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## The STIMTEC experiment at the Reiche Zeche ULab

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Between early 2018 and late 2019 the STIMTEC hydraulic stimulation experiment was performed at ca. ~130 m below surface at the Reiche Zeche research mine in Freiberg, Saxony/Germany. The project aims at gaining insight into the creation and growth of fractures in anisotropic and heterogeneous crystalline rock units, to develop and optimise hydraulic stimulation techniques and to control the associated induced seismicity under in situ conditions at the mine-scale. These aspects of failure and associated seismicity are important for the development of enhanced geothermal energy systems. We present the infrastructure developed for the STIMTEC experiment and provide an overview of the obtained data, including 295 m of core material retrieved from 17 boreholes, 225 m of acoustic TV log, >50 TB of continuous passive seismic data from four field stimulation and hydraulic testing campaigns, as well as ~300 active velocity calibration measurements.

We highlight some of the first results regarding the hydro-mechanical and seismic response to the stimulation, the rock mass characterisation in-situ and in the laboratory, as well as 3-D numerical modelling of the stress state and fracturing. The heterogeneity and anisotropy of the strongly foliated metamorphic gneiss significantly affects fracture creation and propagation in the experiment.

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