Geophysical Research Abstracts
Vol. 14, EGU2012-4809, 2012
EGU General Assembly 2012

Investigation Of Active Faults In Antakya (Southeastern Turkey) And Its Surroundings

N. Lom (1), O. Tüysüz (1), S.C. Genç (2), U. Tarı (2), C. İmren (3), and Ö. Tekeşin (1)

(1) Eurasian Institute of Earth Sciences, Istanbul Technical University, 34469, Istanbul, Turkey, lom@itu.edu.tr, (2) Department of Geological Engineering, Istanbul Technical University, 34469, Istanbul, Turkey, (3) Department of Geophysical Engineering, Istanbul Technical University, 34469, Istanbul, Turkey

Antakya region, southeastern Turkey, is located among the northern part of sinistral Dead Sea Fault Zone (DSFZ), southern part of the sinistral East Anatolian Fault Zone (EAFZ) and eastern continuation of the Cyprus Arc. This study aims to investigate the geometry, structure, and activity of faults between Antakya (Antioch) and Samandağ (Seleukeia Piereia). In this context, geological units were mapped in detail, structural measurements were made on fault zones, surface ruptures and Plio-Quaternary sediments. In addition, the faults were evaluated by using Ground Penetrating Radar (GPR) studies.

Geological evaluations have shown that there are two dominant fault systems in the NE-trending Hatay Graben; strike-slip and normal. High angle orientated normal faults are seen along the margins of Antakya-Samandağ depression and caused the opening of this graben. Sinistral faults that cut Pliocene and Quaternary units are seen within the Antakya-Samandağ depression and they are still seismically active. By using Ground Penetrating Radar measurements the faults buried under alluvial deposits were traced. Combining GPR data with published offshore seismic data indicate that sinistral active fault system extends towards the Cyprus Arc under the waters of Eastern Mediterranean. Although the Hatay region was affected by many destructive earthquakes during the historical period, only small and moderate (max. M=5.7) earthquakes occurred during the instrumental period. Field observations and seismicity interpretations indicate that Antakya-Samandağ fault system is not large enough to produce these large historical earthquakes.

Geophysical and geological data imply that the Hatay Graben developed as a branch of a triple junction between Dead Sea Fault Zone, East Anatolian Fault Zone and Cyprus Arc.