

# The seismically active Mt. Hochstaufen, Bad Reichenhall (Germany)

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For centuries, the Mt. Hochstaufen/Bad Reichenhall region in the Northern Alps has been affected by single earthquakes with magnitudes up to M3.2 or by irregular swarms. Most of the swarms occur during summer, often accompanied by strong precipitation, suggesting a direct correlation of seismicity and rainfall. A swarm in 2019 comprised many earthquakes with high magnitudes but a synchronous strong rain event is missing. Consequently, precipitation and tectonic background stress cannot be the sole explanation for the unusual high local seismicity. A trans-disciplinary study combining seismological analysis, meteorological and geodetic observations of the last years was proposed to identify the set of acting forces. Here, we present the first results of the seismological analyses and of the ground-based radar measurement performed at three measuring points surrounding Mt Hochstaufen. The relocation and clustering of earthquakes of the last decade, enables to distinguish between one-time occurrence of fault mechanisms limited to one swarm and faults reactivated with a distinct (yearly) periodicity. Beside a subsidence of the Bad Reichenhaller basin west of the Saalach river, the ground-based radar measurements show the opening of prominent fractures at both flanks of the mountain.