



Fethiye-Burdur Fault Zone (SW Turkey): a myth?

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Fethiye Burdur Fault Zone (FBFZ) is first proposed by Dumont et al. (1979) as a sinistral strike-slip fault zone as the NE continuation of Pliny-Strabo trench in to the Anatolian Block. The fault zone supposed to accommodate at least 100 km sinistral displacement between the Menderes Massif and the Beydağları platform during the exhumation of the Menderes Massif, mainly during the late Miocene. Based on GPS velocities Barka and Reilinger (1997) proposed that the fault zone is still active and accommodates sinistral displacement.

In order to test the presence and to unravel its kinematics we have conducted a rigorous paleomagnetic study containing more than 3000 paleomagnetic samples collected from 88 locations and 11700 fault slip data collected from 198 locations distributed evenly all over SW Anatolia spanning from Middle Miocene to Late Pliocene.

The obtained rotation senses and amounts indicate slight (around 20°) counter-clockwise rotations distributed uniformly almost whole SW Anatolia and there is no change in the rotation senses and amounts on either side of the FBFZ implying no differential rotation within the zone. Additionally, the slickenside pitches and constructed paleostress configurations, along the so called FBFZ and also within the 300 km diameter of the proposed fault zone, indicated that almost all the faults, oriented parallel to subparallel to the zone, are normal in character. The fault slip measurements are also consistent with earthquake focal mechanisms suggesting active extension in the region. We have not encountered any significant strike-slip motion in the region to support presence and transcurrent nature of the FBFZ. On the contrary, the region is dominated by extensional deformation and strike-slip components are observed only on the NW-SE striking faults which are transfer faults that accommodated extension and normal motion. Therefore, we claim that the sinistral Fethiye Burdur Fault (Zone) is a myth and there is no tangible evidence to support the existence of such a strike-slip fault zone. The research for this paper is supported by TUBITAK - Grant Number 111Y239.

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