

5.9 DETERMINATION OF DEEP-SEATED FAULTS USING GRAVITY AND MAGNETIC METHODS: PRELIMINARY RESULTS FROM NORTH ADIYAMAN, SOUTHEASTERN TURKIYE

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ABSTRACT

Gravity and magnetic methods are among the geophysical methods used to determine specifically geological structures at depth. It is possible to clarify the zones of depression and/or uplift, shallow and deep mass distributions, sediment thickness of basins, and the location, distribution and characteristics of deep faults using gravity-magnetic methods. The study area is represented by widespread faulting along the Southeastern Anatolian Orogeny. The topography shows significant changes over short distances, and the exhumed faults are mainly characterized by reverse/thrust faults, together with a minority of relatively younger strike-slip faulting. With over 3000 gravity and magnetic measurements obtained from the area, fault traces cutting the lithological units were detected at depth. Fault traces observed at -1000, -2000 and -3000 from sea level, striking predominantly to the NE-SW and NW-SE. A small number of fault traces strike in an approximately E-W direction. Our preliminary investigations reveal that the fault traces we identified at depth using gravity and magnetic methods can be correlated with the surface faults observed in the study area.

KEYWORDS: Gravity-Magnetic method, Derivation, Downward extension, Analytical signal, Fault, Southeastern Anatolia