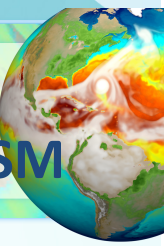# E3SM Communication and Support for E3SM Ecosystem Projects

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
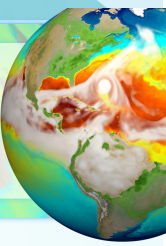
External Projects – non-collaborators

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
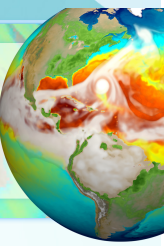
- Our code is constantly evolving and a work in progress
- The "master" branch (the head) is not stable code
- The "next" branch is not stable code
- Only versions that were used in main simulation campaigns are maintained and supported
- **Please use**
  - **maint-1.0**   Water Cycle Simulation Campaign (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
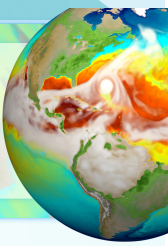
If you are planning on developing a piece of code for E3SM:

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?
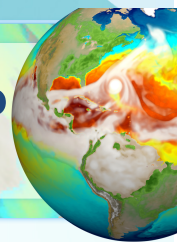
Please submit a **collaboration request** specifying

- 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
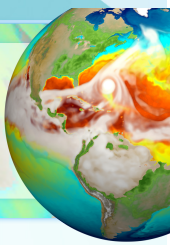
E3SM Infrastructure team developed detailed instructions and online tutorials on

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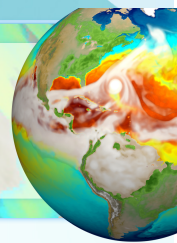
Latest News, Research Highlights
E3SM Floating Points Newsletter, and e3sm.org

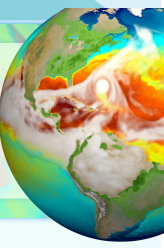Subscribe to quarterly E3SM *FLOATING* POINTS Newsletter

 - send email to LISTSERV@LISTSERV.LLNL.GOV
   with body: 'subscribe E3SM-news'

 (subject line is ignored)

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?