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Reactivity of Hontomín carbonate rocks to acidic solution injection: reactive "push-pull" tracer tests results

Francesca De Gaspari (1,2), Yoar Cabeza (1,2), Linda Luquot (2), Tobias Rötting (2), Maarten W. Saaltink (1), and Jesus Carrera (2)

(1) UPC Barcelona Tech, Geotechnical Engineering and Geosciences, Barcelona,Spain, (2) Institute of Environmental Assessment and Water Research (IDAEA-CSIC), Geosciences, Barceona, Spain

Several field tests will be carried out in order to characterize the reservoir for CO_2 injection in Hontomín (Burgos, Spain) as part of the Compostilla project of “Fundación Ciudad de la Energía” (CIUDEN). Once injected, the dissolution of the CO_2 in the resident brine will increase the acidity of the water and lead to the dissolution of the rocks, constituted mainly by carbonates. This mechanism will cause changes in the aquifer properties such as porosity and permeability. To reproduce the effect of the CO_2 injection, a reactive solution with 2% of acetic acid is going to be injected in the reservoir and extracted from the same well (reactive “push-pull” tracer tests) to identify and quantify the geochemical reactions occurring into the aquifer. The reactivity of the rock will allow us also to evaluate the changes of its properties. Previously, theoretical calculations of Damkhöler numbers were done to determine the acid concentrations and injection flow rates needed to generate ramified-wormholes patterns, during theses "push-pull" experiments. The aim of this work is to present the results and a preliminary interpretation of the field tests.