

The Chair of Geoenergy Productiong Engineering seeks for a master student to write a thesis on the topic of:

## “Solar heat geo-storage”

including a research internship at the King Abdullah University of Science and Technology (KAUST) under co-supervision of Prof. Dr. Thomas Finkbeiner.

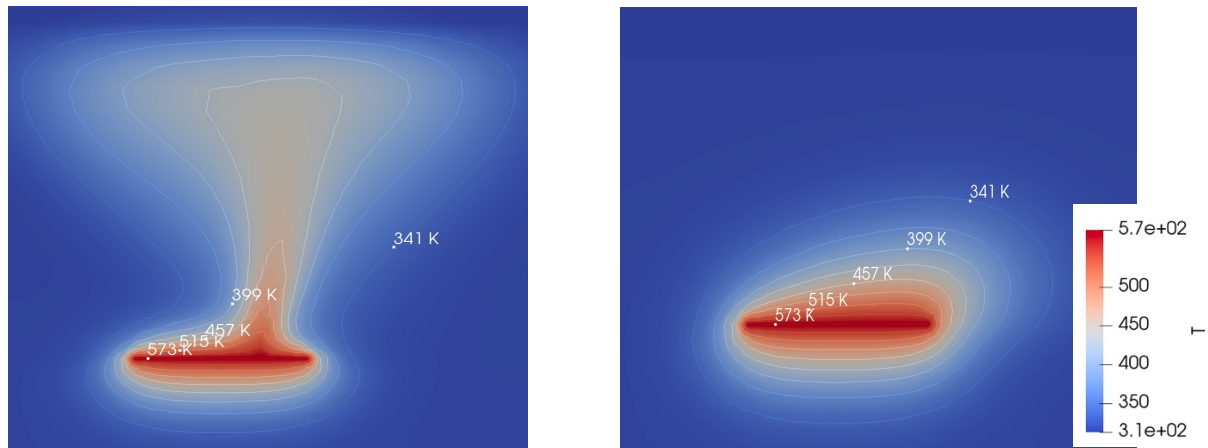


Figure 1: Simulated temperature profiles for high (left) and low (right) permeable formations.

### Research descriptions

One of the challenges associated with solar energy production is not the availability of sunlight but rather the availability of its storage when its production exceeds the demand. It is prohibitively expensive to store the excess energy in a conventional battery or as a form of hydrogen. This thesis explores the technical and economic feasibility of solar heat energy storage in the subsurface directly as heat, creating an artificial convection cell in the subsurface, through numerical modeling of mass and heat transport using an open-source code, OpenGeoSys.

The thesis will be co-supervised by Prof. Dr. Thomas Finkbeiner at the King Abdullah University of Science and Technology (KAUST) via the Visiting Student Research Program (VSRP). Student's research stay at the KAUST (between 3 – 6 months) will be funded (travel, accommodation, and a stipend) by the KAUST.

We are looking for a candidate with experience with numerical methods and/or heat and mass transfer in porous media. If interested, please contact:

Prof. Dr. Keita Yoshioka at [keita.yoshioka@unileoben.ac.at](mailto:keita.yoshioka@unileoben.ac.at)

Prof. Dr. Thomas Finkbeiner at [thomas.finkbeiner@kaust.edu.sa](mailto:thomas.finkbeiner@kaust.edu.sa)