3D Seismic Data - Source for Hydraulic Modeling in Geothermal Exploration within Structurally Complex Tectonic Environments

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The objective of geothermal exploration activities in the Upper Rhine Graben region - Germany - is the analysis of prominent geological structures, fault zones and karst structures in the deeper underground. Thereby the interest is - different from oil field practice - set on fault zones that should be open and active under recent stress conditions. In conclusion geothermal exploration in the given area is focused on open and high permeable fracture zones.

Whereas 2D seismic sections give a general idea about the geological setting 3D seismic data provide detailed description about the subsurface structures and the optimization process for a geothermal project site is advantaged. Besides the well path optimization 3D seismic data is used for reservoir modeling - a very important tool for understanding the hydrogeothermal conditions within structurally complex tectonic environments.

Data from most recent 3D seismic survey in the Upper Rhine Graben and the derived 3D reservoir model for a fault hosted geothermal deposit that predicts the flow of hot fluids in a hydrogeothermal system are presented in the poster.

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