

Community Earth System Model (CESM) Tutorial

NCAR Mesa Lab, Boulder, CO

5-9 August 2024

All sessions in Mesa Lab Seminar Room unless otherwise specified

Goals

As a result of attending the CESM Tutorials, attendees will:

1. Gain a foundational scientific understanding of the core CESM components and CESM features.
 2. Be able to run and modify the model and use the output.
 3. Have opportunities to network with peers and CESM scientists.
 4. Attain an understanding of HPC needed for CESM.
 5. Perceive the tutorials to be an inclusive learning environment.
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Links

Tutorial Website: <https://www.cesm.ucar.edu/events/tutorials/cesm>

Lab materials: <https://ncar.github.io/CESM-Tutorial/README.html>

Monday, August 5

- 8:15-8:30 Welcome, Intro & logistics (*Cécile Hannay & Elizabeth Faircloth*)
- 8:30-9:15 CESM overview and intro to the coupled system (*Dave Lawrence*)
- 9:15-9:30 Break (coffee)
- 9:30-10:15 Atmosphere Modeling I: Dynamics (*Peter Lauritzen*)
- 10:15-10:30 Break (snacks)
- 10:30-11:00 NCAR HPC environment (*Rory Kelly*)
- 11:00-11:15 Intro to Lab: Basics of CESM (*Katherine Thayer-Calder*)
- 11:15-12:00 Lab exercises (**Library**)
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- 12:00-1:15 Lunch on your own + activities (**Cafeteria**)
ML Public Tour (Meet at noon **front door**)
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- 1:15-2:00 Atmosphere Modeling II: Parameterizations (*Christina McCluskey & Meg Fowler*)
- 2:00-2:15 Break
- 2:15-2:45 Climate Variability (*Clara Deser*)
- 2:45-3:00 Lab exercises check in

3:00-5:00 Lab exercises (**Library**)
5:00-5:15 Daily debrief
5:30 Shuttle Departs ML

Tuesday, August 6

8:25-8:30 Daily logistics
8:30-9:15 Land Modeling I: Biogeophysics (*Will Wieder*)
9:15-9:30 Break (coffee)
9:30-10:15 Land Modeling II: Biogeochemistry/ecosystems (*Adrianna Foster*)
10:15-10:30 Break (snacks)
10:30-10:45 Intro to Lab: XML changes (*Hui Li*)
10:45-12:00 Lab exercises (**Library**)

12:00-1:15 Lunch on your own + activities
Meet a scientist (**Breakout rooms**: 12:15-1:00)

1:15-2:00 Sea-Ice Modeling (*Alice DuVivier*)
2:00-2:15 Break
2:15-2:45 Paleoclimate (*Sophia Macarewich*)
2:45-3:00 Lab exercises check in
3:00-5:00 Lab exercises (**Library**)
5:00-5:15 Daily debrief
5:30 Shuttle Departs ML

Wednesday, August 7

8:25-8:30 Daily logistics
8:30-9:15 Ocean Modeling I: basics and overview of models (*Gustavo Marques*)
9:15-9:30 Break (coffee)
9:30-10:15 Ocean Modeling II: parameterizations/physics (*Peter Gent*)
10:15-10:30 Break (snacks)
10:30-10:45 Intro to Lab: Namelist and code changes (*Cécile Hannay*)
10:45-12:00 Lab exercises (**Library**)

12:00-1:15 Lunch on your own + activities
Meet a scientist (**Breakout rooms**: 12:15-1:00)
ML Public Tour (Meet at noon **front door**)

1:15-2:00 Ocean Modeling III: biogeochemistry (*Keith Lindsay*)
2:00-2:15 Break
2:15-2:45 Simpler Models (*Isla Simpson*)
2:45-3:00 Lab exercises check in
3:00-5:00 Lab exercises (**Library**)
5:00-5:15 Daily debrief
5:30 Shuttle Departs ML

Thursday, August 8

- 8:25-8:30 Daily logistics
8:30-9:00 CAM-chem (*Rebecca Buchholz*)
9:00-9:15 Break (Group photo)
9:15-9:45 WACCM (*Mijeong Park*)
9:45-10:30 CGD Cafe
10:30-10:45 Intro to Lab: breakouts (*Multiple speakers*)
10:45-12:00 Lab exercises (**Library**)
- 12:00-1:15 Lunch on your own + activities
Meet a scientist (**Breakout rooms**: 12:15-1:00)
- 1:15-2:00 Land Ice Modeling (*Bill Lipscomb*)
2:00-2:15 Break
2:15-2:45 Climate justice (*Monica Morrison*)
2:45-3:00 Lab exercises check in
3:00-5:00 Lab exercises (**Library**)
5:00-5:15 Daily debrief
5:30 Shuttle Departs ML

Friday, August 9

- 8:25-8:30 Daily logistics
8:30-9:00 Behind the scenes of model development (*Cécile Hannay*)
9:00-9:30 Variable resolution (*Adam Herrington*)
9:30-9:45 Break (coffee and snacks)
9:45-10:00 Intro to Lab: diagnostics
10:00-12:15 Lab exercises (**Library**)
- 12:15-1:30 Lunch on your own + activities
ML Public Tour (Meet at noon **front door**)
- 1:30-2:00 Model porting (*Jim Edwards*)
2:00-2:10 Break
2:10-2:25 CESM and You (*Dave Lawrence*)
2:25-2:45 Wrap up, Daily check-in, Survey
3:00 Shuttle Departs ML