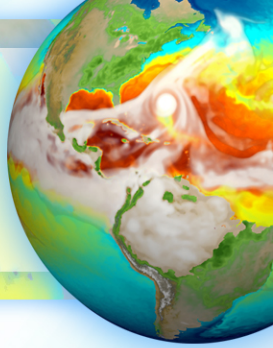


# E3SM Communication and Support for E3SM Ecosystem Projects

**Renata McCoy**

E3SM Chief Operating Officer/Project Engineer

# The growing E3SM ecosystem

## Projects that use E3SM model, data, or develop specific aspects of E3SM

**E3SM project**

- Model development, simulation campaign, computational performance, infrastructure, data publication, research

**Ecosystem project**

- DOE BER ESMD Funded Projects
  - SFA, SciDAC, ECP, University Projects

**Collaborators from External Projects**

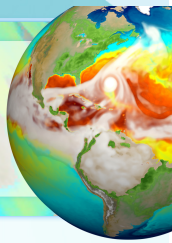
**External Projects – non-collaborators**

**Projects can work on**

- Model development for E3SM
- Analysis of E3SM data
- Running E3SM simulations for research

# The E3SM Support Policies

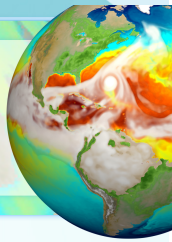
## Open code, public data, limited support



- **E3SM code** is open development (https://github.com/E3SM-Project/ )
- E3SM reserves the right to first publication from its data, hence
- Data is made available after first overview journal publication is submitted
- **Data** can be downloaded through: (https://e3sm.org/data/ )
  - **All Data: ESGF** E3SM project space: in native format, on native grid and regridded to lon-lat,
    - Also accessible through Globus (https://esgf-node.llnl.gov/projects/e3sm/ )
  - **Subset:** ESGF CMIP6 (subset of variables in CMIP6 format)
  - **Subset:** NERSC HPSS (world readable, native format)
- Simulation description, compsets, documentation available when data available
- Only production, main simulations are supported
- The only **supported E3SM versions** are:
  - **maint-v1.0, maint-v1.1, maint-v1.2**
- **Supported machines**: NERSC, Compy (internal Anvil)

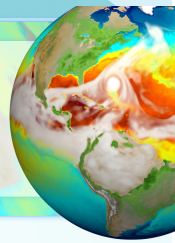
# Word of Caution

## When running simulations make sure to start with “maint” branch



- Our code is constantly evolving and a work in progress
- The “master” branch (the head) is not stable code
- The ”next” branch is not stable code
- Only versions that were used in main simulation campaigns are maintained and supported
- **Please use**
  - **maint-1.0** Water Cycle Simulation Campaign (CMIP6 DECK simulations)
  - **maint-1.1** Biogeochemical Cycles Simulation Campaign
  - **maint-1.2** Cryosphere Simulation Campaign
- Detailed info on the E3SM Model and Development Guide
  - **https://acme-climate.atlassian.net/wiki/spaces/DOC/**

# When working on code development
## make sure to have a POC from E3SM on the project

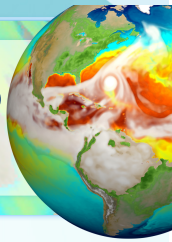


If you are planning on developing a piece of code for E3SM:

1) Coordinate early through the E3SM POC (Point Of Contact), so you understand
   - E3SM current and future code plans
   - E3SM interest and needs
2) Complete Code Review Process: Design Document, Verification, Validation, Performance
   - E3SM's new feature requirement
   - https://acme-climate.atlassian.net/wiki/spaces/DOC/pages/29754189/Code+Review+Process+Implementation
3) Adhere to coding standards
4) Pay attention to performance
5) Plan a lot of time for integration with E3SM
6) If you complied with all requirements and the E3SM project is willing to incorporate the code
   - make sure there is a developer available to work closely with E3SM to resolve any issues when coupling to the full code stack and testing

*Due to project's limited resources – please realize that we cannot guarantee that we will incorporate the code*

# Want an early access to the data or simulation?



Please submit a **collaboration request** specifying

- What data/simulation/early access information/ you need
- What research you are planning to do
- Specify an E3SM POC
- Agree to collaborate and include the E3SM POC in your publication

- Simply fill in the doc at
  - https://e3sm.org/about/collaboration/collaboration_request/

# Working with native E3SM data files?

## Check tutorials on regridding data and available tools

E3SM Infrastructure team developed detailed instructions and online tutorials on

- How to regrid the cube sphere E3SM atmosphere model output to regular longitude-latitude (lon-lat) grid data
- How to regrid the cube sphere E3SM land model output to regular lon-lat grid data using sub-grid scale regridding, taking into account land fraction around coastal areas
- How to regrid E3SM's Model for Prediction Across Scales (MPAS) ocean and sea-ice unstructured Voronoi grid data to regular lon-lat grid data.

https://e3sm.org/about/events/e3sm-tutorials/


Check also available diagnostics and analysis tools

https://e3sm.org/resources/tools/

# Where to find the information

## e3sm.org public website, one-stop shop for all project communication

One-stop shop

- https://e3sm.org

The model

- https://e3sm.org/model/running-e3sm/e3sm-quick-start/

The data

- https://e3sm.org/data/

Simulation campaigns

- https://e3sm.org/research/science-campaigns/v1-campaign/

# Latest News, Research Highlights
## E3SM Floating Points Newsletter, and e3sm.org

Subscribe to quarterly E3SM *FLOATING* POINTS Newsletter

- send email to LISTSERV@LISTSERV.LLNL.GOV
  **with body**: ‘subscribe E3SM-news’

(subject line is ignored)


August 20, 2020 View In Browser

E3SM Energy Exascale Earth System Model

FLOATING POINTS

*News from DOE's state-of-the-science earth system model development project.*

**From the Program Manager**

As we are all settling into a new way of working, the E3SM team has been continuing to make good progress over past few months. The E3SM version 1 simulation campaign is nearly complete and the team is working hard toward finalizing version 2 of E3SM scheduled for this September. Read more.

Xujing Davis

**Project News**

**Modeling Ocean Mesoscale Eddies**

Learn why better modeling of mesocale eddies - the "weather" of the ocean - is important. Read more.

**Outsourcing Sub-Grid Cloud Physics to Neural Networks**

Modern machine learning methods provide interesting breakthrough potential for representing sub-grid processes in next-generation climate simulations. Read more.

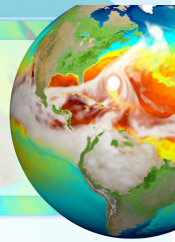
**E3SM Effort on COVID-19**

E3SM, along with several other international Earth System Models, plans to quantify the effect of COVID-related emissions reductions on climate. Read more.

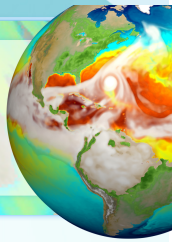
**Scientific Visualization of E3SM's Cryosphere Campaign Simulations**

The overarching goal of the Cryosphere Visualization Project is to use visualization to develop a better understanding of the land ice response to ocean forcing. Read more.

# More in-depth development information
## public documentation on E3SM internal Confluence



- Recently we have enabled anonymous access to the very detailed documentation on E3SM Confluence
  - https://acme-climate.atlassian.net/wiki/spaces/DOC/
- Information available
  - Detailed Development Guide
  - Simulations Documentation
  - Coding Standards
  - Code Review Process
- Project plans, simulation campaigns, code versions v3/v4, data
  - https://e3sm.org



# Thank You,

# Questions?

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