

Suppressing Joint Reactivation in Caprocks

Scientific Achievement

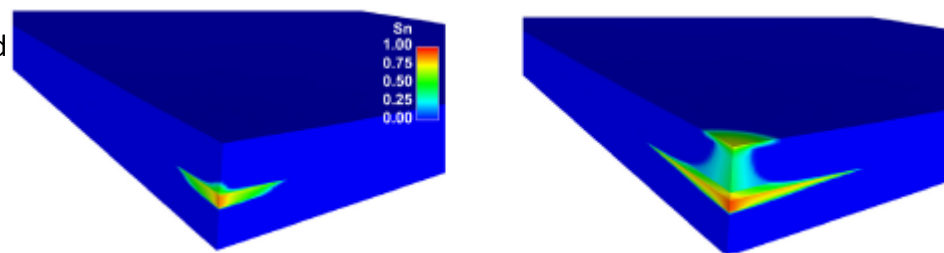
Demonstrated that injection pressure induced joint reactivation impacts caprock integrity for leakage and may limit sustainable injection rates. Leakage rates with joint reactivation can be assessed. The model can be used to interpret wellbore pressure histories indicating significant joint reactivation.

Significance and Impact

The jointed caprock model will determine acceptable ranges for storage aquifer permeability and/or injection rates to suppress joint reactivation and potential leakage or conversely improve injectivity. The model can be used to interpret wellbore pressure histories indicating significant joint reactivation.

Publications

Martinez, M. J., P. Newell, J. E. Bishop, and D. Z. Turner (2013), Coupled multiphase flow and geomechanics model for analysis of joint reactivation during CO₂ sequestration operations, *International Journal of Greenhouse Gas Control*, 17, 148-160.



Distribution of CO₂ saturation for a maximum injection rate of 2.85 Mt/yr into a 30 mD injection zone and for the jointed representation of the caprock. Figure on the left is at 5 years, the end of the injection ramp-up period, and figure on the right is at 20 years.

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