

Determination of total storage capacity through reservoir simulation and rock-fluid interaction modelling

CHALLENGES

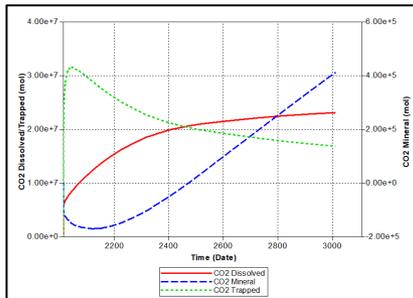
- Modeling and predicting the fate of CO₂ stored in the subsurface is necessary to ensure non-endangerment of underground sources of drinking water
- Complex dissolution, precipitation and trapping mechanisms must be understood to ensure site security for 25 years of injection and post-injection behavior

SOLUTION

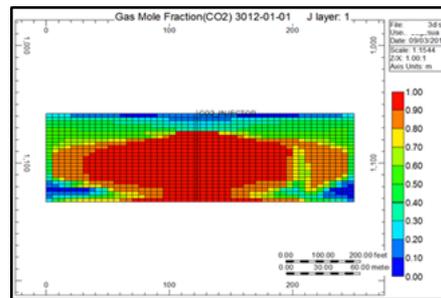
- Use GEM software to develop sector model around exploration well
- Simulated the interaction of injected CO₂ with formation water and minerals.
Examined:
 - Mineral Trapping
 - CO₂ Trapping/Molality
 - Dissolved Minerals
 - Precipitated Minerals
 - Permeability

RESULTS

- Forward modeled dissolution and trapping over the span of 1000 years
- Captured spatial migration of the gas through the target layer during injection and validated containment post-injection



Injection model developed



Models of dissolution and trapping developed for 1000 years