

## Project description

### Identifying fossil fault activity along the eastern Periadriatic Fault system by means of combined OSL- and ESR-dating of fault gouges (NE Italy, S Austria and N Slovenia)

We want to investigate the eastern Periadriatic Fault system (PAF) at the transition from the Eastern to the Southern Alps by means of combined optically stimulated luminescence (OSL) of feldspar and electron spin resonance (ESR) dating of quartz from fault gouges. The PAF can be traced along-strike the entire Alps and is one of its geomorphologically most important features. It has accommodated at least 150 km right lateral strike-slip motion between the European and the Adriatic plates. The eastern PAF reveals little instrumental seismic activity when compared to the southerly adjacent Southern Alps in Friuli and NW Slovenia. However, it has likely hosted strong historical earthquakes, such as the  $M_w$  7.1 event in 1348 and  $M_w$  6.5 event in 1690, with epicentres in southern Austria. Building on the fact that the intensity of the OSL and ESR signals in quartz and feldspar can become partially reset by frictional heating during seismogenic faulting, we intend to identify past seismic events by investigating natural fault gouges along the eastern PAF. This approach will help to unravel which faults have been seismically active throughout the Quaternary.

The project forms part of the DFG-funded Priority Program “[Mountain Building Processes in 4D](#)” as well as the international [AlpArray initiative](#) and will be jointly carried between the University Jena and the [Leibniz Institut für Angewandte Geophysik - LIAG](#) in Hannover. The PhD candidate will be expected to spend extended periods of time at both institutes.

## Principal investigators

Dr. Sumiko Tsukamoto, LIAG Hannover  
Prof. Dr. Kamil Ustaszewski, University Jena

[Sumiko.Tsukamoto@leibniz-liag.de](mailto:Sumiko.Tsukamoto@leibniz-liag.de)  
[kamil.u@uni-jena.de](mailto:kamil.u@uni-jena.de)

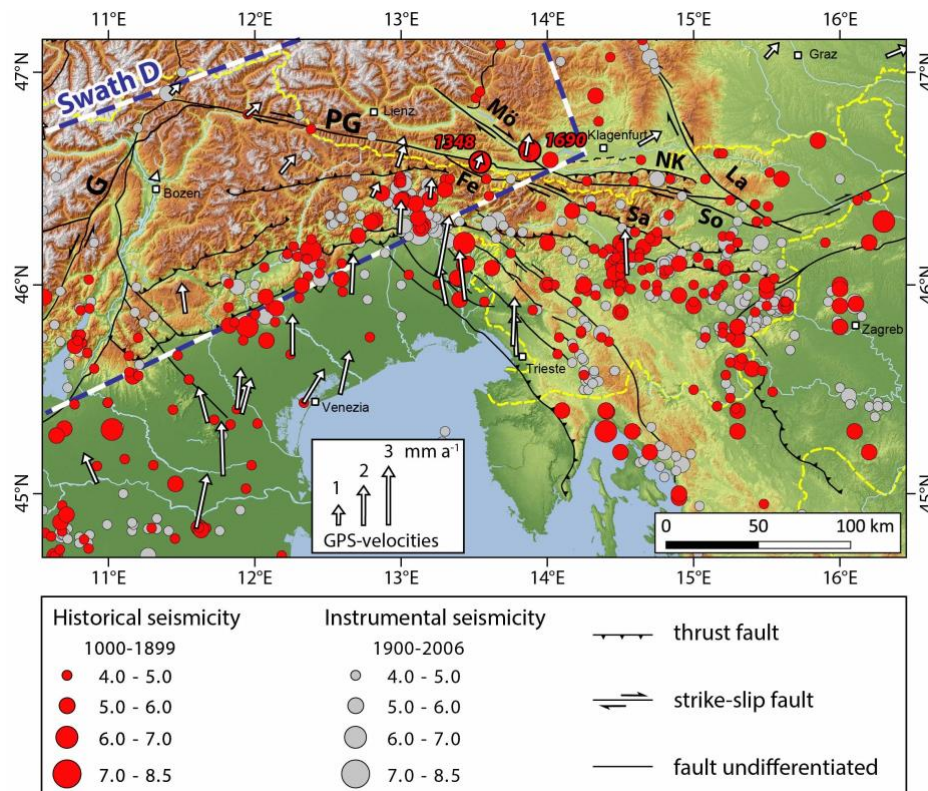


Fig. 1: Southeastern Alps and easterly adjacent Dinarides with epicentres of historical (red) and instrumental earthquakes (grey). GPS vectors with respect to stable Europe indicate 2-4  $\text{mm a}^{-1}$  convergence. Fault segments from NW to SE are: G = Giudicarie Fault, PG = Pustertal-Gailtal Fault, Fe = Fella Fault, Mö = Mölltal Fault, NK = North Karawanken Thrust, Sa = Sava Fault, La = Lavanttal Fault, So = Šoštanj Fault.