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A European Fault Database as a stepping stone towards improved subsurface evaluation of hazards and resources

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Faults are prominent features in the subsurface that define the geological development and distribution of geological formations and resources therein. Faults can define resources themselves (e.g. minerals, thermal conduits), but more often they can pose a hazard to subsurface drilling, injection and extraction activities. Well-known examples are Basel – Switzerland (geothermal stimulation), Oklahoma – US (waste water injection) and Groningen – The Netherlands (conventional hydrocarbon extraction).

Despite that faults are a typical product of geological mapping, there was, until now, no consistent insight in these structures in a pan-European context. There are some examples focusing on the publication of seismogenic faults (e.g. GEM Global Active Faults Database, SHARE European Database of Seismogenic Faults, USGS Quaternary faults database), yet deeply buried faults are under-represented here. With the European fault database, the GeoERA-HIKE project addresses the following objectives: i) develop a consistent and uniform repository for fault data and characteristics across Europe, ii) Implement an associated tectonic vocabulary which provides a framework for future interpretation, modelling and application of fault data, and iii) assess the applicability of fault data in case studies.

The current fault database is envisioned to be a major stepping stone for a sustained and uniform development and dissemination of tectonic data and knowledge which will be applicable to a broad spectrum of subsurface research challenges. The database contains data from Geological Survey Organizations and partners in the Netherlands, Germany, Austria, Belgium, Iceland, Denmark, Poland, Lithuania, Italy, France, Ukraine, Portugal, Slovenia, Albania and various countries in the Pannonian Basin Area.

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