



Burdur-Fethiye Shear Zone (Eastern Mediterranean, SW Turkey)

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Burdur-Fethiye Shear Zone (BFSZ), which was named as Burdur-Fethiye Fault Zone (BFFZ) in the previous studies, is located in the southwestern Anatolia between the eastern Aegean extensional province, the Hellenic Arc and the Isparta Angle. This tectonic line is characterized by Middle Miocene-Quaternary NE-SW-trending faults and basins and its length is about 310 km from north to south while its width ranges from about 15 km in the west of Afyon-Çay to about 90 km in between Patara and Dalaman-İztuzu.

The Burdur-Fethiye Shear Zone (BFSZ) has been affected by three-phase tectonic evolution since Miocene. The uplift of the region began with a compressional regime in the Early Miocene and the alluvial fan sediments settled in the subsidence area between the mountains formed as a result of this uplift. During Middle-Late Miocene, the compression of the region inverted to a left-lateral oblique shear associated with the Isparta Angle and the fluvial sedimentation started in the inner part of the basins. In Late Miocene, the fluvial sedimentation gave way to lacustrine sedimentation. These lacustrine environments disappeared during Messinian salinity crisis. In the Pliocene, the erosion regime dominated the region and the uplifted Miocene-aged series started to erode. The red fluvial and alluvial fan deposits sedimented in the valleys and in front of the faults during this period. At the same period, the fault system inverted to a still-continuing left-lateral extensional shear system associated with the Hellenic Arc.

The mechanism of the Burdur-Fethiye Shear Zone can be explained by the relative movement of the blocks formed by several parallel faults. The width of the BFSZ is approximately 50 km. In consideration of the counterclockwise rotation of the structures along this zone and the effects of shear tectonism, it is seen that this is a wide fault zone being controlled by normal faults in a wide region instead of a narrow region like North Anatolian and East Anatolian fault zones. NE-SW-trending left-lateral, left-lateral oblique normal, approximately N-S-trending normal faults and small-scale faults measured in the basin fills indicate an active left-lateral shear regime. The main fold axis direction is NE-SW in the Miocene sediments of the region. This situation points the existence of a NW-SE compressional regime. Then left-lateral shear developed and the extensional regime affected in the Plio-Quaternary. The obtained data can explain the recent wide-area seismic activity. The main reason of the shear zone evolution is the ophiolitic melange located under the Miocene-Pliocene series. The basement of the study area is composed of Lycian Nappes. The presence of the limestone blocks in the melange along the large-scale faults and basin boundaries provide the identification of the fault planes on the rigid areas. In this context, the faults along the BFSZ form together a parallel, short echelon structure in a wide area instead of following each other along a long distance and this indicates a shear zone.