Geophysical Research Abstracts
Vol. 21, EGU2019-10629, 2019
EGU General Assembly 2019


# Electrical resistivity structure of Andean orogenic crust using magnetotelluric data from Northern Chile

Felipe Reyes Córdova (1,2) and Daniel Díaz (1,3)

(1) University of Chile, Facultad de Ciencias Físicas y Matemáticas, Geophysics Department, Chile, (2) University of Chile, Facultad de Ciencias Físicas y Matemáticas, Geology Department, Chile, (3) Centro de Excelencia en Geotermía de los Andes, Universidad de Chile, Chile

Chilean Central Andes has been subjected to different long-period magnetotelluric surveys since the 80's. And even though it's been 40 years since those early studies there are still many places to get covered. Extreme heights, lack of proper access, long lasting records and difficult electrical contacts are amongst the problems.
The mission of the INSUD group of the Geophysics Department of the University of Chile is to comprehend the relationship between the subduction process and natural disasters. In this context, a magnetotelluric survey was deployed at 23°S in the Chilean Andes. The 180 km long profile goes through the Domeyko Range, Salar de Atacama basin, Western Cordillera and Puna. Western Cordillera coincides with the actual volcanic arc, comprised in the Central Volcanic Zone. It's worth to mention that the arc has an eastward shift of its position at this latitude and includes one of most active volcanoes in Chile, the Lascar volcano.
The array comprises 14 long-period stations separated by 10 km and 6 broadband stations in between long-period stations located in the Puna and Western Cordillera. Preliminary dimensional analysis shows a 2D structure for long periods with an almost N-S geoelectric strike. It remarkably coincides with the geological strike of the main morphostructural features and structural systems. With that in mind, 2D inversionsare executed using WinGlink software. A large conductive anomaly shows up in every inversion at the easternmost end of the cross-section. It may be related with similar anomalies shown in MT studies north of this region which have been interpreted as the Altiplano – Puna Magma Body. This interpretation is also supported by the fact that superficial manifestations of the Altiplano – Puna Volcanic Complex are common at the study area. Some examples are the La Pacana caldera, Puricó Volcanic Complex and the widespread of Neogene ignimbrite sheets. A 3D inversion is also performed with the addition of previously measured data.