

Frequently Asked Questions (FAQs) for DE-FOA-0001862

Q1: Where will the E3SM v1 results be made available?

A1: Simulation results and model code will be made available through the E3SM public website, which will point or link to ESGF (model output) and GitHub (code).

Q2: What simulations will be performed, for what science campaigns, when will the simulations be complete, what resolution (temporal and spatial) will be provided?

A2: See table:

Simulation	duration	Estimated completion date	Science purpose	Spatial resolution*	Temporal resolution for diagnostics
1850 control	300 years	3/1/18	Water Cycle	LR	Monthly; Limited daily; 6 h
Historic transient Ensemble 1850-2014	165 years	7/1/18	Water cycle	LR	Monthly; Limited daily; 6 h
Abrupt 4x CO2	150 Years	7/1/18	Water Cycle	LR	Monthly; Limited daily; 6 h
1%/yr CO2 increase from 270 PPM to doubling, then constant	150 years	7/1/18	Water Cycle	LR	Monthly; Limited daily; 6 h
AMIP 1970-2014	45 years	7/1/18	Water Cycle	LR	Monthly; Limited daily; 6 h
1950 control	50 years	10/1/18	Water Cycle	HR	Monthly, very limited daily
1850 control	250 years	7/1/18	BGC	LR	Monthly, limited sub-monthly
Historical transient experiment with 1850 CO ₂ , 1850-2100	250 years	7/1/18	BGC	LR	Monthly, limited submonthly
Historical transient experiment, both CO ₂ fertilization and radiative effects, 1850-2014	165 years	7/1/18	BGC	LR	Monthly, limited submonthly

Historical transient experiment, CO ₂ fertilization effect only, 1850-2014	165 years	7/1/18	BGC	LR	Monthly, limited submonthly
1850 control with Antarctica ice shelf cavities	60 years	10/1/18	Cryosphere	LR	Monthly; Limited daily; 6 h
Coupled ocean-sea ice (G-Case) with and without Antarctica ice shelf cavities	5 CORE-II cycles (300 simulated years)	10/1/18	Cryosphere	EC6030: 30 km in tropics, 60 km in mid-latitudes, 30 km in polar regions	Monthly, limited hourly point-wise data, limited daily averages
Coupled ocean-sea ice (G-Case) with and without Antarctica ice shelf cavities	1 CORE-II cycles (60 simulated years)	10/1/18	Cryosphere	RRS3010: 30 km in tropics, tapering to 10 km in polar regions.	Monthly, limited hourly point-wise data, limited daily averages

*LR = approximately 1 degree
 HR = approximately 0.25 degree

Notes: (1) All water cycle simulations use satellite phenology for vegetation (i.e., no land BGC). (2) All BGC simulations will include C, N, and P cycles and be carried out separately with two nutrient competition mechanisms: ELM-ECA and ELM-CTC. Ocean biogeochemistry will be turned on in the ECA simulations only, but it has no impact on physical climate in the simulations, as all BGC experiments will be concentration-driven. (3) Water cycle and BGC simulations for future periods following RCP8.5 are also planned, with estimated completion dates in 2019.

Q3: How sharp or fuzzy are the lines between the two categories of "applying v1 for science" vs. "v2, v3 development"? If, for example, proposed new development requires conducting simulations with v1 in order to identify biases, I assume that is ok? (Likewise, if some useful science results came from those simulations.)

A3: First, both types should be doing science. The v1 work may do science, may identify biases, but is less focused on fixing biases (although that would be good too). The v2-v3 work should have a solid plan to actually improve the model.

Q4: To what extent may models other than E3SM be included in the plan for the “v2-v3” topical areas?

A4: It would be fine to include improvements from other models into E3SM if this is part of the plan to improve the E3SM model.

Q5: Is it compulsory for applications to include partners from DOE labs?

A5: It is not compulsory. However Laboratory collaborators are encouraged if they are important for project success.

Q6: Will it be possible for any scientist to pick up E3SM v1 and run it on NERSC? Are there manuals or a “Readme file” guide one through the process?

A6: The model code released (expected in April 2018) will include a “quick-start-guide” and supporting documentation needed to perform the released v1 simulation. The documentation will be sufficient to build, run and analyze released configurations on supported DOE systems, including NERSC.

Q7: For “ESM topics”, how do we know whether to propose developments for E3SM v2, v3 or v4?

A7: The E3SM v2 feature freeze is expected to occur around Jun 1, 2019; bug fixes until January 1, 2019. Any developments not ready before these dates should propose to v3. V4 developments would typically be beyond the scope of this FOA.

Q8: What is the anticipated success rate for this FOA?

A8: Subject to budget constraints, the anticipated success rate is less than 10% for RGMA topics, somewhat higher for ESM topics.

Q9: Will you consider supporting smaller efforts (~200K/year) relevant to the work?

A9: No. The goal is to develop sufficient critical mass of core capabilities, collaborations as required, and an overall integrated approach to make significant progress on this major, multi-disciplinary scientific challenge.

Q10: Will changes in the personnel (lead, co-leads, and collaborators), budget, and title of the proposal compared to the preapplication be entertained?

A10: The title of the proposal, the lead-PI, nor the overall scope of the proposed work cannot change. However, co-leads and collaborators can change, as can the budget. For details about budget and collaborations please refer to the FOA.

Q11: Can my RGMA topic just focus on development of metrics?

A11: The answer is “NO”.

The overall RGMA topic focusses on Earth system processes, interactions, and feedbacks, across scales.

The proposal should focus on the science topics that are listed in the FOA. They are: 1) Extremes and Water Cycle; 2) Modes of Variability; and 3) High Latitude Feedbacks.

This is done through the use of:

- 1) CMIP6 simulations (including those from E3SM), and/or
- 2) E3SM v1 possibly along with other ESMs to address the science questions of their choice.

Metrics can be developed in the process of addressing the science questions but can and should not be the core of the activity. Development of metrics should be based on the core scientific questions that you are focusing on

Q12: What happens if E3SM v1 is not the best choice to address the science questions that is being pursued?

A12: The FOA emphasizes and indicates that the E3SMv1 is the primary model to be used. It was also indicated that it can be used in conjunction with other CMIP6 models. It is anticipated that successful applications will focus on processes relevant to E3SMv1. If certain processes need to be improved in E3SMv1 projects should plan to diagnose the problems, possibly using a hierarchy of models (see e.g. the second paragraph on page 7 of the FOA), and work with the E3SM team to improve the model.

Q13: What is the target resolution of E3SM v3/v4?

A13: We expect that v3-v4 will have versions with 25km, 100km, and 100km with 25km regional refinement; some simulations with 12km regional refinement are also expected, together with an exploratory nonhydrostatic version with 4 km regional refinement

Q14: The FOA mentions a summer 2018 E3SM tutorial, do you know when that will be?

A14: The plan currently is to do virtual tutorial sessions late in the summer, to accommodate the uncertain timeline of funding actions.

Q15: How might we deal with uncertainty regarding changes in convective parameterization for v3/v4?

A15: Not really, other than to try to anticipate the options, build flexibility into your plans, build enough connection with the E3SM team.

Q16: Are subcontracts permitted or required?

A16: In multi-institutional proposals, non-federal and non-Laboratory collaborative institutions must be supported as a subcontract from the lead institution as described on page i and page 10; however note that Universities may not subcontract to DOE Laboratories or Federal institutions.