



Coupled processes in geothermal systems

Ivar Stefansson

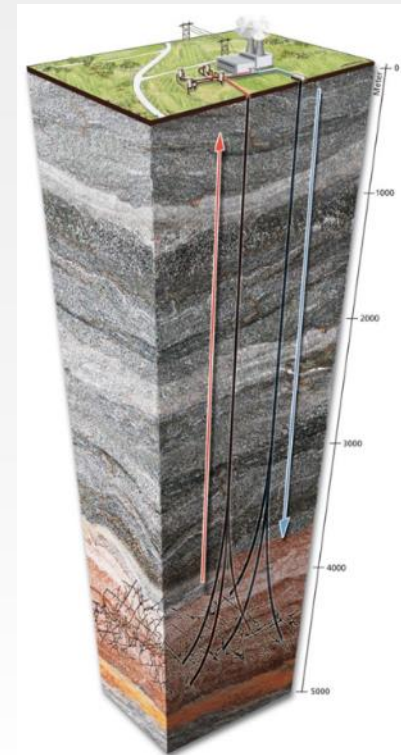
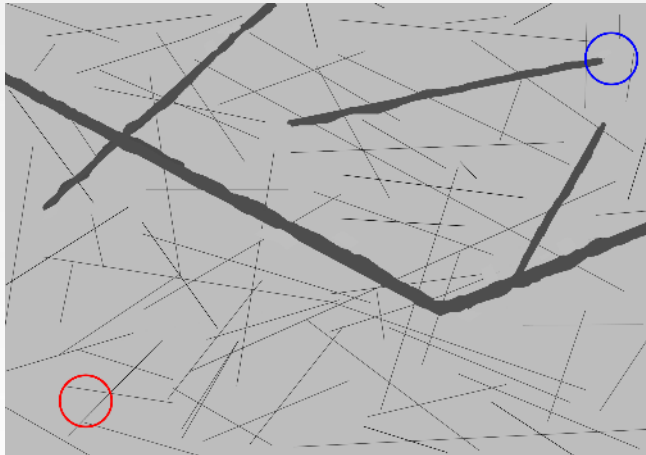
Inga Berre and Eirik Keilegavlen





Modeling geothermal systems

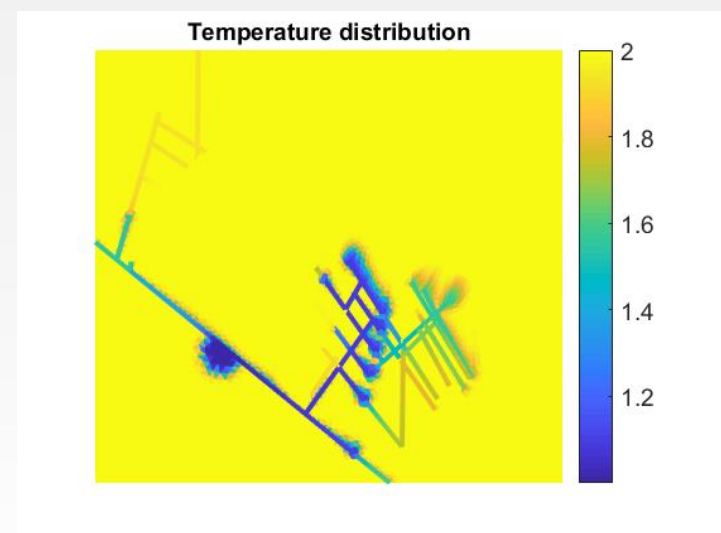
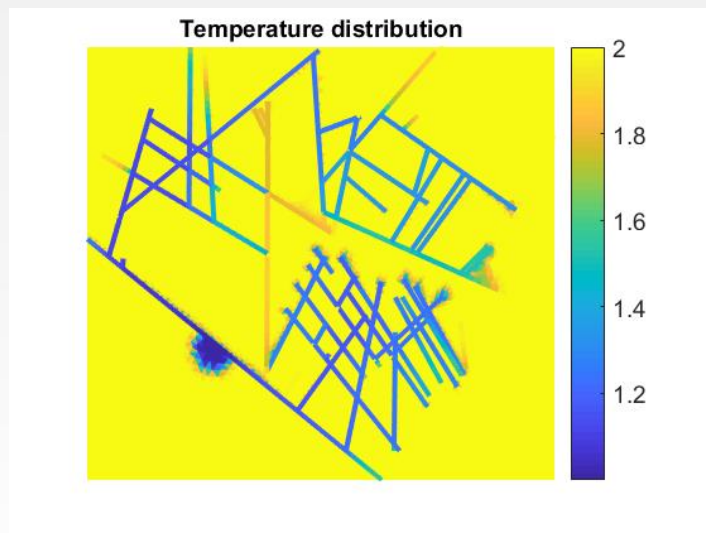
- Large scale and inaccessible situation make data sparse and expensive.
- Models and simulations may predict features of interest from limited information.





Simulations

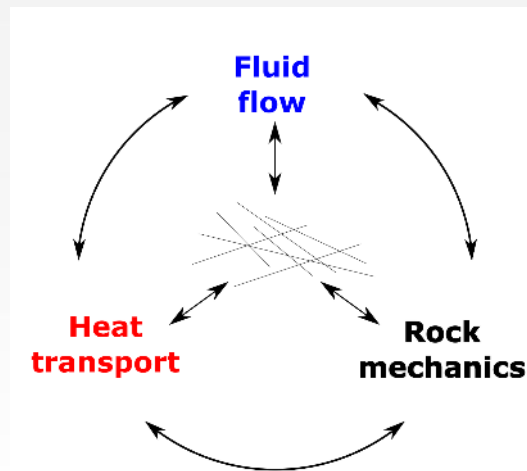
- Main interest: Heat
- Heavily influenced by fluid flow
- The flow is in turn highly sensitive to fractures.





Couplings

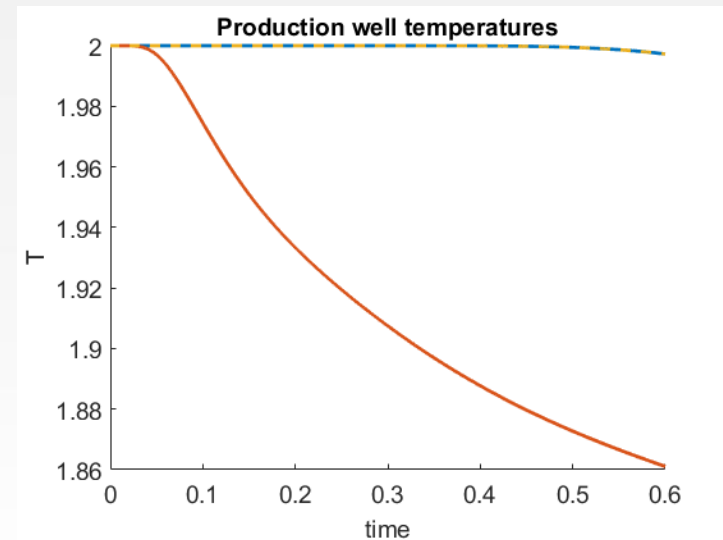
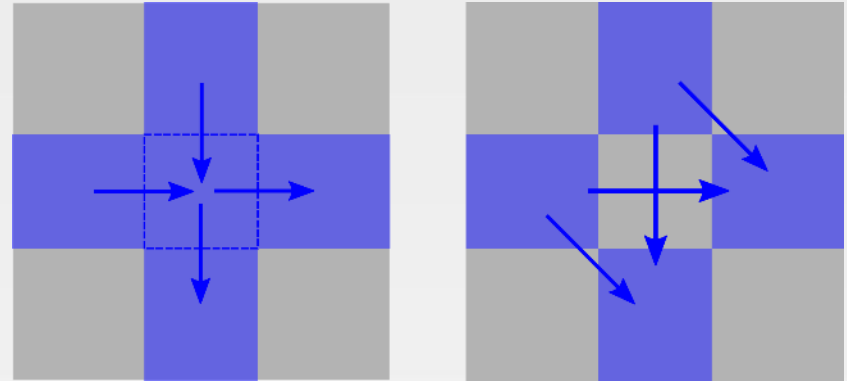
- More interwoven interactions
 - Back-coupling from heat to flow
 - More physical processes: Mechanics, chemical processes etc.
- Efficiency and simulation time considerations.
 - Include only the necessary aspects in models.
 - Lead to investigations into relative importance of processes and couplings.





Example

- Computation times may be greatly reduced by removal of fracture intersection cells.
- May yield completely wrong results if done incorrectly.





UNIVERSITY OF BERGEN