

Preliminary Data about Vertical Deformation of the eastern part of the Anatolian Scholle: Insight from Pülümür River Terraces

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The northward motion of the African and Arabian plates relative to Eurasia and westward motion of the Anatolian scholle (An) have a key role in understanding of the eastern Mediterranean tectonics setting. The North and East Anatolian Shear Zones (NASZ and EASZ) present the main deformation zones of westward extrusion of the Anatolia whereas the NW-striking dextral and the NE-striking sinistral faults represent the remarkable intra-plate deformation within the An. In contrast to the earlier hypothesis, recent geologic and geodetic studies and micro seismic activity strongly suggests that internal deformation of the An is a continuous process. Some of these strike-slip faults, such as Tuzgözü Fault, Ecemiş Fault and Malatya-Ovacık Fault Zone (MOFZ), have long been documented in terms of the kinematic evolution, slip-rate and paleoseismic activity but there is no or very limited knowledge on the uplift characteristics of the An. In this study, we focused on more complex region of the An, which is delimited by the NASZ at north, the EASZ at southeast, the MOFZ at west and the Nazmiye Fault Zone (NFZ) at south. We present data on the distribution of geologic and morphologic structures by using satellite images, aerial stereo pairs, digital elevation models (DEM) with 10 m ground pixel resolution and extensive field observations in this region, particularly along the NFZ that has two sub-parallel segments. The horizontal deformation along the NFZ, within the eastern part of the An, represented by 20 m to 10 km horizontal displacements. The spatial distribution of terraces of the Pülümür River that is one of the biggest drainage systems of the region is a clear morphologic indicator of the vertical deformation of the eastern An. The Pülümür River incised into Paleozoic metamorphic basement at the north and Eocene volcanoclastic at the south. We mapped three terrace levels (T1-T3) in the V-shaped Pülümür River valley that has about 5 km offset along the both segments of the NSZ. The highest terrace (T3) level at 60 to 150 m above the both side of the current river are important morphologic indicator of the active tectonic related base level change in the region. The abandonment ages of the terrace levels and the long-term incision rate of the Pülümür River as a proxy for the rock uplift will calculate based on ongoing isochron-burial dating with cosmogenic ^{10}Be and ^{26}Al . Our observations strongly suggest that the internal deformation of the eastern An is characterized by not only lateral but also important amount of vertical uplift. This study is supported by TÜBİTAK project no: 115Y684.