

Seismic behavior of the 1943 segment of the North Anatolian Fault, Turkey

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The North Anatolian Fault is well-known for its remarkable sequence of westward propagating earthquakes of magnitude greater than 7, which occurred between 1939 and 1999. The “Seismic Cycle” Marie Curie project funded by the European Commission focuses on characterizing its seismic behavior. We present here paleoseismological and geomorphological results obtained on the central part of the North Anatolian Fault affected by the 280 km long 1943 earthquake rupture.

Paleoseismic data integrates the two new paleoseismic sites at Destek, near Ladik Lake and at Elmacik near Kamil and Kargi with existing paleoseismic trenches at Ilgaz (Sugai *et al.*, 2003), Havza (Yoshioka *et al.*, 2000), and Alayurt (Hartleb *et al.*, 2003). The integrated data shows a very similar earthquake record in all these trenches separated by up to 240 km, clearly highlighting the lack a significant seismic barrier along the 1943 fault segment.

Geomorphological data from several sites near Kamil suggest non-characteristic slip along the 1943 segment of the North Anatolian Fault (Schwartz and Coppersmith, 1984). New offset measurements linked to 1943 earthquake confirm the small 1 to 2 m dextral slip already documented. However offset geomorphological markers, which age were constrained using radiocarbon dating, indicate that slip during the 1668 and 1050 earthquakes were very large reaching 8 to 10 m.

References:

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