

Community Earth System Model (CESM) Tutorial

NCAR Mesa Lab, Boulder, CO

July 6-10, 2026

Mesa Lab Seminar Room

Daily 8:30am -4:30 pm. Shuttle departs at 4:45 pm

Components lectures - 45 minutes (30min presentation + 15min questions)

Specialized Lectures - 30 minutes (20min presentation + 10min questions)

Labs:

- Day1, CESM basics: Morning 45min + afternoon 85 min
- Day2, XML Mods: Morning 60 min + afternoon 115 min
- Day3, Namelist & sourceMods: Morning 75 min + afternoon 115 min
- Day4, Diagnostics lab: Morning 75 min + afternoon 85 min
- Day5, breakout lab: Morning 90 min + afternoon 90 min

Monday, July 6

- 8:15-8:30 Welcome, Intro & logistics (*Sophia Macarewich & 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 (light 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**)
- 12:00-1:15 Lunch on your own + activities (**Cafeteria**)
ML Public Tour (Meet at noon **front door**)
- 1:15-2:00 Atmosphere Modeling II: Parameterizations (*Kanishk Gohil & Ben Stephens*)
- 2:00-2:15 Break
- 2:15-2:45 Behind the scenes of model development (*Cécile Hannay*)
- 2:45-2:55 Lab exercise check in
- 2:55-4:20 Lab exercises (**Library**)
- 4:20-4:35 Daily debrief
- 4:45 Shuttle Departs ML

Tuesday, July 7

- 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 (*Sophia Macarewich*)
- 10:45-12:00 Lab exercises (**Library**)
- 12:00-1:15 Lunch on your own + activities
- 12:00-1:00: ML private tour (Meet at noon **front door**)
 - 12:15-1:00: Meet an expert (**Breakout rooms to be assigned**, *Will Wieder, Rich Neale, Marika Holland, Gunter Leguy, Dan Amrhein, Isla Simpson*)
- 1:15-2:00 Sea-Ice Modeling (*David Clemens-Sewall*)
- 2:00-2:15 Break
- 2:15-2:25 Lab exercises check in
- 2:25-4:20 Lab exercises (**Library**)
- 4:20-4:35 Daily debrief
- 4:45 Shuttle Departs ML

Wednesday, July 8

- 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 + snack)
- 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
- 12:00-1:00: ML private tour (Meet at noon **front door**)
 - 12:15-1:00: Meet an expert (**Breakout rooms to be assigned**, *Dave Lawrence, Peter Lauritzen, Dave Bailey, Kristen Krumhardt, Jiang Zhu, Aixue Hu, Adrianna Foster*)
- 1:15-2:00 Ocean Modeling III: biogeochemistry (*Keith Lindsay*)
- 2:00-2:15 Break
- 2:15-2:25 Lab exercises check in
- 2:25-4:20 Lab exercises (**Library**)
- 4:20-4:33 Daily debrief
- 4:45 Shuttle Departs ML

Thursday, July 9

- 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/WACCM-X (*Mijeong Park & Nick Pedatella*)
- 9:45-10:15 Break
- 10:15-10:45 Paleoclimate (*Jiang Zhu*)
- 10:45-11:00 Intro to Lab: diagnostics (*Jesse Nusbaumer*)
- 11:00-12:00 Lab exercises (**Library**)
- 12:00-1:15 Lunch on your own + activities
- 12:15-1:00: Meet an expert (**Breakout rooms to be assigned**, *Kyle Nardi & Christine Shields, Jesse Nusbaumer, Laura Landrum, William Xu, Katie Dagon*)
- 1:15-2:00 Land Ice Modeling (*Gunter Leguy*)
- 2:00-2:15 Break
- 2:15-2:45 Climate Variability (*Clara Deser*)
- 2:45-2:55 Lab exercises check in
- 2:55-4:20 Lab exercises (**Library**)
- 4:20-4:35 Daily debrief
- 4:45 Shuttle Departs ML

Friday, July 10

- 8:25-8:30 Daily logistics
- 8:30-9:00 Simpler Models (*Isla Simpson*)
- 9:00-9:30 Machine Learning (*Katie Dagon*)
- 9:30-9:45 Break (coffee and snacks)
- 9:45-10:15 Earth System Prediction (*Kirsten Mayer*)
- 10:15-10:30 Intro to Lab: breakouts (*Multiple speakers*)
- Cecile (atmos), Jiang (paleo), Gunter (land ice), Dave Bailey (sea ice), Rebecca Buchholz (chemistry), Erik (land & fates), Kristen (biogeochem), William (ocean), Charlie (machine learning)*
- 10:30-12:00 Lab exercises (**Library**)
- 12:00-1:15 Lunch on your own + activities
- ML Public Tour (Meet at noon **front door**)
- 1:15-1:45 Variable resolution (*Adam Herrington*)
- 1:45-2:00 Break
- 2:00-2:30 The Ethics of Earth System Modeling (*Monica Morrison*)
- 2:30-4:00 Lab exercise (**Library**)
- 4:00-4:20 Wrap up, Daily check-in, Survey
- 4:30 Shuttle Departs ML