



## **Lake sediment records as earthquake catalogues: A compilation from Swiss lakes – Limitations and possibilities**

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Intraplate settings are characterized by low deformation rates and recurrence intervals of strong earthquakes that often exceed the time span covered by instrumental records. Switzerland, as an example for such settings, shows a low instrumentally recorded seismicity, in contrast to strong earthquakes (e.g. 1356 Basel earthquake,  $M_w=6.6$  and 1601 Unterwalden earthquake,  $M_w=5.9$ ) mentioned in the historical archives. As such long recurrence rates do not allow for instrumental identification of earthquake sources of these strong events, and as intense geomorphologic alterations prevent preservation of surface expressions of faults, the knowledge of active faults is very limited.

Lake sediments are sensitive to seismic shaking and thus, can be used to extend the regional earthquake catalogue if the sedimentary deposits or deformation structures can be linked to an earthquake. Single lake records allow estimating local intensities of shaking while multiple lake records can furthermore be used to compare temporal and spatial distribution of earthquakes.

In this study, we compile a large dataset of dated sedimentary event deposits recorded in Swiss lakes available from peer-reviewed publications and unpublished master theses. We combine these data in order to detect large prehistoric regional earthquake events or periods of intense shaking that might have affected multiple lake settings. In a second step, using empirical seismic attenuation equations, we test if lake records can be used to reconstruct magnitudes and epicentres of identified earthquakes.