

The NCAR Climate and Global Dynamics Laboratory: *World leader in Earth System science and tools for understanding climate variability and change and addressing the risks of climate change in a collaborative and inclusive environment*

Our Mission:

- *Developing, using and supporting world-leading community models and simulations for Earth system science, including predictions and projections and other societally important applications*
- *Co-designing Earth system research across NCAR, universities, and stakeholders throughout the world; leveraging our strengths; and fostering the next generation of Earth system scientists*
- *Providing trusted, innovative data analysis, tools and methods to enable new scientific discoveries*



OPPORTUNITIES

CGD Scientific Visitor Program. The Climate and Global Dynamics Laboratory has a robust and long-standing program that brings scientific visitors to NCAR's Mesa Lab each year for collaborative research. Graduate students and postdocs are eligible to participate. Enhanced interaction with the university community allows us to play an important role in the education and training of the next generation of scientists. See www.cgd.ucar.edu/visitors

Community Earth System Model (CESM) Tutorial. Every summer, CGD provides a week-long tutorial for graduate students and early-career scientists. The tutorial consists of lectures on simulating the Earth system and practical sessions on running CESM, modifying its components, and analyzing simulations. The selection process emphasizes advancing research capacity for a broad array of university and other collaborators, with a focus on early career researchers and graduate students. See www.cesm.ucar.edu

CESM Workshop. Every June, CGD hosts a CESM Workshop for the scientific community. The workshop is a combination of plenary presentations, CESM working group sessions, a poster session, and cross working group sessions. Working groups meet to discuss current and future priorities, model development, and simulations. This is also a time to enhance collaborations and communicate CESM science to users and researchers. Presentations are made available to the community via the web. <https://www.cesm.ucar.edu/events/workshops/>

COMMUNITY RESOURCES

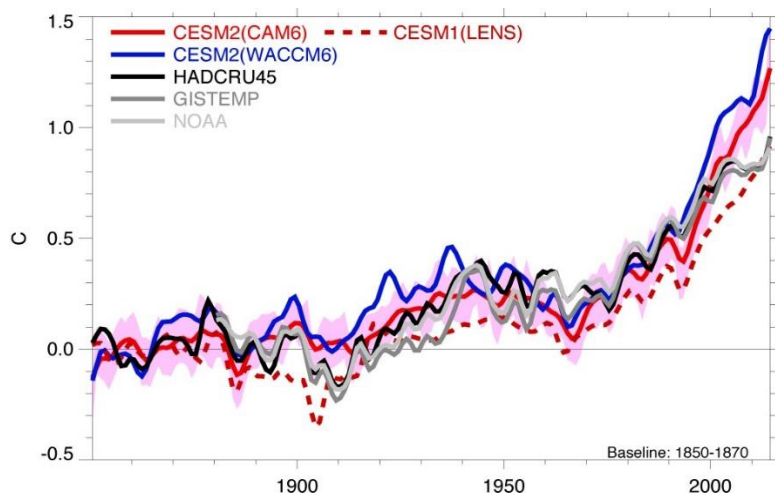
CESM | Community Earth System Model. CESM is an open-source fully-coupled global Earth system model developed in collaboration with the community. It provides state-of-the-art computer simulations of Earth's past, present, and future climate states. Vital elements of CESM development include modern parameterizations, software engineering, and evaluations against observational datasets. CESM provides the community with a single framework that enables portable and flexible out-of-the-box capabilities for Earth system-related research, including parameterization developments and simpler configurations. See www.cesm.ucar.edu

CESM Component Models and Options. The CESM is a collection of component models: CAM: Community Atmosphere Model; CICE: Los Alamos Sea Ice Model; CISM: Community Ice Sheet Model; CLM: Community Land Model; MOM: Modular Ocean Model. These component models can be used in many different configurations, including stand-alone and simpler configurations, to address a wide range of scientific topics. See www.cesm.ucar.edu/models

Community Modeling Datasets. Community datasets encompass output and post-processed data from Earth system model experiments. These include ensembles of simulations to explore past, present, and future forced and natural variability of the coupled system and climate intervention scenarios. They are extensively used by CGD scientists, university collaborators, and other research partners. See [Community Projects](#)

Climate Data Guide. Frequently visited by students, the Climate Data Guide is a high-traffic data discovery and knowledge portal featuring community-written expert guidance on the strengths and limitations of the data and methods that are used for observing climate variability, evaluating models, and predicting physical climate risk. See climatedataguide.ucar.edu.

CMIP6. Results from the CMIP6 simulations (Diagnosis, Evaluation, and Characterization of Klima [DECK] and Model Intercomparison Projects [MIPs]) with low- and high-top atmospheric components, **CESM2(CAM6)** and **CESM2(WACCM6)**, respectively, are available on the Earth System Grid. See [cmip6 - Home | ESGF-CoG](#)



Time series of the global-mean surface temperature anomaly relative to the respective 1850-1870 averages during the historical period from observations, CESM2 (CAM6), CESM2 (WACCM6), and CESM1 (LENS) ensemble simulations

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