



## **Palaeoseismological evidence for Holocene activity on the Manisa Fault Zone, Western Anatolia**

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Manisa Fault Zone (MFZ) is an active structural discontinuity that is geomorphologically expressed as a trace of north-facing Quaternary fault scarps bounding the southern margin of the Manisa basin which is subsidiary to the Gediz Graben. We note that the present-day fault trace is over 50 km long from Manisa city in the northwest to the Turgutlu town in the southeast. The MFZ consists of two major sections: (i) eastern section that strikes NW–SE direction in the south and bends into an approximately E–W direction around Manisa to the northwest, (ii) an approximately 10-km-long western section that strikes approximately WNW–ESE direction from Manisa city in the east to the Akgedik town in the west. In this study, we present the geologic, geomorphologic, and palaeoseismologic observations indicating Holocene activity on the western section of the fault zone. We identify that the MFZ, at its western end, consists of three fault segments which are en échelon arranged in left step; the fault segments show evidence for linkage and breaching at the relay ramps. One of them is named as the Manastir Fault. In front of this fault, two Holocene colluvial fans older of which is uncorformity bounded are cut and displaced by the syntethic faults. Palaeoseismologic data show that the syntethic fault segments correspond to the surface ruptures of the historical earthquakes. As a result of detailed stratigraphic, sedimentologic and structural observations on the trench walls, some evidences for at least two earthquakes are recorded which are supported by radio-carbon dating. Besides this, an archaic aqueduct that were used to transport water from Emlakdere town, located on the hanging wall of the Manastir Fault, to the basin is cut and displaced by the syntethic fault egments. It is known that this archaic architecture were in use after 11. century by the Ottomans. On the basis of the mentioned data, fault segments which are belong to the western part of the Manisa Fault Zone has been active since Holocene time as step-like structural geometries.

**Key words:** Manisa Fault Zone, active fault, palaeoseismology, Western Anatolia

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