



THE UNIVERSITY OF THE WEST INDIES

# CaribEViz

Enhancing Knowledge and Application of Comprehensive Disaster Management (EKACDM) Initiative

## Background

CaribEViz is a seismic risk assessment platform, based on ERGO-EQ that was developed by the Seismic Research Centre (SRC) of the UWI in association with the University of Illinois. It is an output of the EKACDM Initiative funded by GAC.

CaribEViz was developed to provide stakeholders with a tool to help understand seismic risk in the region. The software can perform several analyses of risk using information on the seismic hazard, buildings and people. By combining these the software can estimate aspects of risk including potential fatalities, injuries, structural damage and effects on lifelines (e.g. health centres, water storage tanks). The software can provide a better understanding of the effects of probabilistic and deterministic events.

## Partners

The Seismic Research Centre and Mona Earthquake Unit at The University of the West Indies

National Centre for Supercomputing Applications, University of Illinois

The work was supported by a grant from the Government of Canada and builds on previous work supported by the World Bank



## Features



### Ergo-EQ Platform

Built exclusively on the Ergo-EQ Platform, allowing for precise and reliable data input and output, allowing for accurate assessments to be deduced for Caribbean islands.



### Visualizations

CaribEViz allows for shareable and editable visualizations of data including: earthquake impact simulations and building damage analysis.



### Population Dislocation Analysis



### Bridge Damage Analysis



### Interdependent Network Analysis (INA)



### Pipeline Damage Analysis



### Cross Platform Compatibility

CaribEViz can be installed on Windows, Mac OS X and Linux systems, providing seamless integration into any existing network.

## Benefits



### Planning

Coordinates planning and event mitigation, response and recovery.



### Analysis

Integrates spatial information to perform risk assessment and analysis.



### Connectivity

Connects information to practitioners and decision makers.



### Data

Provides a framework to add and update data and algorithms.



### Support

Allow for analysis of "What If" scenarios (Decision Support)





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## Earthquake risk for Kingston

History: 1907 Earthquake

Magnitude **6.9**

Over **1200** Deaths

Damage of over **£2million**

Destroyed almost all the brick buildings

What if it happened again?

**200%** GDP loss

Damage of **US\$5.5 billion**

Reduction in production of goods and services of **US\$6.5 Billion**

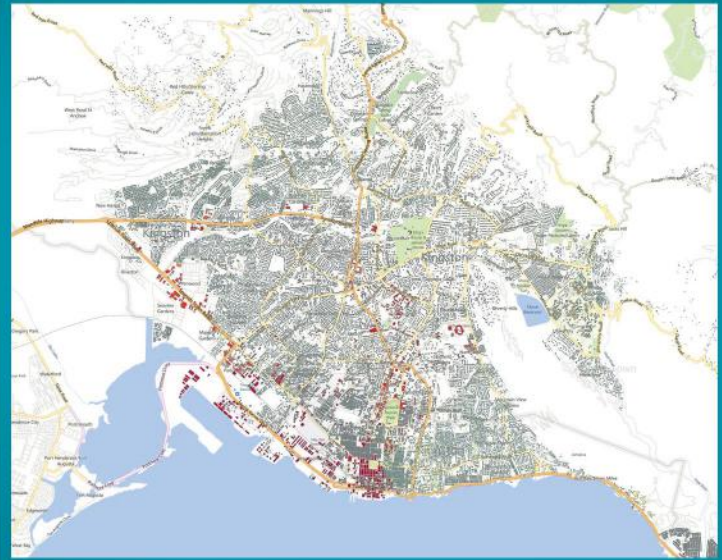
Up to **900,000** jobs could be lost for up to 5 months

### What is the likelihood of this?

The University of the West Indies estimates that Jamaica is subject to medium-high seismic hazard

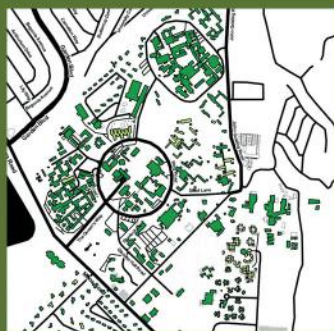
### A simulation of damage to buildings

more damage

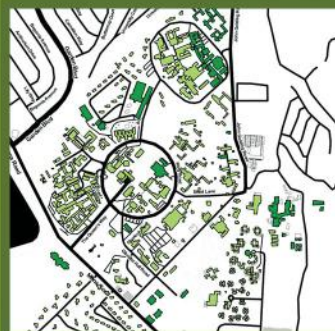


## What could happen on Mona Campus?

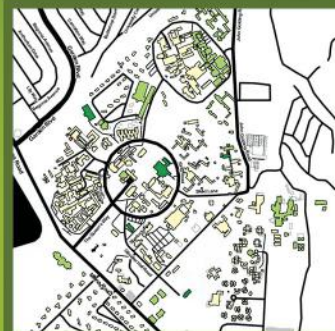
less damage more damage



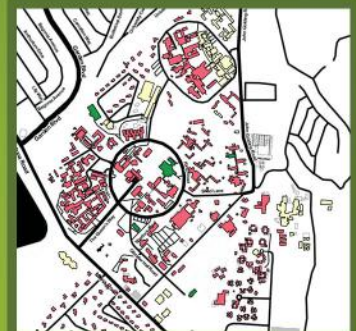
95 year event



475 year event



975 year event



2475 year event

## What can we do with the results?

### Retrofitting

pick buildings for retrofitting & assist in cost benefit analysis if the cost of retrofitting is known

### Teaching

generating scenarios to teach about earthquake impact

### Disaster response

realistic scenarios generated for emergency exercises & simulations.

## Next Steps

Build up a users group

Address comments

Do more training

Collect data