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**Title:** Sedimentary records of earthquake-induced increase in sediment influx from lake catchments

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### Abstract

Lacustrine paleoseismological records from three small and shallow lakes (Yeniçağa, Ladik and Boraboy) located on the North Anatolian Fault (Turkey) are investigated. The high-resolution multi-proxy sedimentological analyses, as well as the precise sediment chronologies, allowed us to understand the sedimentological consequences of historically known paleoearthquakes. Accordingly, clastic layer intercalations within highly organic-rich background sedimentation are attributed to be the result of seismic shaking, which may increase the sediment yield from the catchment by shattering the landscape and triggering landslides. This kind of sedimentary traces are quite rare in the lacustrine paleoseismology literature. Even if seismic shaking may increase the sediment yield from the catchment, the existence of sedimentary traces of this increase depends on the catchment size relative to the lake size, i.e. small lakes having large catchments are expected to better record the catchment response. In order to make an overall comparison within the literature, the ratios of catchment area to lake area for 51 lakes were determined. Accordingly, it is found that the ratios of catchment area to lake area for Yeniçağa, Ladik and Boraboy lakes (i.e., 73, 52 and 81, respectively) are distinguishably higher than the average of the lakes in the lacustrine paleoseismology literature, which is around 17.5.

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