

P10-3**ROTATION OF ALMACIK BLOCK NORTH-WEST TURKEY
OBTAINED FROM CORRELATION OF GRAVITY AND
AEROMAGNETIC ANOMALIES****MURAT BEYHAN¹, FUNDA BILIM², ABDULLAH ATES², AYDIN BUYUKSARAC²
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North Anatolian Fault (NFA) is an active fault and almost crosses all over Turkey's north. Movements of this fault causes stress and strain in its around. This fault has branches between Adapazari and Bolu towns. Thus, NAF represents a complicated fault plane movements and shattered formations in and around the aforementioned region. Mafic rocks outcrop in this area and these rocks have magnetization and cause anomalies. Magnetic anomalies caused by these rocks were modelled by Uhrenbacher (1989); Buyuksarac et al. (1998) in three-dimensions to form a natural geomagnetic stress sensor in order to monitor and predict earthquakes. Saribudak et al. (1990) proposed a clockwise rotation of the Almacik flake (block in between the branches of the NAF in Adapazari and Bolu) from their palaeomagnetic work. Regional gravity and aeromagnetic anomalies of Turkey (Ates et al. 1999) show strong gravity gradient along E-W direction and a local positive aeromagnetic anomaly, respectively.

1/500.000 scale gravity anomaly map of Turkey, Zonguldak sheet shows a local positive gravity anomaly through the north east of Dokurcun. Apex of the anomaly almost coincides with Bektemurlar village. It is thought that mafic rocks of the Almacik block cause the gravity anomalies. Analogue gravity anomalies were digitized using a digitizer in an area of 40×40 km and then the gravity anomalies were regenerated by a computer. Aeromagnetic anomaly map of an area same as gravity map was also obtained from MTA in an analogue form shows anomalies through the north east of Dokurcun. A aeromagnetic anomalies same as the gravity anomalies were transferred to a computer

The shapes and locations of gravity and aeromagnetic anomalies and their geological significance suggest that the same source may appear to be the causative body. Thus, a correlation in between the gravity and aeromagnetic anomalies may be established and existence of remanent magnetization could be monitored. A computer program, which was developed by Bilim and Ates (1999), was applied to estimate the source body magnetization direction. Their method searches for maximum correlation in between the gravity and pseudogravity anomalies of ranges of varying magnetization angles. Maximum correlation was obtained at 0° and +45° inclination and declination angles, respectively.

Results: 0° inclination angle seems to be an upward tilt of the fault block or tilt of the Almacik block in the north. +45° declination angle suggests clockwise rotation of the Almacik block.

References

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