**Docket #:** S22-051

# CCSNet web app: a deep learning modeling suite for $CO_2$ storage

Stanford researchers in the Benson Lab have developed CCSNet, an open source software platform for modeling $CO_2$ storage reservoirs based on machine learning neural networks. As compared to current standards, this software is 10,000 to 100,000 times faster and more accurate.

Traditional simulators for carbon geological storage are computationally expensive and time consuming. Trained with a large numerical simulation data set, CCSNet provides numerous outputs for carbon dioxide storage projects including but not limited to $CO_2$ gas saturation, pressure buildup, and mass balance.

**Stage of Development**

- Pre-clinical

**Figure:**

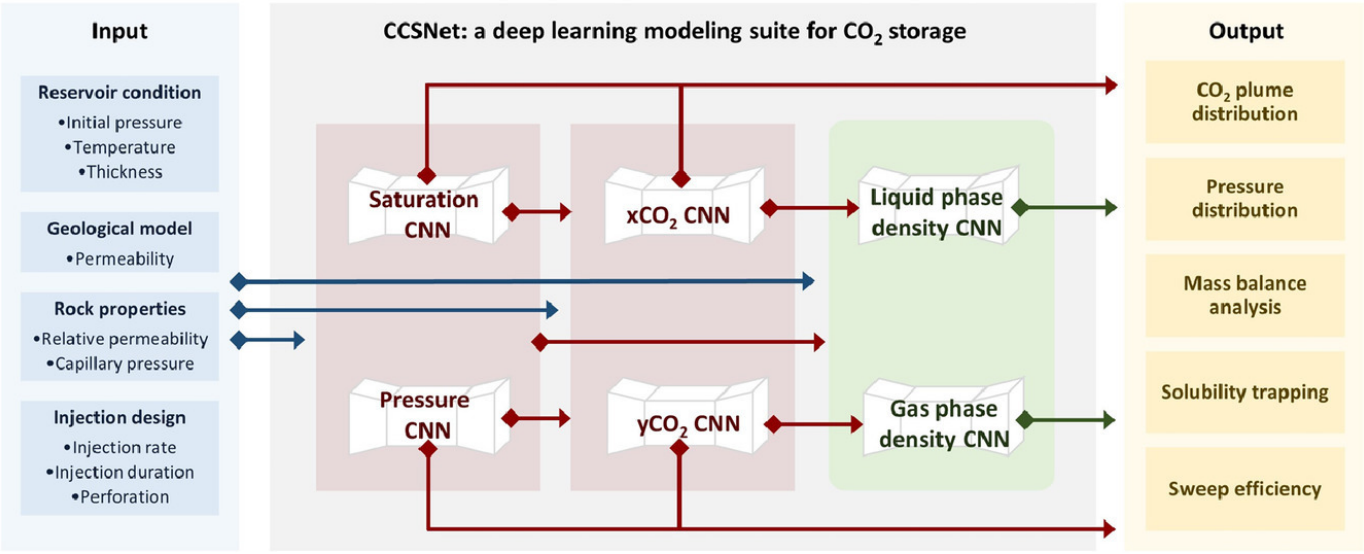



**Figure description: Graphical Abstract**

*Image credit: https://doi.org/10.1016/j.advwatres.2021.104009*

## Applications

- Numerical simulation for carbon storage

## Advantages

- **Instant and accurate predictions -** 10,000 to 100,000 times faster compared to competitive top tier numerical simulations
- **2D version is open source. License available for 3D and webcode.**

## Publications

- Wen, G., Tang, M., & Benson, S. M. (2021).Towards a predictor for CO2 plume migration using deep neural networks. *International Journal of Greenhouse Gas Control, 105,* 103223.

## Innovators

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