Earth & Environmental Systems Modeling

# 2024 EESM PI Meeting

## August 6-9, 2024

## Bethesda North Marriott Hotel & Conference Center

## Rockville, Maryland, USA

**Date and Time:** Thursday, August 8, 2024, 1:00-4:00 p.m.

**Session Name:** 4. Local/Regional Testbeds – an integrative framework for multidisciplinary model development and applications

**Room / Location:** Glen Echo Room

**Breakout Co-chairs:** Nicole Jeffery, LANL (njeffery@lanl.gov) and Shaocheng Xie, LLNL (xie2@llnl.gov)

**Topic Leads:** Rob Hetland, Mark Peterson, Antonia Hadjimichael, Ben Sulman, Yun Qian, Peter Bogenschutz, Qi Tang, Andrew Gettelman

***Breakout Session Agenda***

1:00-2:05 p.m.: Moderator Introduction / Leading Questions – Rob Hetland, PNNL
- Zoom Monitors (2) – Yun Qian, PNNL
- Rapporteurs (3) – Nicole Jeffery, Ben Sulman, Peter Bogenschutz (virtual)

1:05–1:40 p.m.: Featured oral presentation (5 min plus 2 min for clarifying questions)
- 1:05–1:12 p.m.: From Data to Decisions: Machine Learning for Water Allocation Amid Hydrologic Extremes – Nicole Jackson, SNL (early career)
- 1:12–1:19 p.m.: The Indian Ocean-Maritime Continent Regionally Refined SCREAM Configuration for MJO studies – Hsi-Yen Ma, LLNL
- 1:19–1:26 p.m.: Progress toward a high-resolution 3D regional land model for agricultural Systems – Scott Painter, ORNL
- 1:26–1:33 p.m.: Integrated modeling of estuarine tide-surge-river dynamics and time evolving flood risks. – Mithun Deb, PNNL (early career)
- 1:33–1:40 p.m.: Earth system models in a community and regional planning and decision support context: Perspectives from Arctic Alaska – Hajo Eicken, University of Alaska

1:40–2:30 p.m.: Moderator-led discussion (50 min)
- What are the current and unique strengths and foundational capabilities of DOE local/regional testbeds? (Describe your testbed: Why use a local/regional testbed for your investigation? What type of computational approach did you use in your testbed? What

location did you use for this testbed and why? What advancements and opportunities in modeling, data products and data integration support the use of your testbed? Why use a local/regional testbed for this investigation?)
- What do you see as a grand challenge for the development and enhanced utility of the testbed framework for integrated research in EESM?
- What are the gaps in research / infrastructure / coordination that prevent advances using testbeds?

2:30–2:45 p.m.: Break

2:45–4:00 p.m.: Moderator led discussion (Shaocheng Xie)
- *Zoom Monitors (2) – Yun Qian*
- *Rapporteurs (2) – Ben Sulman, Nicole Jeffery*

2:45-3:15 p.m.:
- What opportunities, new technologies, observational systems and approaches exist to overcome each of those gaps?
- How can the testbed framework be advanced to promote coordination across EESM and BER?

3:15–4:00 p.m.:
- What role could other agencies play in facilitating the efficacy of testbeds in achieving our science?
- What are reasonable 2–5 year, 5–10 year, and long-term goals for addressing these grand challenges?

4:00 p.m.: Adjourn

***Thursday Poster Session***

- #145 Climatological characteristics of derechos and their responses to global Warming – Jianfeng Li, PNNL
- #146 How will climate change and a global transition to non-fossil fuel energy affect energy security across Arctic Alaska? – Ying Zhang, PNNL
- #147 Genesis, characteristics, and trends of Atlantic tropical cyclones that do and do not develop from African easterly waves – Emily Bercos-Hickey, LBNL
- #148 Modeling Transport of Estuarine Contaminants in Coastal Urban Systems: A Baltimore Case Study – Julia Moriaty, University of Colorado
- #149 Integrated fluvial-pluvial-coastal flood modeling in coastal urban regions – Ian Krakunas, PNNL
- #150 Contrasting E3SM-simulated aerosols and aerosol-cloud interactions at GCM scale versus cloud-resolving scale – Meng Huang, PNNL
- #151 Enhancing Low Cloud Feedback Analysis through Advanced High-Resolution Multi-scale Modeling Framework (HR-MMF) – Liran Peng, UCI