

# **The Oliana anticline: analog of a geothermal reservoir**

**Author: Pedro Ramirez Perez**

**Directors: Dr. Anna Travé and Dr. Irene Cantarero**

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## ***Abstract***

The Oliana anticline is a seismic scale structure located in front of the Serres Marginals thrust, within the South Pyrenean Zone. Here a middle Eocene to upper Oligocene synorogenic succession crops out. Current research has been focused into the petrophysical, petrological and structural study of 48 rock samples to characterize this anticline such as a geothermal reservoir analog. Petrophysical properties, such as bulk density, porosity, permeability, and P-wave velocity shows a strong correlation with petrology of rocks. Grain-size and matrix-content are factors that control the intensity and type of porosity. Thermal conductivity and effusivity display a poor positive correlation with the mineralogical density of rocks, attributed to their composition.

Linear positive correlation between porosity and bulk density has been observed, whereas P-wave velocity and permeability shows a slight negative relationship. Distribution of facies along the different structural zones of the anticline (i.e., northern and southern flanks and NE and SW closures) controlled the distribution of the petrophysical and thermal properties in them, which is a relevant fact for reservoir assessment. Attending to the low permeability and thermal conductivity values obtained in Oliana, a petrothermal reservoir characterization is proposed. However, high porosity of rocks allows a better assessment of the anticline for being used as a CO<sub>2</sub> storage reservoir analog.