**UNIVERSITY OF THE WEST INDIES, MONA**

**CLIMATE SYSTEMS, TECHNIQUES AND RESOURCES FOR IMPROVED**

**DECISION-MAKING, EDUCATION AND SUSTAINABILITY PROJECT**

**CONSULTANCY SERVICES FOR STASTISTICAL MODELLING ASSISTANT**

**TERMS OF REFERENCE**

# **BACKGROUND**

* 1. The Caribbean comprises nations that are diverse in terms of geographical size, population, political stability as well as economic drivers. This diversity is, however, dwarfed by the common vulnerability to the impacts of climate variability and change that each of the territories experience; and which places the Caribbean amongst the most vulnerable, across all socio-economic and livelihood sectors. Throughout the region, shifts in duration, frequency and intensity of extreme weather and climatic events have already caused serious economic losses in climate sensitive sectors (for example, in 2004, the impact of Hurricane Ivan on Grenada resulted in the nation’s Agriculture and Spice industry gross domestic products (GDP) earnings being set back by 7-10 years). Continued and projected climatic changes not only place the Caribbean amongst the most vulnerable to the impacts and climate variability and change, but threatens the region’s economy, growth and aspirations for sustainable development.
  2. At the start of the 21st century, there were still challenges adequately characterizing and understanding the past and impending threats of climate variability and change to the region due to a paucity of information on account of (i) the general lack of climate change studies at scales matching the geographical size of territories within the region; (ii) minimal or no peer-reviewed sector-specific or related studies on the influence of climate change; and (iii) the absence of continuous in-situ meteorological data. This led Caribbean scientists and relevant stakeholders to embark on a drive to improve data availability from both in-situ meteorological stations and climate model projections as well as working towards the provision of climate change data and information at spatial and temporal scales more relevant to the region for use in decision-making, risk reduction and improving overall resilience. This drive resulted in the production of the set of first relevant and semi-scale specific regional climate model outputs using the Intergovernmental Panel on Climate Change’s (IPCC’s) Special Report on Emission Scenarios (SRES) as well as the subsequent Representative Concentration Pathways (RCPs) scenarios. The results of these endeavours were used by the Caribbean and other Small Island Developing States in:

1. their campaign to have the end of century global warming target be limited to 1.5°C above pre-industrial levels;
2. the production of several of the region’s National Communications to the UNFCCC;
3. a wide array of publications on the impact of climate variability and climate change on varying sectors, such as agriculture;
4. the development and implementation of numerous capacity building and training workshops geared at improving the climate knowledge and capacity in the region; and
5. the preparation of the State of the Caribbean Climate (SOCC) Report, through support from the Caribbean Development Bank (CDB) [[1]](#footnote-1) to The University of the West Indies (The UWI), Mona. The report, which was published online in 2020, analysed the current and future state of the region’s climate using the best available science and data at the time.
   1. The SOCC Report has been viewed as a landmark activity for the region, as it provided the most in-depth view of Caribbean States in terms of the impacts of climate variability and change and has been a go-to resource for anyone conducting climate-related endeavours within the Caribbean. Importantly, the report contributed to an increase in the basic knowledge and understanding of climate vulnerability and change of Borrowing Member Countries (BMCs) of the CDB by providing decisionmakers with the best available climate science information at the time in an easily digestible document. Notwithstanding this, the Caribbean is once again lagging the globe in terms of the scenarios used to inform climate change, adaptation and mitigation efforts as the globe has now moved away from the use of both SRES and RCP scenarios to Shared Socioeconomic Pathways (SSPs). There is therefore urgent need for the region to close this gap, so that it strengthens its efforts to appropriately respond to the threat of climate change.
   2. Recognising the importance of addressing the aforementioned gaps, the CDB, under the European Union-funded Caribbean Action for Resilience Enhancement Programme, has provided grant resources to the UWI, Mona to implement the “Climate Systems, Techniques, and Resources, for Improved Decision-making, Education and Sustainability (STRIDES)” Project. The Climate STRIDES project seeks to engender enhanced climate resilience in the region through the provision of systems, tools and resources that improve decision making capacity, general awareness and influence behaviour change in the face of a changing climate.

# **OBJECTIVE**

* 1. The objective of this consultancy is to assist the Statistics Co-Principal Investigator in developing, selecting and using statistical models for testing and analysis, and applying these models to available climate data and sector-specific data to provide valuable insights and data-driven results to support decision-making processes related to climate and associated sectors.

# **SCOPE OF WORK**

* 1. The scope of work for this consultancy includes supporting the Statistics Co-Principal Investigator in the development, selection and use of statistical models, specifically tailored to address the requirements of climate and sector data available and involves:

1. Support in the Development and Selection of Statistical Models:
   1. Conduct a thorough review of existing statistical models suitable for use in and support of decision-making processes related to climate and its intersections with key economic sectors.
   2. Develop customised statistical models tailored to address the specific requirements of the available climate and sector data.
   3. Rigorously test and validate the developed models to ensure accuracy and reliability.
2. Support in the Application of Statistical Models to Climate and Sector Data:
   1. Gather and preprocess relevant climate data and associated sector-specific data required for the statistical modelling process.
   2. Apply developed statistical models to the collected data.
   3. Evaluate the performance of the applied models and make necessary refinements.
3. Support in the Interaction with GIS collaborator to produce GIS-Based Results:
   1. Utilise the outputs from the statistical models to produce GIS-based results (these can be in latitude, longitude and value orientation).
   2. Ensure that the GIS-based results offer valuable insights for stakeholders and decision-makers.
4. Other Climate STRIDES-related duties assigned by the Statistics Co-Principal Investigator and/or the Climate STRIDES Project Coordinator.

# **QUALIFICATIONS AND EXPERIENCE**

* 1. The Statistical Modelling Assistant should possess the following minimum qualifications, experience and skills:

1. A Bachelor of Science in Mathematics, Statistics, Computer Science or related discipline.
2. At least 6 months working and/or research experience in the disciplines specified in 4.01(a).
3. At least two similar assignments previously completed in the development and/or selection of statistical models.
4. Strong statistical data analyses skills, as evidenced, for example, by knowledge and experience using at least one statistical package such as R, Stata or SAS.
5. Strong statistical modelling skills as evidenced, for example, by college/university course(s) completed in Statistics, or equivalent certification / qualification.
6. Excellent collaboration and teamworking skills as demonstrated, for example, by prior experience working with a research team.
7. Knowledge and command of the English language (as evidenced by publications, reports or other documents prepared in English).
8. Excellent oral communication skills (as evidenced by presentations or talks delivered at public fora).

# **REPORTING REQUIREMENTS AND DELIVERABLES**

* 1. The Statistical Modelling Assistant will report to the Statistics Co-Principal Investigator as well as the Project Coordinator of the Climate STRIDES project. The Assistant is expected to produce the following deliverables:

1. Monthly progress reports over the period of engagement.
2. Interim data analyses and write-ups as advised by the Statistics Co-Principal Investigator.
3. Draft reports on the consultancy, inclusive of data gathering processes, data analyses utilized, key findings and supporting information such as references, models, spreadsheets etc. in Months 9 and 13.
4. Final report on the consultancy, inclusive of data gathering processes, data analyses utilized, key findings and supporting information such as references, models, spreadsheets etc. by Month 15.

# **DURATION**

* 1. It is estimated that 15 person-months are required to complete the scope of work.

# **PLACE OF WORK**

* 1. The Statistical Modelling Assistant will be assigned to the Statistics Programme within the Department of Mathematics at the University of the West Indies, Mona. The Assistant is required to be resident in Jamaica for the duration of the assignment and is expected to report for in-person work at least three workdays per week. Eligible applicants outside of Jamaica will be required to cover any relocation expenses.

1. This was made possible through financing from the European Union (EU) within the framework of the African, Caribbean, Pacific, EU, Natural Disaster Risk Management in CARIFORUM countries. [↑](#footnote-ref-1)