v1 Simulation Campaign

Simulation	Duration	Resolution	Notes
Pre-industrial (1850) control	500 years	LR	DECK
Historical transient (1850-2014)	165 years per ensemble member	LR	DECK - minimum of 3, ideally 5 ensemble members.
Abrupt 4xCO2	150 years	LR	DECK
1%/yr CO2 increase	150 years	LR	DECK
AMIP (1970-2014)	45 years	LR	DECK - possibility of starting earlier (1870) and performing multiple ensemble members
1950 control	50 years	LR, HR	HighResMIP like
1950-2050 (all forcings)	100 years	LR, HR	HighResMIP like - 3 ensemble members
1950-2050 (GHG-only)	100 years	LR, HR	HighResMIP like - 3 ensemble members
AMIP (2000-2010)	10 years	⅛ degree, global	Atmosphere-only global high-resolution simulation
AMIP (2000-2010)	10 years	⅛ degree, RRM	Atmosphere-only high-resolution simulation over North America using RRM

v2 Model Developments

Timeline for v2 (from Rob Jacob)

- **30 Jun 2019**: feature freeze for features to be used in v2 simulations. E3SM v2-alpha made after PRs are integrated. Start component-level tuning (F-cases, I-cases, G-cases)
- **30 Sep 2019**: Finish component level tuning. E3SM v2-Beta made. All initial/BC files should be finished and in inputdata server. Start coupled tuning.
- **31 Dec 2019**: Coupled tuning finished. Start coupled runs. May have additional beta tags after this. (Development during this time can't change answers for coupled runs).
- **24 Mar 2021**: v2 data and model release

Priorities: v2

- v2 Model Developments
  - Fairly large number of developments are under consideration for v2.
  - Just because a particular development is under consideration for v2, it doesn't mean it will be incorporated in v2.
  - To increase chances that a specific development will be in v2, it should:
    - add a demonstrably useful feature or reduce an existing bias,
    - be thoroughly tested and evaluated,
    - be documented in a separate publication,
    - be ready and its author willing to help with v2 integration.
  - We will assembling a **v2 integration and testing team.**
  - Will proceed **incrementally**, starting next quarter (April 1).

v2 Model Developments

New RRM grids

Atmosphere

- Semi-Lagrangian transport + QLT for conservation/monotonicity
- NH dynamical core
- Evaluation of alternate physics for consideration in v2
- Minimalist “scale-aware” physics package for RRM (collaboration with CMDV-RRM)
- New faster version of CLUBB
- ZM with ULL (unrestricted launch level)
- Retuning of gravity wave drag for improved MJO
- Improved dust aerosol physics
- Alternate surface flux formulation based on Fairall et al (2003)
- ...

v2 Model Developments

Ocean

- KPP physics improvements (Langmuir mixing)
- Test and implement KPP implementation port to GPU
- Test and Evaluate Scale-aware Gent-McWilliams mesoscale eddy parameterization
- Redi mixing implementation through University Project

Land

- Water management model and MOSART inundation
- Plant hydraulics
- **Should we update the land model beyond satellite phenology (SP)?**