



## **Development of a Tsunami Scenario Database for Marmara Sea**

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Due to the very short travel times in Marmara Sea, a Tsunami Early Warning System (TEWS) has to be strongly coupled with the earthquake early warning system and should be supported with a pre-computed tsunami scenario database to be queried in near real-time based on the initial earthquake parameters. To address this problem, 30 different composite earthquake scenarios with maximum credible Mw values based on 32 fault segments have been identified to produce a detailed scenario database for all possible earthquakes in the Marmara Sea with a tsunamigenic potential. The bathy/topo data of Marmara Sea was prepared using GEBCO and ASTER data, bathymetric measurements along Bosphorus, Istanbul and Dardanelle, Canakkale and the coastline digitized from satellite images. The coarser domain in 90m-grid size was divided into 11 sub-regions having 30m-grid size in order to increase the data resolution and precision of the calculation results. The analyses were performed in nested domains with numerical model NAMIDANCE using non-linear shallow water equations. In order to cover all the residential areas, industrial facilities and touristic locations, more than 1000 numerical gauge points were selected along the coasts of Marmara Sea, which are located at water depth of 5 to 10m in finer domain. The distributions of tsunami hydrodynamic parameters were investigated together with the change of water surface elevations, current velocities, momentum fluxes and other important parameters at the gauge points. This work is funded by the project MARsite - New Directions in Seismic Hazard assessment through Focused Earth Observation in the Marmara Supersite (FP7-ENV.2012 6.4-2, Grant 308417 - see NH2.3/GMPV7.4/SM7.7) and supported by SATREPS-MarDim Project (Earthquake and Tsunami Disaster Mitigation in the Marmara Region and Disaster Education in Turkey) and JICA (Japan International Cooperation Agency). The authors would like to acknowledge Ms. Basak Firat for her assistance in preparation of the database.