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PREDICTIVE DIGITAL TWIN OF GEOLOGIC CO₂ STORAGE AND PLUME EVOLUTION

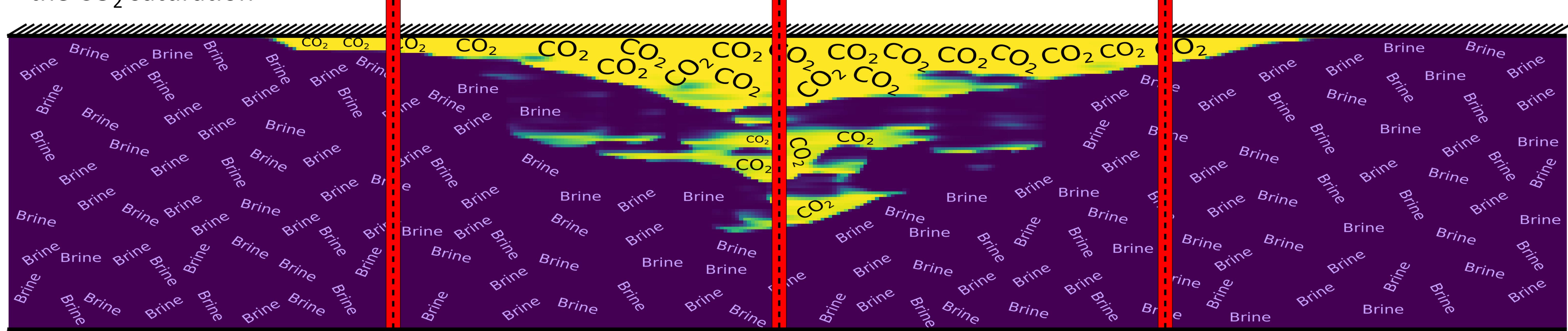
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Highlights

- Digital twin maps **well data** to CO₂ saturation distribution
- Model can predict the CO₂ migration with **maximum error of 10%**
- Digital twin provides a **substantial speed-up** for predicting the CO₂ saturation



Methodology

- Employ continuous **conditional generative adversarial networks (CCGANs, Teeratorn et al. (2022, Computers & Geosciences)** for predicting the saturation distribution of CO₂ given porosity, average pressure and injection rate in three wells
- Train/test with synthetic data generated with Eclipse 100
- Scenario: injection over 10 years and monitoring over 20 more years

Results

