Geophysical Research Abstracts,
Vol. 11, EGU2009-1839-3, 2009
EGU General Assembly 2009

Caribbean tsunamis - Regional exposure and local risk assessment

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In a project on natural hazards in the Caribbean, the following is undertaken: i) preparation of regional tsunami hazard and exposure maps to identify the region's natural disaster hot spot areas; and ii) implementation of tsunami risk assessment demonstration projects in close cooperation with the local authorities. The selected site for the demonstration project is Bridgetown, Barbados.

Studies of both seismic and non-seismic tsunamigenic sources are included to provide examples of various kinds of sources with a regional distribution. The probability, location, and size of the largest credible earthquake and gravity mass flow tsunami sources are based on historical earthquake and tsunami records, large scale tectonics, geology, and topographic evaluations. The seabed displacements and mass flow dynamics related to earthquakes and mass flows, respectively, are governed by analytical calculations and statistics and used as input to numerical tsunami simulations. Numerical models for dispersive wave propagation are coupled to run-up models for nonlinear wave inundation.

In the tsunami risk assessment demonstration project; local vulnerability and mortality risk maps are produced for warning purposes, public awareness, and coping capacity. The maps are based on evaluations of the tsunami inundation distance and a detailed survey of the populational pattern, buildings, and infrastructure in Bridgetown.