**Intra-ACP Climate Services and Related Applications Programme (ClimSA)**

**REQUEST FOR PROPOSAL**

The CIMH is an Institution of the Caribbean Community (CARICOM) and the technical Organ of the Caribbean Meteorological Organization (CMO). The mandate of the CIMH is "to assist in improving and developing the Meteorological and Hydrological Services as well as providing the awareness of the benefits of Meteorology and Hydrology for the economic well-being of the sixteen (16) Member States of the CMO. This is achieved through training, research, investigations, and the provision of related specialized services and advice".

In achieving its mandate, the CIMH in 1973 established an affiliation with the University of the West Indies in which its primary responsibility is the delivery of the B.Sc. programme in Meteorology in the Faculty of Pure and Applied Sciences. The CIMH is recognized regionally and globally as:

- The World Meteorological Organization (WMO) Regional Training Centre for the Caribbean;
- A centre for applied research and development in meteorology, hydrology/water resources, climatology and related areas including disaster risk reduction and impacts forecasting;
- The WMO Regional Instrument Centre for the Caribbean;
- A WMO Centre of Excellence for Training in Satellite Meteorology;
- The WMO Regional Climate Centre (RCC) for the Caribbean;
- The Caribbean Centre for Climate and Environmental Simulations;
- The Climate Data Archive for CMO Member States;
- The Pan American Centre for the WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS);
- Caribbean Regional Marine Forecast Support Centre.

By virtue of the above, the CIMH is active in such areas of hydro-meteorological and climate risk impacts forecasting as well as agricultural risks forecasting and has had strong collaborations with other regional institutions, national organizations in CMO Member States and the international community.

As part of its ongoing work to provide climate services at the regional and national levels and under the Intra-ACP Climate Services and Related Applications (ClimSA)Programme, CIMH is seeking the services of an IT Consultant regarding the work of the CAROGEN online portal. Submissions should include financial proposals.

All submissions should be submitted to procurement@cimh.edu.bb no later than 30 September 2022 and emails should be titled "**IT Consultant re CAROGEN**".

**ANNEX I**

**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:** | IT Consultant re CariCOF Outlook Generator (CAROGEN) |

## 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 achieve

- 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 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 the 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 and private sector entities and end users of products and services from the three target sectors.

The 16 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 lessons learned and results from the three pilot countries and the 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 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. Scope of Consultancy and Activities

One necessary element in the production of valuable and actionable climate information products and services is the automation of repetitive processes to minimize human error and enhance efficiency. In 2016, the Caribbean RCC developed the CariCOF Outlook Generator (CAROGEN) an in-house online platform that allows NMHSs and the Caribbean RCC to generate seasonal forecasts for islands in the Caribbean for the Caribbean Climate Outlook Forum.

CAROGEN is written for Linux-based platforms. CAROGEN integrates (1) the Climate Predictability Tool (CPT) for statistical downscaling and forecasting; (2) a regional climate database; and (3) a public access area for climate statistics and monitoring tools at the weather station level. As such, CAROGEN has reduced the time required to produce seasonal forecasts by 2/3 and ensures objectivity through a consensus-build, standard forecasting methodology across CariCOF, the RCC and Caribbean NMHSs.

Over the past six years, the need for upgrades in the interface, the data management portion of the platform, the version of CPT and scripts needed to run it, as well as the overall architecture and functionality of the platform has increased. This upgrade should accommodate an anticipated sizeable expansion of the climate forecast product range and methodological advances in sub-seasonal to seasonal climate forecasting.

As a result, the consultant will be expected to undertake and complete the following activities:

1. Conduct a survey among CAROGEN users for general feedback on their experience operating the front end of the system and to assess recurrent or frustrating issues, as well as, to assess their recommendations on some proposed solutions. *(Month 1)*

2. Develop a Software Requirements Description, as well as a Software Development Test Plan to guide the work based on the above survey results and assessment.

3. Migrate the current Linux version of the Climate Predictability Tool (CPT) in CAROGEN to an up-to-date and easily updatable Python version (i.e. PyCPT); migrate the current code base to Python; rigorously test the new version among CAROGEN administrators. *(Months 1-9)*

4. Migrate the architecture of CAROGEN into an API; rigorously test the API among CAROGEN users. *(Months 3-9)*

5. Optimise and improve functionality of the CAROGEN database in terms of data management and ingestion of new types of climate data (e.g., sub-daily and daily data); rigorously test the new version among CAROGEN users. *(Months 3-9)*

6. Improve and expand the functionality of CAROGEN's climate outlook generator to (a) enable the automated generation of (i) a broader set of seasonal forecast products (including but not restricted to dry spell frequency, heatwave frequency, flash flood potential, drought) and (ii) subseasonal dry spell, heatwave and flash flood potential forecasts; to (b) upgrade the climate monitoring and statistics tools, as well as the integrated forecast mapping software.

7. Rigorously test the new version among CAROGEN users. *(Months 2-10)*

8. Conduct training on CAROGEN version 2. *(Month 11)*

9. Update technical manual on CAROGEN administration and operational manual for the RCC. Update relevant pieces in the RCC's Manual for climate tools and products. *(Months 10-12)*

## 3. Deliverables

1. Report on the CAROGEN user survey delivered to and discussed with Caribbean RCC. (Month 2)

2. CAROGEN version 2 tested and delivered, containing PyCPT, migrated to an API, containing improved database, climate outlook functionality and upgraded mapping tool. *(Month 10)*

3. Training workshop on CAROGEN version 2 conducted among NMHS and RCC staff. *(Month 11)*

4. Updated manual on CAROGEN administration and operational manual for the RCC delivered; RCC manual for climate tools and products updated. *(Month 12)*

## 4. Selection Criteria

a) The candidate must at least have an undergraduate degree in Computer Science;

b) The candidate must demonstrate a strong background and have at least 3-5 working years of experience in Python, web development, database development, Linux OS. Working experience in the use of GitLab/GitHub is a plus;

c) The preferred candidate shall have working experience and knowledge of html, JavaScript, PHP.

## 5. Duration & Expected Start Date

The duration of the consultancy is 1 year with an expected start date in October 2022.

The working time includes home/office-based work. The breakdown of the estimated per month deliverables can be found in the Deliverables section.

## 6. 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 chosen 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.