Contribution ID: **632** Type: **Oral Presentation**

Thermal fracturing and natural convection –a hidden source of geothermal activity in the earth's crust?

Friday, 4 June 2021 15:30 (15 minutes)

We consider fracture propagation driven by cooling that is mainly caused by convection cells inside vertical fractures. The process, known as convective downward migration, has been proposed as a mechanism for transport of heat in the deep roots of volcanic geothermal systems. It is also predicted to have an important role in the source mechanism of hydrothermal activity in a more general perspective. In a numerical study, the PorePy code is applied to model these coupled THM processes. With the focus on convection-driven cooling, where natural fluid convection induces thermo-poromechanical stress changes leading to fracture deformation and propagation in a single vertical fracture. We identify parameters affecting this natural phenomenon and investigate how these are controlled by reginal and local settings; perhaps explain existence of geothermal systems in some locations over others. We explain the concept of "hidden geothermal systems"and discuss how knowledge of thermal fracturing and natural convection can facilitates for broader utilization of enhanced geothermal systems in locations where reginal settings might not favor natural hydrothermal systems.

Time Block Preference

Time Block A (09:00-12:00 CET)

References

Acceptance of Terms and Conditions

Click here to agree

Newsletter

Student Poster Award

Primary authors: Ms HALLDORSDOTTIR, Sæunn (University of Bergen); Prof. BERRE, Inga (University of Bergen); KEILEGAVLEN, Eirik (University of Bergen); STEFANSSON, Ivar (University of Bergen); Dr AXELSSON, Gudni (GRO GTP)

Presenter: Ms HALLDORSDOTTIR, Sæunn (University of Bergen)

Session Classification: MS1

Track Classification: (MS1) Porous Media for a Green World: Energy & Climate