GCCA+
THE GLOBAL CLIMATE CHANGE ALLIANCE PLUS INITIATIVE

Funded by the European Union

Caribbean Community Climate Change Centre

Conference Executive Summary

International Climate Change Conference for the Caribbean 2017

Port-of-Spain, Trinidad & Tobago, 9th-12th October 2017

Caribbean Community Climate Change Centre

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ACRONYMS TABLE

CCCCC	Caribbean Community Climate Change Centre
CDM	Clean Development Mechanism
CARiDRO	Caribbean Assessment of regional drought
CARICOM	Caribbean Community
CariSAM	Portal of the Caribbean Society for Agro-Meteorology
CCA	Climate Change Adaptation
CDKN	Climate and Development Knowledge Network
CERMES	Centre for Resource Management and Environmental Studies
CIMH	Caribbean Institute for Meteorology and Hydrology
COP24	24th UNFCCC Conference of Parties
CSGM	Climate Studies Group Mona, University of West Indies
CSO	Civil Society Organization
DG DEVCO	Directorate-General for Development and Cooperation
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
EbA	Ecosystem-based Adaptation
EU	European Union
EDF	European Development Fund
FAO	Food and Agriculture Organization
GCCA+	Global Climate Change Alliance Plus, EU
INSMET	Institute of Meteorology, Cuba
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Countries
PICSA	Participatory Integrated Climate Services for Agriculture
SDG	Sustainable Development Goal
SIDS	Small Island Developing States
SMASH	Simple Model for the Advection of Storms and Hurricanes
UNDP-JCCCP	UNDP Japan Caribbean Climate Change Partnership
UNFCCC	United Nations Framework Convention on Climate Change
UWI	University of the West Indies

1. BACKGROUND

Under the framework of the Global Climate Change Alliance Plus (GCCA+) flagship initiative of the European Union and responding to a need identified by the Caribbean Community Climate Change Centre (CCCCC), the European Commission Directorate-General for International Cooperation and Development (DG-DEVCO)[1] and the CCCCC jointly organised an international conference titled "**Integrating Climate Variability and Change information into Adaptation and Mitigation actions in the Caribbean Region" (**Port-of-Spain, Trinidad and Tobago from October 9th to 12th, 2017). The GCCA+, Caribbean Development Bank, UNDP Japan Caribbean Climate Change Partnership (UNDP-JCCCP), the Food and Agriculture Organisation (FAO) and CCCCC coordinated this joint international climate change conference for the Caribbean. This conference addressed the role of climate information (from global, regional and local models) into shaping and implementing climate policy and programs in the Caribbean region. The various sessions discussed the crucial nexus of science/policy to build the required resilience capacity and programs in the Caribbean region based on available climate information, highlighting how theories translate in research and how these research findings are used to formulate actions and policies that are critical to building resilience in the Caribbean and transferable to other regions.

The conference opening addressed the current global climate change situation, providing specifically an overview of the expected challenges in the Caribbean region: higher

[1] The EC DG-DEVCO is responsible for the management of the EU GCCA+ flagship initiative

temperatures, lower rates of precipitation, rising sea surface temperatures, more intense extreme events and sea level rise.

The objectives and the main goals for this three-day conference were to:

1. Evaluate the role of climate information in shaping climate policies and programs in the Caribbean region;
2. Discuss the science-policy nexus in building regional programs;
3. Discuss the integration of climate variability and change risks into national and regional development planning;
4. Foster the interaction and knowledge sharing amongst regional scientists and wider community of policy makers and development partners.

The conference was organised under three thematic areas:

2. Current and Future Climate Scenarios in the Caribbean Region
3. Climate Change impacts on key development sectors and socio-economic dynamics
4. Climate Change Policy and Program Management

2. SUMMARY OF FINDINGS

Current and Future Climate Scenarios in the Caribbean Region

The conference sessions addressing local and regional climate change research, highlighted the following main findings:

1. Outputs from various modelling groups in the region (Institute of Meteorology in Cuba - INSMET, CCCCC in Belize, Climate Studies Group Mona of the University of the West Indies - CSGM, University of Suriname) have significantly improved climate change science, leading to development of New Analytical and Forecasting Tools used in vulnerability and impact studies, such as the Caribbean Weather Generator, the CARiWIG project[2], the Caribbean Assessment of regional drought (CARiDRO), the Simple Model for the Advection of Storms and Hurricanes (SMASH), and for the development of country-specific, socio-economic scenarios for climate threats;
2. Recent modelling studies shows (i) a dramatic (> 30% of present climate) increase in warm days and warm nights, (ii) a reduction (~ 15%) in cold nights and cool days, (iii) and the increased frequency of heavy rainfall events and duration of dry spells;
3. The predicted warming in the region will be between 1.7° and 3.5° C. In the near future (in the next 15-20 years), warm days will be the new average condition, coupled with a significantly less (30-40% decrease) precipitation across the region, increased drought;
4. The number of hurricanes in the region will be increasing, as well as their intensity, rainfall and wind-speeds and sea level rise.
5. Even with the full implementation of the Paris Agreement, 1.5° C increase in the region may occur much sooner than 2050. The regional-led 1.5° C project shows that 2.0° C warming in the region will result in increasing frequency and number of dramatic climate threats, leading to a significant financial, management and technical adaptation challenges for various countries;
6. The region has led globally in flash-flood and heat-wave forecasts, by building fine-tuned regional models integrating satellite and *in-situ* data;

[2] The project was funded by the Climate and Development Knowledge Network (CDKN) and work was carried out as a partnership between the Newcastle University (UK), the Caribbean Community Climate Change Centre (Belize), University of East Anglia (UK), University of the West Indies (Jamaica) and the Institute of Meteorology (Cuba).

Climate Change impacts on key development sectors and socio-economic dynamics

The conference sessions addressing climate change impacts on key development sectors (agriculture, water, health, coastal infrastructure) and socio-economic dynamics, highlighted the following main findings:

1. Regional livestock are already stressed under current climate conditions. It is forecasted that livestock mortality will increase under a 1.5° C scenario for the region, and productivity will significantly decrease through a 2° C or more climate condition;
2. The state of water resources (including water quality, flux, human consumption) is not being monitored at spatial and temporal scales necessary to quantitatively evaluate the current and future climate change impacts;
3. Insurance schemes for agriculture and fisheries sectors are promoting climate-smart practices and early warning systems, to implement Ecosystem-based Adaptation (EbA) strategies as fish stocks and agriculture production have been declining (ECLAC 2011, The economics of Climate Change in the Caribbean), and very vulnerable (decrease in 30-40 % of yield) to large climate events in the region (hurricanes, storms);
4. Increasing and maintaining current agriculture and fisheries production appears no longer possible under the current and future climate change scenarios in the region;
5. Catastrophic multi-island impacts (recent ones by the recent passage of three hurricanes in the region over a period of 2 months), highlighted the upper adaptive capacity limit of regional governments, institutions, and communities to implement effective Regional Response Mechanisms and Adaptation Strategies;
6. Climate variability (combined effects temperature, precipitation, local climate) in the region has been identified as the main threat to socio-economic dynamics, and the main vulnerability factors for key development sectors (Agriculture, Infrastructure, Tourism, Water Management);

Climate Change Policy and Program Management

The conference sessions addressing climate change's programs and policies, highlighted the following main findings:

1. Barriers (financial, management and technical) to the effective delivery of climate services in the regions were identified, namely: (i) lack of funding and staffing for key climate services institutions (e.g. Meteorology and Hydrological departments); (ii) additional institutional responsibility to provide climate services; and (iii) technical challenges to integrate climate information in regional and national policy;
2. Climate projections indicate that extreme events are expected to increase in the region. Integrated and holistically Adaption and Disaster Risk Reduction (DRR) tools must monitor the evolution of these events, aiming at determining key physical and economic variables as adaptive proxy for regional and local programs.
3. The region suffers from lack of weather stations, required for climate monitoring and analysis of local climate trends; furthermore, the region lacks long (> 40 years) time-series of climate data, leading to limited regional & national training of technicians to develop a range of climate tools;
4. More site-specific climate scenarios are required to evaluate region, country and community vulnerability, and, in turn, to developing capacity to formulate climate policy;
5. Extensive training activities throughout all the Caribbean Community (CARICOM) Member States in the use of tools to integrate climate risks have focused on personnel of Ministries of Planning and Finance;
6. Management and Policy Barriers to climate change adaptation in the region include: (i) weak networking across government agencies to utilize various climate services tools, (ii) weak involvement of senior level personnel in regional climate discussions, (iii) overlapping of mandates across various technical institutions addressing climate and climate-related programs.

3. RECOMMENDATIONS

The conference yielded a wealth of recommendations for current and future climate change programming in the region. The following are a summary from all the conference presentations and plenary discussions.

Technical recommendations

1. Caribbean countries are concerned by the regional scarcity of peer-reviewed scientific literature of climate change research. Research institutions should be supported further and encouraged by governments to publish the wealth of information and data analysis available.
2. The 1.5° C study was commissioned to ensure that a Caribbean perspective would be considered and analysed by the next round of Intergovernmental Panel on Climate Change (IPCC) drafting of the specially 1.5° commissioned report. This study should be further shared and launched through an online platform so that results would be included in the IPCC report for publication in November 2018.
3. Downscaling in regional climate modelling is essential to obtain regional and local climate change scenarios needed to support the development of local climate change policies. Model downscaling should be supported by international scientific organizations, and south-south partnerships.
4. Promoting the development of drought forecasting systems, so that local and national institutions can confidently (90% accuracy) utilize these systems to develop their drought management plans and policies.
5. Reviewing climate change adaptation indicators for regional and national programs.
6. Policy and management recommendations
7. Build climate policy partnerships and foster scientific and management based on the GCCA+ projects in the region.
8. Further explore funding and programming modalities under the ongoing EU-funded GCCA+.

9. Review lesson learnt from DRR programmes in the regions supported by EU European Development Fund (EDF).
10. Promote technical training to translate climate scenarios and data into applied policies for decision-makers.
11. Build more technical and advocacy awareness for government representatives, private sector, and civil society. Support the provision of short-term climate services for Agriculture including the Portal of the Caribbean Society for Agro-Meteorology (CariSAM) and its regional bulletin, PICSA.
12. Review the Regional Response Mechanism to capture recent climate-related lessons and derive recommendations for its enhancement and sustainability (including financial sustainability).
13. Promote Ecosystem-based-Adaptation approaches to fisheries management in the Eastern Caribbean, allowing for long-term benefits (e.g. sustainable fishery yield, optimal use for societal benefits).
14. Promote modelling storm surge risk in a changing climate designed to inform policies for coastlines and understanding the sensitivity of shorelines to the impacts of storm surge.
15. Support the transition from climate project pilots to investment-type activities, via the provision of technical instrumentation, analytical tools, funding, and building national adaptive capacity.
16. Discuss and agree on the definition of resilience in the Caribbean region, as well as a common understanding of adaptation and long-term risk management of the region.
17. Support the mainstreaming of climate information services at the country and community level to integrate risk reduction and climate adaptation.
18. Promote Integrated coastal zone management at the highest level in the growth and sustainable development strategy. Integrated coastal planning should not focus only on vulnerabilities, but also on development opportunities (e.g. tourism sector: opportunity to protect ecosystems of interest to tourism industry).
19. Studies, projects, program and policy on Climate Change effects on the marine environment and resources in the Caribbean are very limited, despite the extensive coastlines, food security from fisheries and aquaculture activities, and the natural DRR and Climate Change Adaptation (CCA). The regional stakeholders should establish a coordinated and regional programmatic framework for climate change adaptation of the marine environment.
20. Support studies and projects quantifying the climate change impacts on higher sea levels, coastal erosions, storm events, high energy sea level-related hazards, ocean acidification, degradation of the five "natural lines of defence - bank reefs, fringing reefs, sea grass & rubble, sand dunes and beaches, mangroves.

21. Support the technical and financial management of the regional initiative "Sustainable Water Management Portal under Climate Change in Small Island States of the Caribbean, Water-aCCSIS"[3].
22. Develop climate-socio-economic scenarios for the Caribbean decision-makers, by providing a menu of response options to support and enhance climate adaptation decision-making in the Region.

This conference also generated some tangible and applied proposals to foster regional cooperation. In particular, the University of the Bahamas expressed its interest and commitment in creating, as part of the IMPACT project, an online platform gathering data on regional network of climate researchers and research, including researcher profiles, database of peer-reviewed articles, policy briefs, blog posts. This platform was proposed to be managed by CCCCC, as the main regional climate change institution. The IMPACT project is a 4-year project (2016-2019) funded by the International Climate Initiative of the Government of the Federal Republic of Germany. IMPACT supports Small Island Developing States (SIDS) and Least Developed Countries (LDCs) around the world to strengthen the connections between the scientific assessments of climate impacts, vulnerability, adaptation and mitigation to help access the financial and technical resources required to implement concrete projects.

[3] Water-aCCSIS is a regional initiative that is contributing to the improvement of water management and climate change adaptation of Caribbean states and the development of adaptive management strategies that will balance the sustainability of ecosystems and societal needs. Collaboration between the University of the West Indies (UWI) - Centre for Resource Management and Environmental Studies (CERMES), the Caribbean Community Climate Change Centre (CCCCC) and the Caribbean Institute for Meteorology and Hydrology (CIMH),

4. CONCLUSION

This conference confirmed the existence of high-quality, climate science-based research and work in the Caribbean region, addressing current and future climate threats across various spatial and time scales. This climate research includes most recent hurricanes and other challenges, clearly highlighting the high financial cost of climate inaction. The Caribbean region is no longer 5-7 years behind other world scientific community in terms of its capacity to generate high-quality climate information. The '1.5° C -Stay Alive Study" (presented at this conference) clearly showcases the effort of forty-five regional scientists, spanning six countries, working in a coordinated way to answer the vital question: "What will the 1.5° C change mean for the region, and how does this compare with a world that is 2.0 ° C or 2.5 ° C warmer?". Given a Business as Usual scenario, the Caribbean region will suffer dramatic and extreme climate events, with significant, dire consequences on regional and local socio-economic fabrics.

The Caribbean Scientific community is in need for greater, global political support to limit global temperature rise to 1.5 ° C. Otherwise, the Caribbean region will experience significant decreases in precipitation, increase in intense rainfall, more dry, hot and warm spells. This international support should consist of harmonizing technical and policy support within all SIDS (Small Island Developing States) countries to keep the global warming threshold of 1.5 ° C during the preparation of the United Nations Framework Convention on Climate Change (UNFCCC) 24th Conference of Parties COP24, through sponsoring the relevant technical and negotiation workshops.

Communication of the region's scientific and management information is key and strategic for the successful implementation and development of regional climate change policy and programs. Regional climate change vulnerability, threats and solutions should be tailored to the end-users, being decision-makers, vulnerable communities, the grassroots level-farmers and fishermen, and those outside our normal- technical realm. The high-quality climate knowledge generated by this conference and decades of climate research in the region, should then be translated into accessible information for use by the general public and decision-makers.

Main regional challenges include: (i) low and *ad-hoc* funding streams for DRR and CCA joint programs, (ii) uneven regional political support for climate actions, (iii) *ad-hoc* streamlining of various institutions' arrangements, strategies, conceptual approaches, assessment methodologies and frameworks for climate change policy, (iv) imbalance of human and financial resource allocation for climate programs, (v) systematic integration of climate change and DRR into national development plans and budgeting systems at central and local level, as well as need for stronger involvement of Local Authorities and Civil Society Organisations (CSO), and scientific community and (vi) lack of dedicated

resources from national budgets for climate programming. Conversely, this conference also identified a range of strategic opportunities over the medium and long-tem for the region. These opportunities include (i) harmonizing DRR/CCA/ Sustainable Development Goals (SDG) for all countries, (ii) re-allocating savings from Renewables Solutions to support CCA/DRM/Clean Development Mechanisms (CDM) Investments, and (iv) facilitating access of various stakeholders to climate services and new, climate financing mechanisms.

Some immediate and medium-term priorities were also identified for supporting the development of a Caribbean roadmap to address current and future climate threats, including:

1. Enhancing Operational Readiness for Climate and Disaster Response (Nationally and Regionally);
2. Supporting Community Resilience Building – National Community Based CCA and DRM Programs;
3. Supporting the development of Community Climate Risk Profiles, and identifying the most vulnerable communities to Climate Change and Climate Variability.

4. Advancing the Caribbean Safe Schools Programs to include climate and DRR vulnerabilities and adaptive plans;
5. Establishing a coordinated Climate Change Adaptation and Disaster Risk Information System;
6. Supporting the government and technical institutions to integrate climate information into planning, budgeting and policy development.
7. Regional stakeholders should place emphasis on ANTICIPATION rather than REACTION at the level of policy planning and adaptation strategies.
8. Supporting and enhancing the role of regional organizations, in particular the CCCCC, in convening and fostering climate and DRR meetings, sharing information and mutual technical and management collaborations;

Future regional conferences should actively invite and encourage the participation of middle and senior policy makers. Despite the latter being invited, this conference's participants mainly included scientists and technical practitioners, resulting in technical discussions and limited opportunity to take note of the current challenges to efficiently develop and implement climate change policy in the region. In addition, representatives from the key private sectors of the region should also be encouraged to participate, to address private sector needs, and to foster partnership building for adaptation and mitigation activities.