Earth & Environmental Systems Modeling

2024 EESM PI Meeting

August 6-9, 2024
Bethesda North Marriott Hotel & Conference Center
Rockville, Maryland, USA

Date and Time: Tuesday, August 6, 2024, 1:00–4:00 p.m.

Session Name: A. Water Cycle and Hydroclimate

Room / Location: Plenary Room

Breakout Chairs: Jiwen Fan, ANL (fanj@anl.gov) and Adam Schlosser, MIT (cash@mit.edu)

Topic Leads: Bryce Harrop, PNNL; Ethan Coon, ORNL; Hailong Wang, PNNL; Chris Golaz, LLNL; Jiafu Mao; ORNL; Alan Rhoades, LBNL; Tom Wild, University of Maryland

Breakout Session Agenda

1:00–2:30 p.m.: Atmospheric and Coupled Processes

- Facilitator - Jiwen Fan
- Zoom Monitors (2) – Hailong Wang and Jiafu Mao
- Rapporteurs (2) – Alan Rhoades and Ethan Coon

1:00 p.m.: Oral Presentations (8 min talk +2 min Q/A)
1:00-1:10 p.m.: Introduce Session Organization, Goals, and Whitepaper – Jiwen Fan, ANL
1:10-1:20 p.m.: Extreme Precipitation Scaling with Temperature at the Weather Timescale and Implications for Climate Prediction – Guilin Wang, University of Connecticut
1:20-1:30 p.m.: Diagnosing Mesoscale Convective Systems in DYAMOND Models: A Feature Tracking Intercomparison – Zhe Feng, PNNL
1:30-1:40 p.m.: Atmospheric Feedbacks Dampen Surface Evapotranspiration Fluxes in Wet Regions – Claire Zarakas, University of Washington
1:40-2:30 p.m.: Discussion (50 min)

- Gaps in Research / Infrastructure / Coordination
- Opportunities to Overcome Gaps
- DOE Strengths and Capabilities
- Roles Other Agencies Play / Could Play

2:30-2:45 p.m.: Coffee Break

2:45–4:00 p.m.: Water Resources

- Facilitator - Adam Schlosser
- Zoom Monitors (2) – Chris Golaz, Thomas Wild
- Rapporteurs (2) – Bryce Harrop, Jiwen Fan

2:45-2:55 p.m.: Modernizing River Dynamics Representation in E3SM: Key Progress in the MOSART River Model – Tian Zhou, PNNL

2:55-3:05 p.m: Nonlinear carbon feedbacks in CMIP6 and their impacts on future freshwater availability – Jason Smerdon, Columbia University

3:05-3:15 p.m.: Uncovering Key Drivers of Future Virtual Water Trade and Global Water Use – Neal Graham, PNNL

3:15 p.m.: Discussion (30 min)

- Grand Challenges
- 2–5 year, 5–10 year, and long-term Goals for Addressing Grand Challenges
- Potential Coordination Across BER

3:45 p.m.: Recap and Preparation of Breakout Report Out – Adam Schlosser, MIT

4:00 p.m.: Adjourn

Wednesday Poster Session

- #002 Environmental controls on MCS lifetime rainfall over tropical oceans – Xingchao Chen, The Pennsylvania State University
- #007 Synchronization of the Recent Decline of East African Long Rains and Northwestern Asian Warming – Samson Hagos, PNNL
- #003 Madden-Julian Oscillation and Atmospheric Rivers: New Insights on Water Source and Transport for Extreme Rainfall Over the Western US – Chad Small, University of Washington
- #010 Vertical structure of fronts and atmospheric rivers in the Energy Exascale Earth system model (E3SM) – John Landy, Stony Brook University
- #001 Buoyancy-precipitation coupling in the life cycle of tropical mesoscale convective systems – Wei-Ming Tsai, UCLA
- #008 Toward improved understanding of hydrological processes in EAMxx using water isotope ratios and numerical tracers – Richard Fiorella, LANL
- #005 Moisture transport into the Arctic revealed by numerical water tracers in E3SMv2 – Nicole Feldl, UC Santa Cruz
- #004 Understanding Changes in Cloud Simulations from E3SM Version 1 to Version 2 – Yuying Zhang, LLNL
- #009 Towards Unified Convection Parameterization for Seamless Transition from Shallow to Deep Convection in SCREAM – Maria J. Chinita, UCLA and JPL
- #006 Why does SCREAM exhibit an L-shaped Relative Humidity profile in the tropics? – Hassan Beydoun, LLNL
- #011 Uncertainty of 21st Century western U.S. snow loss derived from regional climate model large ensemble – Jesse Norris, UCLA

Thursday Poster Session

- #006 Low-likelihood high impact snowmelt events: rain-on-snow and snow-eater heatwaves – Alan Rhoades, LBNL

- #009 Uncertainty of 21st Century western U.S. snow loss derived from regional climate model large ensemble – Jesse Norris, UCLA
- #005 Analysis of reservoir drought risks based on a novel reservoir drought index considering water demand and supply in the western United States – Seon-Ho Kim, City University of New York
- #003 River Routing and Water Management with mosartwmpy – Travis Thurber, PNNL
- #008 The influence of climate change on the recent southwest US megadrought through the lens of the Thermodynamic Global Warming simulations – Rachel McCrary, NCAR
- #007 Groundwater and Society Workshop: Transdisciplinary collaborations for sustainable management of an "Invisible Resource" – Lidiia Iavorivska, Penn State University
- #002 An Integrated Multisector Modeling Framework to Analyze Natural and Human Influences on Water Stress Over the Continental United States – Lili Yao, PNNL
- #001 Interactive soil moisture dries the land under anthropogenic warming – Wenyu Zhou, PNNL
- #004 Combined climate and hydrologic uncertainties shape projections of future soil moisture extremes – Ryan Sriver, University of Illinois