



Ground motion simulations in Marmara (Turkey) region from 3D finite difference method

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In the framework of the European project MARSite (2012-2016), one of the main contributions from our research team was to provide ground-motion simulations for the Marmara region from various earthquake source scenarios. We adopted a 3D finite difference code, taking into account the 3D structure around the Sea of Marmara (including the bathymetry) and the sea layer. We simulated two moderate earthquakes (about Mw4.5) and found that the 3D structure improves significantly the waveforms compared to the 1D layer model. Simulations were carried out for different earthquakes (moderate point sources and large finite sources) in order to provide shake maps (Aochi and Ulrich, BSSA, 2015), to study the variability of ground-motion parameters (Douglas & Aochi, BSSA, 2016) as well as to provide synthetic seismograms for the blind inversion tests (Diao et al., GJI, 2016). The results are also planned to be integrated in broadband ground-motion simulations, tsunamis generation and simulations of triggered landslides (in progress by different partners). The simulations are freely shared among the partners via the internet and the visualization of the results is diffused on the project's homepage. All these simulations should be seen as a reference for this region, as they are based on the latest knowledge that obtained during the MARSite project, although their refinement and validation of the model parameters and the simulations are a continuing research task relying on continuing observations. The numerical code used, the models and the simulations are available on demand.