



Contribution ID: 563

Type: **Oral Presentation**

## Small heterogeneities with large impacts on CO<sub>2</sub> flow and trapping

*Wednesday, 21 May 2025 14:50 (15 minutes)*

In this presentation I will argue that small, centimetre scale, heterogeneities in multiphase flow properties will have field scale impacts on the movement of CO<sub>2</sub> injected underground. I will demonstrate our characterisation and modelling workflows in application to simulations of CO<sub>2</sub> storage sites of the offshore UK (An et al., 2023; Wenck et al., 2025). In search of a validating case study, my research group has been reinterpreting seismic imagery from the Decatur CO<sub>2</sub> storage site in the USA (Bukar et al., 2025). I will show results of our application of an interpretation of the time-shifts from seismic surveys at this site. This has revealed CO<sub>2</sub> migration along faults, allowing the plume to bypass lower quality units within the reservoir.

An, S., Wenck, N., Manoorkar, S., Berg, S., Taberner, C., Pini, R., & Krevor, S. (2023). Inverse modeling of core flood experiments for predictive models of sandstone and carbonate rocks. *Water Resources Research*, 59(12), e2023WR035526

Bukar, I., Bell, R. E., Muggeridge, A., & Krevor, S. (2025). Carbon dioxide migration along faults at the Illinois Basin–Decatur Project revealed using time shift analysis of seismic monitoring data. *Geophysical Research Letters*, in Press

Wenck, N., Muggeridge, A. H., Jackson, S. J., An, S., & Krevor, S. (2025). The Impact of Capillary Heterogeneity on CO<sub>2</sub> plume migration at the Endurance CO<sub>2</sub> storage Site in the UK. *Geoenergy*, in Press

### Country

United Kingdom

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### Student Awards

### Water & Porous Media Focused Abstracts

### References

**Primary author:** KREVOR, Sam

**Presenter:** KREVOR, Sam

**Session Classification:** MS26

**Track Classification:** (MS26) Mechanisms Across Scales in Subsurface CO<sub>2</sub> storage: A Special Session in Honor of Sally Benson