

Dr. Jenny Nelson
Energy & Environmental Science

Dear Editorial Board Chair of Energy & Environmental Science:

We wish to submit an article entitled “**Stochastic pix2vid: A new spatiotemporal deep learning method for image-to-video synthesis in geologic CO₂ storage prediction**” for consideration in *Energy & Environmental Science*. We confirm this work is original and has not been published elsewhere, nor is it currently considered for publication elsewhere. In this paper, we propose a novel deep learning method to predict the dynamic behavior of geologic carbon dioxide (CO₂) storage using a spatiotemporal deep neural network model efficiently and accurately. We develop a robust proxy model for the forward predictions of dynamic pressure and saturation distributions from static geologic realizations representing a subsurface uncertainty model. The proxy model is trained based on comprehensive high-fidelity reservoir simulation data sets and can be used as a replacement for fast and accurate forecasting of CO₂ pressure and saturation plume migration with over 4 orders of magnitude in computational speedup. The proxy model is applicable for conducting sensitivity analysis, uncertainty quantification, and feasibility analysis of geologic CO₂ sequestration projects.

We elected *Energy & Environmental Science* to publish this manuscript since the work aligns well with the Journal’s aim and scope on environmentally sustainable exploration, characterization, and storage of CO₂ to support energy transition and net-zero carbon objectives. Our goal is to provide the energy resources industries with general purpose tools to decarbonize the economy and create an environmentally sustainable future.

We have no conflicts of interest to disclose. We appreciate your time and effort in reviewing our work. Please address all correspondence concerning this manuscript to Misael M. Morales at misaelmorales@utexas.edu. Thank you for your consideration of this manuscript. We look forward to hearing from you.

Sincerely,



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