

Numerical Simulation of Geothermal Reservoirs

PROJECT DESCRIPTION

Geothermal energy offers a significant opportunity for renewable energy development and reduction in carbon emissions. Numerical simulations are often employed to predict/optimize/design geothermal reservoirs. However, the modeling scale is typically much larger than the volume scale over which measurements of rock properties are made, and the scale up of measurements have to made accounting for the pattern of spatial heterogeneity exhibited at different scales.

The focus of this project is to formulate a simulation workflow that (1) couples heat transfer, fluid flow, and geomechanical processes, and (2) accounts for spatial heterogeneity (including those that are smaller than the modeling scale). The goal is to develop numerical models that may offer more accurate predictions of geothermal reservoir performance. Though many numerical modeling studies of geothermal reservoirs have been published over the past decade, there is still very little work focusing on the impacts of heterogeneities over multiple scales. The results will enhance the capability of modeling and optimizing these complicated processes at the field scale.

FACULTY-DEPARTMENT

Engineering- Civil & Environmental Engineering

DESIRED FIELD OF (STUDENT) STUDY

1. Petroleum/chemical/mechanical/geotechnical/environmental engineering and certain geosciences background (e.g., hydrology, geophysics)
2. Programming (or scripting) skills are important.
3. Previous knowledge about fluid flow, heat transfer, and mechanical processes is very helpful.

INTERNSHIP LOCATION

University of Alberta Main Campus - Edmonton

NUMBER OF INTERNSHIP POSITIONS

1

INTERNSHIP START DATE

July 1, 2018

INTERNSHIP END DATE

Sept 30, 2018

ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.