

The Puerto Rico Warning and Mitigation Program: a short review

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The Puerto Rico Warning and Mitigation Program was established as a result of the concern about the “forgotten hazard” in the Caribbean Sea region, the tsunami. Funded by the Federal Emergency Management Agency (75%) and the University of Puerto Rico (25%), it consisted of six tasks: (1) Preparation of tsunami flood maps; (2) Education and outreach; (3) Local and regional seismic waveform analysis; (4) Warning messages and protocol; (5) Development of a Caribbean Historical Tsunami Database (CHTDB); and (6) Participation in the USA National Tsunami Warning and Mitigation Program.

For Task 1 the northeastern Caribbean region, encompassing Hispaniola on the west and the Leeward Islands on the east (which defines our LZPR), was divided into 12 subregions according to major tectonic features, seismic distribution and stress pattern. Based on seismic analysis, the tsunamis from 238 spatially linear potential faults, each one generating their hypothetical earthquake, were numerically simulated and flood maps prepared. Task 2 involved a series of workshops given around the island, the preparation of a Spanish language tsunami video, a WEB page (<http://poseidon.uprm.edu>), tsunami drills at schools, and the production and installation of tsunami warning signs along the coast. For Task 3 local and regional seismic wave form analysis algorithms were adapted to the Caribbean region. This is in response to the fact that at-risk regions need real-time determination of earthquake source information to assess the nature of the hazard in order to optimize emergency response. Once a felt earthquake has been characterized in terms of magnitude, location and faulting mechanism and its tsunamigenic potential has been determined, this information needs to reach the affected communities as fast as possible. This was the goal of Task 4. For this purpose, a “Tsunami Protocol Meeting” was held at the Mayagüez Campus of the University Puerto Rico during the 15-16th of January 2003. The objective of this meeting was to set the groundwork for a tsunami warning system capable of rapid dissemination of information throughout the Caribbean on potentially tsunamigenic events in Puerto Rico and the Virgin Islands. Task 5 involved the development of a comprehensive earthquake and tsunami database, Historical Tsunami Database for the Atlantic, containing the written history of earthquakes and tsunamis that have occurred in the Atlantic Ocean, including the Caribbean Sea. The database includes all of the earthquake information available, while the tsunami information is based on the comprehensive compilation by Lander et al. (2002). All of this runs under a PC Windows GUI. Finally, Task 6 involved assisting to some of the meetings of the USA National Tsunami Warning and Mitigation Program.