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Carbon sequestration potential of the Lorestan area, Iran

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Current climate policies are not being implemented at a sufficient rate to mitigate global warming and as a result evaluation for the potentiality of more sites for a purpose of Greenhouse gas storage, in particular Carbon Dioxide, is on the rise. Iran is a country that ranks 7th in the emission of Carbon Dioxide in 2020 by 0.72 GT and is the 4th largest and 2nd largest reserve holder of oil and natural gas, respectively. For this reason and due to its potential, could play an important role in the context of CCS. Since the Zagros area is one of the most important foreland basins in the world hosting oil and gas fields, we addressed this zone for a purpose of Carbon sequestration. The existence of potential reservoirs in the Lorestan zone and vicinity to the source of emissions made us more decisive to focus on this area.

In this work, we evaluate the potentiality of four anticlines by using the data of abandoned oil and gas wells. Through the analysis of seismic lines and well data provided by NIOC (National Iranian Oil Company), we confirmed the geometrical potential and petrophysical characteristics of these structures for a purpose of carbon sequestration.

Required geological storage criteria such as geometry, pressure, depth, and petrophysical parameters are applied with the aim of screening the exploitable structures in the mentioned zone. In the final step, geological models of the structures have been built to represent petrophysical properties three-dimensionally, in order to evaluate the reservoir volumes and more importantly to estimate the storage capacity of this area.