WORLD METEOROLOGICAL ORGANIZATION

Caribbean Climate Outlook Forum (CARICOF)

A Concept Note

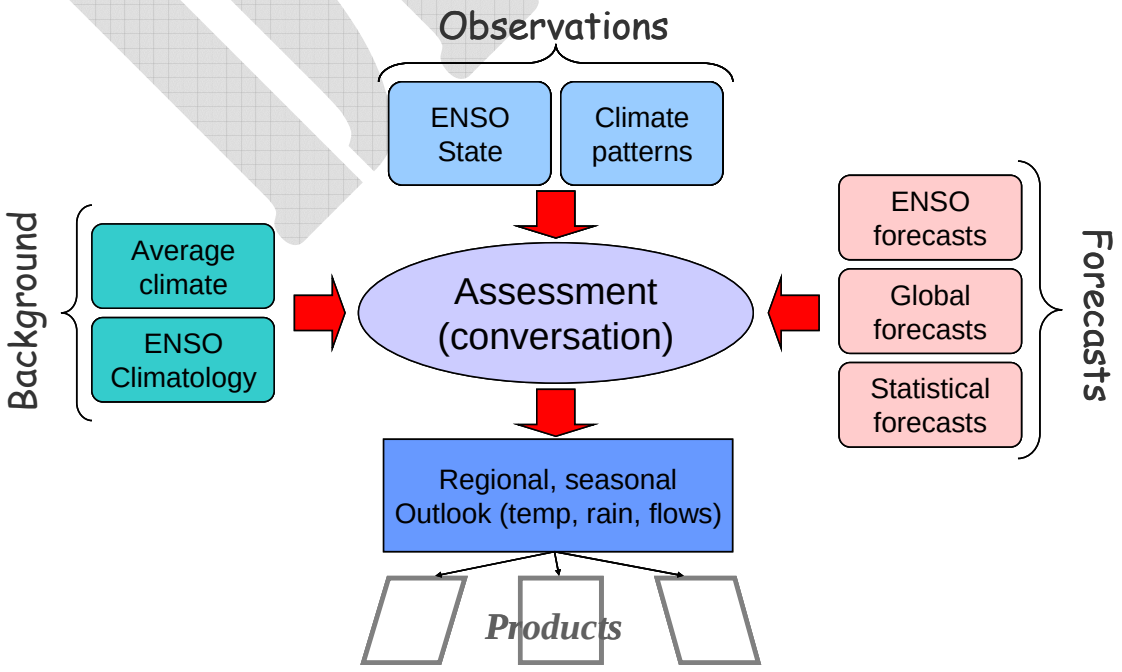
The idea of "climate outlook forums" originated at a Workshop on Reducing Climate-related Vulnerability in Southern Africa, held at Victoria Falls, Zimbabwe, in October 1996. Recognizing that climate predictions could be of substantial benefit to many parts of the world in adapting to and mitigating the impacts of climate variability and change, planning was initiated to establish a regional climate outlook forum (RCOF) with an overarching responsibility to produce and disseminate a regional assessment (using a predominantly consensus-based approach) of the state of the regional climate for the upcoming season. Built into the RCOF process is a regional networking of the climate service providers and user-sector representatives. Recognizing its vulnerability to extreme climatic variability, Africa has been a pioneering and enthusiastic participant in the RCOF process. Participating countries recognize the potential of climate prediction and seasonal forecasting as a powerful development tool to help populations and decision-makers face the challenges posed by climatic variability and change. National and Regional capacities are varied but certainly inadequate to face the task alone. Since 1997, when the Forum process started at Kadoma in Zimbabwe, Africa has benefited from a significant amount of capacity building and funding which has enabled the Southern Africa Climate Outlook Forum (SARCOF) to meet twice a year, the PRESAO (Prévision Saisonnière en Afrique de l'Ouest) once a year and the Greater Horn of Africa (GHA) two/three times each year. In parallel, National Meteorological and Hydrological Services (NMHSs) and some decision makers have come to realize the potential benefits to be gained and have played larger roles in the processes. Ownership now lies largely with national and regional players, but there is a continuing need for support at all levels to ensure that the momentum gained to date is maintained.

The World Meteorological Organization (WMO), through its Climate Information and Prediction Services (CLIPS) project and Regional Programme, made an important contribution towards the development and activities of the forums, alongside an array of bilateral and multilateral sources providing financial and in-kind contributions. These include: the Office of Global Programs of the US National Oceanic and Atmospheric Administration (OGP/NOAA), US Agency for International Development (USAID), the European Union (EU), the International Research Institute (IRI), the UK Met Office, Meteo France, the World Bank, many NMHSs and several others including universities and research institutes. One important aspect of the forums is to bring together experts in various fields, local meteorologists and end users of forecasts in an environment that encourages interaction and learning. CLIPS developed a curriculum as part of the forums which aims at enhancing the climate prediction capabilities of the staffs of the NMHSs. The RCOF process has subsequently been extended to South America, Central America, Asia and the Pacific Islands and more recently to Southeastern Europe, South Asia and Northern Eurasia. While the implementation mechanisms of the RCOFs worldwide have been varied based on the local conditions, the core concept remained the same, cutting across all the regions: delivering consensus based user-relevant climate outlook products in real-time through regional cooperation and partnership.

Among the challenges identified in the process to date, a key area is the design and delivery of climate information and prediction products that satisfy the needs of end-users. Achieving this will require concerted efforts to demonstrate benefits. This challenge, together with that of sustainability, indicates the continued need to improve the scientific underpinnings of the forecasts, for capacity building, and for sustained support.

The consensus prediction process that underlines RCOF operations consists of the following elements:

- Determine the critical time for development of the climate forecast for the region in question;
- Assemble a group of experts:
    - Large scale prediction specialists,
    - regional and local climate applications and forecast/downscaling specialists,
    - stakeholders representative of climate-sensitive sectors;
- Review current large scale (global and regional) climate anomalies and the most recent forecasts for their evolution;
- Review current climate conditions and their impacts at local, national and regional levels, and national-scale forecasts;
- Considering all factors, produce a forecast with related output (e.g. maps of temperature and precipitation anomalies) that will be applied and fine-tuned (downscaling) by NMHSs in the region to meet national needs;
- Discuss applications of the forecast and related climate information to climate-sensitive sectors in the region; consider practical products for development by NMHSs;
- Develop strategies to effectively communicate the information to decision-makers in all affected sectors;
- Critique the session and its results:
    - document achieved improvements to the process and any challenges encountered,
    - Establish steps required to further improve the process for subsequent sessions.



DRAFT

RCOFs stimulate the development of climate capacity in the NMHSs and do much to generate decisions and activities that mitigate adverse impacts of climate and help communities adapt to climate variability. It may also be noted that, in addition to directly supporting the RCOFs along with other partners, WMO has been making concerted efforts to put in place a number of global and regional mechanisms that would further strengthen the RCOF activities. WMO has established formally designated Global Producing Centres (GPCs) of Long Range Forecasts, which provide real-time global seasonal forecasts accessible to all WMO Members. WMO, along with its Regional Associations, is also at an advanced stage of establishing several Regional Climate Centres (RCCs) to cater to the special needs of regions. NMHSs, the regions and the users of the products must contribute to the sustainability of RCOFs (e.g., demonstrate utility of the forums and value of the products to those who need the information). Additionally, research capacities at the regional level need to be enhanced, to assess the forecast skills as well as to work towards their improvement. Media has an important role to play in RCOF process, which needs to be factored in.

The RCOF process has facilitated a better understanding of the links between the climate system and socio-economic activities. An increasing demand for climate services has been recorded in many parts of the world as a result of these developments. Awareness has been created that climate information, including short-range climate predictions, is an essential element in mitigating against the impacts of climate variations. RCOFs have fostered interactions and exchange of information between the climate scientists and users of climate information. More importantly, they have facilitated the mainstreaming of regional cooperation and networking, and effectively demonstrated the immense mutual benefits of sharing of information and experience. RCOFs have been recognized to be prominent among the key mechanisms contributing to the implementation of the emerging Global Framework for Climate Services (GFCS).

While the RCOFs were originally conceived with the main focus on seasonal prediction, the same RCOF mechanisms can be effectively expanded to cater to the needs of developing and disseminating regional climate change information products. Such initiatives are already being taken up by some RCOFs. Regional assessments of observed and projected climate change, including the development of downscaled climate change scenario products for impact assessments, can be included in the product portfolio of RCOFs.

In recent decades we have witnessed significant advances in our understanding of regional climate processes and variability, significantly enhancing our capabilities in regional-scale climate prediction. It is important that the latest research advances are effectively exploited to improve operational climate prediction to meet the societal needs for advance information on regional-scale climate phenomena. The considerable level of ongoing activities in the Caribbean region to generate, improve and use seasonal forecasts, along with the available teleconnections with tropical oceanic parameters and the associated predictive skills, provide an added buoyancy. For the Caribbean region, the Caribbean Institute of Meteorology and Hydrology (CIMH) has been operationally providing sub-seasonal to seasonal climate prediction products. Countries in the Caribbean also have long experience in regional networking and user liaison in climate applications, promoted by major regional institutions like the Caribbean Community Climate Change Centre (CCCCC), Caribbean Meteorological Organization (CMO), etc. At a national level, Caribbean NMHSs have limited capacities to prepare seasonal outlooks and engage with stakeholder agencies in their applications to decision making. In many instances, besides the overarching coordination support by WMO and its Regional Association IV through the NMHSs in the Caribbean region, some such activities have been supported by partner agencies like the EU, Food and Agriculture Organization (FAO), USAID, NOAA, etc. It is in this context that the initiative to launch a Caribbean

Climate Outlook Forum (CARICOF) has been taken up, with the active and enthusiastic support by the NMHSs of the Caribbean countries.

The potential for the development of CARICOF has been discussed recently on several platforms and its importance recognized. CIMH, CCCCC, NOAA, the US Geological Survey (USGS), USAID and IRI organized a workshop, with the participation of WMO and other interested institutions, from 21 to 23 June 21-23, 2010 in Barbados on re-establishing the Caribbean Regional Climate Outlook Forum, that was initiated more than a decade ago in 1998 but could not be sustained. The goals of the workshop, which are still relevant, were to:

- Develop a sustained collaborative process for credible and authoritative early warnings across climate timescales drawing upon multiple warning sources (regional, national, local) and partnerships
- Provide guidance on the development of early warning information systems for critical integrated thresholds (physical, economic, social environmental) across spatial and temporal climatic scales
- Enable regional, country and local level managers to provide more preparedness and adaptation guidance based on risk indicators and triggers for particular decisions
- Enhance the capability to adapt the early warning enterprise as new issues (e.g. ocean acidification) emerge and the climate changes

The critical issues identified to be addressed by the workshop and beyond include:

- Drivers of climate variability and change in the Caribbean
- Seasonal outlooks for precipitation and temperature
- Review of available data and tools for monitoring regional climate variability
- Projections of variability and change from extremes, through decadal variation and climate change
- Impacts in key sectors such as water resources, agriculture, fisheries, tourism, coastal zone management
- Indicators, thresholds and triggers to inform impacts assessments and management
- Critical emergent issues and their impacts such as sea level rise, coral bleaching, and ocean acidification
- Scenario planning to address problem-definition and characterize multiple uncertainties-technical as well as institutional capacity
- Identification and diffusion of successful innovations across the region
- Information communication and use

This well-attended workshop recognized the widely expressed need for a sustainable RCOF process to be established in the Caribbean Region, and there is a general agreement that such a process will greatly enhance regional cooperation as well as more effective engagement of the user community. Evolving uniform and simple templates for seasonal predictions and verification/validation procedures are required in addition to regular training of NMHS staff involved in seasonal prediction.

WMO's Regional Association IV (North America, Central America and the Caribbean), at its Fifteenth Session in 2009, noted the growing benefits of RCOFs in fostering networking amongst climate experts, and in development of consensus-based regional climate forecasts. The Association agreed that the RA IV RCOF efforts need to be expanded to establish additional

subregional RCOFs as needed, and to expand the process to include assessments of climate change for the Region. The Association urged Members to support these initiatives, and to seek low-cost options and user support to enhance their sustainability.

It is necessary to keep under review the ongoing operational activities in seasonal prediction, and consider further development of CARICOF concept and determine its implementation aspects. CARICOF can also be an excellent mechanism to sustain capacity building activities for the Caribbean countries on a regular basis. It is essential to pursue resource mobilization for CARICOF (at least once per year), by including the activity as an integral component of disaster risk reduction projects operating in the sub-region.

DRAFT