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Simulation of Permeability Changes by Reactive Transport in a Geothermal Doublet

Manfred W. Wuttke
Leibniz Institute for Applied Geophysics (LIAG), Geothermics and Information-Systems, Hannover, Germany
(manfred.wuttke@leibniz-liag.de)

The performance of a geothermal plant is controlled by the permeabilities in the geothermal reservoir. Hydrothermal systems often consist of porous sand- or limestone with high salt content. Most important minerals in this context are halite and calcite. During the operation of the geothermal plant the circulating fluid changes locally the chemical equilibrium which leads to changes of the permeability by dissolution and precipitation processes. To investigate these processes we have set up a numerical code on the basis of a general C++ Library, which is developed and maintained at LIAG for the solution of mathematical models of coupled thermal, hydraulic and chemical processes. The code concept is introduced and first numerical studies of the dissolution, transport and precipitation of halite and calcite in a geothermal doublet system are presented.