



Characterization of Earthquake Source Parameters for Deterministic Tsunami Hazard Modeling in the Eastern Mediterranean and its Connected Seas

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Accurate earthquake source parameters are essential for any tsunami hazard assessment and mitigation, including early warning systems. Complex tectonic setting makes the a priori accurate assumptions of earthquake source parameters difficult and characterization of the faulting type is a challenge. Information on tsunamigenic sources is of crucial importance in the Eastern Mediterranean and its Connected Seas, especially considering the short arrival times and lack of offshore sea-level measurements. In addition, the scientific community have had to abandon the paradigm of a “maximum earthquake” predictable from simple tectonic parameters (Ruff and Kanamori, 1980) in the wake of the 2004 Sumatra event (Okal, 2010) and one of the lessons learnt from the 2011 Tohoku event was that tsunami hazard maps may need to be prepared for infrequent gigantic earthquakes as well as more frequent smaller-sized earthquakes (Satake, 2011). As an attempt address the challenges described above, an extensive modeling study is being initiated at KOERI to produce a Tsunami Hazard Map for the Eastern Mediterranean and its Connected Seas. The goal of this initiative is to concentrate on regions where previously such hazard assessments were not made. In this study, characteristic earthquake source parameters strike, dip, rake, depth, $M_w(\max)$ at each $310\ 0.5^\circ \times 0.5^\circ$ size bin at 0-40 km depth and $92\ 0.5^\circ \times 0.5^\circ$ size bin at 40-100 km depth derived from the harmonization of the existing database and previous studies will be presented. Some examples produced from the tsunami scenarios at each bin for the range of 6.5 – $M_w(\max)$ with 0.1 M_w increment will also be presented.