



Kinematic Evolution of Late Cretaceous-Miocene Central Anatolian basins (Turkey) based on Anisotropy of Magnetic Susceptibility and Balanced Cross-Sections

Murat Özkaptan (1), Erhan Gülyüz (2), Nuretdin Kaymakçı (3), and Cor Langereis (4)

(1) Karadeniz Technical University, Geophysical Eng., TRABZON, Turkey (ozkaptan@ktu.edu.tr), (2) Van Yüzüncüyıl University, Department of Geological Engineering, TR-65080 Van, Turkey (erhangulyuz@yyu.edu.tr), (3) Middle East Technical University, Department of Geological Engineering, TR-06800 Ankara, Turkey (kaymakci@metu.edu.tr), (4) Utrecht University, Fort Hoofddijk Paleomagnetic Laboratory, 3584-CD Utrecht, the Netherlands (c.g.langereis@uu.nl)

The central Anatolia is comprises successor basins developed at the terminal phase of closure of Neotethys and collision of intervening continental fragments belonging to Gondwana (at the south) and Eurasia (at the north) along Izmir-Ankara-Erzincan Suture zone. The Intra-Tauride Suture Zone (ITSZ), however, developed between Gondwana derived that include Tauride and Kırşehir Blocks. These two sutures meet around the Haymana and Tuzgözü basins and gave way to complex evolution of associated Central Anatolian basins.

In order to understand the deformation history of these basins we have conducted a comprehensive kinematic study that include determination of Anisotropic Magnetic Susceptibility (AMS) vectors of their Late Cretaceous to Recent infill. For this purpose more than 3000 samples from 112 sites were measured and analyzed. AMS as a paleomagnetic tool is very successful in determination of principal strain directions in low to moderately deformed sedimentary successions. The obtained results are compared with balanced cross-sections constructed from field and seismic data. The results indicate that the AMS vectors are highly correlated with the major structural trends in the basins indicating that the AMS is acquired during the deformation of the infill of these basins during Oligocene and onwards.

This research was partly supported by National Science Foundation grants EAR-1109762, “Continental Dynamics: Central Anatolian Tectonics” (CD-CAT) to Donna Whitney and Christian Teyssier.