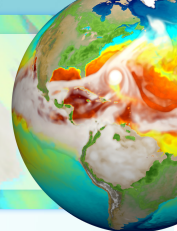


E3SM Resources and Where to Find Them

Renata McCoy

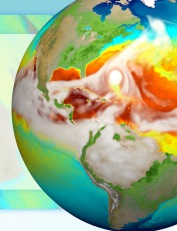
E3SM Chief Operating Officer/Project Engineer

E3SM Resources



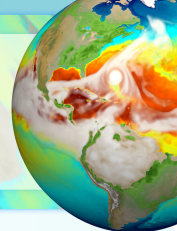
- **Productivity Tools**
 - Confluence and email lists
 - E3SM Slack Channel – communication platform
 - GoToMeeting and reservations
 - Overleaf – collaborative cloud LaTeX license
- **Standardized Documentation**
 - Code Review process
 - Standards for running the model
 - Documenting simulations
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 - Data publication documentation
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 - Jira reporting pages
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- **Resources on e3sm.org**
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 - Quarterly Newsletter

E3SM Resources



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Productivity Tools



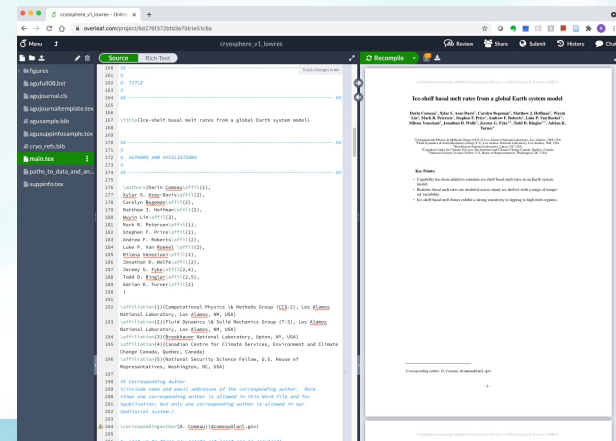
- E3SM Slack Channel – communication platform
 - **E3SM-Project** channel on Slack
 - There is also **ESMD-BER** channel for help with running E3SM model for ecosystem projects
 - Email Rob Jacob to be added to a slack channel



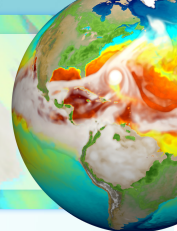
- GoToMeeting and reservations
 - 3 licenses, **need to reserve time**
 - Make sure to not overrun or start early, it will close others session if it is running
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/818217379/Gotomeeting>



- Overleaf – collaborative cloud LaTeX license
 - Email Renata McCoy if you need a license

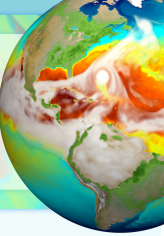


E3SM Resources



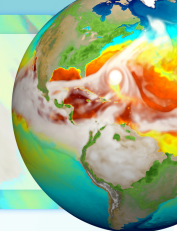
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Standardized Documentation



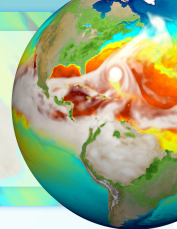
- Code Review process
 - Design Document, Verification, Validation, Performance
 - <https://acme-climate.atlassian.net/wiki/spaces/DOC/pages/29754189/Code+Review+Process+Implementation>
 - Changes are coming, look for updates (coupled testing)
- Standards for running the model
 - Configuring the run, naming conventions, short-term archive, post-processing, documenting, long-term archive
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/2309226536/Running+E3SM:+step-by-step+guide>
- Documenting simulations
 - <https://acme-climate.atlassian.net/wiki/spaces/DOC/pages/496435927/v1+DECK+simulations+low-res+water+cycle>
- Requesting computational resources
 - Requesting an account and time on a machine
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/1114710/Computational+Resources+--+Internal>
 - *Anvil and Chrysalis Users*, and *Compy Users* pages under:
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/928285576/Machine-specific+Help>
- Data publication documentation
 - <https://acme-climate.atlassian.net/wiki/spaces/DOC/pages/1195212872/Status+of+Data+Publication+and+Documentation+Pages>

E3SM Resources

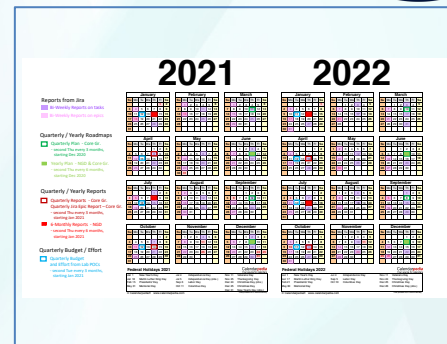


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Planning and Reporting



- Schedule and Due Dates
 - Group's Plans, Quarterly and 6-monthly Reports, Jira Reports Due Dates and Calendar:
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/930908360/Schedule+Calendar+-+Reports+Plans+Due+Dates>
- Plans and Reports
 - Plans are in group's space, reports are in documentation space:
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/818380822/Quarterly+Reports>
- Jira Reporting Pages
 - Bi-Weekly reports by assignee on tasks and epics, also list of non-updated tasks
 - <https://acme-climate.atlassian.net/wiki/spaces/ED/pages/849576915/Jira+Reports+by+Assignee>
- E3SM v3 and Phase 3 Timeline
 - <https://acme-climate.atlassian.net/wiki/spaces/CNCL/pages/1024196952/E3SM-v3.0+and+Phase+3+Timeline>



Council / E3SM Phase 2 Roadmaps Share

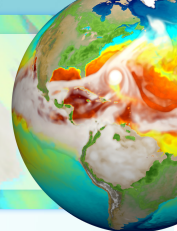
E3SM-v3.0 and Phase 3 Timeline

Created by Renata McCoy
Last updated May 14, 2021 by David C. Bader • 39 people viewed • Attachments

E3SM-V3.0 and E3SM Phase 3 Timeline

- 30 Jun 2020 - v3 tentative definition
- 09 Nov 2020 - 10 Nov 2020 - 2020-11-09 E3SM Project Review
- Oct 2021 - white paper request/guidance from BER for the E3SM phase 3
- January 2022 - E3SM Phase 3 white paper due
- July 2022 - E3SM Phase 3 proposal due
- September 2022 - panel review - E3SM Phase 2/3 project's review
- 01 Dec 2022 - E3SM Phase 3 start date
- 01 Mar 2023 - feature freeze for features to be used in v3 simulations E3SM v3-alpha water cycle made
- 01 Mar 2024 - Start coupled runs. May have additional beta tags after this.
- 30 Sep 2024 - water cycle simulation campaign completed, other campaigns in progress.

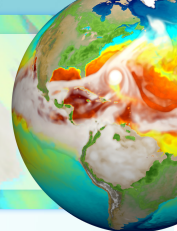
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E3SM Tutorials

How to run the model, work with data, E3SM tools



E3SM Infrastructure team developed detailed instructions and online tutorials on

- Quick Start on running the model
- E3SM tools: E3SM-diags, MPAS-analysis, Zstash, PACE
- Regridding from cube sphere E3SM atmosphere output to regular longitude-latitude (lon-lat) grid
- Regridding from 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
- Regridding 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/>



Diagnostics and analysis tools

- <https://e3sm.org/resources/tools/>

Home > Resources > Tools

TOOLS

[f](#) [t](#) [+](#) [-](#) [o](#) CUSTOMIZE

[Edit]
The E3SM developed a suite of tools to help evaluate, analyze, visualize as well as to manipulate and transfer data.

The **Data Management** section contains tools to transfer, publish to public archives or HPSS archives.

- **Data Management**
 - E3GF
 - Globus
 - Zstash HPSS Archive

The **Diagnostic Tools** help evaluate and analyze coupled and each model component.

- **Diagnostic Tools**
 - E3SM Diagnostics
 - A-PRIME Diagnostics
 - ARM Diagnostics
 - MPAS Analysis
 - ILAMS
 - LIVVkit

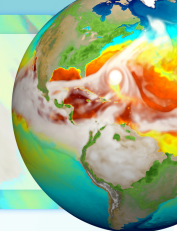
The **Analysis Tools** enable manipulation and visualization of the data

- **Analysis Tools**

PRECT ANN polar_N
E3SM
MPAS
ILAMS

An example of the polar contour plots for precipitation rate

E3SM All-hands Presentations recorded and released as YouTube webinars



- All-Hands Presentations
- Bi-Weekly Webinars
 - Science Highlights
 - Code Development
 - Performance Tools
 - Algorithm Highlight
 - Software Tools
 - Invited Talks from Ecosystem
- Posted on E3SM YouTube Channel
- https://www.youtube.com/channel/UCLJ-3mzOcGFn_ZnxNT5IL9Q

E3SM Public Website

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/>

Publicity

- <https://e3sm.org/publications/publicity/>

E3SM Energy Exascale Earth System Model

ABOUT | RESEARCH | MODEL | DATA | PUBLICATIONS | RESOURCES

These three model components are included in the E3SM v1 configuration: Model for Prediction Across Scales (MPAS) Ocean, MPAS Ice, and MPAS Land Use. Plotted here is global E3SM simulation showing eddy activity.

DOE's E3SM is a state-of-the-science Earth system model development and simulation project to investigate energy-relevant science using code optimized for DOE's advanced computers.

The 2020 Virtual E3SM-E3SM PI Meeting

The 2020 Earth System Model Development (ESMD) program area Executive Investigator (PI) and E3SM Annual All Hands meeting was held October 26-28, 2020. The presentations are available in the Agenda.

E3SM t-shirts and accessories, stay tuned for the next time the web store is open.

FEATURE STORY

- From Program Manager**
Xiang Davis presents news about E3SM and DOE >>
- E3SM on Fugaku**
Scientists test running E3SM on Fugaku, currently the fastest supercomputer in the world >>
- E3SM Leadership Meeting**
The E3SM Leadership Team met virtually to discuss current and anticipated issues >>
- CMIP6's ScenarioMIP**
A new paper shows temperature and precipitation changes across CMIP6's SSP-based scenarios >>

BRIEF

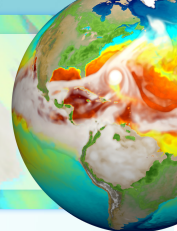
- Spring All-Hands Meeting**
E3SM will host its 2021 Spring All-Hands Meeting virtually on June 1, 3, 8, and 9 >>
- E3SM-E3SM Meeting Report!**
The report from the 2020 E3SM-E3SM PI Meeting has been published >>
- White Papers Available**
The 150 AI4ESIP white papers have been posted to the initiative's website >>
- Climate Resilience**
E3SM scientists presented at the America Resilient Climate Conference in April 2021 >>

SCIENCE AND TECHNICAL HIGHLIGHTS

- Tropical Cyclones in E3SM**
New analysis assesses the relation and biases of tropical cyclones at various resolutions in E3SMv1 >>
- Interface Flux Recovery**
More accurate estimates of interface flux increases the robustness of coupled-system simulations >>
- Precipitation Improved**
Coupling a stochastic convective parameterization with the CM system improves mesoscale jet >>
- Undesirable Sensitivities**
A method for attributing temperature resolution error could improve seasonal and climate models >>

RELEASES

- LI Rain Impacts Aerosols**
Light rain disproportionately influences aerosol burden >>
- Aerosol Overestimation**
Business burning (BS) aerosols in most climate models tend to >>
- AFM Diags in E3SM-Dialog**
AFM Diagnostics test Open AFM Diagnostics >>
- COVID-19 CMIP6 Data**
E3SM data now available for simulations with a without >>



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

Quarterly E3SM FLOATING POINTS Newsletter

Communication Team

- Project pamphlets, brochures, technical highlights
- E3SM Quarterly Newsletter <https://e3sm.org/about/news/newsletter-archive/>
- Publications, Publicity
- Tutorials, webinars on E3SM YouTube Channel

Email e3sm-comm@lnl.gov with

- Publicity
- Journal publication
- Research or Technical Highlight
- Video, webinar etc.
- To propose a story for the newsletter



PUBLICITY

0301
Collection of News Articles or Videos Relating to E3SM

May 11, 2021
DOE Office of Science:
Trust and Women @ Energy: Dr. Ruby Leung
Article:
Ruby Leung was mentioned in a DOE Office of Science Twitter post for Asian American and Native Hawaiian/Pacific Islander Heritage Month. The tweet referred back to a feature story the Office published on September 11, 2019 about women working at the Department of Energy.

May 9, 2021
New York Times: **Emissions Cuts Could Drop the Impact of Rising Sea Level Causes by Half**
Washington Post: **Uncertainty is not our friend: Scientists are still struggling to understand the sea level risks posed by Antarctica**

LANL Press Release: Antarctica reveals the wild side for sea level rise estimates through 2100

LBL/NERSC Press Release: Limit global warming to 1.5°C and leave the world less contribution to sea level this century

All news articles and press releases include a discussion of the Nature paper titled "Projected sea level contributions to twenty-first century sea level rise" which was published May 5, 2021. Several E3SM and SciDAC ProSPARC team members were co-authors on the Nature paper.

May 5, 2021
University of California, Irvine (UCI) News:
UCI researchers identify primary causes of Greenland's rapid sea level rise
Understanding the relative importance of the various surface melt processes is helping scientists evaluate and improve Greenland's surface melt in E3SM.

Researchers: Wenhan Wang (UCJ), Charles Zender (UCJ), Donghai An and Robert Fazio (Geological Survey of Canada and Greenland), GELU, and Matthew Lefebvre (UCJ).

A helicopter flight over Greenland enabled UCI Earth system scientists to observe melt ponds. By gathering data from a network of weather instruments placed around the massive island, the researchers determined that surface melting of the ice sheet is coming mainly from the steady, day-to-day effect of wind- and wave-driven heat. Image courtesy of Wenhan Wang JGOC.

Technical Highlights

Biogeochemical Transport and Reactions (BioTR)

Model for Predictions Across Scales (MPAS) - Analysis Diagnostics Package

Simple Cloud-Resolving E3SM Atmosphere Model (SCREAM)

Historical Estimates of Atmospheric Reactive Gases and Aerosols by the Community Emissions Data System (CEDS)

CLUBB: A Unifying Parameterization of Low Clouds

Performance Analytics for Computational Experiments (PACE)

FATES: The E3SM Functionally-Assembled Terrestrial Ecosystem Simulator

MPAS-Albany Land Ice (MALI): A Variable-resolution Ice Sheet Model for Earth System Modeling Using Voronoi Grids

The E3SM Diagnostics Package for Earth System Model Evaluation



News from DOE's state-of-the-science Earth system model development project.
Editor in Chief: Renata McCoy; Managing Editor: Holly Davis

From the Program Manager

I have many exciting updates to share in this issue. The E3SMv1 summary paper has been recognized by the *Journal of Advances in Modeling Earth Systems (JAMES)* for its immediate impact in the community. [Read more of Dr. Davis' message.](#)



Project News



E3SM Pathfinder on Fugaku

Scientists test running E3SM on Fugaku, currently the fastest supercomputer in the world. [Read more.](#)



Recent E3SM Leadership Meeting

The E3SM Leadership Team met virtually in late April to discuss current and anticipated issues. [Read more.](#)



CMIP6's Scenario-Based Temperature and Precipitation Projections

A new overview paper shows temperature and precipitation changes across CMIP6's SSP-based scenarios. [Read more.](#)



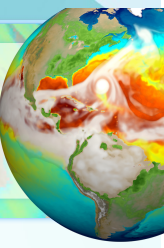
2021 Spring E3SM All-Hands Meeting Starts Next Week

E3SM will hold its 2021 Spring All-Hands Meeting virtually on June 1, 3, 8, and 9. [Read more.](#)



ESMO-E3SM PI Meeting Report Published

The report from the October 2020 ESMO-E3SM Principal Investigator Meeting has been published. [Read more.](#)



Thank You, Questions?

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DEAC52-07NA27344. It is supported by the Energy Exascale Earth System Model (E3SM) project, funded by the U.S. Department of Energy, Office of Science, Office of Biological and Environmental Research. IM Release LLNL-PRES-816372