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Spatial and temporal characterization of CO_2 storage sites using magnetotellurics

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Integration of different geophysical, geological and geochemical methods will play a key role for the spatial and temporal characterization of underground CO_2 storage sites. Among the geophysical techniques the magnetotelluric method (MT) may help on both, site characterization and monitoring of the CO_2 plume, mainly on deep saline reservoirs. In this work we present the characterization of a salt diapir in southern Spain using MT data. This diaper does not satisfy the conditions to be a future reservoir due to the absence of a good lithological seal, but can be use as a natural analog to determine the validity of different geophysical methods. In total 34 MT sites were acquired along a 15 km profile. Once the data has been analyzed, inverted and integrated with surface geological data a simulated investigation for monitoring the CO_2 has been carried out. In this simulation the CO_2 has been located at the base of the Jurassic to Turonnian carbonates and marls increasing the resistivity of the model. Several tests varying the resistivity and the amount of the CO_2 as well as the number of MT sites used will be show.