

**CO<sub>2</sub> enhanced solubility trapping caused by convective mixing in an aquifer storage**

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Super critical CO<sub>2</sub> injected into storage reservoir migrates upward towards the cap rock because of buoyant force, and then changes the migrating direction towards lateral along the bottom of the cap rock. In the upper front portion of the migration, CO<sub>2</sub> dissolve into groundwater. The mineral dissolution contributes to the solubility acceleration. CO<sub>2</sub> dissolution will increase density of the groundwater. Dens water will then move downward due to gravity, giving rise to convective mixing. Increased CO<sub>2</sub> solubility enhances solubility trapping. The process of enhanced solubility trapping caused by convective mixing was explored through application to an aquifer storage reservoir model.