Chemistry Climate Working Group

Criterion for Recommending Adding New Modules to the CESM Trunk

Spring 2013

Addition of new code or chemical mechanism to the trunk will be considered if this addition fits within one or more of the following categories:

1. Reduces known biases relevant to a CESM science question
2. Provides a benchmark representation of a process
3. Adds new feedbacks that have been demonstrated to be important for a CESM science question
4. Provides a new approach to science questions of interest to the CESM enterprise
5. Provides diagnostics needed to constrain simulations
6. Significantly reduces the cost of simulations

The addition is subject to the following requirements

1. It does not significantly degrade the overall simulated climate or atmospheric composition. This will be documented through the use of existing and upcoming diagnostics and specific requested simulations (e.g., present-day and pre-industrial for indirect effect estimates, if applicable).
2. It does not increase cost substantially unless it provides a benchmark

Science Questions

* What are the impacts of short-lived climate forcers (anthropogenic aerosol, ozone and methane) on the past, present and future global and regional climate?
* What is the role of aerosol and ozone deposition in surface biology?
* How much does climate-wildfire feedback contribute to climate variability?
* What is the role of climate-dust feedback?
* How strong is the climate-DMS feedback?
* What are potential impacts of engineered aerosol?
* How is tropospheric chemistry affected by the ozone recovery and changes in stratospheric residual circulation?
* What were the changes in tropospheric oxidants since pre-industrial times and expected changes in the future?
* What is the role of anthropogenic pollutants on the formation of secondary-organic aerosols?