A GEOELECTRICAL CHARACTERIZATION OF VALLÈS BASIN

Student: Raha Hafizi (Reservoir Geology and Geophysics, MSc)

Advisors: Dr. Alejandro Marcuello, Dr. JuanJo Ledo

Abstract

A good recognition of the geological characteristic of a geothermal system is a key parameter in using kind geothermal energy optimally. Magnetotellurics (MT), a passive geophysical method that shows resistivity distribution of the Earth's structure is an applicable technique to study geothermal systems. In this study, the process is focused on the Vallès Penedès basin located in the eastern sector of the Pre-Coastal Depression in Spain. Geothermal system in this area is demonstrated as several hot springs along the Vallès Penedès fault and turned it into an area interesting for study. The main goal of this work includes using MT method to obtain a 2D geoelectrical model for the basin to have a better understanding about the basin's structural architecture. The modeling results support previous studies and give a better understanding for the depth of sediments in the basin, their geometry and an estimation of the placement of the Vallès Penedès fault and its orientation. These achievements are helpful for further prospects and for characterizing the fluid circulation in this geothermal system.