

## **Constraining deformation history and recent activity along the Tuz Golu fault zone, central Anatolia, Turkey: Implications for uplift of the Central Anatolian Plateau**

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The 200 km-long, northwest-striking Tuz Golu fault zone is located in Central Anatolia, Turkey, along the eastern margin of the Late Maastrichtian Tuz Golu basin. It is a highly significant structure in that it lies within the transition zone between the Western Anatolian Extensional Province and the Eastern Anatolian Contractual Province, and offers insights into how this region is affected by microplate extrusion originating in the east and gravitational pull forces associated with Aegean subduction in the west. Proposals for the formation of the Tuz Golu fault zone range from Late Cretaceous to Neogene as an extensional structure. However, the fault system has undergone multiple episodes of inversion and reactivation since this time. In this study, we use a combination of paleostress, morpho-tectonic, and strain analysis to further delineate the geologic history and evolution of the Tuz Golu fault zone. Paleostress and strain analysis offer insight into the deformation history of the region as well as the modern-day stress regime. Two principal phases of deformation are delineated through our paleostress analysis – pre-Upper Miocene compression and Late Miocene to Quaternary extension, supporting a regional changeover from compression to extension in Anatolia during the Late Miocene. Additionally, we conducted a morphometric analysis of over 300 drainage basins along the range-front, which suggest migration of deformation into the basin interior, which may be related to lithospheric-scale processes such as uplift of the Central Anatolian Plateau or the onset of crustal thinning associated with slab-tear propagation in the subducting African lithosphere. Application of these techniques provides greater insight into plateau growth and development, as well as the surface expressions associated with processes such as lithospheric thinning and slab tearing or breakoff.