

EGU22-12062, updated on 05 Jul 2022

<https://doi.org/10.5194/egusphere-egu22-12062>

EGU General Assembly 2022

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## Quaternary Seismogenic Activity Along the Eastern Periadriatic Fault System: Dating of Fault Gouges via Trapped Charge Methods

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The Periadriatic Fault System (PAF) is one of the most important tectonic and geomorphological features in the Alps. It has accommodated between 150-300 km of right-lateral strike-slip motion between the European and Adriatic plates from about 35 Ma until 15 Ma. However, for such a large-scale feature, the eastern PAF reveals relatively little instrumental and historical seismic activity, especially when compared to nearby structures in the adjacent Southern Alps. With this project, we aim to show which fault segments of the eastern PAF system accommodated seismotectonic deformation in the Quaternary by applying trapped charge dating methods to fault gouges produced by its activity. We use optically stimulated luminescence (OSL) and electron spin resonance (ESR). The principle for both is the accumulation of unpaired electrons in lattice defects of quartz and feldspar, due to natural radiation product of the decay of radiogenic nuclides, which are then released during an earthquake due to shear heating allowing the system to reset (Fukuchi 1992, Aitken 1998, Tsukamoto et al., in Tanner 2019). Due to their dating range (a few decades to ~1Ma) and low closing temperature, trapped charge methods provide a unique opportunity to date earthquake activity during the Quaternary at near-surface conditions. During our field campaigns, we collected 19 fault gouge samples from 15 localities along the PAF, the Labot/Lavanttal fault, and the Šoštanj fault. From each locality, we controlled the structures found in the field, which allowed us to relate the observed deformation features in outcrop scale to the activity along each fault. Aside from the fault gouge in the cores of the large-scale structures at the sampled localities, we additionally found gouge and cataclasites formed within the host rocks in small-scale faults presenting the orientation of the respective regional fault, providing supplementary evidence of activity.