

CRUST STRUCTURE INVESTIGATION OF NORTH-WEST ANATOLIA WITH MAGNETOTELLURIC DATA COLLECTED ALONG TWO PARALLEL LINES BY THE HELP OF GRAVITY, MAGNETIC AND SEISMOLOGICAL DATA

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We have collected Magnetotelluric (MT) and Gravity data along two 300-km-long parallel lines in south-north direction in north-west of the Anatolia, Turkey in 2007 under the TÜBİTAK project, “N-W Anatolia Crust Structure investigation by using Geophysical Methods (NW_Anatolia_CSGM)”. Station intervals are approximately 3 km for MT and 0.5 km for gravity data. MT data were collected from 83 and 89 stations along Line-1 and Line-2. After Groom-Bailey decomposition analysis, static shift correction was made from each MT apparent resistivity curves by using transient electromagnetic data collected from each MT stations along two measurement lines. These two lines are 50-km separated and both are crossing the main geological units from North to South; İstanbul zone, Intra-Pontide suture zone, Sakarya continent, İzmir-Ankara-Erzincan suture zone, Anatolid Torid Block, in addition, North Anatolian Fault Zone, Eskişehir Fault and some Neogene’s basins in the investigated area. The MT data set (apparent resistivity and impedance phase for TE- and TM-mode and tipper) are inverted by using 2D regularized inversion with smoothing stabilizer for two parallel lines. The main suture zones and continents boundaries and main fault systems and their depth extend can be interpreted from the both estimated models. The depth of the upper and lower crust can also be acquired from the inverted resistivity models. 2D density models are also constructed along the same parallel lines by the help of the 2D resistivity model from the gravity data. These models are also supports the resistivity models. The high Bouguer gravity values are correlated with suture zones. We also showed earthquake epicenters that occurred close to the measurement lines on the resistivity models. These data also shows the location of the main fault zones.

NW Anatolia, magnetotelluric, crust

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