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# MeProRisk – Acquisition and Prediction of thermal and hydraulic properties

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MeProRisk is a joint project of five university institutes at RWTH Aachen University, Free University Berlin, and Kiel University. Two partners, namely Geophysica Beratunggesellschaft mbH (Aachen) and RWE Dea AG (Hamburg) present the industrial side. It is funded by the German Ministry of Education and Science (BMBF). The MeProRisk project aims to improve strategies to reduce the risk for planning geothermal power plants.

Within our subproject we estimate geothermal relevant parameters in the laboratory and in the borehole scale. This basis data will be integrated with hydraulic and seismic experiments to provide a 3D reservoir model. Hitherto we focussed on two different type locations in Germany. These are (1) the crystalline basement in South Germany and (2) the Rotliegend formation and volcanic rocks in the Northern German Sedimentary Basin.

In the case of the crystalline basement an extensive dataset could be composed from the 9 km deep KTB borehole including logging, core and cutting data. The whole data could be interpreted with respect to lithology, structure and alteration of the formation which mainly consists of alternating sequences of gneiss and metabasite. For the different rock types the data was analyzed statistically to provide specific values for geothermal key parameters. Important key parameters are for example: p-wave velocity, density, thermal conductivity, permeability and porosity.

For the second type location we used logging data recovered within one borehole (> 5 km deep) which was drilled in the so called Voelkersen gas field. The data was supplied by the RWE DEA company. The formation comprises volcanic rocks and sandstones. On corresponding cores we measured p-wave velocity, thermal conductivity, density and porosity in the laboratory. In the same way as for type location (1) the complete data set was analyzed statistically to derive specific values which are relevant for the geothermal reservoir model.

Finally this study will end up in a multi-scale implementation of the bore and its direct environment into a 3D reservoir model. For this purpose we provide the basic data which is suitable for the model calculations.