



Assessment of Tsunami Hazard in Central America

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Tsunamis are not considered a major hazard in Central America, people are not aware of that risk and recent tsunami events recorded in the area have been forgotten. Despite this, recent studies have established that Central America is a moderately tsunamigenic zone and that is affected mainly by tsunamis triggered by earthquakes, especially at the Pacific coast where the middle American Trench runs parallel to the coast. The most recent event occurred on the 2nd of September 1992 offshore the Nicaraguan coast, the run-up values measured at that time varied between 2 and 6 metres. This event has led to several studies including the compilation of a tsunami catalogue for the region, some empirical, statistical and deterministic studies. In this study, a combination of statistic and deterministic approaches is followed in order to estimate the wave height values expected at the coast given an earthquake with magnitude and epicentral coordinates. The statistical approach estimates the probability of occurrence per year of earthquakes, then the number of expected tsunamis can be estimated, considering that tsunamis in the region are mainly triggered by earthquakes exceeding a threshold magnitude and with epicentres near the coast. The threshold magnitude value defined as an increasing function of the distance of the epicentre to the coast. The magnitude is used as input value in empirical relations in order to define the characteristics of the rupture mechanism, the seismic moment and the maximum dislocation of the seafloor. These values are used as initial conditions for the deterministic part of the study, which aims to estimate the wave height values expected at the coast. This procedure allows us to make an estimation of the minimum magnitude able to trigger a predefined threshold wave height at the coast, and when this value is associated to the number of earthquakes likely to occur per year, then the number of tsunamigenic earthquakes expected per year that could trigger tsunamis with wave heights exceeding the threshold value can be estimated.