



Curie point depth of inner East Anatolia (Turkey)

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The residual aeromagnetic and gravity anomalies of the inner East Anatolia, surveyed by the Mineral Research and Exploration (MTA) of Turkey, display complexities. Residual aeromagnetic anomalies appear to be correlated with topography. To remove effects of topography, aeromagnetic anomalies were low-pass filtered. Curie point depth map was produced using the low-pass filtered aeromagnetic anomalies in the inner East Anatolia, displays rather deep Curie level which may not be feasible in terms of geothermal energy potential of the region. Such estimates can be indicative of temperatures in the crust; because magnetic minerals lose their spontaneous magnetization at the Curie temperature of the dominant magnetic minerals in the rocks. The depth to the tops and centroid of the magnetic anomalies were calculated by azimuthally averaged power spectrum method for the whole area. The Curie point depths of the inner East Anatolia vary from 14.1 km and 22.6 km. The tectonic units of inner East Anatolia are composed of Sivas-Kangal Basin, Tauride Belt, Kirsehir-Nigde massif, ophiolitic and plutonic rocks. Although the studied area tectonically is active region, geothermal resources are very limited. Information obtained from CPDs can provide information about the geothermal resources and tectonic settings.

Sharma *et al.* (2005) suggested an empirical method for high heated areas, not only heat flow, but using Pn wave velocity. Values of heat flow were calculated according to Curie point depths using empirical formulae. The highest value of heat flow (105.9 mWm^{-2}) is around the shallowest Curie point depths. Pn wave velocities were calculated as averagely 7.8 km s^{-1} using inverse relationship between heat flow and Pn wave velocity with the empirical formulae. Pn velocities of the region are in line with a previous study. Heat flow values are incorporated with surface heat flow values. Aeromagnetic anomalies in the inner East Anatolia have been utilized to produce

Curie point depth (CPD) map. The data and their regional interpretations will lead to better reconnaissance of this active tectonic area.