

Integrated Water Resources Management (IWRM) Projects and Initiatives in the Caribbean

Title: Terrestrial Flood Risk and Climate Change in the Caroni river basin: Adaptation Measures for Vulnerable Communities

Organisation: The University of the West Indies, Sir Arthur Lewis Institute of Social and Economic Studies, St. Augustine Campus, Trinidad and Tobago

Aims and Objectives:

The overall objective of this project is to assess current and potential future flood risk in the Caroni river basin, and the vulnerability of communities to such risks. The project will integrate methods used in the social and physical sciences to provide a holistic overview of the flood hazard and its impact on communities. The specific objectives are to:

1. Utilise the community-based vulnerability assessment (CBVA) approach of Smit and Wandel (2006) to integrate scientific and local knowledge to understand the multi-scale socioeconomic, governance and environmental conditions that shape vulnerability and capacity to adapt changing flood risk
2. To provide a historic overview of the frequency and severity of flooding for the Caroni basin and to conduct a long-term trend analysis for flood return periods using gauging station records.
3. Assess climate model projections for Trinidad, particularly in relation to the frequency and intensity of storm events and sea-level rise, using model outputs from the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) (2007) and the Fifth Assessment Report (2014).
4. Creation of flood hazard models and current and potential future flood risk maps for the Caroni basin using a topographically-based GIS analysis and the hydrodynamic models HEC-RAS and LISFLOOD-FP.
5. Assess local knowledge, attitudes and practice of Caroni basin communities towards flood risk and climate change, and increase community knowledge of climate change.
6. Conduct community vulnerability mapping exercises through the integration of physically-based flood risk assessments with a GIS analysis of census data and community-based interview and survey data.
7. Creation of interactive web maps showing the spatial extent of the floodplain, inundation depths, communities affected and to be affected from future extreme events and include the results in the Caribbean Disaster Risk Atlas.

Dissemination of results through community workshops, television and radio interviews and through publication in peer reviewed academic journals; dissemination of project outputs to appropriate Government organisations.

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Duration: Start Year: 2013 Completion Year: 2015

Estimated Cost (USD): \$86,000

Funding Source: Trinidad and Tobago Research and Development Impact Fund (RDIFund)

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Key Words: Flood risk, Vulnerability, Climate change, Community, Trinidad

Geographic Coverage: Trinidad & Tobago – Caroni River Basin

Sectoral Focus: Water; flood hazard management

Target Beneficiaries: Government; communities; planning agencies

Outputs:

Primary outputs will include:

- Climate projections and the associated RCM for use in further climate research.
- Flood risk model tools for assessment of flood risk in other areas/ catchments.
- Project website facilitating the dissemination of research outputs, including online maps of current and future flood risk
- A set of recommendations regarding the mitigation of flood risk and adaptation measures under climate change
- A workshop and associated workshop proceedings held for key Government agencies including the Water Resources Agency and the Office for Disaster Preparedness and Management

Secondary outputs will include:

- Two Masters in Engineering projects
- Publications in the form of journal articles and technical reports.
- Capacity development at the St. Augustine campus in climate and flood risk modelling

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Project Links and References:

<http://sta.uwi.edu/ffa/geography/>

<https://sites.google.com/site/caronifloodrisk/>

Impacts:

The management and mitigation of flood risk is an aim of the Government of Trinidad & Tobago through its policy frameworks. This project will provide the necessary tools to allow for effective planning of flood risk management strategies which incorporate social vulnerability at their centre. In this way, the effective allocation of resources may be achieved. It is anticipated that results of the project will lead to a review of urban planning and drainage policy. In addition, the project will lead to the development of capacity for modelling climate change.

Sustainability:

Information not available

Lessons for the Future:

Information not available

Opportunities Arising from the Project:

Additional study sites, nationwide. Collection of data.

Further Comments:

Information not available