



Active and passive seismic observations and their implication in seismic hazard assessment in the north Evoikos basin, central Greece

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In the late 90's, an active seismic survey was carried out in the north Evoikos basin, central Greece. The sediments and crustal structure were mapped by observing one 120 Km long NW-SE oriented profile, using 14 ocean bottom seismographs along the major axis of the basin, and 10 land stations at each onshore end of the profile. A passive seismic study was later accomplished by operating a combined on/offshore seismic array, consisting of 7 ocean bottom seismographs and 23 land stations, for a period of four months.

Alignments of the recorded microseismicity are well correlated with tectonic faults mapped by the active seismic experiment. The combination of active and passive observations enabled us to delineate the active faults and their geometric characteristics. Thus, a new seismogenic source model is proposed for the area around the north Evoikos basin and its link to the Sporades basin to the east and central Greece to the west.

The assessment of the regional seismic hazard is obtained by using the hypothesis of tectonic lines supported by seismicity evidence. The model has the advantage of recognizing rupture length as the most significant parameter in seismic hazard assessment. Probabilistic uncertainties in the location of the rupture zone on the fault, in the maximum possible magnitude, and in the expected ground motion are accounted for explicitly. The results of the analysis are given in terms of maximum expected ground acceleration at a base rock level for different return periods.