

Last Millennium 850AD-1849 Setup: Instructions for using the B1850C5CN Compset

Fully Transient Simulation :: 850AD → 1849

REQUIRED: The following namelist changes will produce an 850-1849 transient simulation from a B1850C5CN compset. Note that you may have small differences between your simulation and the NCAR Last Millennium ensemble members due to machine and compiler changes, or from perturbations to the initialization files. (Ensemble members were created using pertlim in user_nl_cam: e.g., pertlim = 2.d-14).

1. For use with CESM model versions: **cesm1.1, cesm1.2**
2. `./create_newcase -case /myPath/myCase -mach yellowstone -compset B1850C5CN -res f19_g16`
3. `cd /myPath/myCase`
4. `./cesm_setup`
5. Edit `env_run.xml` using `xmlchange`

e.g.: `prompt> ./xmlchange -file env_run.xml -id RUN_STARTDATE -val 0850-01-01`

```
./xmlchange -file env_run.xml -id RUN_STARTDATE -val 0850-01-01
./xmlchange -file env_run.xml -id RUN_REFCASE -val b.e11.B1850C5CN.f19_g16.0850cnt1.001
./xmlchange -file env_run.xml -id RUN_REFDATE -val 0850-01-01
```

6. **Edit user_nl_cam** (PATH = /glade/p/cesm/cseg/inputdata)

Note: `solar_data_ymd` needs to be set to the default value of zero for a transient simulation

```
solar_data_file = '/PATH/atm/cam/solar/SOLAR_SPECTRAL_VK_Lea_849-2008_annual_c130909.nc'
solar_data_type = 'SERIAL'
solar_data_ymd = 0
bndtvghg = '/PATH/atm/cam/ggas/ghg_pmip3_850-2007_annual_c100517.v2.nc'
scenario_ghg = 'RAMPED'
prescribed_volcaero_datapath = '/PATH/atm/cam/volc'
prescribed_volcaero_file = 'IVI2LoadingLatHeight501-2000_L18_c20100518.nc'
bnd_topo = '/glade/p/cesmdata/cseg/inputdata/atm/cam/topo/consistent-topo-fv1.9x2.5_c130424.nc'
```

7. **Edit user_nl_clm :: fsurdat and fpftdyn**

⇒ You must edit `user_nl_clm` every 250 years as the transient simulation progresses to point `fsurdat` and `fpftdyn` to the correct forcing files. To update this file every 250 years, uncomment the line that contains the date range matching the current model date, and add a comment to the line pointing to the old date range. (PATH = /glade/p/cesm/cseg/inputdata)

```
! surface dataset --> change every 250 years
  fsurdat = '/PATH/lnd/clm2/surfddata/surfddata_1.9x2.5_simyr0850_c130710.nc'
! fsurdat = '/PATH/lnd/clm2/surfddata/surfddata_1.9x2.5_simyr1100_c131015.nc'
! fsurdat = '/PATH/lnd/clm2/surfddata/surfddata_1.9x2.5_simyr1350_c131018.nc'
! fsurdat = '/PATH/lnd/clm2/surfddata/surfddata_1.9x2.5_simyr1600_c131018.nc'

! LULC --> change every 250 years
  fpftdyn = '/PATH/lnd/clm2/surfddata/surfddata.pftdyn_1.9x2.5_hist_simyr0850-1100_c130710.nc'
! fpftdyn = '/PATH/lnd/clm2/surfddata/surfddata.pftdyn_1.9x2.5_hist_simyr1100-1350_c131015.nc'
! fpftdyn = '/PATH/lnd/clm2/surfddata/surfddata.pftdyn_1.9x2.5_hist_simyr1350-1600_c131018.nc'
! fpftdyn = '/PATH/lnd/clm2/surfddata/surfddata.pftdyn_1.9x2.5_hist_simyr1600-1850_c131018.nc'
```

8. Edit user_nl_cpl

```
orb_iyear = 850
orb_iyear_align = 850
orb_mode = 'variable_year'
```

9. Edit user_nl_rtm

```
finidat_rtm = 'b.e11.B1850C5CN.f19_g16.0850cntl.001.rtm.r.0850-01-01-00000.nc'
```

10. Compile and run model as usual