

Reactive transport models as analytical tools for geothermal reservoirs

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Reactive transport modelling is a powerful tool for understanding the evolution of geothermal reservoirs over time. Applying these models can help us better understand how mineral alteration occurs temporally and its impact on the development of the characteristics of a geothermal reservoir. This type of information can be invaluable for understanding the dynamics of geothermal reservoirs and provide insights into how best to manage and protect these valuable resources.

Here, we present the results of two reactive transport modelling studies carried out on a generic reservoir. The models address a setting representative of the conditions prevailing in a two-phase-liquid dominated geothermal reservoir and its fluid-rock characteristics.

The first tackles the development of the reservoir over time, showing the mineral alteration in space, its effect on porosity and permeability, and how these affect flow paths. The second models the injection of disulfonate tracers in a produced resource area, exploring the effects of fluid chemistry and geologic structures on the measured tracer returns at monitoring wells.