



RAL/MMM SEMINAR SERIES

Benchmarking MPAS- NoahMP for S2S Prediction: A Long-Term Assessment of Key Global Meteorological Pattern & Land-Atmosphere Interactions

ZHE ZHANG

NSF National Center for Atmospheric Research

Wednesday, November 12, 2025

1-2 PM (MT)

HYBRID MEETING FL2-1022 | [Watch Live](#)



Subseasonal-to-seasonal (S2S) forecasts are challenging, yet the land surface provides a key source of predictability on these timescales. This presentation benchmarks the coupled MPAS-NoahMP model for S2S applications using a 25-year, 60-km global simulation. We evaluate the model's climatology, systematic biases, and its ability to represent critical land-atmosphere interactions. The simulation captures global temperature and precipitation patterns well, despite some known sensitivities in high-latitude winters and regional precipitation biases. Crucially for S2S, the model accurately reproduces key land-atmosphere coupling hotspots, such as summer soil moisture-evaporation feedbacks, and major modes of tropical variability like ENSO and the MJO. To demonstrate its forecast potential, we will also present an S2S case study of the May 2015 extreme rainfall event in Texas. This work establishes a foundational reference dataset for the MPAS-NoahMP system, paving the way for its future use in S2S prediction. [Event Website](#)