



Assessing in-situ residual saturation of CO₂ storage in saline aquifers using thermal response tests

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In assessing in-situ residual saturation of CO₂ storage in saline aquifers, thermal response tests (TRTs) are used in this study. Motivation for applying the method to the application of CO₂ storage in saline aquifers lies in little difference in the thermal properties of CO₂ in gaseous and supercritical states relative to other media. Based on the assumption that only conduction is dominated, change of supercritical CO₂ and saline water in pore space is obtained from the inverse models of temperature change over time for either heating or cooling. The key idea is if this change may lead to the detection of change in thermal properties of fluids and media. Three different models are applied for the purpose of applicability of the technology. Possible errors are also evaluated with respect to a variety of mixing laws of thermal conductivity estimation.