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Preliminary Paleoseismological results of the Middle Strand of the North Anatolian Fault (NAF) in the Marmara Region, NW Turkey

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The North Anatolian Fault (NAF) forms the northern boundary of the westward moving Anatolian block, connecting the Aegean extensional regime with the East Anatolian high plateau. This strain is mainly localized along the single strand section of the NAF, except the Marmara Region in the west, where the fault zone bifurcates into three branches. The middle strand (MS-NAF) elongates between Geyve (Sakarya) in the east and Biga (Çanakkale) in the west about 400 km-long, with N70-80E strike around Geyve and İznik, almost E-W between Gemlik and Erdek mostly under the sea in the middle part and towards SW around Biga-Bayramiç. In general, the deformation zone becomes wider to the west along the MS-NAF.

In spite of its relative slow slip-rate, there are some recorded large and destructive historical earthquakes along the MS-NAF. Previous paleoseismological studies reveal some paleo-earthquakes, which are correlated to the 300 B.C., A.D. 1065, 1419, 1857, and 1867 events on different segments between Geyve and Gemlik. We perfomed a trench study (GEYVE-1; 40.4934N, 30.3270E) at ∼3km SE of Geyve to investigate earthquake history of the middle strand of NAF. Faulting is clearly characterized with an elongated ridge and a displaced north-flowing drainage system in this particular region. The joint analysis of stratigraphic and structural relations of the trench wall reveals two (or possible 3) paleoevents. The dating process of collected samples is still underway.