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Focal Mechanisms at the convergent plate boundary in Southern Aegean, Greece.

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Greece is characterized by high seismicity, mainly due to the collision between the European and the African lithospheric plates and the dextral strike slip motion along the North Anatolia Fault zone and North Aegean Trough. The subduction of the Eastern Mediterranean oceanic plate along the Hellenic Arc under the Aegean microplate along with the accompanied roll back of the descending slab is considered the main tectonic feature of the region (Papazachos and Comninakis 1971; Makropoulos and Burton 1984; Papazachos et al. 2000a, b). The divergent motion between the Aegean block and mainland Europe is indicated by an extension zone in the northern Aegean, with Crete and Aegean diverging from mainland Europe at a rate of about 3.5 cm yr-1 with Africa moving northward relative to Europe at a rate of about 1 cm yr-1 (Dewey et al., 1989; Papazachos et al., 1998; Mc-Clusky et al., 2000; Reilinger et al., 2006). In this tectonically complicated area diverge types of deformation are manifested, in addition to the dominant subduction processes. Aiming to shed more light in the seismotectonic properties and faulting seismological data from the Hellenic Unified Seismological Network (HUSN) were selected and analyzed for determining focal mechanisms using the method of moment tensor inversion, additional to the ones being available from the routine moment tensor solutions and several publications. Thus, 31 new fault plane solutions for events with magnitude M>4.0, are presented in this study, by using the software of Ammon (Randall et al., 1995). For this scope the data from at least 4 stations were used with an adequate azimuthal coverage and with an epicentral distance not more than 350 km. The preparation of the data includes the deconvolution of instruments response, then the velocity was integrated to displacement and finally the horizontal components were rotated to radial and transverse. Following, the signal was inverted using the reflectivity method of Kennett (1983) as implemented by Randall (1994) in order to determine Green's functions. Initially, iterative inversions were performed considering a crude depth interval of 5 km and the relative misfit functions were computed. In a second stage, inversions were performed considering a finer depth interval of 1–2 km around the depth where the lowest misfit was exhibited. During the analysis different velocity models were used (Karagianni et al., 2005; Novotny et al., 2001; Papazachos et al., 1997).

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