Active subaquatic fault segments in Lake Iznik along the middle strand of the North Anatolian Fault, NW Turkey

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Lake Iznik (NW Turkey), is bordered by the middle strand of the North Anatolian Fault (MNAF), whose seismic activity is debated because of its quiescence during the instrumental period. In contrast, significant historical activity is documented by several chronicles over the last two millennia.

This study aims to get a new insight into its long-term seismicity and its tectonic setting. Lacustrine sediment cores reveal fourteen earthquake-induced turbidites since their ages correspond to seismic events during the past two millennia. Bathymetry and high-resolution seismic reflection data allow describing two hitherto unknown subaquatic active fault structures (the South Boyalica and Iznik faults), belonging to the MNAF system. Sediment cores sampled on both sides of the Iznik Fault document an event deposit and a sedimentary unit vertically offset of ~40 cm interpreted as the last rupture during the 1065 CE destructive earthquake. Older events are supposed on this fault more than a thousand years ago. Further studies will help to estimate the horizontal coseismic offset of this oblique-slip fault and the calendar of older ruptures. The current seismic gap of thousand years on this segment greatly increases the seismic hazard in this region and must be considered in the seismic risk assessment of the NAF system.

Keywords: North Anatolian Fault, Lake sediment, Fault activity, Earthquake, Turbidite, Paleo-seismicity.

Merci de ne rien inscrire dans cette zone et ne pas modifier les marges des pieds de page et entêtes.