



Probabilistic tsunami hazard assessment in Greece for seismic sources along the segmented Hellenic Arc

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Greece and adjacent coastal areas are characterized by a high population exposure to tsunami hazard. The Hellenic Arc is the most active geotectonic structure for the generation of earthquakes and tsunamis. We performed probabilistic tsunami hazard assessment for selected locations of Greek coastlines which are the forecasting points officially used in the tsunami warning operations by the Hellenic National Tsunami Warning Center and the NEAMTWS/IOC/UNESCO. In our analysis we considered seismic sources for tsunami generation along the western, central and eastern segments of the Hellenic Arc. We first created a synthetic catalog as long as 10,000 years for all the significant earthquakes with magnitudes in the range from 6.0 to 8.5, the real events being included in this catalog. For each event included in the synthetic catalog a tsunami was generated and propagated using Boussinesq model. The probability of occurrence for each event was determined by Gutenberg-Richter magnitude-frequency distribution. The results of our study are expressed as hazard curves and hazard maps. The hazard curves were obtained for the selected sites and present the annual probability of exceedance as a function of pick coastal tsunami amplitude. Hazard maps represent the distribution of peak coastal tsunami amplitudes corresponding to a fixed annual probability. In such forms our results can be easily compared to the ones obtained in other studies and further employed for the development of tsunami risk management plans. This research is a contribution to the EU-FP7 tsunami research project ASTARTE (Assessment, Strategy And Risk Reduction for Tsunamis in Europe), grant agreement no: 603839, 2013-10-30.