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Parameters Affecting Accuracy of Tsunami Inundation Assessment; a case study for Antalya Coast Turkey

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Tsunami inundation and run-up are main reasons of costal impacts of tsunamis. There are numerous parameters which effect the inundation in spatial and temporal scale. Some of those reasons are size and rigidity of the structures, physical characteristics of ground materials, plantation, infrastructure, and bottom friction, in the nearshore and inundation area.

In this study, high resolution topography, covering stationary and rigid buildings and infrastructure, plantation and other natural areas at the inundation zone for Belek region (west of Antalya city which is one of the famous tourism destinations of Europe), is developed. Some of the tsunami sources are selected for the input of simulations. The modeling study is performed by using the hybrid model NAMI DANCE which solves depth averaged nonlinear shallow water equations in nested grid system by considering different equations sets in different domains even with dispersion term.

The database of coastal bathymetry and topography is generated by following processing of the data obtained from the available national and international data sources and digitized data of the study area. Tsunami simulations have been performed to find the temporal and spatial distributions of velocity and fluxes, inundation distance under tsunami. In the different simulations different parameters (such as rigidity, friction, dispersion, and nonlinearity) are used and their effect on the difference in inundation distance and nearshore tsunami parameters are compared and discussed.

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