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. 10**

FIFTY-FIFTH SESSION

Belize City, BELIZE, 12-13 NOVEMBER 2015

##### CMO STRATEGIC AND OPERATIONAL PLANNING PROCESS

(Submitted by the Coordinating Director)

**Introduction**

1. From mid-2014, the Secretariat of the Caribbean Community has been actively engaged in developing a Five-Year *Strategic Plan for the Caribbean Community 2015-2019 “Repositioning CARICOM.”* The Strategic Plan for the Community 2015 - 2019 is in direct response to the need to target “…a narrow range of specified outcomes within specified timeframes, focusing on a few practical and achievable goals” in relation to the regional development agenda. This is particularly important given the Community’s limited resources.

2. The CARICOM Plan identifies seven Strategic Priorities for the Community over the five-year period, 2015-2019, and key areas of intervention for each. The Strategic Priorities are:

* Building Economic Resilience;
* Social Resilience;
* Environmental Resilience;
* Technological Resilience;
* Strengthening the CARICOM Identity and Spirit of Community;
* Strengthening Governance within CARICOM
* Enabling Resilience: Coordinated Foreign and External Relations and Research and Development and Innovation.

3. The CMO Headquarters and the CIMH have been contributing to an agreed Framework and Implementation Plan to accompany the Strategic Plan, which includes an attempt to link internal Strategic Plans and/or Work Programmes with Community Strategic Implementation Plan. The CMO headquarters and CIMH have been contributing primarily to “*Environmental Resilience*”, as well as to “*Building Economic Resilience*” priorities.

4. Council will recall that, at its 54th session (Jamaica, November 2014), it requested the CMO Headquarters to develop a regional strategic plan for the meteorological community that would be linked to the Caribbean Community Strategic Implementation Plan. In parallel to the efforts led by the CARICOM Secretariat on the Community Plan, therefore, the CMO Headquarters has developed its **“Operational Programme 2016-2019 - For the Enhancement of Meteorological and Hydrometeorological Services in CMO Member States”.** This is produced in its entirety in the **ANNEX** to this document.

5. Council should be aware that developing the Caribbean Community Strategic Implementation Plan is a long time-consuming process, which is determined by the collective effort of all Caribbean Community institutions, including the CMO Headquarters and the CIMH, and led by the Caribbean Community Secretariat. Making direct links between the specific activities of any institution and the overall Community Plan is not an easy task. At this point of development, that link is only visible within the Community Plan. Because of the number of and sometimes diverse Community institutions, it is expected that regional consultations in connection with the Community Plan will take more than one year to be completed.

**Action Proposed to Council:**

6. The Council is invited to:

1. **Discuss** the draft of the CMO Headquarters ***Operational Programme 2016-2019*,** shown in the **ANNEX**;
2. **Provide** guidance on any areas it deems necessary.

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CMO Headquarters

October 2015

CARIBBEAN METEOROLOGICAL ORGANIZATION


### CMO HEADQUARTERS

##### OPERATIONAL PROGRAMME 2016-2019

**FOR THE ENHANCEMENT OF METEOROLOGICAL AND HYDROMETEOROLOGICAL SERVICES IN CMO MEMBER STATES**

Prepared: August 2015

**CMO HEADQUARTERS**

**OPERATIONAL PROGRAMME 2016-2019**

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### Introduction

Weather, climate, water and environmental monitoring and prediction services are recognized for their essential contributions to the protection of life and property from meteorological and hydrological hazards including severe storms, excessive heat, droughts and floods. Furthermore, they also underpin economic growth in sectors including agriculture and food production, transportation, energy and water resources. High impact weather and climate extremes are likely to occur with greater frequency and intensity due to climate variability and change. Today, these changes in weather, climate, water, as well as other related environmental conditions are having compelling consequences for the environment and for the prosperity of Caribbean nations. Investments to strengthen monitoring infrastructures and improve the quality of weather and climate predictions can result in effective disaster prevention and socio-economic planning. Future investments are also required to optimize socio-economic benefits to mitigate and adapt to high impact weather and climate extremes.

The implications of changing weather, climate, water and related environmental conditions are escalating the demand from governments, institutions and citizens for more useful and reliable information, products and services. The Caribbean Meteorological Organization (CMO) and its Members' National Meteorological Services (NMHSs) play a foundational and authoritative role in the provision of these products and services.

CMO and NMHSs are exploring methods to improve efficiency through collaboration and cooperation. This will improve the capacity of NMHSs to meet its governments’ expectations for saving lives, reducing damages, contributing to economic growth and supporting environmental stewardship.

### The Role of National Meteorological and Hydrological Services

Weather-, climate- and water-related hazards do not necessarily need to become natural disasters. NMHSs strive to provide early warnings of high impact events. Likewise, they provide information on climate extremes and variability, enabling society to better adapt to a changing climate through improved community resilience, water resource management and food security strategies.

Information products and services provided by NMHSs positively impact critical decisions made in economic sectors sensitive to the extremes of weather, climate and water. These services provided by NMHSs also help to improve environmental quality, enable safe and efficient transportation and support positive health outcomes through warnings of health impacts of poor air quality or vector-borne disease outbreaks. Therefore the services provided by the NMHSs are of enormous benefit for decision-makers addressing global, regional and national challenges.

### The Value of Sustained Meteorological and Hydrological Infrastructure

To deliver effective value-added weather and climate services, NMHSs must have a strong understanding of the needs of its government, the public and other key stakeholders. To deliver high quality services that meet the needs of decision-makers, NMHSs must develop, maintain and improve scientific and technological infrastructure and attract and retain skilled personnel to operate and manage sophisticated meteorological, hydrological and related environmental networks. The benefits of these services to governments, institutions and citizens hinge on real-time monitoring and modelling of atmospheric processes which form the basis for all weather, water and climate forecasts and projections.

To be sustainable, NMHSs require investment in their core infrastructure, including robust and observation systems, information and computing technologies, and human resource development. Some essential infrastructure components needed to support service delivery (e.g. high performance computing) are not available at all NMHSs. CMO has an essential and unique role in assisting NMHSs to access the necessary frameworks for the required global and regional coordination and cooperation that supports all Members. (e.g. Regional Specialized Centres, Regional Training Centres, etc.)

### The Role of WMO

WMO is a Specialized Agency of the United Nations (UN) with 191 Member States and Territories. It is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the land and oceans, the weather and climate it produces and the resulting distribution of water resources. Since its establishment in 1950, WMO has been central in facilitating international collaboration and cooperation for observations, data and knowledge exchange, setting standards, coordinating scientific and technical methods and capacity development for the benefit of its Members and their NMHSs. WMO Programmes such as the World Weather Watch facilitate the gathering, processing and sharing of information, expertise and technology to create cost-effective solutions for the provision of weather, climate, water and related environmental services delivered by its Members.

Under the WMO framework, NMHSs deploy, operate and sustain essential infrastructure in a coordinated manner to deliver a wide range of services that support decision-making on current and emerging issues. WMO supports the work of the broader international community and international Conventions or Treaties such as the United Nations Framework Convention on Climate Change (UNFCCC) and the UN Convention to Combat Desertification (UNCCD). This collaborative framework results in a much more efficient use of global resources.

### The Caribbean Meteorological Organization and its Role

The Caribbean Meteorological Organization (CMO) is a functionally autonomous agency within the CARICOM family. It originated out of the old British Caribbean Meteorological Service, which was established in 1951. This Service later became the Caribbean Meteorological Service after the break-up of the Federation. But with the establishment of many National Meteorological Services after independence, the Caribbean Meteorological Service was subsequently transformed into the CMO in 1973, so that the joint activities could continue.

The CMO comprises the following *sixteen (16) Member States*:

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.

The CMO undertakes the *coordination of the joint scientific activities* of the respective National Meteorological and Hydrometeorological Services, the *establishment of joint technical facilities and systems*, the provision of *joint training and research facilities*, and the promotion of a reliable *severe weather warning system* to safeguard the region. The CMO provides support and *advice to governments* in the development of their NMHSs and in dealing with issues of an international nature affecting weather, water and climate, and represents the regional meteorological community's interests in relation to *international civil aviation* matters. The CMO also *works closely with regional agencies* involved in disaster preparedness, response and relief.

Since its inception, the CMO has developed a series of initiatives and projects for the development and benefit of its Member States. CMO, either through the Headquarters or the CIMH, collaborates closely with institutions of CARICOM and has established a number of strategic partnerships with regional and international organizations and agencies (WMO, NOAA, ACS, CDEMA, among others), as well as funding agencies and countries (the European Commission, the World Bank, Finland, among others), to enable the National Meteorological and Hydrometeorological Services (NMHSs) of Member States to improve their involvement in and contribution to the sectors shown in section A above. Some of the partnerships focus on key areas such as meteorological telecommunications and observing networks, human resources development, data rescue and data management for climate change impact studies. Since the early 70’s, the CIMH has participated in the development and execution of collaborative programmes and projects on applications of meteorology and hydrology. For example, CIMH is undertaking applied research into weather and climate simulation, an aim of which is to provide an additional basis to (i) inform the decision-making process of disaster managers during weather-related emergencies, (ii) support disaster risk reduction and (iii) support the development of climate change adaptation strategies for the region.

### External Factors Influencing CMO Priorities 2016-2019

High impact weather and climate extremes continue to have significant consequences in the Region. Concerns are mounting about the increasing socio-economic vulnerabilities, risks and severity of these events due to climate variability and change. Demands are escalating for improved monitoring, more accurate and reliable data, better forecasts and advanced impact-based warnings, which inform decision-making that mitigates and adapts to these risks and minimizes disastrous consequences. Continuing economic pressures means that there is an increasing drive to deliver these service improvements as efficiently as possible.

Significant changes in the socio-economic sectors including health, agriculture and food production, transportation, water resource management and energy sectors are also shaping the demands for services from NMHSs now and will continue in the future:

1. The implementation of the Global Air Navigation Plan of International Civil Aviation Organization (ICAO) will have significant implications on the way meteorological services for aviation will be delivered;
2. Real-time operational climate services at the national and regional levels are needed urgently to support the national priorities of agriculture production and food security, reduced disaster risk, human health and sustainable water resources. Such services will also have significant relevance for the energy sector, urban infrastructure and transportation;
3. Shifts in the intensity and distribution of precipitation patterns will implicate water resource and flood management and related decision-making;
4. The burgeoning use of new technologies, such as wireless and social media, and citizens’ expectations for tailored understandable information and ‘just-in-time’ delivery, require NMHSs to use these new technologies to remain effective and relevant;
5. Slow economic global growth may have a negative impact on resource mobilization; NMHSs need to demonstrate resource efficiencies, cost-benefit and value.

### Expected Results

To achieve significant, targeted improvements of services to address the escalating needs, CMO will focus its endeavours on the following Expected Results:

1. Improved service quality and service delivery: Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings and services in response to users’ needs and to enable their use in decision-making by relevant societal sectors.
2. Reduced Disaster Risk: Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements.
3. Improved Observations and Data Exchange: Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO.
4. Strengthened Capacity Development: Assist Members’ NMHSs to enhance their capabilities to fulfil their mandates.
5. Strengthened Partnerships: Strengthened partnerships and cooperation activities to improve NMHSs’ performance in delivering services and to demonstrate value to relevant regional organizations, international conventions and national strategies.
6. Improved Efficiency and Effectiveness: Promote Quality Management Systems in NMHSs for efficient and effective use of resources.

The degree to which this Plan is factored into the national development agenda is amongst the risks that will influence the achievement of Expected Results. The fluid global financial situation is having significant impact on national development with respect to NMHSs. This is also true with respect to voluntary contributions via the WMO, which provide some of the resources for implementing the strategic priorities, particularly to enhance capacities of NMHSs in developing countries and Small Island Developing States.

| **STRATEGY** | Improved protection of life and property |
| --- | --- |
| **OUTCOME(S)** | Disaster Risk Reduction |
| **PRINCIPAL MEASURE** | Improved the service quality and service delivery of National Meteorological and Hydrological Services |
| **OUTPUTS**  | **OUTPUT INDICATORS** | **MEANS OF VERIFICATION** | **ACTIONS** | **TIME FRAME** | **BUDGET****(USD)** | **RESPONSIBILITY****RESOURCE IN PLACE and REQUIREMENT** |
|
| Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings and services in response to users’ needs and to enable their use in decision-making by relevant societal sectors | Improved access to seamless weather, climate, water, and related environmental products and services (e.g. warnings, forecasts and supporting information) | 1. Percentage of NMHSs with regular access to products provided by global and regional centres.
2. Number of NMHSs expressing user satisfaction with the (a) availability, (b) reliability and (c) range of products that are (d) received in time and (e) are an essential contribution to decision making
 | 1. Work with NMHSs to identify required products from global and regional centres and the assist in proving access to those products.
2. Assist NMHSs to create satisfaction surveys.
 |  |  | **CMO's Budget** |
| Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements | Multi-hazard early warning systems are implemented and operating | 1. Number of NMHSs contributing to the implementation of multi-hazard early warning systems.
2. Number of Members establishing flood management plans.
3. NMHSs and Regional Centres that issue drought early warnings
 | 1. Assist NMHSs to implement a multi-hazard early warning system.
 |  |  | **CMO's budget**  |

| **STRATEGY** | Ensuring food security, sustainable access to water and energy, healthy lives, and economic growth, and combat climate change |
| --- | --- |
| **OUTCOME(S)** | WMO Integrated Global Observing System  |
| **PRINCIPAL MEASURE** | Improved Observations and Data Exchange  |
| **OUTPUTS**  | **OUTPUT INDICATORS** | **MEANS OF VERIFICATION** | **ACTIONS** | **TIME FRAME** | **BUDGET****(USD)** | **RESPONSIBILITY****RESOURCE IN PLACE and REQUIREMENT** |
|
| Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO | 1. Implementation of WMO Integrated Global Observing System.
2. WMO information System is developed and implemented
3. Development of national WIGOS implementation plan with key tasks, milestones and deliverables.
 | 1. Increasing the availability of observations for users.
2. Number of national partner organizations involved in WIGOS implementation.
3. Progress in the implementation of WIS by NMHSs as measured by: (a) percentage of registered WIS centres and (b) Number of NMHSs with improved observational data and products as a result of implementation of WIS functions
 | 1. Assist NMHSs in the procurement of instruments and AWSs.
2. Assist NMHSs where necessary in the creation and implementation of National WIGOS and WIS Implementation plans.
 |  |  | **CMO's Budget** |

| **STRATEGY** | Ensuring food security, sustainable access to water and energy, healthy lives, and economic growth, and combat climate change |
| --- | --- |
| **OUTCOME(S)** | WMO Integrated Global Observing System  |
| **PRINCIPAL MEASURE** | Improved aviation meteorological services  |
| **OUTPUTS**  | **OUTPUT INDICATORS** | **MEANS OF VERIFICATION** | **ACTIONS** | **TIME FRAME** | **BUDGET****(USD)** | **RESPONSIBILITY****RESOURCE IN PLACE and REQUIREMENT** |
|
| Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO | 1. Improving Members compliance with WMO and ICAO QMS and competencies standards;
2. Improving Members understanding of ICAO Aviation System Block Upgrades (ASBU) for Air Traffic Management (ATM) which will lead to significant mid-to-long-term changes in and impacts on the mode of aeronautical meteorological service delivery to a time horizon of 2028
 | 1. The number of NMHS achieving QMS certification;
2. The numbers of Members able to adapt to the new models of service provision and compliance with new regulations and institutional arrangements.
 | 1. Promote culture of compliance. Identify and fix deficiencies. Proactively develop standards and recommended practices for the delivery of other services.
2. Close collaboration with ICAO to contribute to development of new systems, services and regulatory frameworks.
3. Participate in the development of adequate cost-recovery mechanisms for multi-national service provision models.
4. Facilitate fast uptake of science and technology achievements into operational practice in order to respond to the user demands.
 |  |  | **CMO's Budget** |

| **STRATEGY** | Sustainable use of natural resources and improved environmental quality |
| --- | --- |
| **OUTCOME(S)** | Capacity development |
| **PRINCIPAL MEASURE** | Strengthened Capacity Development |
| **OUTPUTS**  | **OUTPUT INDICATORS** | **MEANS OF VERIFICATION** | **ACTIONS** | **TIME FRAME** | **BUDGET****(USD)** | **RESPONSIBILITY****RESOURCE IN PLACE and REQUIREMENT** |
|
| Enhanced capabilities of Members’ NMHSs, to fulfil their mandates | Education and training development facilities at national and regional levels are improved,  | The degree of Member satisfaction with workshops at the CIMH. | 1. Development projects and activities;
 |  |  | **CMO's Budget** |

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**List of Acronyms and Abbreviations**

|  |  |
| --- | --- |
| ACS | Association of Caribbean States |
| CARICOM | Caribbean Community |
| CDEMA | Caribbean Disaster Emergency Management Agency |
| CIMH | Caribbean Institute for Meteorology and Hydrology (of CMO) |
| CMC | Caribbean Meteorological Council (of CMO) |
| CMF | Caribbean Meteorological Foundation (of CMO) |
| CMO | Caribbean Meteorological Organization |
| ECMWF | European Centre for Medium-Range Weather Forecasts |
| GFCS | Global Framework for Climate Services |
| ICAO | International Civil Aviation Organization |
| ISO | International Organization for Standardization |
| NMHS | National Meteorological and Hydrological Services |
| NOAA | The National Oceanic and Atmospheric Administration (USA) |
| QMS | Quality Management System |
| RCC | Regional Climate Centre |
| RTC | Regional Training Centre  |
| SIDS | Small Island Developing States |
| UWI | University of the West Indies |
| WIGOS | WMO Integrated Global Observing System |
| WIS | WMO Information System |
| WMO | World Meteorological Organization |

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