Geophysical Research Abstracts
Vol. 20, EGU2018-17866, 2018
EGU General Assembly 2018

Insights of Quaternary movement at the southern Diendorf Fault (Austria)

Esther Hintersberger (1), Kurt Decker (1), Eva-Maria Ranftl (1), Adrian Flores-Orozco (2), and Lukas Aigner (2)

(1) University of Vienna, Department of Geodynamics and Sedimentology, Vienna, Austria (esther.hintersberger@univie.ac.at), (2) Geophysics Research Group, Department of Geodesy and Geoinformation, TU Vienna, Austria

The Diendorf-Boskovice Fault System is a ca. 200 km long, approximately NE-SW trending fault system that forms the eastern margin of the Bohemian Massif in Austria. It extends towards Brno (CZ), where it is supposed to be kinematically linked to the Boskovice furrow. Showing a long-lasting and multiphase history, proofs of NE-SW-trending left-lateral strike-slip partly ductile, mylonitic shear zones during Carboniferous and Permian times are observed. In addition, insights show continuous transtensional left-lateral strike-slip faulting during Miocene.

A closer inspection along the length of the fault system shows segments of different geomorphic characteristics due to the long-lasting tectonic history of the Diendorf Fault System. In addition, earthquakes are observed mainly at the southern part of the Diendorf Fault System (DFS) close to and south of the River Danube, suggesting recent tectonic activity there. Here, we present a multi-parameter study based on geomorphological parameters, geophysical electrical imaging results and structural geological analysis, to investigate the structure and the activity level of the southern segment in greater detail. A clearly visible linear lineament influencing the course of the river running parallel to it and triangular facets on both sides of the valley indicate vertical movement. In addition, detailed electrical resistivity profiles across the fault reveal at least two fault strands displacing the valley-filling sediments. Moreover, the electrical resistivity images display clearly the contact between the shallow sedimentary materials and the deeper metamorphic rocks of the Bohemian Massif. These are clearly offset across the fault zone and can be used to quantify the vertical displacement. Therefore, by using the combined information from geophysical, geomorphic and earthquake data, we can indeed identify the segment of the DFS south of the Danube as recently active.