXECUTIVE SUMMARY

The paper provides a brief summary of the actives of the Caribbean Meteorological Organization as it provides advice, meteorological equipment and capacity building to enable National Meteorological Services of its Member States, meet regional and international standards in the service of aeronautical meteorology.

Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• First Eastern Caribbean Civil Aviation Technical Group Meeting (E/CAR/CATG/1), Martinique, French Antilles, France, 19 to 21 June 2013

1. Introduction

1.1 The Caribbean Meteorological Organization

1.1 The Caribbean Meteorological Organization (CMO) was established to replace the old Caribbean Meteorological Service as English-speaking Caribbean States moved into independence in the 1960s and 1970s and established their National Meteorological Services. The Agreement which established the Caribbean Meteorological Organization was signed by its sixteen Members States in October 1973, in which the Ministerial-level *Caribbean Meteorological Council* (CMC) became its Governing Body, its Headquarters established in Trinidad and Tobago and the Caribbean Meteorological Institute (now the Caribbean Institute for Meteorology and Hydrology (CIMH)) integrated into the CMO.

1.2 The Members States of the CMO are: Anguilla, Antigua and Barbuda, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts & Nevis, Saint Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands.

1.3 The objective of the Organization is the promotion and co-ordination of regional activities in the field of meteorology and allied sciences, while a primary function is to provide for meteorological services to civil aviation.

2. Functions of the CMO

2.1 The Role of the CMO:

2.1.1 Meteorological Services, whether regional or international, cannot operate in isolation and cooperation at all levels is fundamental. This can be very difficult for small or relatively small countries to achieve. Hence, the CMO provides support and advice to governments of its Member States in the development of their Meteorological Services and in dealing with issues of an international nature affecting weather and climate, and represents the regional meteorological community's interests in relation to international civil aviation matters.

2.1.2 The National Meteorological Services (NMS) of the CMO Member States are responsible for meteorological, hydrometeorological and related scientific matters within their national boundaries. The smaller ones may receive support in this regard from a neighbouring Member State. The NMSs can be placed into two technical categories, even though at varying degrees of sophistication:

a) ***Weather Forecast and Warning Offices:*** These Offices operate essentially round-the-clock and year-round. They undertake surface weather observations, with selected Offices also undertaking observations of the upper levels of the atmosphere. Vast volumes of meteorological data are exchanged regionally and internationally for the preparation of routine weather forecasts and warnings of severe weather for the public, aviation, marine and industrial interests. Some of these Offices have more significant international responsibilities than others, particularly for civil aviation.

b) ***Aeronautical Meteorological Offices***: These Offices undertake weather observations mainly in support of the public and the aviation industry, and carry out climate functions. Their hours of operation are determined by aeronautical requirements.

2.2 Services Provided by CMO to Member States in Civil Aviation

2.2.1 All of the meteorological services of CMO Member States began by providing meteorology in the service of civil aviation. Central to those services is the training which is provided in aeronautical meteorology. The training is provided at all levels for aeronautical meteorological personnel at the Caribbean Institute for Meteorology and Hydrology (CIMH). The CIMH is an organ of the CMO and is also a designated World Meteorological Organization (WMO Regional Training Centre (RTC).

2.2.2 Further, following ICAO recommendations, meteorological authorities establish and implement a properly organized quality system. CMO, through various projects, has provided training to meteorological services in ISO 9001:2008 Quality Management System (QMS), which included training in internal auditing. Training has also been provided in competency and competency assessment which is a part of QMS. CMO's training arm, the CIMH, provides continuous competency and competency assessment through its refresher courses.

2.2.3 Between 2009 and 2013, CMO implemented two projects within the region which installed five (5) S-band Doppler weather radars in Barbados, Belize, the Cayman Islands, Guyana and Trinidad and Tobago for use by the meteorological services to provide warnings for hydrometeorological events. These complemented the existing Doppler weather radar in Jamaica. All of the radars can detect wind shear and micro-bursts which are relevant to the aviation community. In addition to individual radar data, these radars link up with radars of other regional States to form an electronic radar composite of the Caribbean. Among its uses, the radar network forms an important part of the Meteorological Services' information and warning system for the safety of airport operations.

2.2.4 CMO also provided assistance to its Members in the procurement of meteorological workstations, used in for the ingestion and transmission of weather observations, SIGMETs, aerodrome forecast, area forecasts etc., the generation of wind and temperature data for different flight levels and significant weather charts among of meteorological information. CMO provides guidance for the periodic upgrade of these workstations. Advice also provides guidance on the siting of instruments for use in collecting observational elements for aviation purposes.

2.2.5 An example of the assistance provided is the analysis of wind data for the International Argyle Development Company, which is developing the new international airport at Argyle in St. Vincent and the Grenadines. Based on the results of the analysis, CMO made recommendations for the siting of a number of automatic weather stations, which would provide continuous temperature and wind (direction and speed, crosswind and tailwind) data. CMO also made recommendations on the placement of an observational plot and the instruments which it should contain.

2.2.6 The CMO has in place, back-up arrangements between Meteorological Services of its Member States in case of disruption of services by any one State. This is built into the region-wide warning system for tropical storms, hurricanes and other severe weather, organized under the umbrella of the World Meteorological Organization (WMO). The CMO back-up arrangements are designed to ensure uninterrupted public warnings and the provision of aeronautical observations, forecasts, route weather and warnings.

2.2.7 In order to adequately advise its Member States on matters concerning aeronautical meteorology, CMO staff members actively participate in the aeronautical meteorology programmes of WMO, through its Commission on Aeronautical Meteorology (CAeM), and collaborate closely with the ICAO NACC Regional Office in Mexico City on matters affecting aeronautical meteorology in CMO Member States.

3. Summary

3.1 The Caribbean Meteorological Organization is active in providing advice and services to its Members in order for them to provide aviation meteorological service, which meets regional and international standards. It ensures that National Meteorological Services understands their obligations to meeting these standards and that they have the necessary meteorological tools and human capacity to fulfil their obligations.

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