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New insights on large past earthquakes on the Raša Fault in NW Dinarides (Slovenia) revealed from multi-trench paleoseismic study

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The Raša Fault is a major right-lateral strike-slip structure in the northwestern Dinarides, representing a key active fault in a low- to moderate-strain region. Despite its prominent geomorphic expression and recognized hazard, its seismic history remains poorly constrained. To address this gap, we conducted a multi-trench paleoseismological investigation, including radiocarbon and luminescence dating, to characterize past surface-rupturing earthquakes and assess recurrence intervals of large-magnitude events previously unknown in the region. Our results reveal repeated strong earthquakes during the Late Pleistocene and Holocene, which based on worldwide empirical data likely exceeded magnitudes 6 or even 6.5. Although some age determinations are still in progress, preliminary results from four trenches indicate that at least five surface-rupturing events occurred in the last ~20,000 years, with several clustered in the past 6,000 years. Recurrence intervals vary widely, from a few hundred years to several millennia, reflecting both temporal clustering as well as locally incomplete stratigraphic records due to dynamic environment. These findings highlight the importance of multiple trench sites and extensive dating to resolve complex paleoseismic histories on faults in low- to moderate-strain regions. Our results also underscore the seismogenic potential of the Raša Fault and emphasize its relevance for regional seismic hazard assessment.