Deep fracture zone reactivation during CO2 storage at In Salah (Algeria) – a review of recent modeling studies

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Abstract

We present a review of numerical studies aimed at understanding the condi-tions leading to the reactivation of a deep fracture zone, as well as thermal ef-fects, at the In Salah CO2 Storage Project. Numerical simulations carried out with the TOUGH-FLAC coupled fluid flow and geomechanics simulator show that a deep fracture opening can explain the observed deformation at the ground surface. Accounting for a fractured reservoir with stress-dependent permeability allows for a better match of the recorded wellhead pressure. Simulation results including thermal effects show that cooling becomes more significant for long-term storage, causing a decrease in fracture stability.