The 2024/25 Dry Season Caribbean Regional Climate Outlook Forum (CariCOF)

Stakeholder Forum

Rodney Bay, Saint Lucia

Final Report

November 28th to 29th 2024

1.0 Introduction

The Caribbean dry season typically has implications for water management and agriculture, with water availability often challenging these two sectors, and with cascading effects on other sectors. It is now customary to have participation from practitioners from the water and agriculture sectors for the dry season Caribbean Climate Outlook Forum (CariCOF). In collaboration with our partners the European Union, the Organization of the African, Caribbean and Pacific States (OACPS), the Department of State of the USA, the National Oceanic and Atmospheric Administration, and the Columbia Climate School International Research Institute for Climate and Society of Columbia University, the Caribbean Institute for Meteorology and Hydrology (CIMH) implemented the 2024-25 version of the Dry Season CariCOF from November 25th to 29th, 2024 in Rodney Bay, Saint Lucia. The training for meteorologists and climatologists was held on the November 26th and 27th and the Stakeholder Forum on November 28th and 29th. The forum featured 4 themes:

1. The delivery of the regional forecasts for the season (which includes rainfall and temperature forecasts, as well as forecasts of drought and dry spells that limit water availability, wet days, wet spells, extremely wet days and extreme wet spells that provide insight into the potential for flooding), the Atlantic and heatwaves along with sub-seasonal forecasts up to 4 weeks,
2. Interactive exercises, initiated by the forecasts and recent climate conditions, that encourages dialogue between national meteorological services and practitioners from climate sensitive sectors on action to reduce climate risks,
3. Discussions surrounding current and future climate services for the water and agriculture sectors,
4. Sub-seasonal forecasts for the Caribbean.

Obtain the 2024/25 Dry Season concept note here. The agenda and participant list can be found in Appendix I and Appendix II respectively.

2.0 Day 1

2.1 Welcome and Featured Remarks

2.1.1 The session commenced with an official welcome by Mr. Adrian Trotman from the Caribbean Institute for Meteorology and Hydrology (CIMH). On behalf of the principal and staff of the CIMH, Mr. Trotman extended greetings to the Honorable Minister Stephenson King, stakeholders, participants, the media and regional organizations at the 2024/25 Dry Season Climate Outlook Forum. He noted that the forum is held twice annually, with the last hosting in Saint Lucia in 2015.

Mr. Trotman acknowledged that the two predominant seasons offer different challenges to the region, stating that in the case of the wet/hurricane season, the hurricanes stand out and deficient water during the dry season. He emphasized that we are approaching the end of a very interesting year 2024, being dubbed as “a year of extremes”. He reflected on the significant heat that persisted from 2023, with fans blowing nothing but hot air, and unsurprisingly setting new records in terms of temperature. Mr. Trotman raised concerns about the region’s preparedness for seasonal extremes, noting that 2024 was an extreme hurricane season. He cited Florida’s devastating experiences with hurricanes Helene and Milton. He also pointed out the eastern Caribbean’s heightened vulnerability to flooding during 2024. In conclusion, Mr. Trotman stressed the importance of consulting the climate outlooks for the upcoming 2024/25 dry season.

2.1.2 Ms. Vigil Saltibus (Saint Lucia Meteorological Service)

Ms. Vigil Saltibus, Acting Director of Saint Lucia Meteorological services, welcomed everyone to the Dry Season forum, emphasizing its importance as a vital platform for addressing the challenges posed by climate change. She highlighted the forum’s role in fostering effective communication on various issues. Ms. Saltibus shared that monthly meetings are held to facilitate knowledge-sharing and collaboration across sectors, including the health sector, in the development of bulletins. In conclusion, she noted that CariCOF provides valuable opportunities to assess the region’s progress in tackling climate change, underscoring the need to build on successes while addressing ongoing challenges.

2.1.3 The Honourable Stephenson king (Senior Minister and Minister for Infrastructure, Ports, Transport, Physical Development, and Urban Renewal, Saint Lucia)

The honorable Minister, Mr. Stephenson King, delivered the feature address after warmly welcoming everyone to the meeting and to Saint Lucia. He also acknowledged the presence of meteorologists, climatologists, the media, sector stakeholders and other guests, expressing, on behalf of the Prime Minister and other Ministers, his honour that Saint Lucia was selected to host the forum. Minister King highlighted the timeliness of CariCOF’s involvement, particularly given the region’s recent impacts during the hurricane season that was nearing its end. He stressed that the threats posed by the climatic revolution are real, with significant consequences for people’s lives. He explained that the government of Saint Lucia has declared a water emergency due to a shortage of water, imposing restrictions on the use of drinking water. Minister King emphasized the need to address the challenges faced by Small Island Developing States (SIDS) and to build resilience. He highlighted that Saint Lucia has implemented adaptation methods, including the use of solar energy, and acknowledged support from regional organizations such as the World Meteorological Organization (WMO). Additionally, he mentioned that

the CariCOF provides valuable products that aid in planning efforts, assuring that full support will be offered, as the positive outcomes of the meeting are already visible in Saint Lucia.

2.1.4 Mr. Luca Trinchieri (European Union Delegation)

Mr. Luca Trinchieri from the European Union (EU) Delegation for Barbados and the Eastern Caribbean, addressing the forum virtually, extended greetings on behalf of the Ambassador and EU Delegates. He discussed the importance of addressing challenges and emphasized the need for providing climate information to decision-makers. He expressed satisfaction with the ongoing forums and hoped that this collaborative approach would continue. Mr. Trinchieri highlighted the various products under the ClimSA project and took the opportunity to thank the CIMH and other supporting organizations for their role in assisting decision-making and promoting resilience building.

2.2 Presentations

2.2.1 Dry Season Climatology of the Caribbean and Review of recent Impacts in the Caribbean (Mrs. Shontelle Stoute, CIMH)

Mrs. Stoute provided an overview of the dry season climatology of the Caribbean and reviewed recent Impacts. She explained that the dry season typically spans December to May, though this can vary up to a month depending on the location. She reminded the audience that the northern portion of the Guianas experience two distinct wet and dry seasons and discussed key triggers and characteristics of the dry season, such as cooler sea surface temperatures and a more stable atmosphere, which lead to decreased thunderstorm and rain shower activity.

She presented maps showing rainfall totals across the first half (December-January-February), second half (March-April-May) and the core (February-March-April) of the dry season. Regarding temperatures, she noted minimal variation in the region but highlighted that cooler temperatures are observed during the dry season, particularly the first half. Looking back at the climate conditions during the last dry season (2023/24), Standardized Precipitation Index (SPI) maps for December to May showed normal to extremely dry conditions across the region. Temperature anomaly maps revealed warmer than usual temperatures persisted during the last dry season. The host country, Saint Lucia, observed significantly above average maximum and minimum temperatures for 2024.

Mrs. Stoute then addressed regional impacts during the last dry season and leading up to the upcoming dry season, emphasizing how drought and heat have particularly affected farmers. She cited rice farmers in Guyana who struggled with water shortages and severe drought in Suriname that affected crop yields. She also mentioned Hurricane Beryl, the earliest Category 5 hurricane in recorded history to ever affect the region, which caused significant losses to the fishing industry in Barbados and other parts of the region. Additionally, she discussed Hurricane Milton, the Gulf's strongest late-season hurricane, noting that the hurricane season still has a few days remaining.

2.2.2 2025 Another Year of Climate Extremes (Dr. Cedric Van Meerbeeck, CIMH and Ms. Vigil Saltibus, Saint Lucia Meteorological Service)

Dr Cedric Van Meerbeeck, Climatologist at the CIMH, discussed the continuing trend of climate extremes following the record heat in and around the Caribbean in 2023 and 2024. He began by questioning the extent to which climate information is being utilized and emphasized the importance of learning how to better apply this information. Besides highlighting record-high atmospheric and ocean temperatures in 2023 and 2024, he expressed concern over warming trends in both the Atlantic and Pacific Oceans.

He then proceeded to ask if there is going to be another year of extremes stating that, while the scenario for continued unusually high ocean temperatures in and around the Caribbean was clear, there are still important unknowns which science does not allow us to forecast at the seasonal time scale as yet. He also addressed the impact of Saharan dust intrusions, which can suppress rainfall activity, and stressed the need to remain vigilant for extreme weather occurrences.

He underscored the importance of monitoring hazards beyond hurricanes and the hurricane season, highlighting that CIMH and other institutions currently track nine categories of hazards. Focusing on the upcoming months, these include hazardous conditions such as fire weather, dust, and dry spells, concluding that climate-related hazards are by no means bounded by the Hurricane Season. On the contrary, climate-related hazards can occur year-round. Dr. Van Meerbeeck emphasized the need for continued awareness and preparedness in the face of these challenges.

Ms. Vigil Saltibus presented the regional Dry Season Climate Outlook. She noted a reduction in rainfall during the peak of the previously concluded wet season and encouraged stakeholders to focus on sector-specific concerns. She also emphasized the influences of the Saharan Air Layer (SAL) on seasonal outcomes.

A summary of the 2024/25 Dry Season outlook is as follows:

Scenario – usual frequency SAL intrusions:

- 2024/25 dry season intense in the northwest, delayed start in the southeast
- Initially very wet, except in the northwest (i.e., through the end of 2024)
- Cool season between December and February, followed by early start of an intense Heat Season

Scenario – very frequent SAL intrusions:

- More dry spells and worsening drought towards May
- Erratic, intense wet spells from May to July
- Humid heat approaching 2023 and 2024 levels from May
- Prolonged duration of intense marine heatwaves from July

2.2.3 Climate services for the water sector (Ms. Laurayne Lucky, Caribbean Water and Wastewater Association, CWWA)

Ms. Laurayne Lucky emphasized the importance of determining whether climate products are being effectively utilized. She noted that the CWWA, established in 1991 in Trinidad and Tobago, now has over 300 members, including some in the Uk and Europe. The organization focuses on capacity building, sustainable sector development, and addressing the funding gaps, with significant youth engagement and an emphasis on the role of climate services in tackling water sector challenges in the Caribbean.

Ms. Lucky highlighted the growing demand for adequate financial resources, pointing out that insufficient investment in data and technology gaps has led to maintenance challenges and water losses due to leakage. However, she also acknowledged progress in the region, with examples such as Trinidad and Tobago's loan agreement for The National Water Sector Transformation Program and Dominica's implementation of metering to aid in water rate adjustments.

The region's two seasons have distinct impacts on the water sector. During the dry season, reduced precipitation leads to production and supply deficits, while in the wet season, extreme rainfall events can result in flooding, infrastructure damage, as well as water quality issues. Ms. Lucky highlighted ongoing water challenges in Grenada and St Vincent and the Grenadines due to Hurricane Beryl. In one instance, a desalination plant had to be replaced, and widespread roof damage left many homes without functional water supply systems

This was followed by an interactive session where water resource representatives and participants from meteorological services shared their perspectives and provided examples of how climate information supports their decision-making process.

Guyana

- A water resource representative from Guyana shared an example, explaining that guidance was provided during periods of excessive rainfall while a solar farm was under construction.

Trinidad and Tobago

- The water and Sewerage Authority in Trinidad and Tobago utilizes the outlook forums to make reservoir projections. It was noted that rainfall occurs in areas other than the reservoir catchments, highlighting the necessity of having plans tailored for both the wet and dry season.
- Advice must be given as to how much water is to be extracted

Jamaica

- Use of the Precipitation Outlook in stream flow bulletins
- Assessment of water availability published every two months
- Drought bulletins used to determine drought projections

Dominica

- The Dominica Water and Sewerage Company Limited (DOWASCO) receives precipitation Outlooks and Drought bulletins to assist with planning in the dry season.
- Certain areas required water trucking and the bulletins aided with the planning
- An attempt is being made to make more use of the tools

Belize

- Energy crisis could have been a lot worse had it not for the climate information received

Saint Lucia

- Exploration of water harvesting
- Wastewater needs to be taken seriously

2.2.4 Evaluation of CariCOF-Assessment and Findings (Erica Goto, University of Arizona)

Erica Goto from the University of Arizona delivered the results of an evaluation of CariCOF through a virtual presentation entitled *Enhancing Climate Resilience in the Caribbean through the Improvement of CariCOF*. The findings were based on a series of online surveys, focus group discussions and interviews with participants, aiming to assess CariCOF's impact since 2014.

Ms. Goto explored several key aspects, including information brokering and communication activities at the cariCOF, barriers to seasonal climate forecast information, and the knowledge networks within CariCOF that facilitate information dissemination and use. She also analyzed sector-specific information usage, emphasizing that CariCOF is more than just a climate forum.

Her findings highlighted the need to clarify the technical nature of the information provided, address communication challenges, and improve mechanisms for stakeholder feedback. Despite these challenges, she noted that both forecasters and sectoral stakeholders view CariCOF's scientific credibility positively.

Ms. Goto concluded that CariCOF significantly contributes to regional climate resilience and has had a positive impact on the Caribbean.

2.2.5 Climate Services for the agricultural sector (Mrs. Shontelle Stoute, CIMH)

Mrs. Stoute shared insight on climate services for the agricultural sector, addressing the question: "Why a crop water demand forecast?" She explained that such forecasts support decision-making ahead of the season, addressing challenges farmers face, including pricing uncertainties, governmental policies, and issues of pest and diseases.

She highlighted several monitoring and forecasting products available through the Caribbean Regional Climate Centre (RCC), such as the Caribbean Society for Agricultural Meteorology (CariSAM) platform, which connects regional and national users to provide weather and climate information. She also mentioned plans to provide a monthly video summary of the CariSAM bulletin.

Mrs. Stoute emphasized the importance of considering the period of interest and its implications for the farming community. Tailored information is critical, she noted, to help farmers decide what crops to plant based on expected conditions. She concluded by stressing the need to consolidate all available climate information to create a comprehensive picture of the climate's impact on agriculture.

2.3 Climate Jeopardy (Dr Roché Mahon, Ms. Jodi-Ann Petrie, Dr. Theodore Allen, CIMH)

The interactive "Climate Jeopardy" activity was led by Dr. Roché Mahon, Dr. Teddy Allen and Ms. Jodi-Ann Petrie of the CIMH. Participants were divided into five groups to engage in a jeopardy-style game designed for peer-to-peer learning across the met/climate communities and the 6 climate sensitive sectors served by the Caribbean climate services programme. Technical game questions were divided into 2 main categories. Part 1 focused on the 2024/2025 Dry Season Outlooks under the following categories:

1. Forecasted conditions, Early Dry Season, Dec 2024 - February 2025
2. Forecasted conditions, Late Dry Season, March 2025 - May 2025
3. Sectoral implications and decisions based on the 2024-2025 Dry Season Outlooks

Part 2 focused on General Questions under the following categories:

1. Definitions (Statistical Interpretation)
2. Timescales
3. Outlook Products
4. Climatological Seasonality

Using a Jeopardy styled board, groups consisting of a mix of Met and sectoral professionals per group selected categories and answered multiple-choice questions. At the conclusion of the game, scores were tallied, and Group 4 emerged as the winners (see Figure 1).

Figure 1: Group 4, winners of Climate Jeopardy, along with facilitators Dr. Roché Mahon (send from front left), Ms. Jodie-Ann Petrie (Front left) and Dr. Theodore Allen (back left)

A plenary debriefing session with all participants explored the following questions:

1. What were some of the hard questions today?
2. Why were these questions hard for you?
3. How can we continue to improve your capacity to access, interpret and use climate information products?

3.0 Day 2

3.1 Presentations

3.1.1 Sub-Seasonal Heat Forecasting for The Caribbean-WMO Guidance and CariCOF work (Dr. Simon Mason, IRI)

Dr. Mason began by addressing the issue of heat, noting that global temperatures reached record levels in 2023. He reviewed daily global average air temperatures from 1940 to 2023/2024, showing that 2023 was on track to becoming the warmest year on record and the first year to exceed 1.5°C above pre-industrial temperatures - much warmer than predicted. Additionally, he mentioned a sharp drop in sulphur dioxide emissions from shipping following the implementation of new regulations in 2020.

Discussing health impacts, Dr. Mason explained that mortality rates increased significantly as temperatures surpassed the local optimum, regardless of the background climate, with many deaths attributed to excessive heat. He defined extreme heat as temperatures exceeding local and annual climatological norms, occurring predominantly during the hottest part of the season. Warm spells, he explained, are episodes of excessive heat relative to local but not annual climatology.

Dr. Mason further elaborated on heat-related terms, such as:

- Excess heat: defined relative to annual climatology
- Cumulative heat: excessive heat building over a number of days
- Sustained heat: insufficient nighttime cooling, preventing relief from daytime heating.

He also discussed measures of excess heat, including temperature indicators, thermal indices, and heatwave intensity indices. In conclusion, Dr. Mason outlined the defining characteristics of heatwaves, which comprise of excess heat, local reference, sustained heat, and cumulative heat.

3.1.2 The role of the Carogen v2 (version 2) and ClimSA Climate station in data management and automation of product generation (Dr. Cedric Van Meerbeeck, CIMH)

Dr Van Meerbeeck provided an overview of CAROGEN v2, highlighting its capabilities as a purpose-built tool for operational seasonal and sub-seasonal climate forecasting among CariCOF participating countries and territories. CAROGEN v2 stores historical and current data, enabling analysis for monitoring and predictive outlook products. He described it as an information portal offering valuable early warning information.

He emphasized the quality of the datasets used, noting that they are clean, homogeneous and high quality, which contributes to producing accurate, reliable and precise forecasts. Regarding its practical benefits, Dr. Van Meerbeeck pointed out that CAROGEN v2 is timely, appropriately scaled, and easy to understand, using a common language to ensure accessibility.

Concluding his presentation, he discussed the system's operational advantages. He noted that repetitive processes are automated, making it cost-effective and sustainable. Additionally, CAROGEN v2 is designed with multi-stakeholder priorities in mind, is accessible to all, and is supported by effective stakeholder networks.

3.1.3 The latest sub-seasonal forecasts of extreme rainfall, dry day counts and heat (Dr. Wazita Scott, CIMH)

In her presentation, Dr. Scott focused on the two-week period from December 2nd to December 15th 2024. She explained that sub-seasonal forecasts bridge the gap between short-term weather forecast and seasonal forecasts, providing insights into what is expected over one- and two-week periods.

For the week December 2nd to December 8th, Dr. Scott reviewed experimental forecasts, including maps showing the probability of excessive rainfall events (at least 30 mm in a day), noting the potential for flash floods. She highlighted a high likelihood of such events in western Jamaica and eastern Cuba, with a moderate to high potential in northern Guyana.

Additionally, maps depicting the number of dry days during the same period, revealed that southwestern Guyana, western Cuba and northern Bahamas were forecasted to experience up to six dry days. For the second week, December 9th to December 15th, southwestern Guyana was again expected to have up to six dry days.

Dr. Scott also analyzed forecasts for days with temperatures of at least 32°C. During December 2nd to 8th southwestern and northeastern Guyana were forecasted to have six such days. For the second week, December 9th to 15th the forecasts indicated six hot days in eastern Jamaica and both southwestern and northeastern Guyana.

3.1.4 A Year of Extremes (Cedric Van Meerbeeck, Teddy Allen, Andrea Sealy, Shontelle Stoute, CIMH and Mr. Kenton Chance, CMC)

In this shared presentation:

Dr Cedric Van Meerbeeck reviewed the year 2024, posing the question, "What was different in 2024 compared to the historical norm?" He highlighted that from January to September 2024, global mean surface air temperatures were 1.5 ± 0.13 °C above the pre-industrial average, boosted by record-shattering North Atlantic Ocean heat content and by the 2023-24 strong El Niño. He further reported that forecasts indicate an intense heat season for 2025. He concluded by noting a transition from El Nino to La Niña, accompanied by a record-warm Atlantic.

Dr Andrea Sealy, presenting online, discussed Saharan dust intrusions in the Caribbean during 2024. She described the atmosphere as featuring a warm, dry dust layer and posed the question, "Are we to expect a dust winter?" She referred to the Copernicus Atmosphere Monitoring Service (CAMS) daily mean total Aerosol Optical Depth (AOD) forecasts, which showed a large plume of Saharan dust covering the Atlantic and extending northward. Dr. Sealy noted that much of the Saharan dust present in the Atlantic had been there since 2022. She shared graphs of Aero net, AOD and AOD dust mass from July to August 2024, questioning whether there had been a dusty late August? She confirmed significant Saharan dust transport across the North Atlantic throughout the month, forming a substantial dust cover.

Mrs. Shontelle Stoute focused on drought during the 2023-2024 Caribbean dry season and its impacts. She highlighted short-term drought alert levels at the end of February and referenced standardized precipitation index (SPI) maps to illustrate the season's wet/dry conditions. Mrs. Stoute detailed regional impacts, including rice farmers in Guyana affected in December 2023, Trinidad and Tobago experiencing its worst drought in years in April 2024, Jamaican farmers grappling with drought in the same period, and Belize suffering agricultural losses alongside the displacement of over 400 families due to wildfires.

Dr Teddy Allen provided insights into sea surface temperature (SST) anomalies for September, characterized by widespread "red" zones, indicating SSTs 1.5-2°C above average. He showcased maps of the Atlantic warm pool area, where SSTs exceeded 28.5°C during August, September and October, with particularly warm waters in the eastern Caribbean in October. Dr. Allen also noted elevated surface pressure warming in addition to SSTs. He presented heatwave frequency maps, again highlighting deep red zones in the eastern Caribbean. Dr. Allen discussed record-breaking daily maximum temperatures, mentioning Dominica with 127 record days and Sint Martin with 45 record days since October 18, among other examples.

In his reports, Mr. Chance presented videos highlighting the devastating effects of extreme weather across the region in 2024, with particular focus on St Vincent's severe flooding event in November. The footage showcased extensive damage to homes, buildings, vehicles and infrastructure, underscoring the critical importance of ensuring early warning information is readily accessible to all. The presentation also included footage from Grenada, depicting the aftermath of flooding that tragically claimed the life of a female schoolteacher who became trapped in her car while attempting to collect her children from school. Rainfall totals for various locations in Grenada, such as Grand Etang Lake, Westerhall, and MBIA, were shared for November 12, 2024, providing further context to the event's severity.

3.1.5 Reflecting on 2024: A Year of Extremes- Regional & National Perspectives (Dr Roché Mahon & Ms. Jodi-Ann Petrie, CIMH)

This session led by Dr. Roché Mahon gave meeting participants the opportunity to reflect as a 'community of communities' on what 2024 meant in terms of individual sectoral practitioner experience in a year of extremes, particularly sectoral practitioner experience accessing, interpreting, understanding and using climate early warning information. In the case of Met Service colleagues across the region, it was an opportunity to share experience developing and disseminating climate early warning information to the range of climate sensitive they try to serve. The Met Service reflection was meant to focus particularly on successes, challenges and insights/lessons going forward.

Dr. Mahon invited pre-prepared presentations from colleagues working at the regional level in the disaster risk management, water and health sectors. One of these reflections is highlighted below:

3.1.5.1 Dr Laura-Lee Boodram, CARPHA

Dr. Boodram's presentation featured a video showcasing a team from CARPHA conducting an aerial survey of areas devastated by Hurricane Beryl in St Vincent and the Grenadines, with particular focus on Union Island. It was highlighted that CARPHA also extended aid to Grenada. The footage revealed widespread destruction of roofs and vegetation. As a result, only 20% of Union Island's residents remained, while the majority relocated to shelters elsewhere.

The CARPHA team visited two shelters on the island. In one case, the upper floor of a two-story building had been destroyed, forcing residents to occupy only the lower level. In another shelter, a COVID-19 outbreak required infected individuals to be isolated from others.

Reports from Mayreau in the Grenadines painted a more optimistic picture. A warehouse stocked with essential supplies such as water and medical provisions was accessible, and the island also had a satellite-based Wi-Fi signal, enabling communication within a limited range.

During their visit, the CARPHA team engaged with the healthcare workers, residents, and other stakeholders, gathering insights and providing recommendations to support Union Island's recovery efforts.

Following regional presentations/reflections, the meeting transitioned into focus group discussions where participants had the opportunity to discuss and share more granular national level experiences. Participants were divided into 4 groups - 2 cross-sectoral focus groups and 2 Met Service focus groups.

Sector stakeholder discussions focused on the following questions:

- Did you receive multi-hazard forecast information for 2024? If yes, from what sources?
- How did the forecast information influence your risk perceptions around: 1) drought, 2) heat, 3) flood, 4) Saharan dust, 5) severe weather systems including hurricanes in 2024?
- Did the forecast information influence your preparation for 1) drought, 2) heat, 3) flood, 4) Saharan dust, 5) severe weather systems including hurricanes in 2024? If yes, what decisions and/or preparations did you make differently?
- How was your sector impacted by: 1) drought, 2) heat, 3) flood, 4) Saharan dust, 5) severe weather systems including hurricanes in 2024?
- How does your experience(s) responding to multi-hazard forecast information in 2024 influence your confidence in the reliability of the CIMH forecasts?

Met Service discussions focused on the following questions:

- How would you describe the level of stakeholder demand for weather and/or climate information during 2024?
- What was your experience supporting sectors to respond to multi-hazard forecasts in 2024?
- How would you describe your experience developing and disseminating multi-hazard forecasts for your country in 2024?

3.1.6 Update on the Consortium of Regional Sectoral Early Warning Information Systems across Climate Timescales (EWISACTs) Coordination Partners Perspectives (Dr Roché Mahon, CIMH)

Dr. Roché Mahon provided an overview of the work of the Consortium of Regional Sectoral Early Warning Information Systems across Climate Timescales or (EWISACTs) Coordination Partners. Dr Mahon began her presentation by expressing thanks to the CLIMSA Programme and others for making the 11th Consortium Meeting convened on Tues 26 and Wed 27 possible. She noted that the work of the Sectoral EWISACTs Consortium is very important as the Caribbean RCC seeks to better connect its suite of climate early warning information products to the decision-making contexts of the 6 climate sensitive sectors through the process of co-producing information that is the most useful to sectoral user communities. The 11th Consortium Meeting allowed RCC staff, as well as regional Consortium partners who are the lead regional organisations responsible for the climate-sensitive sectors, as well as Observers organisations to come together in the same room for 2 days to share, to coordinate and work towards amplifying efforts going forward.

Dr. Mahon then gave an overview of concrete progress across 5 Outcome Areas of the Regional Roadmap and Plan of Action (RPA) for Caribbean Climate Services 2020-2030. The 11th Consortium Meeting concluded that Partners made progress on all 5 Outcome Areas. However, it was noted that there has been very limited progress on Climate Services Information System Outcome Area. Partners were pleased to see progress on approximately 23 of 38 RPA outputs with all Partners making progress on their joint triennial work programme. However, on this point, the meeting noted that there is variability in progress across sectors. Finally, the meeting found that while Water, Agriculture and Health have benefitted from sufficiently sustained funding from multiple donor projects, funding for 2023-2025 outputs is still a major limiting factor for the Tourism, Energy and DRM sectors. In closing, Dr. Mahon thanked all sector partners, as well as Observer organisations for working so diligently with the Caribbean RCC and further expressed optimism about continuing to work with sectoral partners and their communities in the upcoming 6 month period to continue to advance joint outputs on the Regional Roadmap and Plan of Action 2020-2030.

3.1.7 Update on the ClimSA Programme Including Upcoming Activity (Sherri Frederick, CIMH)

Ms. Frederick provided an overview of the 6.9 million four-year project funded through the EU African Caribbean. She explained that the pilot activities aim to strengthen climate services value chains in Dominica's health sector and Jamaica's water sector. She highlighted the project's support for CariCOF meetings held in Dominica in November 2023 and Guyana in May 2024, as well as support for the National Climate Outlook Forums (NCOFs) conducted in Dominica (December 2023 and June 2024) and Jamaica (April 2024), with plans underway for December 2024 and Antigua June 2024.

Ms. Frederick outlined some project-related activities, including the hiring of an IT consultant for the CariCOF Outlook Generator from August 2023 to February 2025 and a 12-month web design consultancy starting in July 2024. She emphasized the importance of data management and the enhancement of climate databases, supported by initiatives such as purchasing operational dust monitoring equipment and upgrading observational networks.

Additional activities include promotion and awareness-building efforts, a Knowledge, Attitudes, and Practices (KAP) study for a communications campaign, and the development of upcoming products. She also mentioned the data rescue activity for both meteorological and non-meteorological data in Dominica and Jamaica.

3.1.8 Climate Services for Agriculture 2 (Mr. Adrian Trotman, CIMH)

Mr. Trotman discussed the deliverables of the GCCA+ pest and disease components, highlighting tools such as the whitefly model for tomatoes, and the powdery mildew and downy mildew models for squash. He stated that each model is available as an interactive online web application designed for use by farmers in participating countries. These applications enable users to upload meteorological data related to pest and disease analysis, with results presented graphically to provide insights into various risks.

He then addressed irrigation management, focusing on the FAO AquaCrop Model, a crop growth model developed by FAO's Land and Water Division. This model is designed to enhance food security by evaluating environmental and management effects on crop production. Mr. Trotman emphasized that the AquaCrop model simulates the yield response to water for herbaceous crops.

He also reviewed different irrigation methods, such as sprinkler, surface, and drip irrigation, noting the unique characteristics of each. For instance, surface irrigation wets a larger percentage of the soil surface, which leads to higher evaporation rates and consequently greater water requirements.

The approach to a heat-stress forecasting system relating to livestock and poultry was discussed, highlighting necessary key documents and activities:

- Inception report outlining the technical approach to the consultancy,
- Literature review on the influence of temperature and heat on the behavior and production of small ruminants and poultry
- Technical report on the recommended forecasting approach and its tested results
- Regional workshop for presenting results and incorporating and applying forecast information for (i) small ruminants and (ii) poultry

Also mentioned were agricultural drought management plans to establish triggers for actions in the agriculture sector based on SPI information.

Mr. Trotman concluded by giving some insight into the Participatory Integrated Climate services for agriculture (PICSA) approach, which utilizes climate information based on historical data and forecasts. He highlighted that the farmer makes decisions based on their individual challenges, opportunities and options.

3.2 Summary and Close out (Mr Adrian Trotman, CIMH)

Mr. Trotman, in his closing remarks thanked all participants for their attendance at yet another successful meeting, as well as the hosts and sponsors.

Appendix I: Agenda

The 2024-25 Dry Season Caribbean Climate Outlook Forum
(CariCOF)
Stakeholder Forum
Rodney Bay, Saint Lucia
November 28th – 29th, 2024

AGENDA

DAY 1

TIME	SESSION	PRESENTER/FACILITATOR
0900 - 0940	Welcome and Featured Remarks	**Mr. Adrian Trotman**, CIMH **Ms. Vigil Saltibus,** Director (Ag.) Saint Lucia Met Service **EU Delegation**, (Virtual) **Hon. Minister Stephenson King**
0940 - 1000	Dry Season Climatology of the Caribbean & Review of recent impacts in the Caribbean	Shontelle Stoute (CIMH)
1000 - 1025	Dry Season Climate Outlook (rainfall, temperature, wet days/wet spells, drought, dry spells, coral reef,)	Saint Lucia Meteorological Services
1025 - 1035	Open discussion on the Seasonal Forecast	
1035 - 1100	**COFFEE BREAK**	
1100 - 1230	Sector Feud/Jeopardy	Roché Mahon, Jodi-Ann Petrie, Teddy Allen (CIMH)
1230 - 1330	**LUNCH**	
1330 - 1410	Climate Services for the Water Sector	Laurayne Lucky (CWWA)
1410 - 1440	Climate Services for the Agriculture Sector	Shontelle Stoute, Adrian Trotman (CIMH)
1440 - 1500	**COFFEE BREAK**	
1500 - 1550	Evaluation of CariCOF – Assessment and Findings	Erica Goto, (U of Arizona) (Virtual)
1550 - 1600	Close of Day 1	Adrian Trotman (CIMH)

The 2024-25 Dry Season Caribbean Climate Outlook Forum (CariCOF)
Stakeholder Forum
Rodney Bay, Saint Lucia
November 28th – 29th, 2024

AGENDA

DAY 2

TIME	SESSION	PRESENTER/FACILITATOR
0900 - 0910	Welcome & Recap of Day 1	Lisa Kirton-Reed (CIMH)
0910 - 0940	Towards sub-seasonal heat forecasting for the Caribbean - Guidance from the WMO and CariCOF work	Simon Mason, (Columbia University, IRI)
0940 - 1000	The role of the CAROGEN v2 and ClimSA Climate Station in data management and automation of product generation	Cedric Van Meerbeeck (CIMH)
1000 - 1030	The latest sub-seasonal forecasts of extreme rainfall, dry day counts and heat	Wazita Scott (CIMH)
1030 - 1050	COFFEE BREAK	
1050 - 1140	2024 – a year of extremes	Cedric Van Meerbeeck, Teddy Allen, Andrea Sealy, Shontelle Stoute, Adrian Trotman (CIMH)
1140 - 1240	Simultaneous Focus group discussion + User questionnaire completion	Roché Mahon, Jodi-Ann Petrie, (CIMH)
1240 - 1345	LUNCH	
1345 - 1415	Impacts Based Forecasting and Early Warning for the Water Sector – an Update	Shawn Boyce (CIMH)
1415 - 1445	Update of EWISACTs Activity	Roché Mahon, Jodi-Ann Petrie (CIMH)
1445 - 1500	COFFEE BREAK	
1500 - 1530	Update On the ClimSA programme including Upcoming Activity	Sherri Frederick (CIMH)(Virtual)
1530 - 1545	Summary and Close-out	Adrian Trotman CIMH

Appendix II: Participant List

Meteorological Offices				
Organisation	**Last Name**	**First Name**	**Email contact**	
Antigua	Paige	Orvin	odepaige@yahoo.com	
Antigua	Humphreys	Charissa	charissa.humphreys@gmail.com	
Antigua	Alvarez Guerrero	Magela	Magela.Alvarez@ab.gov.ag	
Aruba	Irausquin	Lothar	lothar.irausquin@meteo.aw	
Barbados	Martin	Christophe	Christophe.Martin@barbados.gov.bb	
Belize	Young	Shanea	syoung@nms.gov.bz	
Cayman Islands	Forbes	Kerrie	Kerrie.Forbes@gov.ky	Zoom
Cuba	Martinez Alvarez	Marilee	marilee.martinez@insmet.cu	
Cuba	Garcia	Idelmis	idelmisggt@gmail.com	
Curacao	Constancia	Endy	endy.constancia@meteo.cw, info@meteo.cw	
Dominica	Carrette-Joseph	Annie	ac_joseph@outlook.com	
Dominican Rep	Matos	Miriam	mimat19@hotmail.com	
Grenada	Clarke	Kendra	kclarke@gaa.gd	
Guyana	Dhiram	Komalchand	kdhiram@gmail.com	
Jamaica	Hibbert	Nikeisha	n.hibbert@metservice.gov.jm	
St. Kitts	Benjamin	Vincere	vincere.benjamin@scaspa.com	
St. Kitts	Dixon	Denel	denel.dixon@scaspa.com	
St. Lucia	Saltibus	Vigil	vigil.saltibus@govt.lc	
St. Lucia	Joseph	Shemma	shemmajoseph@gmail.com	
St. Maarten	Etienne-Leblanc	Sheryl	Sheryl.Etienne-Leblanc@sintmaartengov.org	
St. Vincent				
Suriname	Kardatji	Santoucha	s.kartadji@gmail.com	
Trinidad	Kissoon	Kaidar	kaidarkissoon@gmail.com	
UWI - CSGM	Maitland	Deron	deronmaitland@gmail.com	
Trainer	Mason	Simon	simon@iri.columbia.edu	
CIMH	Trotman	Adrian		
CIMH	vanMeerbeeck	Cedric		
CIMH	Allen	Teddy		
CIMH	Stoute	Shontelle		
CIMH	Kirton-Reed	Lisa		
CIMH	Scott	Wazita		
CIMH	Applewhaite	Andrea		

CIMH	Hosein	Tarick		
CIMH	Lowe	Daison		
CIMH	Greaves	Jemar	jemargreaves@gmail.com	
EU	Arias Munoz	Carolina	Carolina.ARIAS-MUNOZ@ec.europa.eu	

EWISACTS				
Organisation	**Last Name**	**First Name**	**Email contact**	
AACARI	Thompson	Errington	aacariregion@gmail.com	
CARDI	Thomas-Barry	Gem	GThomas-Barry@cardi.org	
CARICOM	Baugh	Shaun	shaun.baugh@caricom.org	
CARICOM	Sabir	Kareem	Kareem.Sabir@caricom.org	Zoom
CARPHA	Boodram	Lauralee	boodrala@carpha.org	
CCCCC	Jones	Albert	ajones@caribbeanclimate.bz	
CCREEE	Andalcio	Jason	jason@ccreee.org	
CDEMA	Greenidge	Nicole	nicole.greenidge@cdema.org	
CHTA	Duffy-Mayers	Loreto	loretoduffy@gmail.com	
CMO	Kerr	Kenneth	kkerr@cmo.org.tt	
CTO	Ramgulam	Narendra	ramgulamn@caribtourism.com	
CWWA	Lucky	Laurayne	llucky@cwwa.net	
GWP-C	Martinez	Kerron	kerron.martinez@gwp-caribbean.org	
OECS				
CSGM	Whyte	Felicia	whyfelicia@gmail.com	
CIMH	Mahon	Roche		
CIMH	Petrie	Jodi-Ann		
CIMH	Deane	Lyn-Marie		
CIMH	Frederick	Sherri		

Stakeholder Forum				
Organisation	**Last Name**	**First Name**	**Email contact**	
CMC	Chance	Kenton	kentonxtchance@gmail.com	
CHH Fellow				
CHH Fellow	Persaud	Nayan	nayanpersaud789@gmail.com	
Agri Ant	Bailey	Gregory	Gregory.Bailey@ab.gov.ag	
Bdos				
Dom	Francis	Jefferson	jeffhfrancis@yahoo.com	
GUY				
Jam	Webb-Lawrence	Francine	francine.lawrence@rada.gov.jm	
STV	Davis	Ayan	ayan3023@gmail.com	

Sur	Samoender	Iwan	isamoender@hotmail.com	
Water Dom	Williams	Magnus	m.williams@dowasco.dm	
Gda	De Gale	Mtumda	mdegale@nawasa.gd	
GUY	Franklin	Angela	angelaf@guyanawaterinc.com	
Jam	Henderson	Paul	phenderson@wra.gov.jm	
SKI	JnBaptiste	Diandra	Diandra.JnBaptiste@gov.kn	
Tdad	Archie	Sharon	Sharon.Archie@wasa.gov.tt	
Health Dom				
TCI	Daniel	Joshua	joshuadaniel@tciairports.tc.	
Montserrat	Skerritt	Arlen	skerrittea@gov.ms	
Agriculture	Mathurin	Junior	junior.mathurin@govt.lc	
Agriculture	Richardson	Sanjay	sanjay.richardson@govt.lc	
NEMO	Job	Malcolm	job@nemo.gov.lc	
Sustainable Development	Descartes	Jermaine	jdescartes.sde@gmail.com	
WASCO	Hyacinth	Nicholai	nicholaihyacinth@wascosaintlucia.com	
Energy	Antoine	Kerne	kerne.antoine-gabriel@govt.lc	