

Development of Geothermal Energy in Switzerland

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Context

Switzerland is promoting the development of renewable resources for a sustainable energetic transition. The Services Industriels de Genève (SIG) and the Geological Services of the Canton of Geneva launched the campaign geothermie2020.ch to support the growth of geothermal energy. The exploration phase began in 2015 with the compilation of available data [Clerc *et al.*, 2015] and the acquisition of new geophysical data. In early 2018 the prospection phase kicked off with the drilling of the first shallow exploration well G_{Eo}-01. The exploration phase will continue and more wells will be drilled. To support the geothermie2020.ch campaign the group of Crustal Deformation and Fluid Flow (CDFF) at the University of Geneva developed an exploration workflow for the investigation of middle-enthalpy geothermal resources. The methods includes shallow active seismic (in collaboration with local companies), gravity and deep geoelectrics. In addition, we developed several libraries for the Matlab Reservoir Simulation Toolbox (MRST) to simulate fluid flow processes in the upper crust.

Objectives and Methods

This is an open subject to contribute to the development of geothermal energy in Switzerland and in particular in the Canton of Geneva. The candidate is particularly encouraged to combine the interpretation of already performed active seismic studies with gravity and geoelectrical surveys to be acquired via specific geophysical campaigns. The Geophysical data may be integrated into numerical models simulating fluid flow within and across the investigated reservoir. The average geothermal gradient of the basin is between 25-30 °C/km with local anomalies [Chelle-Michou *et al.*, 2017]. The ultimate goal of the project will be to identify such a key areas that may be suitable to develop middle-enthalpy geothermal energy.

Literature

Chelle-Michou, C., D. Do Couto, A. Moscariello, P. Renard, and E. Rusillon (2017), Geothermal state of the deep Western Alpine Molasse Basin, France-Switzerland, *Geothermics*, 67, 48–65, doi:10.1016/J.GEOTHERMICS.2017.01.004.
Clerc, N., E. Rusillon, A. Moscariello, and P. Renard (n.d.), Detailed Structural and Reservoir Rock Typing Characterisation of the Greater Geneva Basin, Switzerland for Geothermal Resource Assessment, *pangea.stanford.edu*.



View of the Geneva Basin from the Jura.

Sites WEB

<http://www.unige.ch/sciences/terre/en/research/crustal-deformation-and-fluid-flow/>

Choice of orientation :

SERG