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Magnetic sources in sedimentation of Thrace Basin and its around (NW Turkey) and their tectonic implications

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In NW Turkey, major geologic structures are the sedimentary Thrace Basin, the adjacent Istranca Massif in the north and the complex pull-apart Marmara Sea Basin in the south. The Kı rklareli Fault Zone forms the boundary between the Istranca massif and the Thrace basin. Aeromagnetic analyses have been conducted in the Thrace Basin and its around, in order to have look into subsurface causative bodies and magnetized structures in the region independent of surface cover. The aeromagnetic field over the study region is relatively quiescent except for a few anomalies in the northeastern and southwestern areas. For this purpose, power spectra, residual and pseudo-gravimetric anomalies were produced using geophysical methods. Processing of the data was carried out using the FFTFIL program from USGS. A linear trend was removed from the total field aeromagnetic anomalies to isolate near surface effect. The correlation with surface geology and aeromagnetic anomalies gives an indication of the magnetic material of the causative body. The residual aeromagnetic anomalies mostly oriented from the N-S direction implying the presence of remanent magnetization. The maxima of the horizontal gradient of the aeromagnetic data are calculated. The distribution of magnetic sources in the study region is clearly brought out in the Boundary circles map. Major extensive SE-NW and E-W trending faults are identified which are coincide with the strands of Kı rklareli Fault Zone and the Saros section of North Anatolian Fault Zone, respectively. Based on the magnetic data, the thickness of the magnetized crust in the study area lies between on 10 to 20 km. While shallow Curie point depths are characterized by Istranca Massif and Saros Gulf area, deep depths are characterized by Thrace Basin of thick sediments ca. 6 km. At this situation contradict some previous heat-flow researches. It might be expected to the thick sediments may pre-

vent to reach heat at surface. Then, a NE-SW profile, ca. 200 km in length, crossed the boundary between a metamorphic mass called the Istranca Massif in the north, Tertiary sedimentary basin called the Thrace Basin in the middle, and the Marmara Sea Basin in the south. This profile reflects the magnetized crust at depths.