minerals

MDPI

Supplementary Materials

CO_2 Leakage Scenarios in Shale Overburden

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Supplementary Material

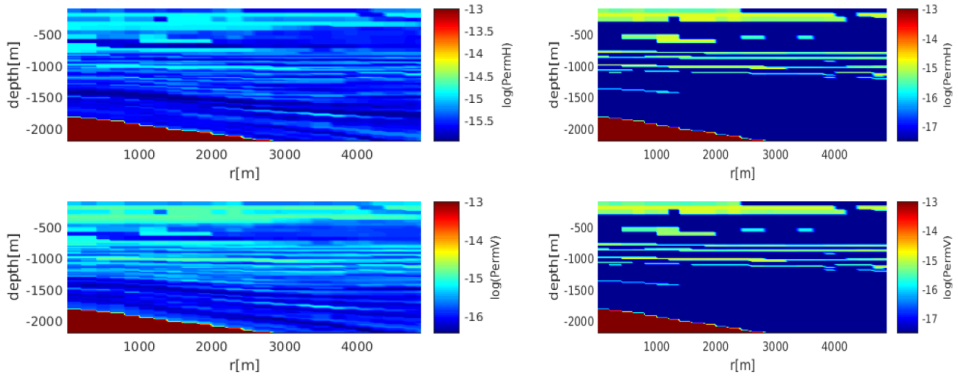

Figure S1. Scenario 1. Vertical (permV) and horizontal (permH) permeability distribution in Models A (a) and B (b) along the E-W section.

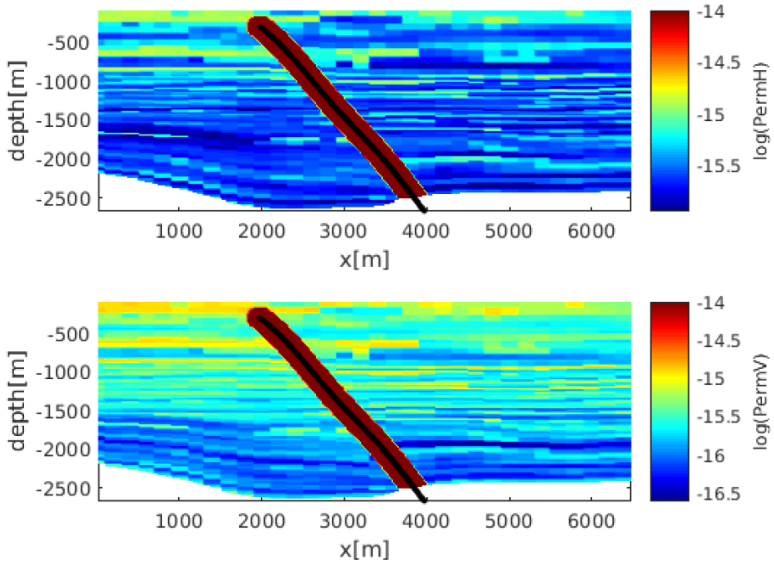

Figure S2. Scenario 2. Vertical (permH) and horizontal (permH) permeability distribution in Model A along the E-W section.

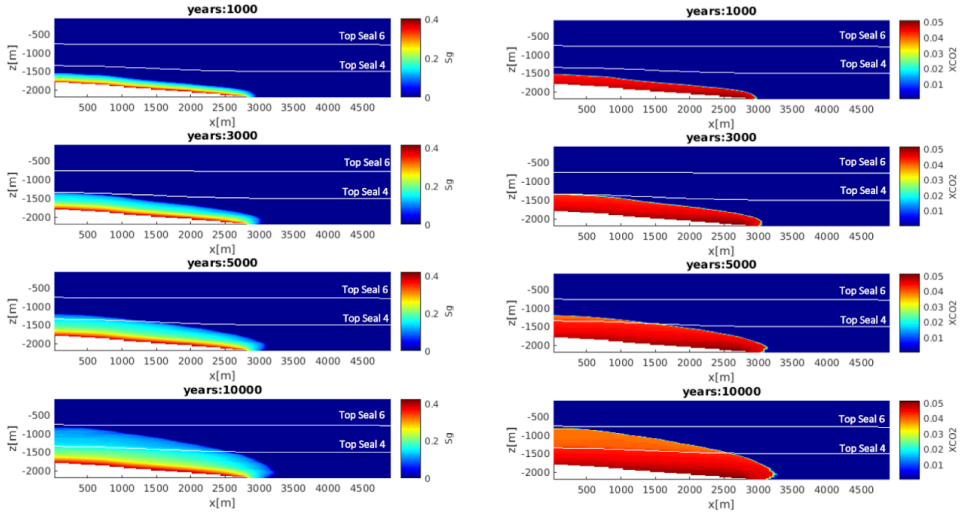

Figure S3. Scenario 1, E-W section, permeability Model A. (a) Gas saturation (Sg) and (b) CO_2 mass fraction (XCO2) distribution over time.

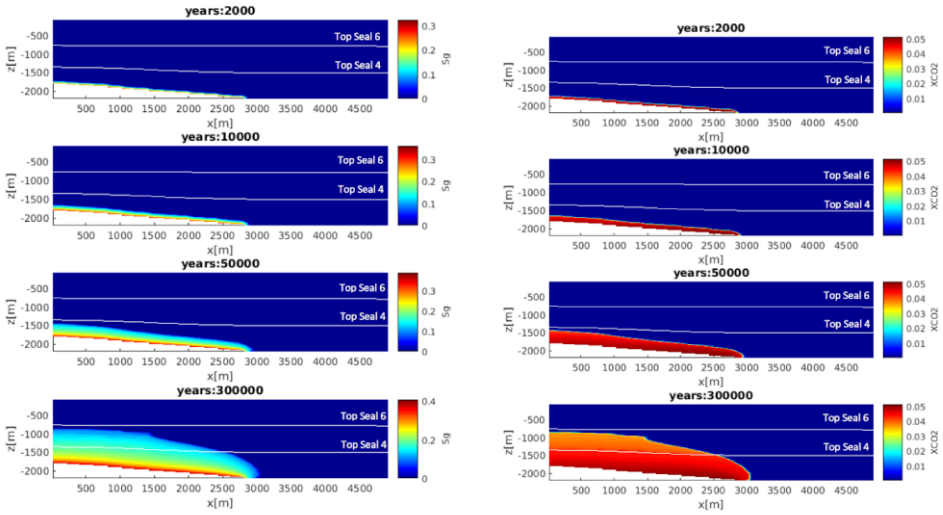

Figure S4. Scenario 1, E-W section, permeability Model B. (a) Gas saturation (Sg) and (b) CO_2 mass fraction (XCO2) distribution over time.

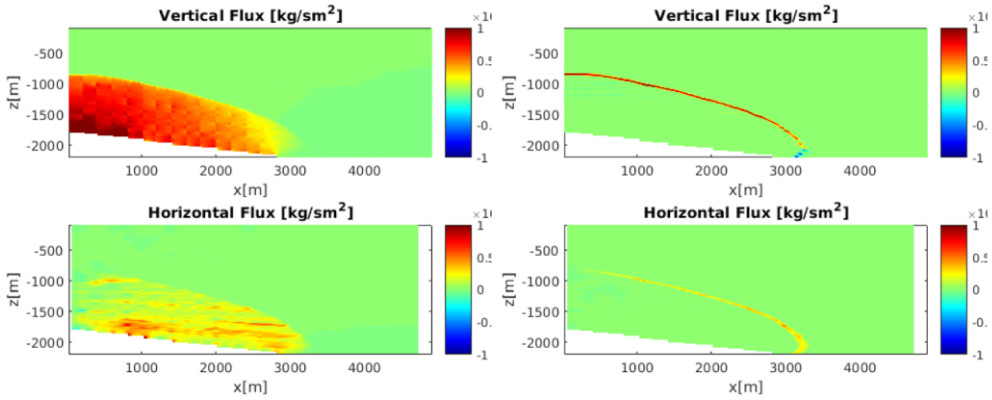

Figure S5. Scenario 1, E-W section, permeability Model A. (a) Darcy fluxes and (b) diffusive fluxes after 300,000 years.

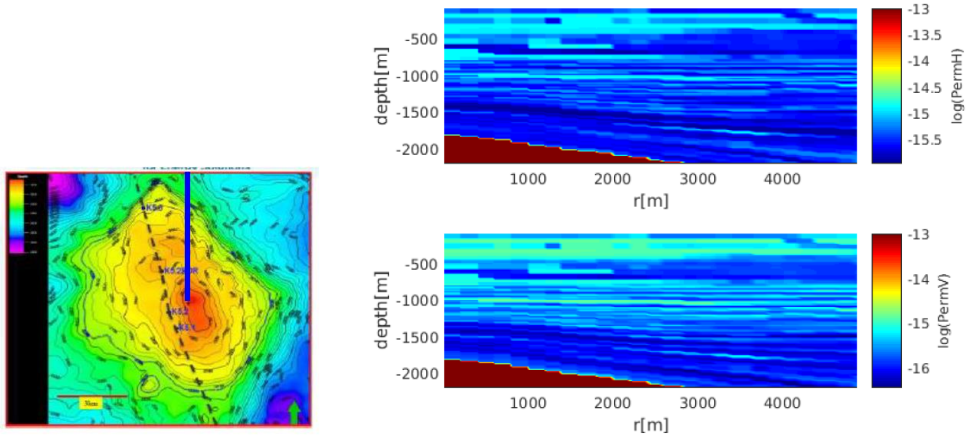

Figure S6. Scenario 1: (a) the N-S section running from the center of the reservoir top. (b) Horizontal (permH) and vertical (permV) permeabilities distribution for Model A interpolated on the computational domain derived for the section.

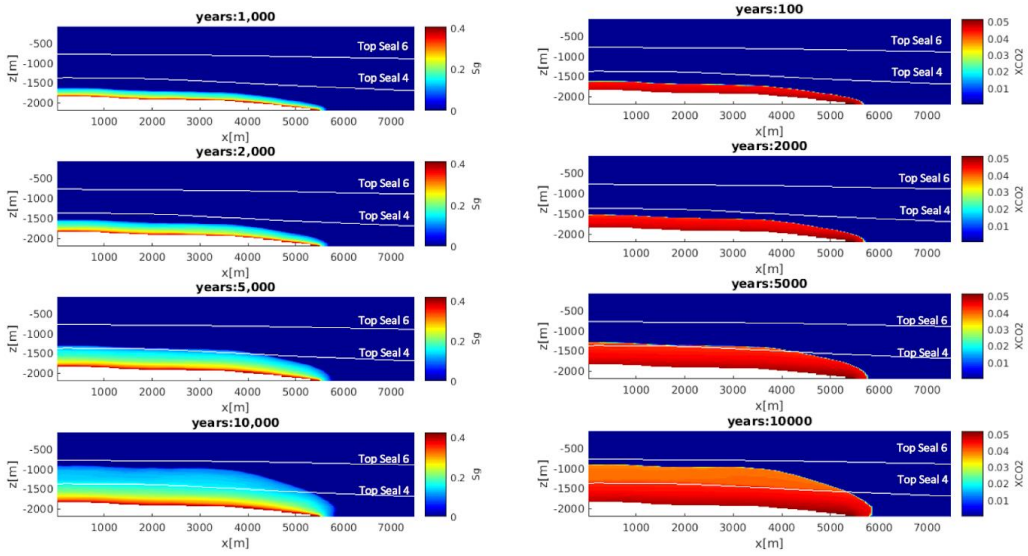

Figure S7. Scenario 1, N-S section, permeability Model A. Distribution of: (a) gas saturation (Sg) and (b) CO_2 mass fraction (XCO_2) in the liquid phase at different time steps.

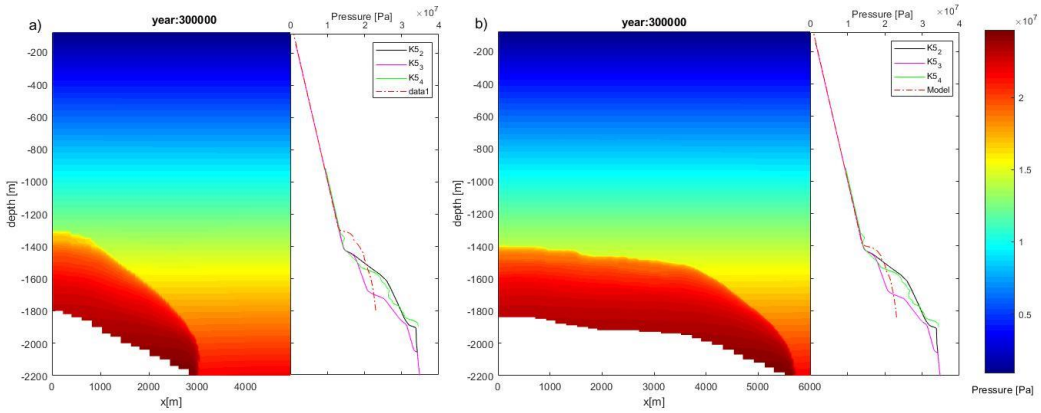

Figure S8. Scenario 1, permeability Model A. Pore pressure distribution measured in the three wells with respect to simulated ones at steady state. (a) E-W section; (b) N-S section.

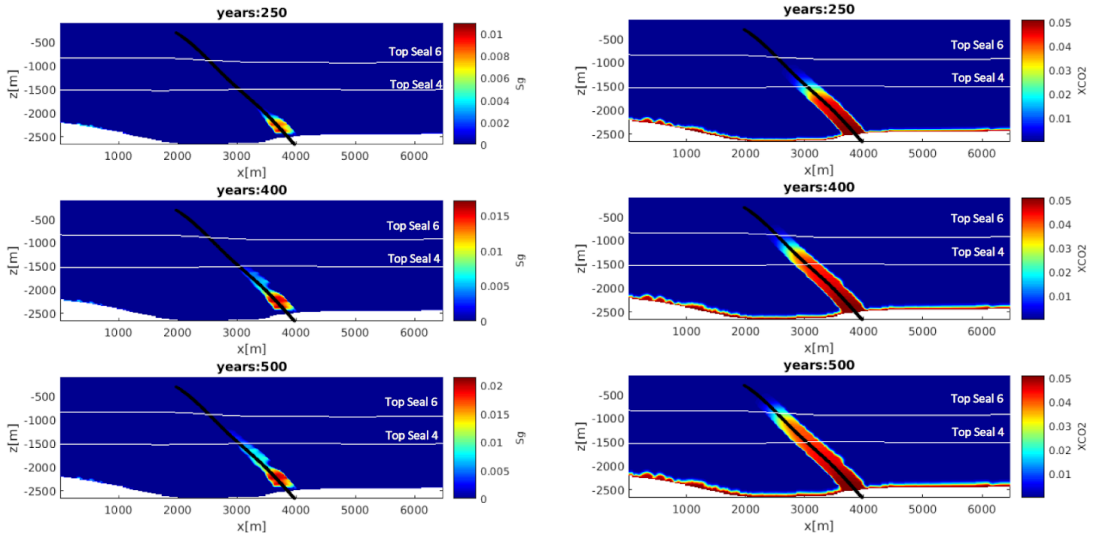

Figure S9. Scenario 2, permeability Model A. Distribution of: (a) gas saturation (Sg) and (b) CO_2 mass fraction (XCO_2) in the liquid phase at different time steps.