EGU24-18451, updated on 07 Dec 2024
https://doi.org/10.5194/egusphere-egu24-18451
EGU General Assembly 2024

Large-scale reservoir modeling of the Vendenheim geothermal site (France)

Javier Abreu Torres[1], Gergo Hutka[2], Mauro Cacace[2], Guido Blöcher[2], Vincent Magnenet[3], and Jean Schmittbuhl[1]

[1]CNRS, France (abreutorres@unistra.fr)
[2]GFZ-Potsdam, Germany
[3]Université Strasbourg, France

During the Vendenheim deep geothermal project (Strasbourg Eurometropole, France), large induced seismic events led to the arrest of the project. Two important features of the induced seismicity were unexpected : the large distance to the wells of a cluster of seismic events (4-5km) and the occurrence of the largest event Mlv3.9 at the bottom of the wells, six months after shut-in. To better understand the mechanisms of seismicity, we develop within the framework of the DT-GEO project (Horizon Europe) a large-scale model (8kmx8kmx8km) of the area. We aim at performing in-silico experimentation to reproduce the geophysical responses of the geothermal reservoir with different geological geometries, different geomechanical properties and constrained with a variety of crustal stress conditions and variety of the external forcing representing the anthropogenic control. The model is based on the MOOSE/GOLEM framework (finite element approach) and integrate the public regional geological model GEORG that includes major lithologies and large-scale faults of the area. We will present the preliminary of coarse-grained simulations of the natural fluid circulation and fluid injections.