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-Based Tsunami Hazard Assessment for Karpathos Island, Southeastern Aegean Sea

Karpathos is the second largest of the Greek Dodecanese islands. Historical data indicate that this area is prone to earthquakes and tsunamis. In this study we evaluate the tsunami hazard for the Karpathos Island (Karpathos, Arkasa and the Airport) by means of a scenario-based technique. We take into account tsunamis generated by three seismic sources in agreement with local tectonics and historical records: one placed near Crete in the Eastern Hellenic Arc (EHA), with reference to the 1303 A.D., Mw=8.0 event), another near Rhodes (hypothetical scenario earthquake, Mw=7.3), and one near the coast of Karpathos, based on the 1948, Mw=7.3 earthquake. The code UBO-TSUFD, developed by the Tsunami Research Team from University of Bologna, is used for all numerical simulations. Tsunamis are computed in several domains with different resolution for a better calculation of the maximum coastal wave height and tsunami inundation. Tsunami parameters for each individual scenario are used to construct aggregated scenario, which help us to evaluate the buildings in the inundation zone. The contribution of all scenarios along the coast of Karpathos is studied via synthetic mareograms. It is found that seismic source EHA dominates and that the southern part of Karpathos is more exposed to tsunami.

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