ESPWG Co-chairs Update

CESM Annual Workshop 2025

WG Co-chairs: Stephen Yeager, Kathy Pegion
WG liaison: Sasha Glanville

NCAR

11 June 2025

NSF

This material is based upon work supported by the National Center for Atmospheric Research, which is a major facility sponsored by the National Science Foundation under Cooperative Agreement No. 1852977.

Wednesday, June 11th, 13:00 pm - 16:00 pm

** All times are MDT; **Speakers**: 10-12 min. talk. Please leave 3-5 min at the end of your slot for questions.*

Time	Topic	Speakers
1:00	Leveraging CESM2 data for machine learning based S2S forecasting	Anisha Pal
1:15	The fidelity of land-atmosphere interactions in CESM	Paul Dirmeyer
1:30	Benefits of an online bias-correction for S2S forecasts	Judith Berner
1:45	Quantifying sources of subseasonal prediction skill in CESM2 within a perfect modeling framework	Abby Jaye
2:00	The impacts of vertical resolution on seasonal predictability in a new CESM suite of seasonal hindcasts	Isla Simpson
2:15	The Influence of Tropical-Extratropical Interactions on Northeast Pacific Marine Heatwave Predictability in CESM	Evan Meeker
2:30	BREAK	
3:00	AMOC and subpolar North Atlantic Ocean predictability in CMIP6 decadal prediction simulations	Dylan Oldenburg (remote)
3:15	2019-2020 Australian bushfire smoke, multi-year La Niña, and implications for the Interdecadal Pacific Oscillation (IPO)	Jerry Meehl
3:30	Efficient Drift Correction of Initialized Predictions	Steve Yeager
3:45	Co-Chairs Update & Discussion	
4:00	ADJOURN	

Posters

	Decadal Predictability for Hydroclimatic Drivers of Wildfires across North America	Samar Minallah
	Breakthrough Data Assimilation Capabilities Available for CESM using DART	Kevin Raeder

ESPWG Dataset Updates

https://www.cesm.ucar.edu/working -groups/earth -system/

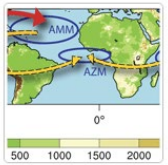
- CESM2 **S2S** CAM single-climo and dual-climo initialization experiments
  - 11-member, 45-day ensembles initialized weekly (1999-2020)
  - Set one or two components (atmosphere, land, or ocean) to climatology, while other(s) are realistic
  - *Ref: Richter et al., 2024 ("Quantifying sources of subseasonal prediction skill in CESM2")*
  - NEW: extension to 2022 (May-Aug)

- CESM2 **SMYLE** backward extension
  - {Feb, May, Aug, Nov} initializations now span 1958-2019
  - 20 member ensemble

- CESM2 **SMYLE** "CLIVAR TBI CoEx" hindcast pacemaker experiments
  - Equivalent to SMYLE, but with regional SST anomaly nudging to Obs (tropical ATL, PAC, IND)
  - Feb. 1 init, 10 member ensemble, 1978-2019

The Tropical Basin Interaction Model Intercomparison Project (TBIMIP)

Ingo Richter ✉, Ping Chang, Ping-Gin Chiu, Gokhan Danabasoglu, Takeshi Doi, Dietmar Dommenget, Guillaume Gastineau, Zoe E. Gillett, Aixue Hu, Takahito Kataoka, Noel S. Keenlyside, Fred Kucharski, Yuko M. Okumura, Wonsun Park, Malte F. Stuecker, Andréa S. Taschetto, Chunzai Wang, Stephen G. Yeager, and Sang-Wook Yeh



Richter et al. (*GMD*, 2025)

ESPWG Dataset Updates

https://www.cesm.ucar.edu/working -groups/earth -system/

- CESM2 **DP**
  - Nov. 1 init, 20 member ensemble, 1958-2023
  - 10-year hindcasts
  - NEW: timeseries files to be uploaded to CMIP6Plus

- CESM2 **MDP**
  - Nov. 1 init, 10 member ensemble, {1960, 1965, …, 2015}
  - 20-year hindcasts

Ongoing/Planned ESPWG Allocation Usage

- ✔ CESM2-SMYLE backward extensions to 1958
- ✔ CESM2-MDP
- ✔ ClimoIC hindcasts for CESM2-S2S, CESM2-SMYLE, CESM2-DP
- CESM2-S2S land/atmosphere coupling sensitivity experiments (Fowler/Glanville/Richter)
- CESM2-S2S w/ online deterministic bias correction & stochastic physics (Berner/Chapman)
- CESM2-DP mixed resolution experiments
- CESM2 coupled MOV-mechanism experiments (DCPP CMIP7)
- CESM3-SMYLE case study experiments
- CESM3-S2S and CESM3-SMYLE partial reforecast sets

Open Workshop on Understanding and Predicting Annual to Multi-Decadal Climate Variations

- 18-20 November, 2025 in Bologna, Italy (hybrid option)
- Abstract Submission Deadline: 15 July
- www.upcliv-workshop.eu

Open Discussion

Get Involved!

- Analyze ESPWG datasets
- Propose new experiments that can utilize ESPWG compute allocation
- Share your work at future meetings

Contacts:

- Steve Yeager (yeager@ucar.edu)
- Kathy Pegion: (kpegion@gmu.edu)
- Sasha Glanville (sglanvil@ucar.edu)
- https://www.cesm.ucar.edu/working -groups/earth -system/