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Title: Examples of Subaqueous Paleoseismological Techniques from Turkey and Iceland: With Special Emphasis on the Importance of Constructing Precise Sediment Chronologies

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Abstract

Subaqueous paleoseismological techniques have proved their potential to contribute to the paleoseismological investigations. Sedimentary records of past earthquakes have been mostly represented in lacustrine environments by multi-location coeval mass-wasting deposits and/or soft-sediment deformations. More recently, records of increased sediment influx due to seismically-triggered landslides in lake catchments have been explored by several researchers as well. The most commonly used argument in subaqueous paleoseismology is the temporal correlation between observed sedimentary events and historical earthquakes in the region. This requires precise and robust sediment chronologies, especially if the target is to evaluate earthquake recurrence. Here, we present lacustrine paleoseismological examples from the North Anatolian Fault (NAF, Turkey) and the Húsavík-Flatey Fault (HFF, Iceland). The examples from Turkey illustrate the application of regional time-stratigraphic correlations between proxy records to improve sediment chronologies. The sedimentary records of the lakes along the NAF were successfully correlated with the precisely dated cave deposits and varved lake sediments, which significantly improved the sediment chronologies. On the other hand, the investigations in Iceland benefit from the well-established tephrochronology in the region. Precise sediment chronologies do not only allow us to evaluate the long-term seismic behavior in a region (i.e., earthquake recurrence), but also to

improve our understanding of the consequences of earthquakes on lacustrine sedimentation.

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