Release Versions and Compsets

CESM2 contains several subversions as described on the CESM2 Release Webpage. CESM2.0 and CESM2.1 are consistent with CMIP6 simulations, while CESM2.2 contains a number of updates that will give different results from previous versions. CESM2.2 is a "functional" release, and not all available compsets and configurations have been scientifically validated. When building some combinations of resolution and compsets you may need to include the switch "--run-unsupported" when creating a case. The default chemical mechanism for CAM-chem in CESM2 is the MOZART-TS1 chemistry (Emmons et al., 2020) with MAM4 aerosols and a VBS-SOA scheme (Tilmes et al., 2019).

CESM2.2 contains MUSICA-V0. CESM2.2 also includes an updated scavenging of aerosols in convective clouds. The MOZART-TS2 chemical mechanism (Schwantes et al., 2020) is available. Both MOZART-TS1 and -TS2 now include the NOx-dependent VBS-SOA scheme described in Jo et al. (2020).

See the CESM2.1 Quickstart Guide or the CESM2.2 Quickstart Guide for information on downloading the model code.

The definitions of CESM compsets (component sets, i.e., configurations) can be found here: http://www.cesm.ucar.edu/models/cesm2/cesm/compsets.html. Current CAM-chem compsets start with "FC". More information on the CESM2.2 CAM-chem compsets is available on the MUSICA-V0 wiki. Compsets that include "ts2" use the MOZART-TS2 chemical mechanism published in Schwantes et al. (2020). Compsets with "nudged" use the physics-side nudging, as described in the CAM User's Guide. Spectral Element resolutions are now available: "ne30" is approximately 1-deg resolution, ne30pg3 is approximately 1-degree with CSLAM (Conservative Semi-Lagrangian multi-tracer transport scheme). More information on supported grids is on the CESM 2 grids webpage.

See MUSICA wiki for more information about compsets appropriate for the CONUS regionally refined grid.

CompSet	Chemistry	Meteorology	Other Components	Default Start Date	Default Emissions	Possible Resolutions	Comments
FCnudged	TS1	nudging to MERRA2 on 32 Levels	prescribed SST prescribed LAI(1)	Jan 2010	CMIP6	f09_f09_mg17	MERRA2 available 1990-present;
FCts2nudged	TS2	nudging to MERRA2 on 32 Levels	prescribed SST prescribed LAI(1)	Jan 2010	CMIP6	f09_f09_mg17	MERRA2 available 1990-present
FCHIST	TS1	CAM6, transient	prescribed SST prescribed LAI(1)	Jan 2010	CMIP6	f09_f09_mg17 ne30_ne30_mg17 ne30pg3_ne30pg3_mg17	Appropriate for simulations from 1850 to 2015
FC2010	TS1	CAM6, repeats year 2010	prescribed SST prescribed LAI(1)	Jan 2010	CMIP6	f09_f09_mg17 ne30_ne30_mg17 ne30pg3_ne30pg3_mg17	Calendar: NO_LEAP
FCSD	TS1	Specified Dynamics MERRA2 on 56 Levels	prescribed SST prescribed LAI(1)	Jan 2005	CMIP6	f09_f09_mg17	FCnudged is now recommended instead of FCSD
FCfireHIST	TS1	CAM6	prescribed SST	Jan 1995	interactive fire emissions from CLM; CMIP6 anthro	f09_f09_mg17	*** do not use without consulting ACOM scientists *** Currently default includes offline fire emissions, too.

(1) Uses satellite phenology (bgc sp) from observed present day LAI

Most recent SST file:

To update in `env_run.xml`

$DIN_LOC_ROOT/atm/cam/sst/sst_HadOIBl_bc_1x1_1850_2021_c120422.nc