



Paleoseismicity of the eastern part of the Büyük Menderes Fault Zone, Western Turkey

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The Büyük Menderes fault zone is one of the main active tectonic structures of the Western Anatolia. The fault zone extends for a distance of 150 km between the Denizli basin in the east and the Aegean Sea in the west. The major boundary faults are located along the northern side of the graben and these normal fault geometric segments ruptured in the historical period and during the 20th century. For example, the 1653 and 1899 earthquakes involved surface ruptures along the northern boundary of the Menderes graben. The main trace of the fault zone is mapped in detail on the basis of morphological and geological evidence. In order to obtain stratigraphical evidences of past earthquakes a trench was opened east of Nazilli.

Trench study provided evidence for 4 historical earthquakes. Comparing trench data with historical earthquake records showed that these earthquakes occurred in 1653, around 10th, 6th and 3th century. On the basis of palaeoseismological evidence, it is suggested that the recurrence interval for surface faulting event is around 300-600 years on the Büyük Menderes Fault Zone. In addition, on the northern side of the trench we expose relatively older units which were cut by faults and the infill of the oldest fault was dated around 9397 ± 1605 BC. Thus it reveals that surface faulting events were occurred in a 30 m zone during the Holocene and similarities on offset amounts show characteristic surface rupture of the fault zone.

Key words: Büyük Menderes Fault Zone, historical earthquake, paleoseismology