

# SIAM MPE Community Meetings: Colloquium

**Prof. Elizabeth A. Barnes**

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## *Explainable AI for Climate Science: Opening the Black Box to Reveal Planet Earth*

**Abstract:** Earth's climate is chaotic and noisy. Finding usable signals amidst all of the noise can be challenging: be it predicting if it will rain, knowing which direction a hurricane will go, understanding the implications of melting Arctic ice, or detecting the impacts of humans on the earth's surface. Here, I will demonstrate how explainable artificial intelligence (XAI) techniques can sift through vast amounts of climate data and push the bounds of scientific discovery: allowing scientists to ask "why?" but now with the power of machine learning.

**Biography:** Dr. Elizabeth (Libby) Barnes is a Professor of Atmospheric Science at Colorado State University. Libby's research has centered on climate variability, predictability, and change and the data analysis tools used to better understand the Earth system (including machine learning and causal discovery). She teaches graduate courses on statistical analysis methods, machine learning for Earth scientists, and data-driven forecasting from days-to-decades. See [Barnes Group - prof. barnes \(google.com\)](#)

**Thursday, Sept. 26, 2024**

**11:00 AM EDT**

Zoom link: [siam.zoom.us/j/85142274147](https://siam.zoom.us/j/85142274147)

Hosts:  
Irina Tezaur and Pierre Lermusiaux  
<http://mseas.mit.edu>

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