



2025 CESM Tutorial

Final check-in

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Jul 7-11, 2025

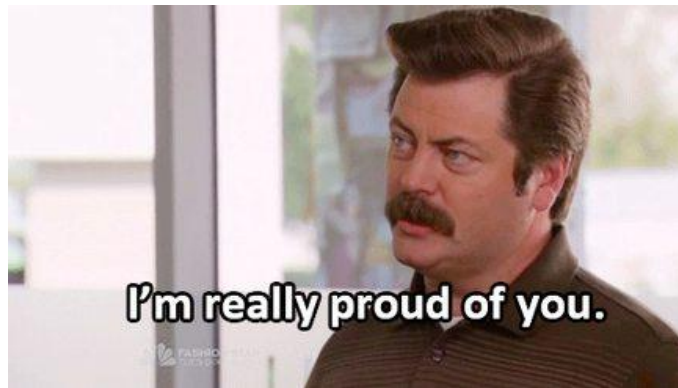
2025 CESM Tutorial



Tutorial Goals

As a result of attending the CESM Tutorial, attendees ~~will~~ have:

- ❑ Gained a foundational scientific understanding of the core CESM components and CESM features.
- ❑ Been able to run and modify the model and use the output.
- ❑ Had opportunities to network with peers and CESM scientists.
- ❑ Attained an understanding of High Performance Computing (HPC) needed for CESM.
- ❑ Perceived the tutorials to be an inclusive learning environment.



Continuing to learn on Derecho

How long will I keep my account?

- Accounts will be active until Aug 31

How can I get an allocation on derecho?

- Small allocations are available for researchers at U.S. institutions
<https://ncar-hpc-docs.readthedocs.io/en/latest/allocations/university-allocations>
- Exploratory / classroom allocations don't require a NSF-funded project

Other Learning Opportunities

- Tutorials:
 - Component model tutorials (i.e., CTSM tutorial)
 - Cloud-based half-day tutorials at AGU, AMS, and even WCRP in Kigali
- Please share your knowledge with colleagues and recommend future tutorials
- The learning materials, slides, recordings, Jupyter notebooks will continue to be available



Earth System models and data can be a tool in your research toolbox

Earth System Modelling is hard!



“Observations of the future are not available at this time.” - Knutson, 2005

NCAR's role is to serve as a collaborative hub to help enable the research community



Slides from Dave Lawrence

Learning and engagement opportunities



Tutorials

- CESM Tutorial (80+ students, online materials)
- Jupyter notebooks

Mentoring

- NCAR CESM staff host graduate students / postdocs / and faculty visits

Workshops

- 30th CESM Annual Workshop (June 9-11, 2025)
 - Award for best graduate student contribution to CESM project
- Winter Working Group meetings (February)

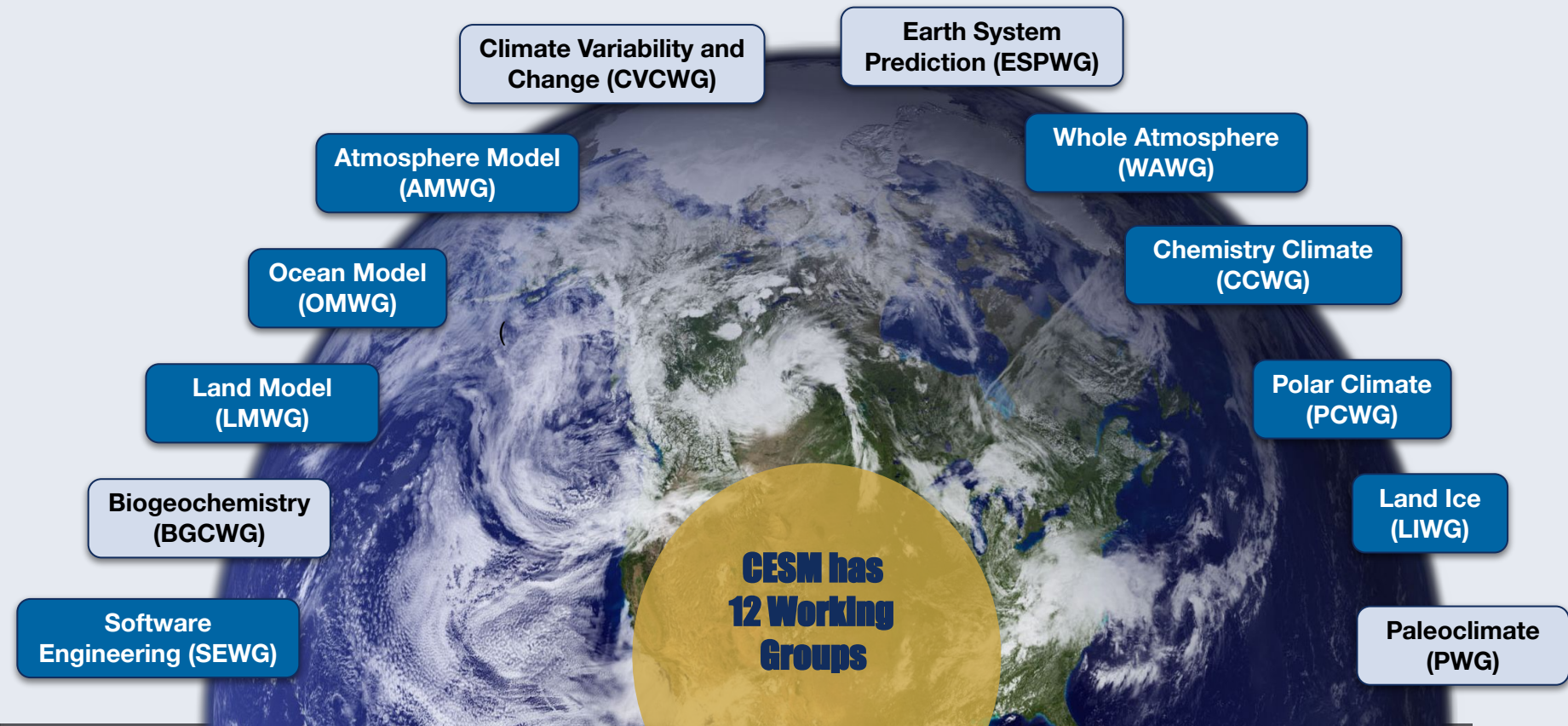


STAY CONNECTED WITH THE CESM COMMUNITY



- CESM working groups
- CESM newsletter
- CESM mailing lists
- DiscussCESM forum
- Faculty classroom
- CESM Github
- CGD Social Media

CESM Working Groups provide platform for engaged community model development and application



The CESM Newsletter

- Updates on CESM events
- Point users to new or under-advertised features of CESM
- Research highlights from across community
- Quick links to common pages (CGD Youtube, User support forum, Release pages, etc)

CESM

Chief Scientist – David Lawrence

The CESM project is supported primarily by the U.S. National Science Foundation (NSF). Administration of the CESM is maintained by the CGD Laboratory at the NSF National Center for Atmospheric Research (NSF NCAR).

CESM is a fully-coupled, community, global Earth system model that provides state-of-the-art computer simulations of the Earth's past, present, and future states.

SUBSCRIBE TO OUR NEWSLETTER

www.cesm.ucar.edu

April 2025 Newsletter Issue

Welcome to the Community Earth System Model (CESM) Newsletter. Want to receive our next newsletter in your inbox? Visit our [newsletter page](#) to subscribe and never miss a newsletter.



Photo by Elizabeth Hunkle

In this Newsletter:

Chief Scientist Message

30th Annual CESM Workshop

Plenary Speakers for the 30th Annual CESM Workshop

Faculty Network

Searching for Photos from past CESM Workshops

CESM Winter Working Group Video Recordings Available

Research Highlights from Our Community

Quick Links

Chief Scientist Message



I want to begin by acknowledging the ongoing anxiety and sadness that so many of us are feeling as we hear and read about layoffs, restrictions, and reduced science budgets at NSF and other federal agencies. With all of this uncertainty, it can be challenging to maintain focus on research. But, I have been impressed and thankful for the continued dedication and effort of the CESM development team and for the broader CESM research community that continues to utilize CESM and CESM model output to conduct impactful research.

Within the broader context of this uncertainty, we are pushing forward with CESM activities. The 30th Annual CESM Workshop is coming up



CESM mailing lists

<https://www.cesm.ucar.edu/communications>

Q: Can I receive CESM updates in my email inbox?

A: Of course!

View the list below and click on the name to get more information about the list, or to subscribe, unsubscribe, and change the preferences on your subscription. If you have issues with subscribing to a list, then email fair@ucar.edu.

[CESM Community](#) Announcements for workshops, call for talks

[CESM Jobs](#) Posts for job openings, Post doc opportunities and internships related to CESM related fields

[CESM Participants](#) All participants in the Community Earth System Model (CESM) project

[CESM Project meeting](#) Regular meetings related to the development and implementation of CESM

Updated: 12/5/2023

Q: Can I receive CESM working group updates in my email inbox?

A: Of course!

View the list below and click on the name to get more information about the list, or to subscribe, unsubscribe, and change the preferences on your subscription. If you have issues with subscribing to a list, then email fair@ucar.edu.

[CESM AMWG](#) CESM Atmosphere Model Working Group List

[CESM Biogeochemistry](#) CESM Biogeochemistry Working Group List

[CESM Chemistry](#) CESM Chemistry Working Group List

[CESM CVCWG](#) Working Group List

[CESM ESPWG](#) CESM Earth System Prediction Working Group

New [CESM Faculty](#) Network for Teaching with CESM

[CESM LIWG](#) CESM Land Ice Working Group List

[CESM Land](#) CESM Land Working Group List

[CESM Ocean](#) CESM Ocean Model Working Group List

[CESM PWG](#) Working Group List

[CESM Polar](#) CESM PCWG

[CESM SEWG](#) CESM Software Engineering Working Group

[CESM WACCM](#) CESM WACCM Working Group



Discuss CESM Forum (<https://bb.cgd.ucar.edu/cesm/>)

NCAR CGD

DiscussCESM

Forums

What's new

Log in

Register

Search

New posts


Search forums

DiscussCESM Forums

Information to include in help requests

Supported Development Release 2.2.0

Supported Production Release 2.1.3



The Community Earth System Model (CESM) is a fully coupled, global climate model that provides state-of-the-art computer simulations of the Earth's past, present, and future climate states. Please post your question to the most appropriate forum topic.

CESEG Announcements


Threads 59

Messages 275

J

New Releases available now.
Jan 11, 2024 · jedwards

Non-component-specific topics


 CESM General

Threads 3.5K

Messages 14.1K

X

How to run compset B1850 with y...
Yesterday at 9:35 PM · Xun Li


 CESM Community Projects

Threads 76

Messages 408

K

Failure in trying to reproduce a SS...
Jul 8, 2024 · kyha0830


 CESM Diagnostics and Postprocessing

Threads 14

Messages 60

Y

Failure due to error in inputdata file
Jul 23, 2024 · yongsheng zheng


 Infrastructure (CIME, porting, machines, scripts)

Threads 750

Messages 4.3K

H

Running CESM2.1.5 on Stampede 3
Yesterday at 5:03 PM · harukihirasaw


 Data Models

Threads 65

Messages 177

W

Data Issues with the CESM Model...
Jul 3, 2024 · wrunyu


 Containers & Cloud Platforms

Threads 24

Messages 131

F

Containerized CESM for laptops/...
Jan 27, 2024 · feellikeclimateresearch

 Machine Learning


Threads 9

Messages 9

M

What configurations and depende...
Jun 14, 2024 · markwilliams21

Specialized Configurations

 High resolution/variable resolution

Threads 35

Messages 121

哒

编译cesm1_3_beta17代码时报错...
Tuesday at 12:58 AM · 哒哒哒

New Posts

O

Questions on interpreting surface energy balance and specific humidity results in CLM
Latest: oleson · 8 minutes ago
CTSM, CLM, MOSART, RTM

L

Error in in subgridWeightsMod.F90
Latest: LiwenWu · Today at 7:57 AM
CTSM, CLM, MOSART, RTM

X

How to run compset B1850 with year 2000 input - can't find input data
Latest: Xun Li · Yesterday at 9:35 PM
CESM General

H

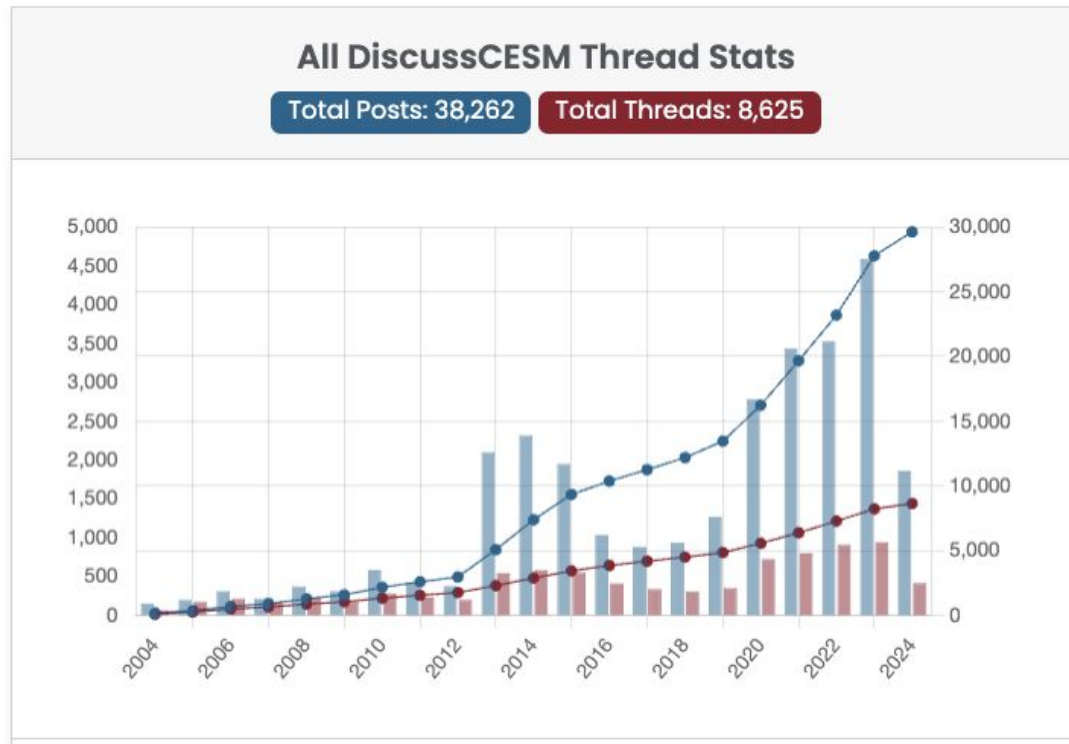
Running CESM2.1.5 on Stampede 3
Latest: harukihirasawa · Yesterday at 5:03 PM
Infrastructure (CIME, porting, machines, scripts)

D

Naming of restart files
Latest: djw · Yesterday at 1:43 AM
Infrastructure (CIME, porting, machines, scripts)

Discuss CISM Forum (<https://bb.cgd.ucar.edu/cesm/>)

- DiscussCISM Forum
 - Trying to direct all support requests to DiscussCISM for greater collective benefit
 - Implementing a 'best answer' flag



Faculty Network for Teaching with CESM

<https://www.cesm.ucar.edu/classroom>

Faculty Network for Teaching with CESM

Note: This description of resources is incomplete as of 6/5/2025 and will be undergoing further development in the next few weeks. Please refer to each section for the date of the latest update.



This webpage collects information and resources intended to help university faculty get setup to best utilize CESM, its component models, or simpler models in undergraduate and graduate coursework. Through the creation of a Faculty Network for Teaching with CESM, we also hope to facilitate sharing of information and resources between faculty members and to learn how to improve ease-of-use for CESM for educational purposes.

Options for computational resources

Section last update: 6/9/2025




- **Derecho**
 - Classroom allocations
 - CISM offers opportunities to undergraduate and graduate faculty and instructors at U.S. 2- and 4-year institutions to use NSF NCAR HPC and analysis resources in their courses in Earth system science and related areas. Individual accounts are provided to all students and the instructor(s), so be sure to allow at least a week for setting up accounts. Very large classes may require more setup time. NSF NCAR can provide consulting assistance to the instructors.
 - **Classroom Allocation Requests can be submitted at any time and decisions are generally made within a few days.**
 - **Allocation requests are typically on the order of ~500K core-hours**
 - Example allocation request

Interact / collaborate through github

 ESCOMP / CTSM

Q Type [7] to search

+ ▾



<> Code

Issues 657

Pull requests 54

Discussions

Actions


Projects 25

Wiki

Security 6

Insights


 **CTSM** Public

 Edit Pins ▾

 Unwatch 33 ▾

 Fork 303 ▾

 Starred 298 ▾

 master ▾

 10 Branches

 1,040 Tags

Q Go to file

t

Add file ▾








<> Code ▾


About


Community Terrestrial Systems Model
(includes the Community Land Model of CESM)

 www.cesm.ucar.edu/models/cesm2.0/

[ecosystem](#) [climate](#) [land](#) [hydrology](#)
[ncar](#) [clm](#) [cesm](#)
[land-surface-model](#)

 ekluzek	Merge pull request #2465 from mvdebolskiy/fix/excess-ice-cold-st...		33daaf8 · last week	 12,159 Commits
 .github	first remove manage_externals and update docs			3 months ago
 .lib/git-fleximod	Merge commit 'c2f52d19f48f98d97183d447a77b7947b4...			2 months ago
 bin	update submodules			3 months ago
 bld	Merge tag 'ctsm5.2.017' into fix/excess-ice-cold-start			last week

 README

 Code of conduct

 License

CTSM

DOI [10.5281/zenodo.3739617](https://doi.org/10.5281/zenodo.3739617)

Overview and resources

The Community Terrestrial Systems Model.

This includes the Community Land Model (CLM5.0 and CLM4.5) of the Community Earth System Model.

For documentation, quick start, diagnostics, model output and references, see

<http://www.cesm.ucar.edu/models/cesm2.0/land/>

and

<https://escomp.github.io/ctsm-docs/>

For help with how to work with CTSM in git, see



Interact / collaborate through github

If you find a bug, or even thing you found a bug, file an issue



GitHub repository header for ESCOMP / CTSM. The header includes the GitHub logo, the repository name, and navigation links for Code, Issues (657), Pull requests (54), Discussions, Actions, Projects (25), and Wiki. A search bar and a user profile picture are also visible.

Bug report

Report a problem with the code

Get started

Science discussion

We encourage the use of issues to discuss CTSM science developments

Get started

Other

Other issues (enhancement, cleanup, documentation, etc.)

Get started

CESM forums

For support with model use, troubleshooting, etc., please use the CTSM forum

Open

Thanks to our committee, presenters, lab helpers and admin

Adam Herrington

Adam Phillips

Addisu Semie

Alice DuVivier

Alper Altuntas

Arianna Foster

Benjamin Stephens

Bette Otto-Bliesner

Brian Dobbins

Cecile Hannay

Christina McCluskey

Clara Deser

Courtney Peverley

Dan Amrhein

Daniel Sena

Danny Leung

David Bailey

David Lawrence

Elizabeth Faircloth

Erik Kluzek

Gunter Leguy

Gustavo Marques

Jesse Nusbaumer

Jiang Zhu

Jim Edwards

John Fasullo

John Truesdale

Justin Richling

Kailyn Kampert

Katherine Thayer-Calder

Katie Dagon

Keila DeBellis

Keith Lindsay

Kristen Krumhardt

Kyle Nardi

Manish Venumuddula

Meg Fowler

Michael Levy

Mijeong Park

Monica Morrison

Peter Gent

Peter Hjort Lauritzen

Peter Lawrence

Rebecca Buchholz

Riyanka Roy Chowdhury

Rory Kelly

Sophia Macarewich

Teagan King

Teresa Walz

Walker Lee

Will Wieder


Thank YOU everyone
for creating such a valuable learning experience!



And thank you for filling out the surveys!

- daily survey
- wrap-up survey



 You are here

Hui Li