



Terms of Reference

For Consultancy for Regional dynamical climate models for climate predictions

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TERMS OF REFERENCE (TOR)

Title of project:	Intra-ACP Climate Services and Related Applications Programme (ClimSA)
Project duration:	Four years
Donor:	European Union
Executing Entity:	Caribbean Institute for Meteorology and Hydrology (CIMH)
Consultancy:	Consultancy for Regional dynamical climate models for climate predictions

1. Programme Description

1.1. Project Introduction

The Intra-ACP Climate Services and Related Applications Programme (ClimSA) is a four-year project funded through the European Union (EU) African, Caribbean, Pacific (ACP) Secretariat and being implemented by the Caribbean Institute for Meteorology and Hydrology (CIMH). Its goal is to support the climate information services value chain with technical and financial assistance, infrastructure, and capacity building. This will ultimately result in improved access and use of climate information, services, and applications at all levels of decision-making and will lead to improved adaptation measures that allow for the Caribbean region to become more sustainable and resilient.

The ClimSA work programme is aligned to the Regional Roadmap and Plan of Action 2020-2030 for Climate Services in the Caribbean to ensure:

- Interaction between the users, researchers and climate services providers is structured;
- Provision of climate services at regional and national levels is effectively guaranteed and secured;
- Access to climate information is improved;
- Capacity of the Caribbean region to generate and apply climate information and products relevant to particular concerns is strengthened;
- Climate-informed decision-making is enhanced, and climate services are mainstreamed into policy processes at regional and national levels.

For the Caribbean, these activities are timely and necessary since climate variability and change are already having, and will continue to have, severe impacts on national economies and key socio-economic sectors in the absence of this type of large scale, resilience intervention.

The ClimSA Caribbean Programme will be executed through pilot activities aimed at strengthening climate services value chains in the:

- health sector of Dominica;
- water sector of Jamaica; and
- agriculture and food security sector of Guyana.

Key partners of the programme at the national level are the National Meteorological and Hydrological Services (NMHSs), government ministries with national responsibility for health, water and agriculture/food security sectors, private sector entities and end users of products and services from the three target sectors.

The 16 Caribbean Member Countries of the Organisation of the African, Caribbean and Pacific States (OACPS) will benefit from the programme through regional capacity building initiatives,

sharing of results and lessons learned from the three pilot countries and institutional and capacity building at the CIMH.

1.2. Project Outcomes and Outputs

The ClimSA programme has the following Outcomes:

- Outcome 1 Interaction between the users, researchers and climate services providers in the Caribbean regions is structured
- Outcome 2 Provision of climate services at Regional and National levels is effectively guaranteed and secured
- Outcome 3 Access to Climate Information is improved
- Outcome 4 Capacity of the Caribbean region to generate and apply climate information and products relevant to particular concerns enhanced
- Outcome 5 Climate-informed decision-making is enhanced, and climate services are mainstreamed into policy processes at regional and national levels

2. Objective of the Consultancy and Activities

Statistical downscaling is the most widely used approach in seasonal forecasting at the regional level, with the Climate Predictability Tool (CPT) one of the most widely used platforms for this downscaling. Whereas dynamical methods and tools have been used at the global level, it is generally accepted that dynamic downscaling is more challenging at the regional level due to the need for high resolution verification. However, the use of dynamic models at the regional level for sub-seasonal to seasonal forecasting is becoming more widespread and necessary for Caribbean region. Climate prediction services based on regional dynamical models can offer a more detailed view on expected climate conditions within the next few weeks to years. A number of models derived from the Weather Research Forecast (WRF) system, which is already implemented for weather forecasting purposes in the Caribbean, can be utilised to this end. For example, CLWRF, a model based on WRF v3.1.1 and maintained by the Santander MetGroup, can perform more flexible regional climate simulations. Another model, RegCM4 was previously introduced to the Caribbean through a training workshop at CIMH and stands as another option for dynamic modeling for the Caribbean. This was originally developed at the National Center for Atmospheric Research (NCAR), and it is maintained in the Earth System Physics (ESP) section of the International Centre for Theoretical Physics (ICTP). Research also shows that there are other regional dynamic models exist that can be applicable to the Caribbean context such as the Unified Model run at the UK Met Office Hadley Centre. It is in this context that it is necessary for capacity to be built in the region in the production of dynamical seasonal and sub-seasonal predictions. It is expected that similar to the introduction and build out of the statistical modelling tool CPT, through the CariCOF process, a dynamic model can be introduced and expanded, offering alternative but complimentary information to the climate prediction landscape of the Caribbean.

Objective: To build the capacity of CIMH and NMHSs in production of dynamical seasonal and sub-seasonal predictions, including training on a relevant model and tools.

Scope/Activities

The following activities to be implemented by the consultant in collaboration with CIMH are envisaged to support the achievement of the objectives:

- I. Review of existing models and tools to determine the most appropriate dynamical prediction model(s) and tools for the Caribbean SIDS;
- II. Installation of recommended model and tools at CIMH for seasonal and sub-seasonal predictions;
- III. Training of CIMH IT staff in installation and maintenance of models and tools;
- IV. Training of CIMH staff in running the model, as well as accessing and post processing of model outputs for the delivery of seasonal and sub-seasonal forecast products;
- v. Conduct, in collaboration with RCC staff, a regional training workshop for NMHS staff on the production of seasonal to sub-seasonal forecast products using dynamical models.

3. Deliverables

The consultant deliverables and indicative schedule are detailed below:

No.	Deliverables	Deliverable timeline
1	Inception Report outlining approach and methods.	Month 1
2	Report on relevant and recommended models and tools.	Month 3
3	Manual on installation and maintenance of recommended model and tools.	Month 5
4	Training manual on running of the model, as well as accessing and post processing of model outputs for the delivery of seasonal and sub-seasonal forecast products.	Month 6
5	Report on training of CIMH staff.	Month 6
6	Report on regional workshop.	Month 7

CIMH inputs

- I. Provision of server for the installation of model and tools;
- II. Technical support for the installation and maintenance of model and tools
- III. Administrative and technical support for the planning and execution of regional workshop

4. Duration & Expected Start Date

The duration of the consultancy is 7 months with an expected start date by November 2025.

The working time includes home/office-based work. The breakdown of the deliverable payments can be found in the Deliverables section. *Travel regarding the direct training of CIMH staff should be included.*

5. Contract Type and Price

The assignment will be contracted through a fixed-priced consultancy agreement. Remuneration will depend on the level and degree of expertise of the consultant.

The contract will be concluded between the Consultant and CIMH and will contain the above-stated deliverables.

Payment for consultancy services will be made upon satisfactory delivery of services.

6. Proposal Requirements

Technical Proposal inclusive of the following:

- a) A detailed curriculum vitae of the candidate including a description of main achievements
- b) Proposed methodology for completion of the work.
- c) References of previous work completed that is similar to the TOR with contact information for three (3) references.

Financial Proposal:

- a) Full financial proposal.
- b) Hourly rate for additional work beyond this scope.
- c) Full work plan inclusive of time for the provision of feedback.

7. Eligibility

The consultant is required to have recognised experience in

- i. The practical use of a regional dynamic climate model(s)
- ii. Demonstrated experience in the installation, maintenance and running of a regional dynamic climate model(s)
- iii. Experience in training in the installation, maintenance and running of a regional dynamical model(s)

The consultant should also possess at least a Master's degree with significant experience in climate modeling with supporting experience in some or all of the following climatology, meteorology, atmospheric science, and computational mathematics.

8. Evaluation and Selection Process

Proposals will be evaluated according to the Combined Scoring method – where the technical criteria will be weighted at 70% and the financial will be weighted at 30%. Specific weighting is detailed below:

Category	Description	Weighting
1	Level of education of consultant	15
2	Demonstrated in the use and application of regional dynamical climate	20
3	Experience in the installation, maintenance and running of a regional dynamic climate model(s)	20
4	Experience in training in the installation, maintenance and running of a regional dynamical model(s)	15
	Total	70

Supervision of contract

The Consultant shall report directly to the Chief of Section, Applied Meteorology and Climatology (AMC) or his designate.

Review and feedback on consultants' outputs will be provided by CIMH and its partners and the outputs will be approved by the CIMH.