



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: 1. Metrics, Benchmarks and Credibility of Model Output and Data for Science and End Users

Room / Location: Forest Glen Room

Breakout Co-chairs: Paul Ullrich, LLNL (ullrich4@llnl.gov), Forrest Hoffman, ORNL (forrest@climatemodeling.org), and Peter Caldwell, LLNL (caldwell19@llnl.gov)

Topic Leads: Jill Zhang, Rob Nicholas, Mike Wehner, Klaus Keller, Stephen Yeager, Nathan Collier, and Scott Rupp

Breakout Session Agenda

1:00-2:00 p.m.: Systematic Model Evaluation and Benchmarking

- Facilitators – TBD
- Zoom Monitors (2) – TBD
- Rapporteurs (2) – TBD

1:00 p.m.: Introduction of Session Organization and Goals (10 min) – Forrest Hoffman, ORNL

1:10 p.m.: State of Metrics and Benchmarking (10 min) – Paul Ullrich, LLNL

1:20 p.m.: Recent Update on the Collective Earth System Model Evaluation and Benchmarking Tool: PCMDI Metrics Package (PMP) (10 min) – Jiwoo Lee, PCMDI/LLNL

1:30 p.m.: Methodological Developments in the International Land Model Benchmarking (ILAMB) Effort (10 min) – Nathan Collier, ORNL

1:40 p.m.: Open Discussion

- How do we differentiate flagship packages from standalone efforts?

2:00–2:30 p.m.: Poster Lightning Talks (2 min each)

- Facilitators – TBD
- Zoom Monitors (2) – TBD
- Rapporteurs (2) – TBD

1. Polaris: A Testing Framework for the Next-Generation Ocean Model OMEGA (2 min) – Carolyn Branecky Begeman, LANL
2. Addressing the Modeling Challenge of Climate Sensitivity (2 min) – John Christy, University of Alabama Huntsville
3. Updates on E3SM Diags: A Python Package for Earth System Model Evaluation (2 min) – Chengzhu Zhang, LLNL
4. Examining Cloud Properties and Cloud Feedbacks in DOE’s Global Storm Resolving Model (2 min) – Li-Wei Chao, LLNL
5. Quantifying the Compound Hazard: Freezing Rain-Icing-Wind Gusts (FZG) (2 min) – Jacob Coburn, Cornell University
6. UXarray: Python Package for the Analysis and Visualization of Model Output on Unstructured Climate Grids (2 min) – Rajeev Jain, ANL
7. CMIP7 the Next Phase: Ongoing Status and Planning (2 min) – Paul J. Durack, LLNL
8. Object-based Evaluation of Downscaled Precipitation Products over CONUS (2 min) – Xiaodong Chen, PNNL
9. Sea-ice Biases and Simulation Fidelity Across Multiple CMIP Phases (2 min) – Ana Ordonez, LLNL
10. New Tools for Analysis of Data on Unstructured Grids (2 min) – Robert Jacob, ANL
11. Integrating E3SM and ARM LASSO (2 min) – Scott E. Giangrande, BNL
12. Bias Correction in Dynamical Downscaling: Friend or Foe? (2 min) – Stefan Rahimi, U. Wyoming

2:45–4:00 p.m.: New Metrics, Diagnostics, and Datasets

- Facilitators – TBD
- Zoom Monitors (2) – TBD
- Rapporteurs (2) – TBD

2:45 p.m.: xCDAT (Xarray Climate Data Analysis Tools): A Python Package for Simple and Robust Analysis of Climate Data (10 min) – Tom Vo, LLNL

2:55 p.m.: A Process-Informed Determination of Credibility Across Different Downscaling Methods (10 min) – Melissa Bukovsky, U. Wyoming

3:05 p.m.: The E3SMv2.1 Seasonal-to-Multiyear Large Ensemble Forecast System: A Comparative Global Skill Assessment (10 min) – Stephen Yeager, NCAR

3:15 p.m.: New observational constraints for aerosol and aerosol-cloud interactions in E3SM (10 min) – Matthew Christensen, PNNL

3:25 p.m.: Open Discussion (20 min)

- What is DOE’s unique value to metrics and diagnostics?
- What new metrics and diagnostics packages should DOE consider?
- How do we perform evaluation across different climate datasets?

3:45 p.m. Recap and Preparation of Breakout Report Out

4:00 p.m. Adjourn

Wednesday Poster Session

- #113 Addressing the Modeling Challenge of Climate Sensitivity – John Christy, University of Alabama Huntsville
- #114 Examining Cloud Properties and Cloud Feedbacks in DOE’s Global Storm Resolving Model – Li-Wei Chao, LLNL
- #115 UXarray: Python Package for the Analysis and Visualization of Model Output on Unstructured Climate Grids – Rajeev Jain, ANL
- #116 Object-based Evaluation of Downscaled Precipitation Products over CONUS – Xiaodong Chen, PNNL
- #117 New Tools for Analysis of Data on Unstructured Grids – Robert Jacob, ANL
- #118 Bias Correction in Dynamical Downscaling: Friend or Foe? – Stefan Rahimi, University of Wyoming

Thursday Poster Session

- #113 Polaris: A Testing Framework for the Next-Generation Ocean Model OMEGA – Carolyn Branecky Begeman, LANL
- #114 Updates on E3SM Diags: A Python Package for Earth System Model Evaluation – Chengzhu Zhang, LLNL
- #115 Quantifying the Compound Hazard: Freezing Rain-Icing-Wind Gusts (FZG) – Xin Zhou, Cornell U.
- #116 CMIP7 the Next Phase: Ongoing Status and Planning – Paul J. Durack, LLNL
- #117 Sea-ice Biases and Simulation Fidelity Across Multiple CMIP Phases – Ana Ordonez, LLNL
- #118 Integrating E3SM and ARM LASSO – Scott E. Giangrande, BNL