

Community Earth System Model (CESM) Tutorial

NCAR Mesa Lab, Boulder, CO

7-11 July 2025

Mesa Lab Seminar Room

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

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

Monday, July 7

- 8:15-8:30 Welcome, Intro & logistics (*Hui Li & 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 (*Christina McCluskey & Meg Fowler*)
- 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 8

- 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

ML private tour (12:00-1:00)
Meet a scientist (**Breakout rooms**: 12:15-1:00)

1:15-2:00 Sea-Ice Modeling (*Alice DuVivier*)
2:00-2:15 Break
2:15-2:25 Lab exercises check-in
2:25-4:20 Lab exercises (**Library**)
4:20-4:35 Daily debrief
4:45 Shuttle Departs ML

Wednesday, July 9

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
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
2:15-2:25 Lab exercises check in
2:25-4:20 Lab exercises (**Library**)
4:20-4:33 Daily debrief
4:45 Shuttle Departs ML

Thursday, July 10

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*)
9:45-10:15 Break
10:15-10:45 Climate Variability (*Clara Deser*)
10:45-11:00 Intro to Lab: diagnostics (*Jesse*)
11:00-12:00 Lab exercises (**Library**)

12:00-1:15 Lunch on your own + activities
ML private tour

Meet a scientist (**Breakout rooms**: 12:15-1:00)

1:15-2:00	Land Ice Modeling (<i>Gunter Leguy</i>)
2:00-2:15	Break
2:15-2:45	Paleoclimate (<i>Sophia Macarewich</i>)
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 11

8:25-8:30	Daily logistics
8:30-9:00	Simpler Models (<i>Brian Medeiros</i>)
9:00-9:30	Variable resolution (<i>Adam Herrington</i>)
9:30-09:45	Break (coffee and snacks)
09:45-10:15	Earth System Prediction (<i>Steve Yeager</i>)
10:15-10:30	Intro to Lab: breakouts (<i>Multiple speakers</i>) <i>Potentially: Cecile (atmos), Sophia (Paleo), Gunter (Land Ice), Dave Bailey (sea ice), Rebecca Buchholz (chemistry), Erik (land), Kristen (biogeochem), Alper (Ocean).</i>
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	Model porting (<i>Jim Edwards</i>)
1:45-2:00	Break
2:00-2:30	How CESM can be used for actionable science (<i>Monica Morrison</i>)
2:30- 4:00	Lab exercise (Library)
4:00-4:20	Wrap up, Daily check-in, Survey
4:30	Shuttle Departs ML