



Tsunami modeling of the 20th July 2017 Mw 6.6 earthquake in the Aegean Sea

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Western Turkey which includes a part of the East Aegean Sea is located at the boundary of the African and European plates where subduction, collision and extensional processes are going on. The active seismicity of the area is moderate with small and intermediate earthquakes of magnitude rarely greater than 6. The 20th of July 2017 a M6.6 earthquake occurred in the rift zone of the Gulf of Gokova, 100km away from the cities of Kos and Bodrum. A tsunami was generated and impacted the coasts of Turkey and Kos Island, with reported waves of up to 1.5 to 2 meters and floods and damages in many harbors. Two fault models in agreement with the rift geometry and the actual known faults are possible: a fault dipping to the South favored by GPS and waveform inversion models and a fault dipping to the North favored by GPS and INSAR inversion models. Several tsunami simulations were performed to constrain the source and to solve this fault plane ambiguity, by comparing the modeling results with the field survey data and the available tide gage record of Bodrum harbor. The Turkish coast and Kos Island have complex geometries with numerous gulfs and bays. To obtain accurate simulation results, two grids of 5 meters resolution of Kos and Bodrum harbors were built in addition to a 10 meters resolution grid kindly provided by the Turkish research team. The resulting water elevation maps present coherent 1 to 2 meters waves at proper places depending on the sources. By comparing those maps to the survey maps, we try to discriminate the source parameters. For instance, the tsunami simulations favor the North dipping fault. So far, the high sensitivity of the tsunami propagation and the complexity of the coastline do not allow solving clearly the plane ambiguity. Further studies including finer bathymetric data and other high resolution grids may help to improve the results.