



Geostatistical characterisation of geothermal parameters for a thermal aquifer storage site in Germany

J. Rodrigo-Illarri (1), T. Li (2), P. Grathwohl (2), P. Blum (2), and P. Bayer (2)

(1) Universidad Politecnica de Valencia, Departamento de Ingenieria Hidraulica y Medio Ambiente, Valencia, Spain
(jrodrigo@upv.es), (2) Center for Applied Geoscience. Eberhard-Karls Universität Tübingen, Germany.

The design of geothermal systems such as aquifer thermal energy storage systems (ATES) must account for a comprehensive characterisation of all relevant parameters considered for the numerical design model. Hydraulic and thermal conductivities are the most relevant parameters and its distribution determines not only the technical design but also the economic viability of such systems. Hence, the knowledge of the spatial distribution of these parameters is essential for a successful design and operation of such systems.

This work shows the first results obtained when applying geostatistical techniques to the characterisation of the Esseling Site in Germany. In this site a long-term thermal tracer test (> 1 year) was performed. On this open system the spatial temperature distribution inside the aquifer was observed over time in order to obtain as much information as possible that yield to a detailed characterisation both of the hydraulic and thermal relevant parameters.

This poster shows the preliminary results obtained for the Esseling Site. It has been observed that the common homogeneous approach is not sufficient to explain the observations obtained from the TRT and that parameter heterogeneity must be taken into account.