



Seismicity and the Crustal Structure in Turkey

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Turkey and adjacent areas which is located in the Alpine-Himalayan orogenic belt suffer from active seismicity for many years. The number of recorded earthquakes in the area increase day by day with the improvement of the seismic networks operated in the area. A well defined crustal (velocity-depth) model is one of the most important parameters in the process and the location of earthquake data. Three largest networks of Turkey are operated by Kandilli Observatory and Earthquake Research Institute (KOERI), Prime Ministry Disaster and Emergency Management Presidency (AFAD) and TÜBİTAK Marmara Research Center (MRC). In this study an integrated homogeneous earthquake catalogue is obtained by combining the catalogues of these three agencies operating seismic networks in Turkey. Approximately 120.000 earthquakes in five years between 2008 and 2013 recorded by more than 400 broadband stations, belonging to the networks of KOERI, AFAD and MRC in the area are combined and relocated. Integrated homogeneous earthquake catalogue obtained in the frame of this study from the combination of three different catalogues are used not only for a better understanding and interpretation of the active tectonics and seismicity in the area, but also for obtaining the regional one dimensional (1-D) P and S wave velocity-depth models on a variety of different regional crustal structures in Turkey. Determination of the detailed crustal structure on different lithospheric fragments and the relocation of earthquakes by using these new models will improve the knowledge on the seismicity and the distribution of earthquake clusters together with a better understanding of the correlation of these earthquake locations with the existing active faults. The results of the study will also serve as an input for later studies for the determination of three dimensional (3-D) Vp and Vp/Vs models in the area.