

TECTONIC INTERPRETATION OF AEROMAGNETIC ANOMALIES OF TURKEY

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In this presentation, an interpretation of the aeromagnetic anomalies of Turkey will be discussed. Aeromagnetic data acquired by the General Directorate of Mineral Research and Exploration of Turkey (MTA) is used in this study. Sensitivity of these data are suitable for regional studies. The International Geomagnetic Reference Field (IGRF) correction and advanced geophysical data processing methods were applied, and then data were gridded with 5x5 km intervals. Initially, aeromagnetic anomalies were upward continued to be at 2, 3, 5 and 7 km heights (including flight altitude). This application suppressed near surface effects and revealed that the 3 km upward continued aeromagnetic anomaly map is the most convenient map to reflect the deep-seated structures in Anatolia. Then, Reduction to the Pole (RTP) method was applied to the 3 km upward continued anomalies. Hence, it was observed that polarities of the most anomalies were aligned along the North-South direction. It is thought that the remanent magnetization is not existent in the west and the centre of Anatolia, in contrast to the east where polarities of the most anomalies are different from the north-south direction by the presence of strong remanent magnetization. In order to delineate the boundaries of the causative structures, Analytical Signal (AS) method was applied on the aeromagnetic anomalies. A sinuous boundary in the south of Turkey is apparent in the AS map which can be evaluated as suture zone between the Anatolides and non-magnetic African/Arabian Plate. Several important anomalies became more visible after AS transformation in Anatolia. These are, from west to east, the Suluklu-Cihanbeyli-Goloren (SCGA), Konya (KA), Cappadocian Volcanic Complex (CVCA) and Van Lake (VLA) magnetic anomalies. The East Anatolian Contractional Province Anomalies (EACPA) are intensively gathered in the East Anatolia where intensive earthquake activities are also observed. Magnetic anomalies in the NW of Turkey can be related to the North Anatolian Fault (NAF). However, there is no simple relation between the earthquake data and the magnetic anomalies. In conclusion, we suggest that the properties of aeromagnetic anomalies of Turkey were shaped during the palaeosuture occurrence, except north-west Turkey.

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