



The May 2018 earthquake swarm in Vogtland/NW-Bohemia: Spatiotemporal evolution and focal mechanism determinations

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Vogtland/NWBohemia, an area at the border between Germany and Czech Republic, is known as one of the most interesting earthquake swarm regions in Europe. This special type of seismicity is expressed by the accumulation of a huge number of events of similar magnitude and their episodic reoccurrence. During a swarm hundreds or thousands of earthquakes without a distinct main shock occur spatially and temporally clustered.

The most recent swarm of 2018 occurred between the 10th of May and the beginning of September with the main swarm activity in May. With more than 1000 located events and magnitudes up to 3.8 it is one of the most prominent swarms during the last decades. Due to the strength of the swarm and the increased number of stations in the Vogtland/NW-Bohemia region the swarm of 2018 offers various possibilities to investigate the peculiarities of swarms and the special seismotectonic situation of the Vogtland/NW-Bohemia region.

This study concentrates on the spatiotemporal evolution of the swarm and on the determination of earthquake focal mechanisms. We analyse the interevent times of the individual events as well as the magnitude frequency distribution. Focal mechanisms for all events with magnitudes $ML \geq 3.0$ have been calculated. The ensemble of focal mechanism is analysed with respect to variations within the swarm as well as changes with respect to the mechanisms of the former swarms. Most of the focal mechanisms represent strike slip mechanisms with a normal faulting component. The strike direction of one nodal plane (almost NS) reflects the strike of the Marianske Lazne fault zone and parallel striking fault systems. The focal mechanisms are used to invert for the regional stress field which then is compared to the stress field in Central Europe.