

NorESM user workshop 2026

14 - 16 Jan. 2026

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Forskningsrådet

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Goals for the workshop

- Understand the basic structure of the NorESM model
- Create, configure and run the NorESM model
- Learn about the model components, and how they work together
- Understand and examine model output

Who is participating?

What is your level of experience with climate models and NorESM in particular?

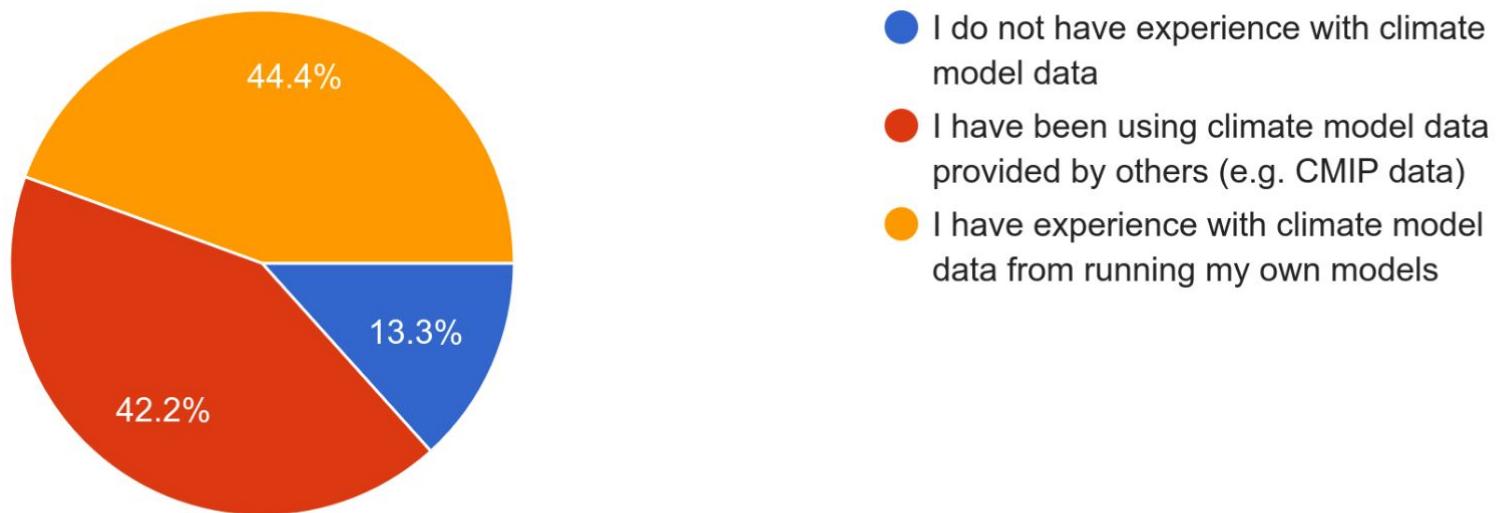
45 responses



Who is participating?

What is your level of experience with climate model data?

45 responses



Practical information

Workshop website (permanent link):

https://noresmhub.github.io/NorESM2_Workshop_2026/

zoom link for meeting will be provided by email to participants for each day

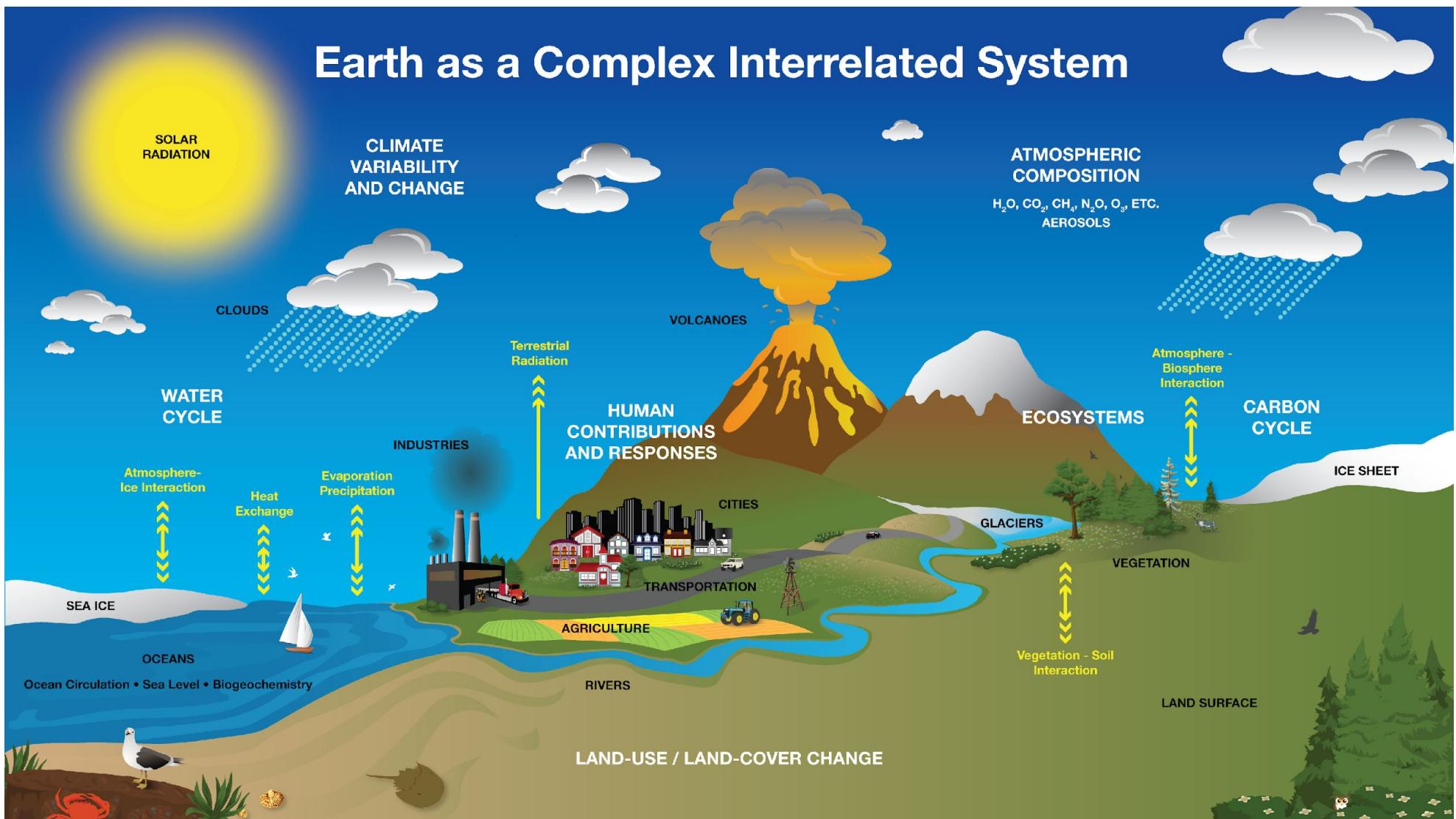
hackMD notes for Q&A: <https://hackmd.io/join/note/dmvQPXKbRI>

presentations will be provided to participants, either by link from workshop website or by email (some information on related to development versions of NorESM may not be public yet)

Agenda – Day 1

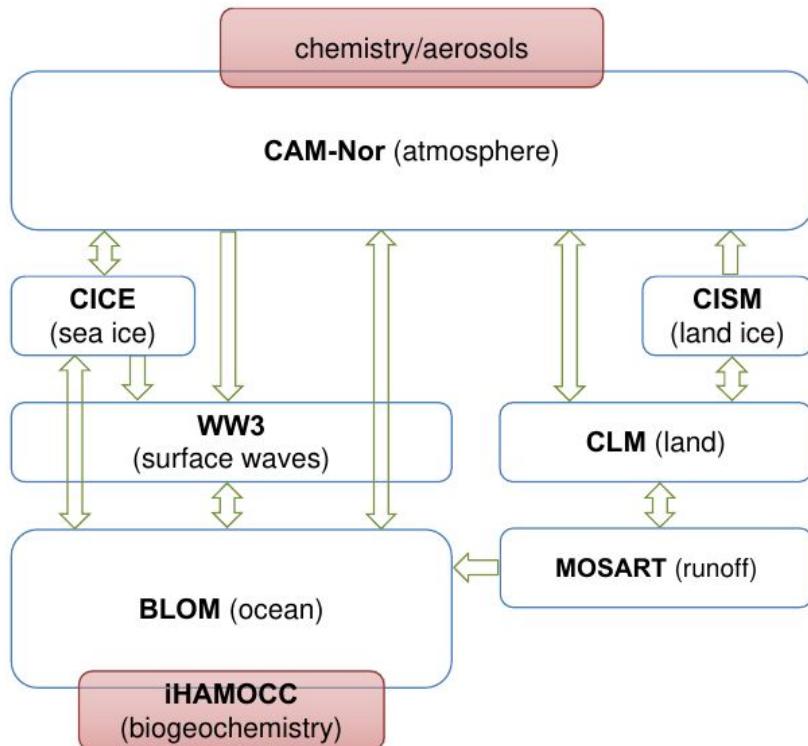
- What is NorESM?
- Accessing the NorESM source code
- Model structure
- Basic run procedure

Earth as a Complex Interrelated System



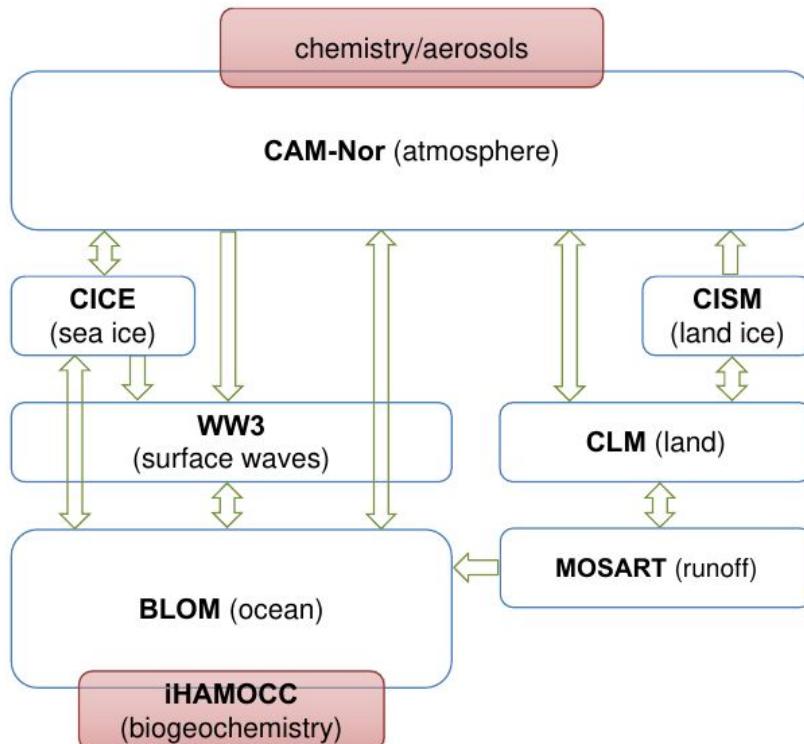
Source: NASA's Goddard Space Flight Center

NorESM model structure



Based on CESM
(Community Earth
System Model) of
NCAR, Boulder, USA.

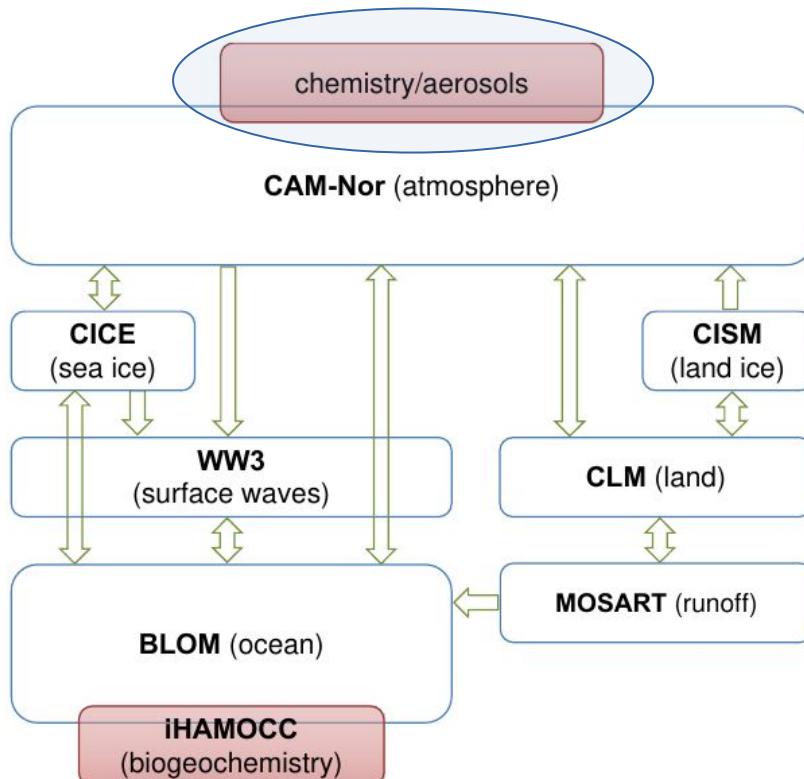
NorESM model structure



Developed and maintained by
the NorESM consortium



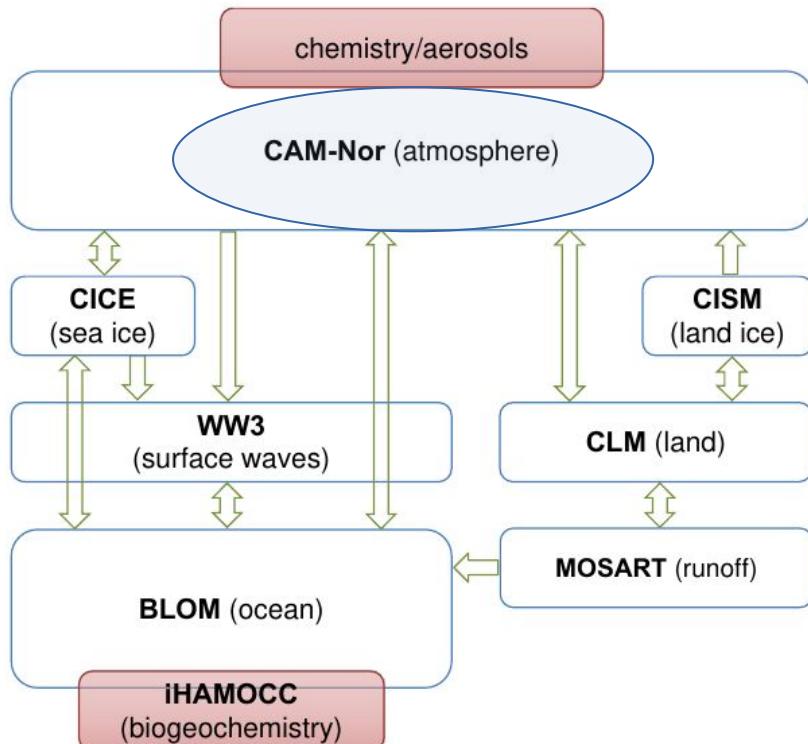
NorESM model structure



Specific NorESM additions to CESM:

- Atmospheric chemistry/aerosol/cloud module

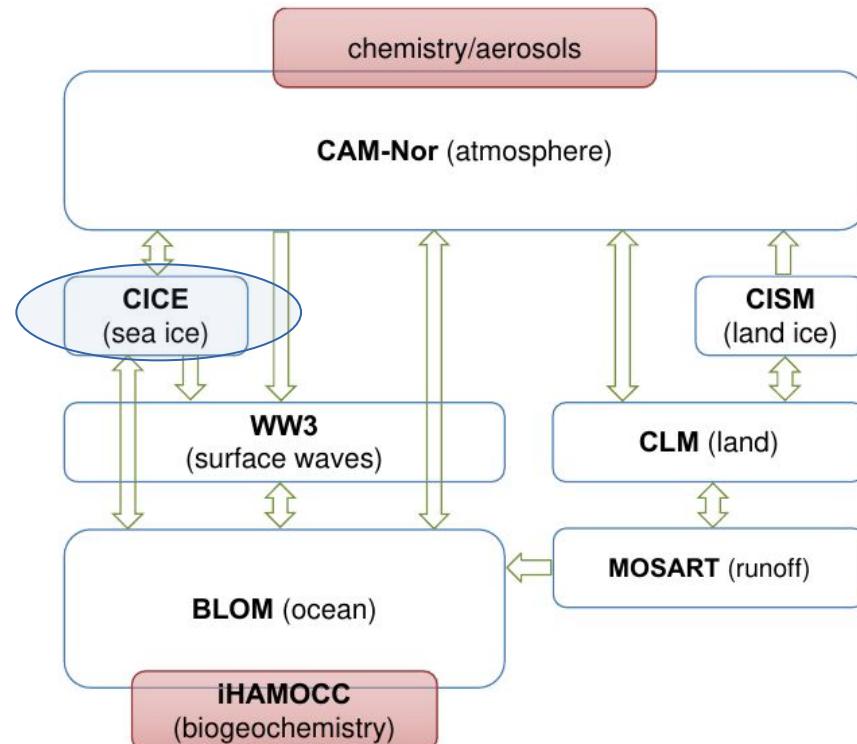
NorESM model structure



Specific NorESM additions to CESM:

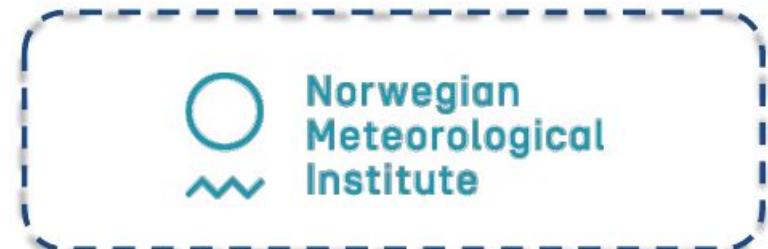
- Atmospheric chemistry/aerosol/cloud module
- Atmospheric dynamics/physics: Improved conservation of energy and angular momentum

NorESM model structure

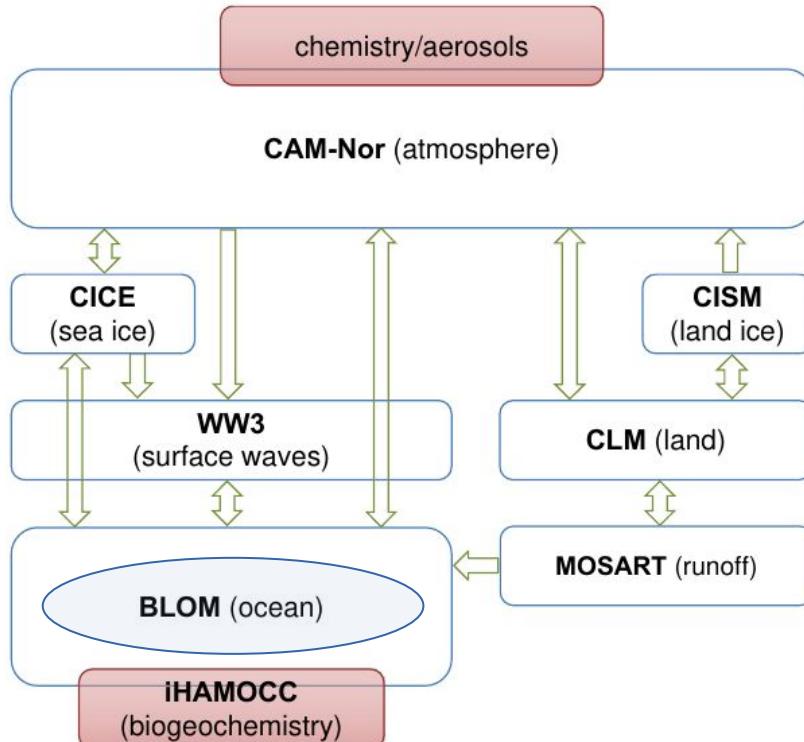


Specific NorESM additions to CESM:

- Atmospheric chemistry/aerosol/cloud module
- Atmospheric dynamics/physics: Improved conservation of energy and angular momentum
- Wind drift of snow



NorESM model structure

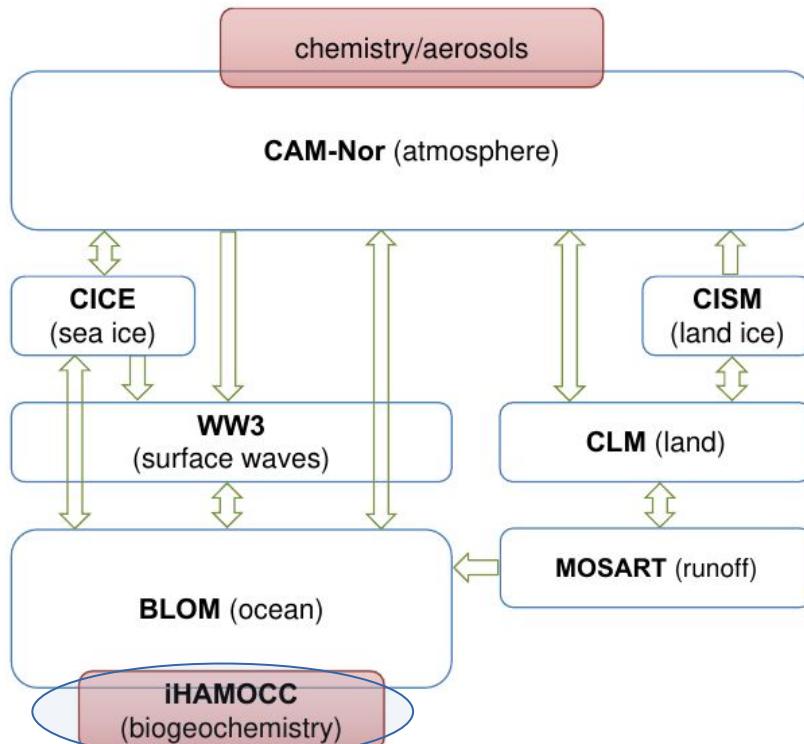


Specific NorESM additions to CESM:

- Atmospheric chemistry/aerosol/cloud module
- Atmospheric dynamics/physics: Improved conservation of energy and angular momentum
- Wind drift of snow
- Ocean component with isopycnic vertical coordinate



NorESM model structure



Specific NorESM additions to CESM:

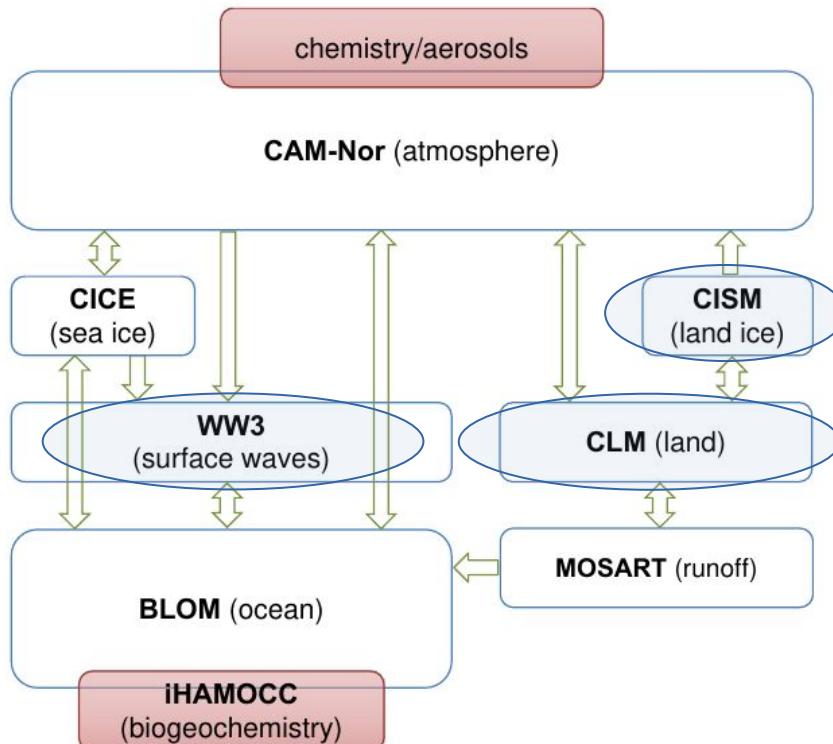
- Atmospheric chemistry/aerosol/cloud module
- Atmospheric dynamics/physics: Improved conservation of energy and angular momentum
- Wind drift of snow
- Ocean component with isopycnic vertical coordinate
- iHAMOCC – modified version of the Hamburg Model of Ocean Carbon Cycle (HAMOCC)



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NorESM model structure



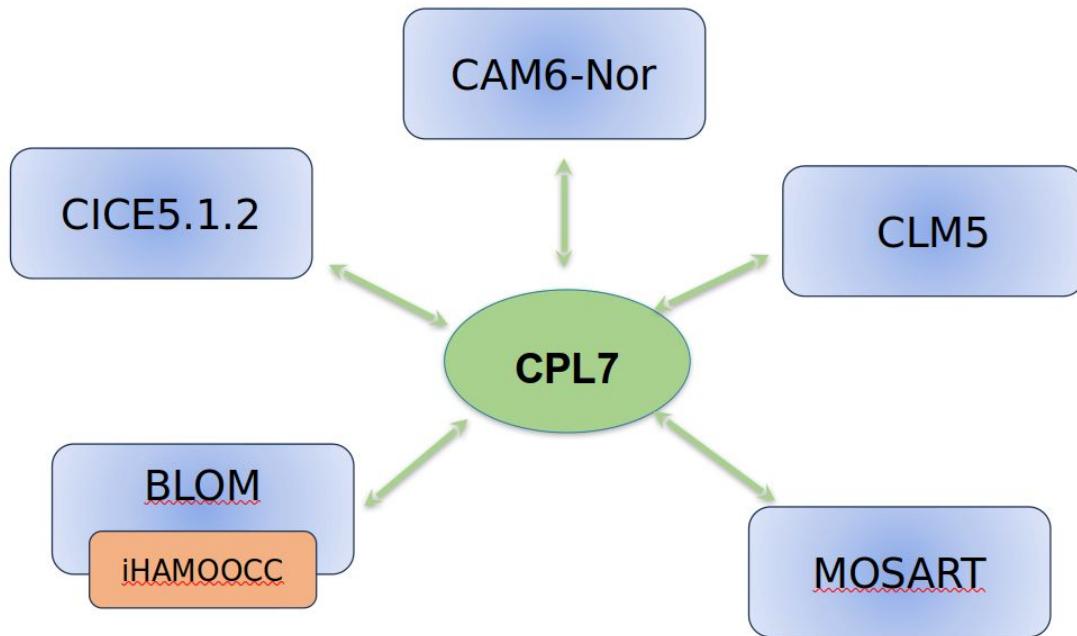
Development towards NorESM3

CISM – land ice is available in experimental versions of NorESM2 (e.g. NorESM2.3)

CLM – include support for the Functionally Assembled Terrestrial Ecosystem Simulator (FATES)

WW3 – ongoing work to include surface waves as a model component

NorESM communication framework



NorESM2 is based on the second version of the Community Earth System Model, CESM2, and share most of the CESM2 structure.

Component communicate with each other through the COUPLER, named CPL7 for the NorESM2 model version.

NorESM versions

NorESM2.0 is the CMIP6 version of NorESM, and the latest scientifically supported version of NorESM (latest tag **release-noresm2.0.10** from March 20, 2025).

NorESM2.0 is maintained in a state that reproduces the CMIP6 climate output.

NorESM2.3 is a development version, building on the NorESM2.0 model framework, but with bug fixes and new (mostly optional) capabilities.

NorESM3.0 is intended as the CMIP7 version of NorESM, expected to be finalized in early 2026.

NorESM2.3 does not reproduce CMIP6, and is not scientifically supported!

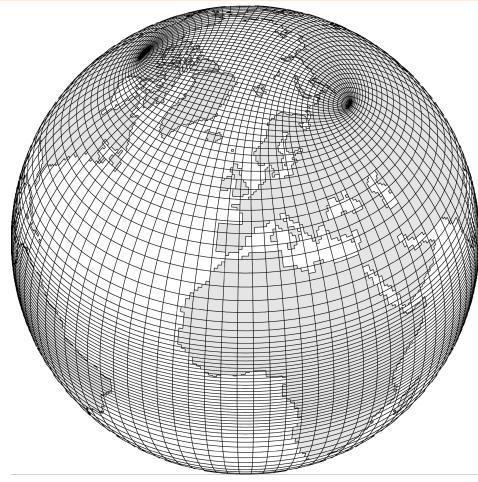
The model setup and run procedure is the same for NorESM2.0 and NorESM2.3, and most of the model structure for NorESM3.0 will be similar.

Component discretization

CAM finite volume



BLOM/CICE tripolar



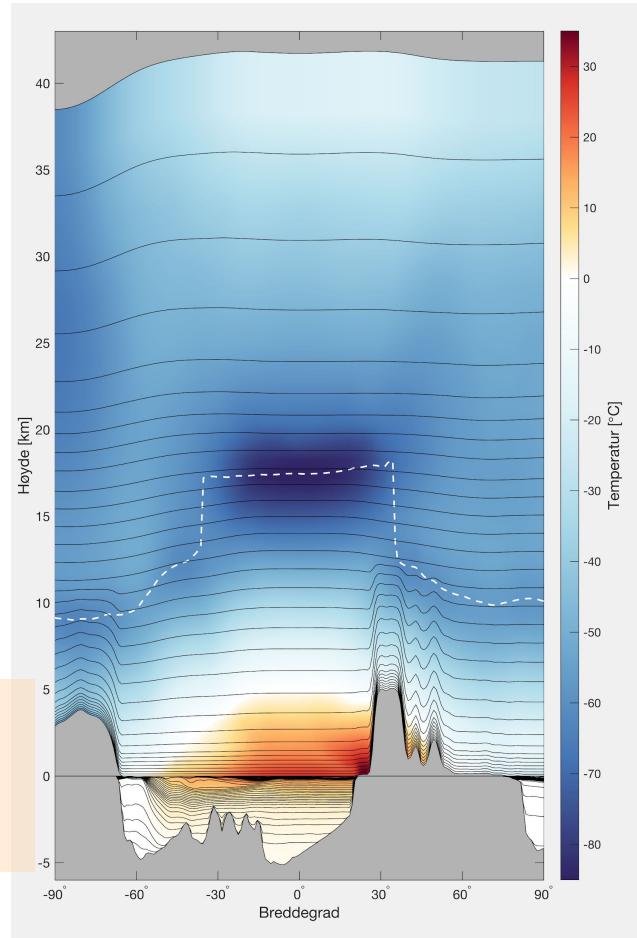
NorESM2 variants:

NorESM2-LM: $\sim 2^\circ$ atm; $\sim 1^\circ$ ocn

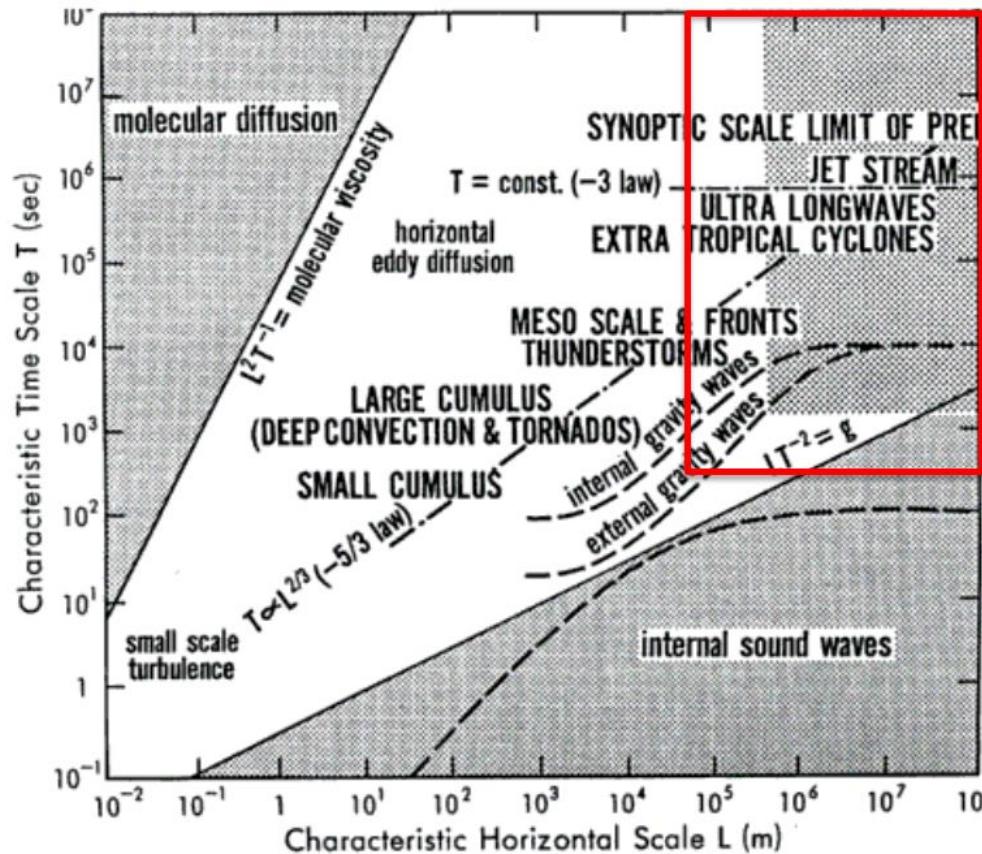
NorESM2-MM: $\sim 1^\circ$ atm; $\sim 1^\circ$ ocn

Atm: hybrid-pressure layers

Ocn: near-isopycnic layers

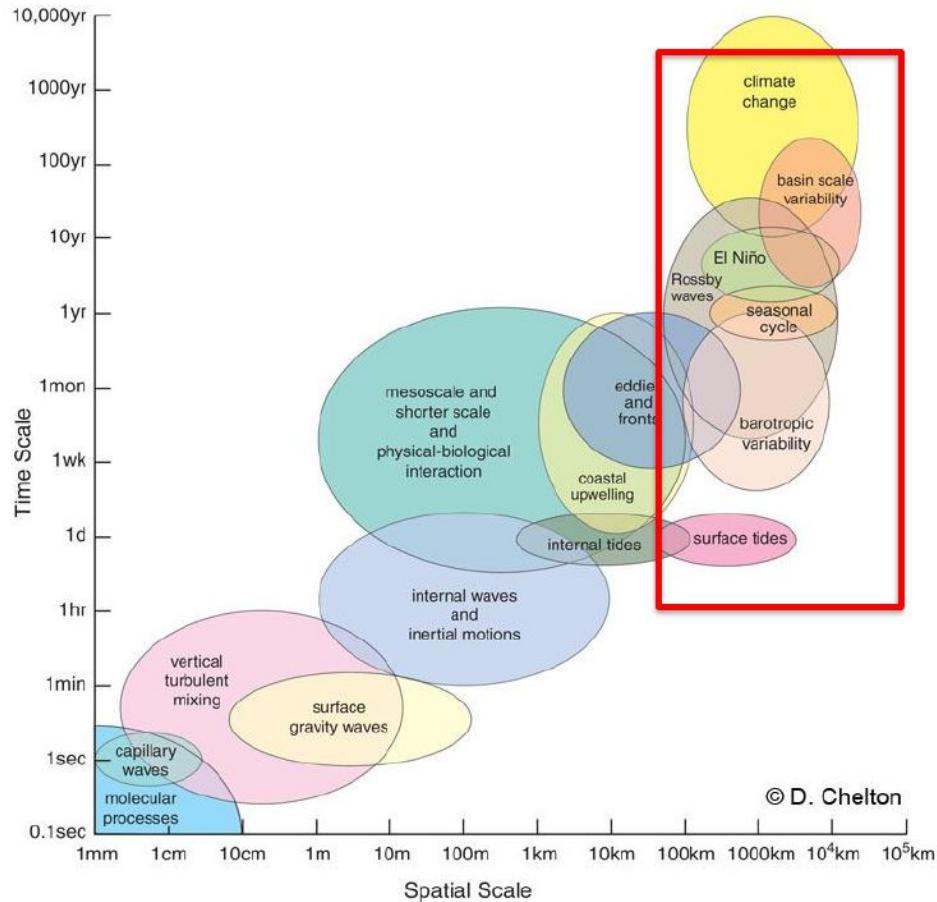


Atmosphere: Spatial & temporal scales



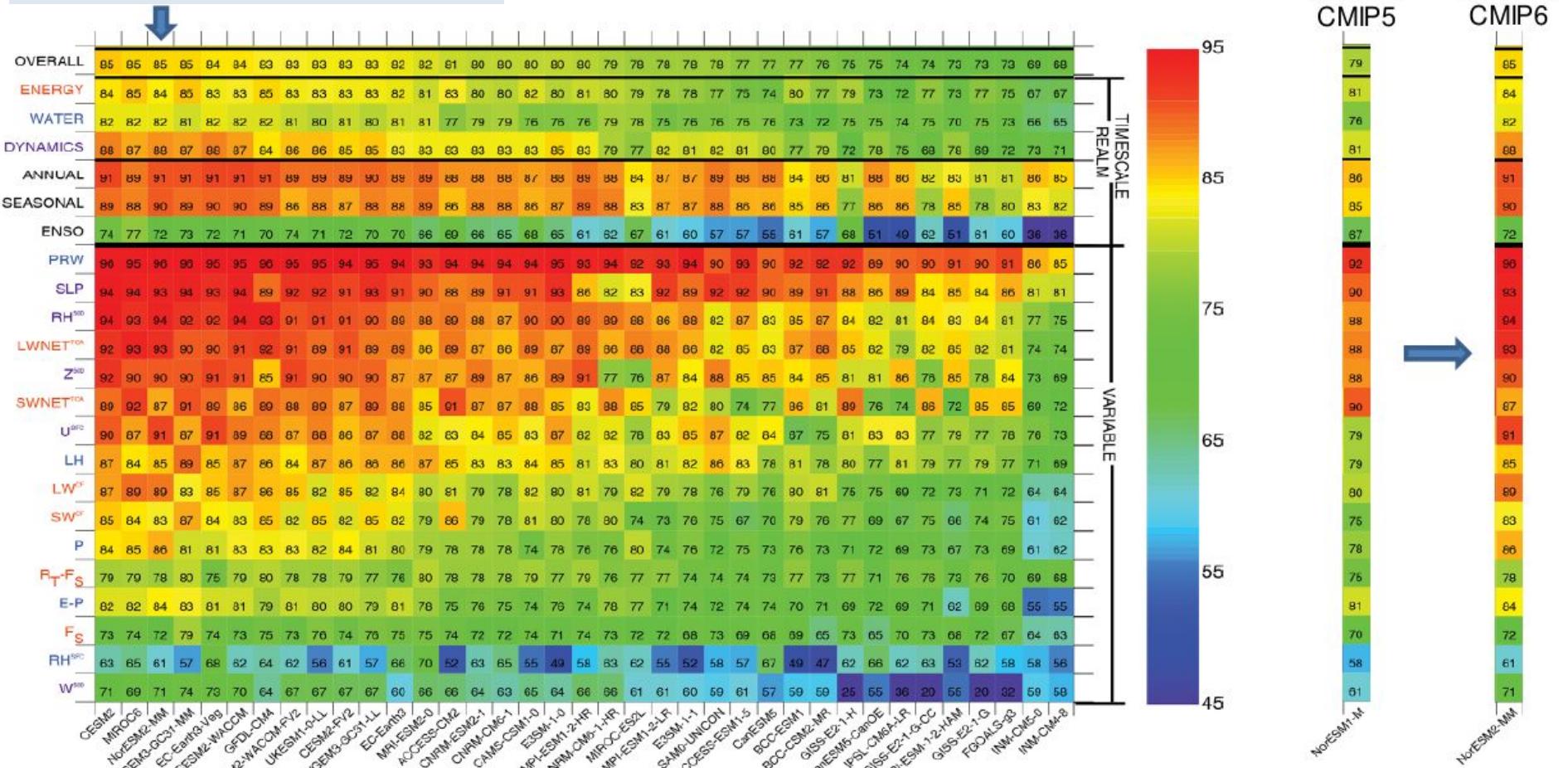
Courtesy: Smagorinsky (1974).

Ocean: Spatial & temporal scales



CESM2/NorESM2 capability

Courtesy: Fasullo (2020)

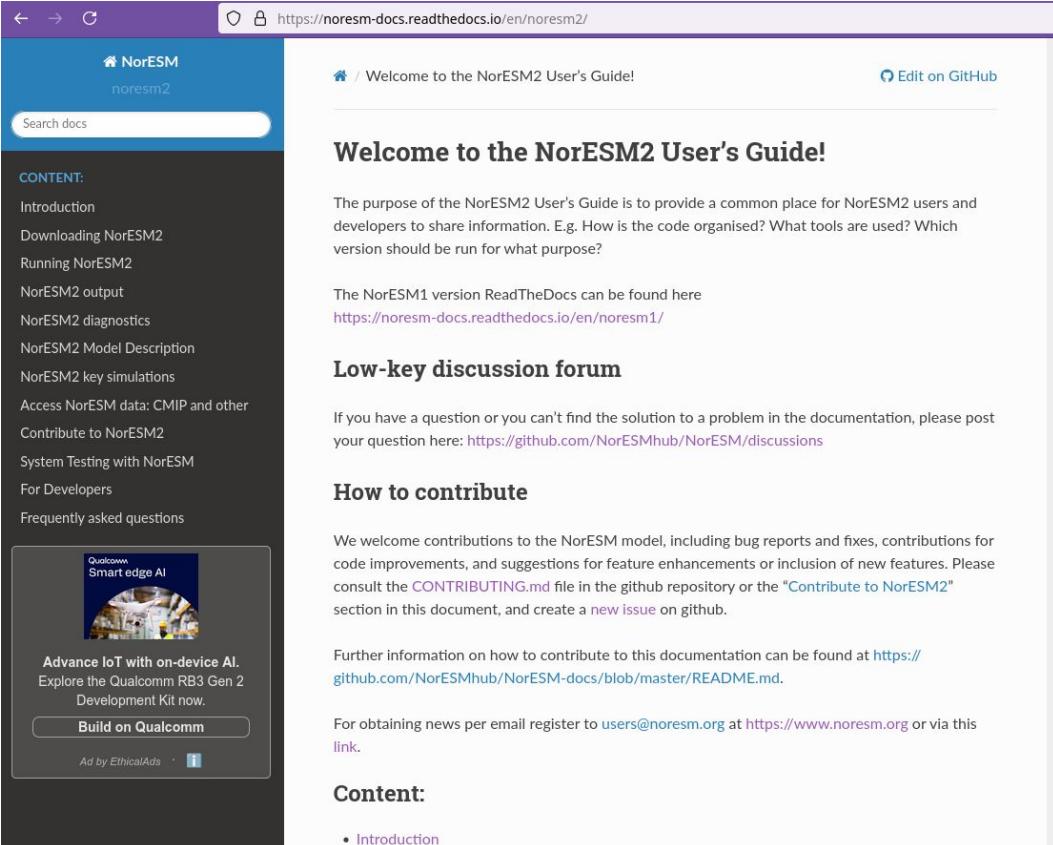


Where to learn about NorESM

- Seland et al. “Overview of the Norwegian Earth System Model (NorESM2) and key climate response of CMIP6 DECK, historical, and scenario simulations”, GMD, 13, 6165–6200, 2020
<https://doi.org/10.5194/gmd-13-6165-2020>
- Repository hub for NorESM code: <https://github.com/NorESMhub>
- NorESM documentation and user guide: <https://noresm-docs.readthedocs.io>
- NorESM homepage: <https://www.noressm.org>

NorESM documentation page

Documentation pages have been created for different major versions of NorESM



The screenshot shows a web browser displaying the NorESM2 documentation page at <https://noresm-docs.readthedocs.io/en/noresm2/>. The page has a dark theme with a sidebar on the left containing a navigation menu and a central content area. The sidebar includes a search bar and a "CONTENT:" section with links to various documentation pages. The main content area features a "Welcome to the NorESM2 User's Guide!" heading, a brief introduction about the purpose of the guide, and links to the NorESM1 documentation and a low-key discussion forum. It also includes sections for "How to contribute" and "Content". A small advertisement for Qualcomm Smart edge AI is visible at the bottom of the sidebar.

https://noresm-docs.readthedocs.io/en/noresm2/

Welcome to the NorESM2 User's Guide!

The purpose of the NorESM2 User's Guide is to provide a common place for NorESM2 users and developers to share information. E.g. How is the code organised? What tools are used? Which version should be run for what purpose?

The NorESM1 version ReadTheDocs can be found here
<https://noresm-docs.readthedocs.io/en/noresm1/>

Low-key discussion forum

If you have a question or you can't find the solution to a problem in the documentation, please post your question here: <https://github.com/NorESMhub/NorESM/discussions>

How to contribute

We welcome contributions to the NorESM model, including bug reports and fixes, contributions for code improvements, and suggestions for feature enhancements or inclusion of new features. Please consult the [CONTRIBUTING.md](#) file in the github repository or the "[Contribute to NorESM2](#)" section in this document, and create a [new issue](#) on github.

Further information on how to contribute to this documentation can be found at <https://github.com/NorESMhub/NorESM-docs/blob/master/README.md>.

For obtaining news per email register to users@noresm.org at <https://www.noressm.org> or via this link.

Content:

- Introduction

NorESM2 documentation: <https://noresm-docs.readthedocs.io/en/noresm2/>

Accessing the NorESM source code

NorESMhub

<https://github.com/NorESMhub>

- NorESM source code
- Components source code
- Common tools
- Documentation

Norwegian Earth System Modeling hub
Repository hub for NorESM code, documentation and tools

25 followers <https://NorESM-docs.readthedocs.io...> Unfollow

Pinned

 **NorESM** Public
Norwegian Earth System Model and Documentation
Python 35 ⚡ 73

 **BLOM** Public
Bergen Layered Ocean Model
Fortran 17 ⚡ 25

 **NorESM-docs** Public
Documentation of the NorESM model system and components
Python 4 ⚡ 9

 **CAM** Public
Forked from ESCOMP/CAM
Community Atmosphere Model including CAM6-Nor branches
1 ⚡ 22

 **CTSM** Public
Forked from ESCOMP/CTSM
Community Terrestrial Systems Model (includes the Community Land Model of CESM)
Fortran 3 ⚡ 9

 **WW3** Public
Forked from NOAA-EMC/WW3
WAVEWATCH III
Fortran ⚡ 1

 **Repositories**
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You are viewing the README and pinned repositories as a public user.
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 NCL

Most used topics 
[noresm](#) [climate](#) [cesm](#) [api](#)

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Code Issues 23 Pull requests 5 Discussions Actions Projects Wiki Security Insights Settings

NorESM Public

master 17 Branches 36 Tags

Go to file Add file Code About

TomasTorsvik Remove the docs submodule (#516) 9694189 · 7 months ago 1,355 Commits

.github/ISSUE_TEMPLATE Remove fixed assignees last year

cime_config From noresm2: Update config_compsets.xml file (#424) last year

img Update README.md file in master with correct links. (#457) last year

manage_externals Avoid error on python > 3.8 3 years ago

.gitignore Ignore "doc/_build" folder. 4 years ago

.readthedocs.yaml Replace "doc" directory with "docs" directory for submod... last year

CONTRIBUTING.md Update CONTRIBUTING.md 2 years ago

Copyright-CESM.txt Updated NorESM specific copyright and license in LICEN... 4 years ago

Externals.cfg From noresm2: Update Externals*.cfg files (#425) last year

Externals_continuous_development.cfg From noresm2: Update Externals*.cfg files (#425) last year

LICENSE-CESM.txt Updated NorESM specific copyright and license in LICEN... 4 years ago

LICENSE.txt Updated NorESM specific copyright and license in LICEN... 4 years ago

README.md Update README.md on master branch (#510) 8 months ago

Norwegian Earth System Model and Documentation

noresm-docs.readthedocs.io/en/latest/

norwegian climate cesm noresm

Readme Unknown, Unknown licenses found Activity Custom properties 35 stars 24 watching 73 forks Report repository

Releases 16

[release-noresm2.1.3](#) (Latest) on Oct 8 + 15 releases

Packages

No packages published Publish your first package

Link to download source code

Link to NorESM documentation

List of code releases, i.e. NorESM versions

The code download link

A screenshot of a GitHub repository page for 'NorESM' (Public). The page shows a list of files and a detailed commit history. On the right, there's an 'About' section with a description of the Norwegian Earth System Model and Documentation, a link to the documentation at noresm-docs.readthedocs.io/en/latest/, and several tags: norwegian, climate, cesm, noresm. Below this is a 'Clone' section with options for Local, Codespaces, and three cloning methods: HTTPS (selected), SSH, and GitHub CLI. The HTTPS URL is highlighted with a red box: <https://github.com/NorESMhub/NorESM.git>. A copy icon is next to the URL. To the right of the URL is a 'Clone using the web URL' button. At the bottom of the page, there are links for README, License, and License.

Link to
download
source code

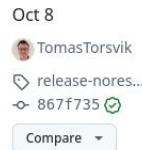
The HTTPS clone option
can be used by anyone
to download the source
code.

NorESM code releases

The “releases” panel shows

- Code releases for different model version
- Purpose of code release
- Changelog highlights
- Current component tags

Current CMIP6-compatible
release tag is:
release-noresm2.0.9



release-noresm2.0.9

release-noresm2.0.9 is a minor management update to release-noresm2.0.8

There are no answer or experiment changes in this release.

The purpose of release-noresm2.0.9 is to enable running NorESM2.0 experiments on Betsy after machine upgrade in October 2024. Older tool chain modules are being removed, hence this version introduces new tool chain modules through CIME. Model output is bit identical to previous results. Other HPC systems should not be affected by changes introduced in this release.

What's Changed

- Update tag for cime to cime5.6.10_NorESM2_3_r5 by [@TomasTorsvik](#) in [#569](#)

Full Changelog: [release-noresm2.0.8...release-noresm2.0.9](#)

Component tags

component	tag
<i>cam</i>	cam_cesm2_1_rel_05-Nor_v1.0.5
<i>cice</i>	cice5_20181109-Nor_v1.0.3
<i>cime</i>	cime5.6.10_NorESM2_3_r5
<i>cism</i>	wrapper_noresm2.0.6_v0
<i>clm</i>	release-clm5.0.14-Nor_v1.0.4
<i>mosart</i>	release-cesm2.0.03-Nor_v1.0.0
<i>blom*</i>	v1.4.2

Component ([updated](#)/[not updated](#)) relative to release-noresm2.0.8

NorESM Discussions page

Welcome to NorESM Discussions!

Announcements · MichaelSchulzMETNO

Q is:open Sort by: Latest activity Label Filter: Open New discussion

Categories

- [View all discussions](#)
- Announcements
- General
- Ideas
- Polls
- Q&A
- Show and tell
- Team Posts

Most helpful

Be sure to mark someone's comment as an answer if it helps you resolve your question — they deserve the credit! ❤️

Discussions

Discussion Title	Poster	Comments
Upcoming noresm2_5_alphaXX tags (for planning purposes)	mvertens	0
noresm2_5_alpha07 created	mvertens	3
release-noresm2.1.X	TomasTorsvik	0
release-noresm2.0.X	TomasTorsvik	2
Suggestion for structure and management of NorESM system testing baselines	TomasTorsvik	5
Question on Ocean Vertical Velocity Data Documentation	oyvindseland	7

Community guidelines