Geophysical Research Abstracts
Vol. 18, EGU2016-2452, 2016
EGU General Assembly 2016

Preliminary investigation on the deformation rates of the Nazimiye Fault (Eastern Turkey)

Taylan Sançar
Tunceli Üniversitesi, Mühendislik Fak., Jeoloji Müh. Bölümü 62000 Tunceli, Turkey

The complex tectonic setting of the eastern Mediterranean is mainly shaped by the interaction between three major plates, Eurasian, African, and Arabian plates, with additional involvement from the smaller Anatolian Scholle. The internal deformation of the Anatolian Scholle is mainly accommodated along NW-striking dextral and NE-striking sinistral faults, which are explained by the Prandtl Cell model by Şengör (1979). Although some of these strike-slip faults, such as Tuzgölü, Ecemiş and Malatya-Ovacık faults, have long been documented, the Nazimiye Fault (NF) is only presented in very recent studies (Kara et al. 2013; Emre et al. 2012).
The aim of the study is to understand intra-plate deformation of the Anatolian Scholle, by studying the morpho-tectonic structures along the NF. The study area located close to the eastern boundary of Anatolia, roughly on the wedge that is delimited by the North and East Anatolian shear zones and the Malatya-Ovacık Fault Zone. After the preliminary remote sensing analyses and field observations, I mapped the locations of the different terrace treads along the Pülümür River, which is strongly deflected by the activity of the NF. This dextral strike-slip fault, is not only characterized with the deformation of the Pülümür River, but also it shows many beheaded streams, pressure ridges, hot springs and travertines along its course. I sampled one of the alluvial fans for cosmogenic dating at the eastern section of the NF, where about 20 m of dextral offset was measured at the margins of the incised stream. Moreover, additional sampling was performed from different terrace levels along the Pülümür River, in order not only to estimate the min. horizontal rate, but also to quantify the vertical deformation. Moreover, I applied morphometric indices to understand the tectonic control on the local morphology along the NF. Transverse Topographic Symmetry Factor was used to show the relative degree of tectonic activity along the fault-bounded mountain fronts. In addition to that I also extracted hypsometric curves, hypsometric integrals and stream length gradient index to understand the relationship between characteristics of the drainage basins and tectonic activity. As preliminary results, I conclude that the southern segment of the NF is tectonically quiescent, whereas the deformation is mainly accommodated on the northern branch.

References

Emre, Ö., Duman, T.Y., Kondo, H., Olgun, Ş., Özalp, S., Elmacı, H., 2012. 1:250.000 Ölçekli Türkiye Diri Fay Haritası Serisi, Erzincan (NJ37-3) Paftası, Seri No:44, Maden Tetkik ve Arama Genel Müdürlüğü, Ankara-Türkiye.

Kara, K., Sançar, T., Zabci, C., 2013. Morphologic and Morphotectonic Characteristics of the Nazimiye Fault Zone, Eastern Turkey. EGU2013-8105, EGU General Assembly Vienna, Austria.

Şengör, A.M.C., 1979. The North Anatolian transform fault; its age, offset and tectonic significance. Journal of the Geological Society of London 136, Part 3, 269-282.