Geophysical Research Abstracts,
Vol. 11, EGU2009-8381, 2009
EGU General Assembly 2009

MeProRisk – a toolbox for evaluating risks in exploration, development, and operation of geothermal reservoirs

C. Clauser and the MeProRisk Partners Team

Applied Geophysics and Geothermal Energy, E.ON Energy Research Center, RWTH Aachen University, Germany email: cclauser@eonerc.rwth-aachen.de

When developing geothermal resources, the risk of failure is still high when compared to hydrocarbon exploration. The MeProRisk projects aims at the improvement of strategies in all phases of the reservoir life cycle. It is a joint enterprise 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 key idea followed in this project is that the development of the understanding of a given reservoir is an iterative process. Starting from geological base knowledge and geophysical exploration one or more conceptual models will emerge, which will be incorporated in first numerical models. The use of inverse techniques in a broad sense will not only lead to an optimal model, but will produce uncertainty and resolution estimates for this model. This information may be used for further setup of optimal experiments, including the choice of exploration well locations. In later stages of reservoir development, the numerical models will be continuously updated based on the most recent models. Once wells have been drilled, the character of experiments shifts from static methods to dynamic interaction with the reservoir, e.g. by injection experiments and their monitoring. The use of all the methods with one simulation tool poses large challenges. Inverse problems require orders of magnitude larger computer resources, and the development of appropriate theoretical and numerical methods for this is on of the primary aims of this project. Due to the less obvious signatures of geothermally relevant targets, it is also necessary to improve the experimental base for model setup and update by developing new and better methods for some of the key problems in the case of geothermal targets. Among these are the development of methods to estimate hydraulic and thermal parameters form geophysical (e.g. seismological) observations, and the characterization of natural or engineered fracture zones. First results from all of these problem areas will be given on this poster.