



Contribution ID: 153

Type: **Poster**

Geothermal Systems Exploration in the Southern Chilean Volcanic Zone by Magnetotelluric Method: a case study at Villarrica Volcano

Wednesday, October 9, 2019 4:50 PM (20 minutes)

Understanding the subsurface behavior of the Earth is of high importance for the development of geothermal energy, especially in Chile, which has active volcanoes throughout the country. An area with great potential of geothermal development is the southern zone of Chile. Controlled by volcanic environment widely influenced by cortical fault systems. Several thermal spring manifestations of different temperature are proof of this control.

The study of geothermal systems in southern Chile began around of Villarrica volcano with the objective of exploring reservoirs for production of energy. The study in the area around the volcanic volcano was based on 31 magnetotelluric (MT) stations, deployed in two profiles, one oriented EW and perpendicular to the branches of the Liquiñe-Ofqui fault system (LOFS) and a second NS-oriented along LOFS and subsystems perpendicular to the Andean transversal fault (ATF) and the chain volcanic Villarrica-Quetrupillán-Lanín. The results correspond to inversion of MT data revealing a high anomaly of the electrical conductivity at 3km depth below the volcanic chain. In addition, anomalies of intermediate resistivity are observed that coincide with the location of thermal sources of low-medium temperature or monogenic volcanic activity. Possibly, fault systems would serve as fluid pathways.

The study of geothermal systems in southern Chile will continue with the investigation of the Tolhuaca geothermal system, located on the flanks of Tolhuaca volcano, influenced by LOFS and ATF as well. MT data measured in the surroundings of the Tolhuaca volcano will be analyzed, in order to know the influence of fault systems in a high temperature geothermal system.

These two studies will allow us to understand geothermal systems of different temperatures in the southern Chilean volcanic zone that are controlled by the same fault systems.

Author: PAVEZ, Maximiliano (KIT - INE)

Co-authors: SCHILL, Eva; HELD, Sebastian; DÍAZ, Daniel; Mr KOHL, Thomas

Presenter: PAVEZ, Maximiliano (KIT - INE)

Session Classification: Poster Session