



DELIVERING CLIMATE EARLY WARNING INFORMATION TO CLIMATE-SENSITIVE SECTORS IN THE CARIBBEAN



A compelling case for action

Regional statistics indicate that weather and climate-related events dominate natural hazard occurrence in the Caribbean. For example, according to the Caribbean Disaster Emergency Management Agency, for the period 1950-2008, wind storms accounted for 60%, flooding accounted for 25% and drought accounted for 5% of natural hazard events (CDEMA 2013).

Climate-related extreme events have also been associated with significant socio-economic damage and loss. For example, floods in Guyana in 2005 resulted in losses of about 60% of country GDP (UNECLAC 2005); the region's most severe drought in 50 years led to widespread water shortages, reduced crop production, an increase in food prices and increased bush fires across many territories in 2009/2010 (Farrell, Trotman, & Cox, 2010); while the 2015/2016 drought caused inflation to increase in Belize, Guyana and Haiti (CDB 2017).

Climate impacts will continue to incur losses. A World Bank report (Toba, 2009) estimates future annual direct losses (given in US dollar values for the year 2007) due to climate-related disasters to be in the range of billions of US dollars:

- 1) USD 2.6 billion due to wind damage;
- 2) USD 363.1 million due to flood damage; and
- 3) USD 3.7 million due to drought.

The adverse impacts of climate variability, extremes and change therefore pose a serious threat to the Caribbean. They also present a compelling socio-economic case for action, especially in key sectors that remain highly sensitive to climate. To address impacts going forward, the Caribbean Institute for Meteorology and Hydrology (CIMH) is developing climate early warning capabilities in six key sectors, namely, Agriculture and Food Security, Disaster Risk Management, Energy, Health, Tourism and Water.



The value of sector-specific climate early warning information

Sector-specific climate information can be particularly helpful because it can provide early warning of potential impacting climatic events that may have implications for a wide range of decisions by sectors. Sectoral Early Warning Information Systems across Climate Timescales (EWISACTs) establish the framework for the provision of climate monitoring and forecast information on a range of timescales (e.g. monthly, seasonal, annual, multi-year, or even decadal or more into the future). Through the development of EWISACTs, climate-sensitive sectors will be in a better position to anticipate, prepare for and respond to climate-related risks and opportunities.

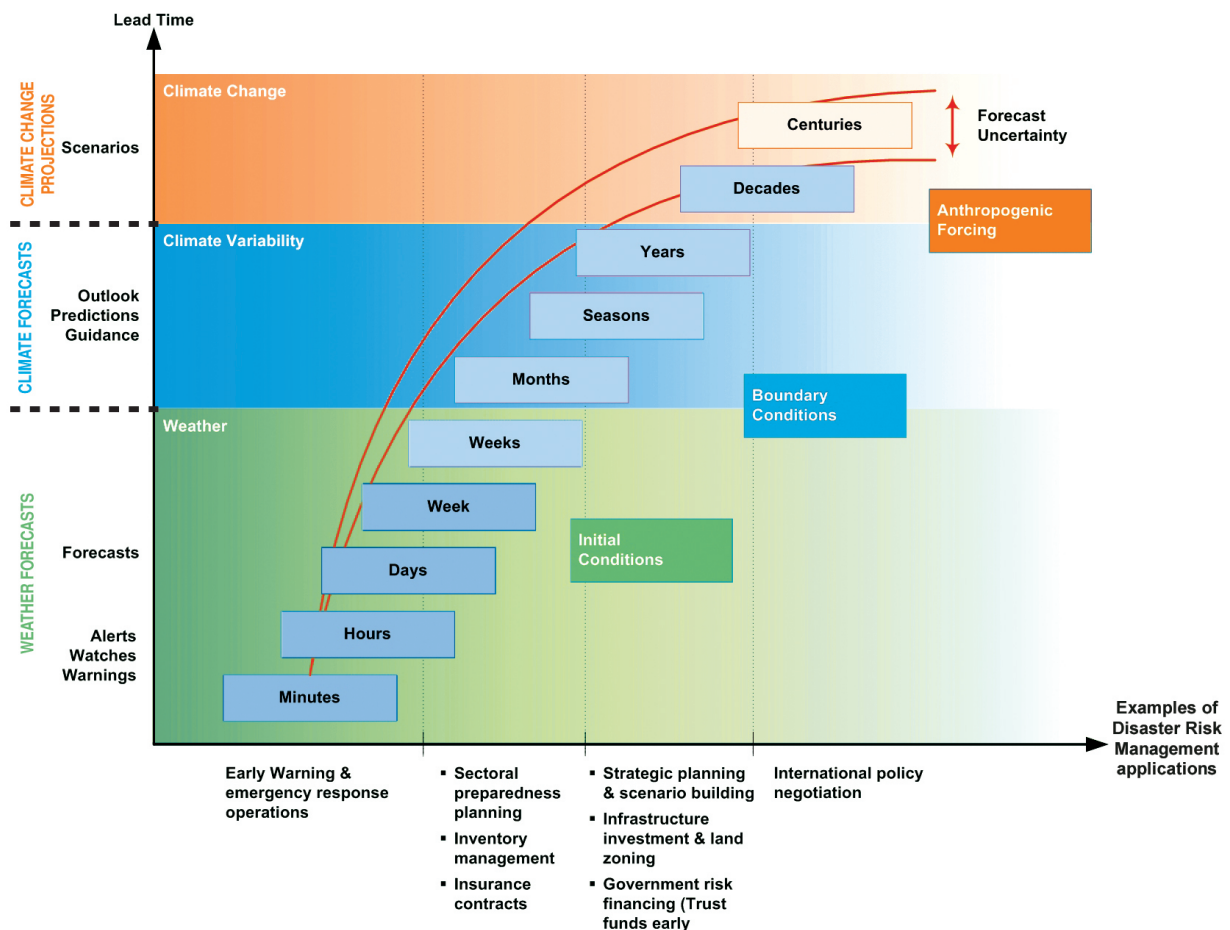


Figure 1. Types of weather and climate information for sectoral decision-making

Towards the development of sector-specific EWISACTs

The sectoral EWISACTs development process brings the CIMH, its network of National Meteorological and Hydrological Services and the Consortium of Sectoral EWISACTs Coordination Partners together to co-design, co-develop and co-deliver sector-specific climate information products and services, as well as integrated decision-support processes and tools that build sectoral capacity to engage in climate risk management.

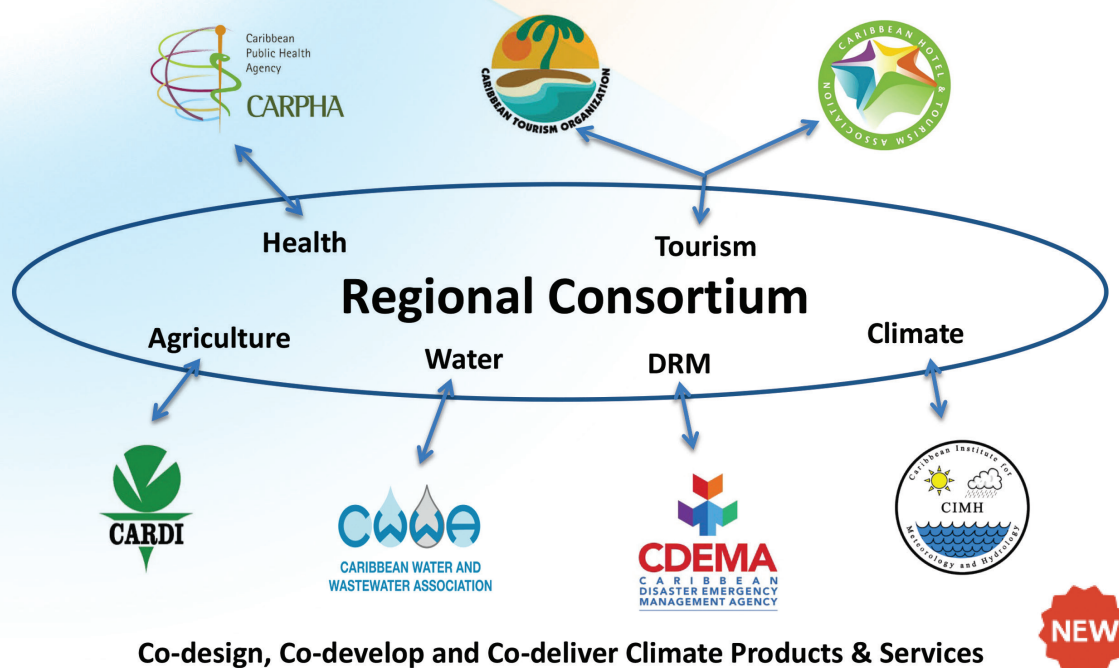


Figure 2. The Consortium of Regional Sectoral EWISACTs Coordination Partners.
Source: Mahon, Farrell, Cox, Trotman, van Meerbeeck & Barnwell (2017)

The Consortium is an alliance of sector agencies and the CIMH – each committed to partnering on the development and integration of climate services in sectoral decision-making. As a regional climate service governance mechanism, the Consortium leverages the position and expertise of lead technical organisations such as the Caribbean Agricultural Research & Development Institute (CARDI), the Caribbean Water and Wastewater Association (CWWA), the Caribbean Disaster Emergency Management Agency (CDEMA), the Caribbean Public Health Agency (CARPHA), the Caribbean Tourism Organization (CTO) and the Caribbean Hotel and Tourism Association (CHTA).

A focus on concrete results

Under the BRCCC Programme, the CIMH has worked with the agriculture, health and tourism sectors to improve the range and use of climate products and services available to decision-makers in these sectors. Highlights to date include the re-design of the Regional Caribbean Agrometeorological Initiative (CAMI) Bulletin and its transition into the Caribbean Agro-Climatic Bulletin of the Caribbean Society for Agro-Meteorology (CariSAM), as well as the development and operational launch of the new Caribbean Health-Climatic Bulletin and the new Caribbean Tourism-Climatic Bulletin. Each of these bulletins provides a broad overview of climate conditions (how wet, how dry, how hot etc.) and communicates implications for their respective sectors 3 to 6 months in advance.

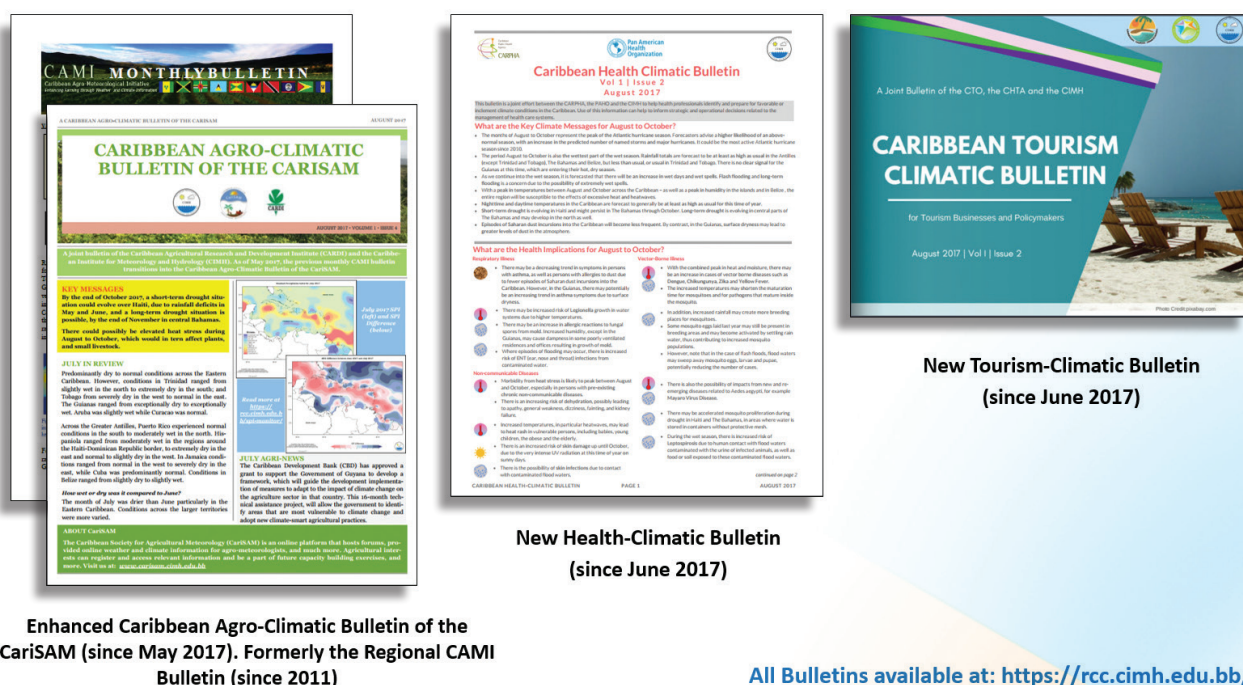


Figure 3. New and enhanced sector-specific climatic bulletins

Ongoing and future work

The CIMH and its partners have already begun to develop the next generation of sector-specific information products that build resilience to climate hazards. One priority application is in the fight against *Aedes aegypti* borne diseases such as Yellow fever, Dengue fever, Chikungunya and Zika which have historically placed a serious health burden on Caribbean societies. Here, the CIMH is partnering with the CARPHA, the Pan American Health Organization, national Ministries of Health, national Met Services and international research teams to co-design and co-develop a climate-driven spatio-temporal modelling framework that provides early warning of the increased risk of *Aedes aegypti* diseases. Over time, the outputs of this modelling framework can be used for operational, evidence-based decision making in the area of vector surveillance and control.

The CIMH is also exploring the possibility of expanding its stakeholder constituency by engaging the energy sector in meaningful discussion.

More generally, six (6) methodological steps will be pursued to continue the long-term development of sectoral EWISACTs:

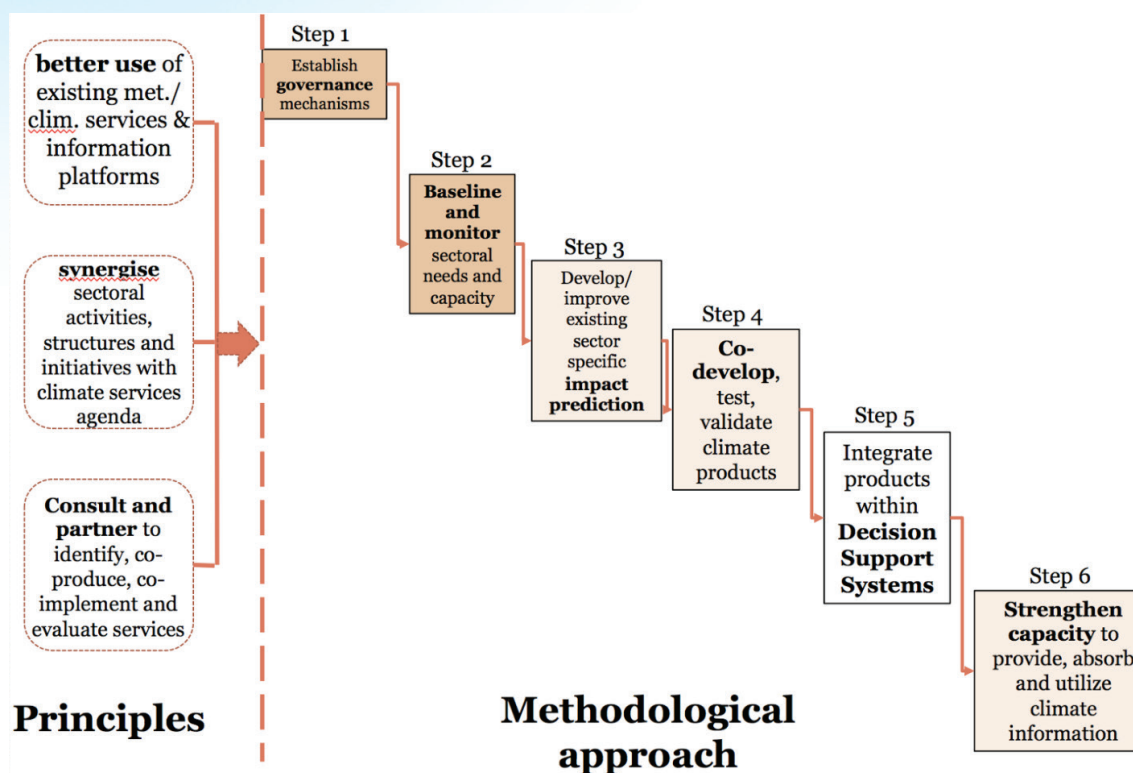


Figure 4. Methodological approach to the co-development of sectoral EWISACTs in the Caribbean (shading indicates progress made to date at varying degrees of implementation).
Source: Mahon et. al. (2017)

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