

CCR diagnostics

Setting up CCR diagnostics for CCSM4

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The CCR diagnostics create an updated version of the AMWG timeseries diagnostics e.g., [plots](#). They are created by a series of rather complicated steps.

All environmental variables below can be set by going to the directory where you run your case from (\$CASEROOT) and executing Tools/ccsm_getenv

- See Options below for pre-preprocessing data: extract monthly data from the atm history files (see Option 1 and Option 2 below).

Step 1: Automatically run the diagnostics as data is produced:

edit \$CASEROOT/\$CASE.l_archive script to add lines in Option 1 box below.

Step 2: Make sure to generate the output fields necessary for the diagnostics:

edit cam.buildnml.csh to include the following output fields. You may add your own as well.

```
fincl1 = 'cb_ozone_c', 'cb_sulf_c', 'MSKtem', 'VTH2d', 'UV2d', 'UW2d', 'U2d', 'V2d', 'TH2d', 'W2d', 'UTGWORO'  
fincl2 = 'TREFHTMN', 'TREFHTMX', 'TREFHT', 'QREFHT', 'PRECC', 'PRECL', 'PSL'`
```

Step 3: Create the local timeseries files:

If you did step 1, the timeseries files will be created and updated every time you run the archiver. If you did not do step 1, then

```
% cd $CASEROOT  
% ~adrienne/diag4/sdiag $CASE
```

This will create timeseries plots in \$DIAGDIR/monthly, where \$DIAGDIR is defined below

Site	Machine	\$DIAGDIR
NCAR	bluefire	/gpfs/proj2/dasg018/adrienne/diagnostics/\$CASE
ORNL	jaguarpf	\$CASEROOT/diag
NERSC	franklin	\$CASEROOT/diag
NERSC	hopper	\$CASEROOT/diag

sdiag can take a very long time to run, especially if you have more than 100 years of data. You can improve speed significantly by downloading all \$CASE.cam2.h0.* files to \$DIAGDIR/hist before launching sdiag.

Step 4: Compare your run against a control:

On copper, create a new data directory for your case

```
% mkdir /datalocal/ccpa/adrienne/diag/$CASE /datalocal/ccpa/adrienne/diag/$CASE/timeseries /datalocal/ccpa/  
/adrienne/diag/$CASE/plot
```

Step 5: Transfer all files in \$DIAGROOT/monthly to copper:/datalocal/ccpa/adrienne/diag/\$CASE/timeseries

```
% cd $DIAGDIR/$CASE/monthly  
% tar -cvf $CASE.diag.tar $CASE  
% scp $CASE.diag.tar copper.cgd.ucar.edu:/datalocal/ccpa/adrienne/diag/$CASE/timeseries
```

NB: These files are not backed up. I highly recommend that you copy all files in \$DIAGDIR/annual and \$CASE.diag.tar to \$CASE/diag on the hpss.

Step 6: Move the files into place on copper

```
setenv CASE to your case name  
% cd /datalocal/ccpa/adrienne/diag/$CASE/timeseries  
% tar -xvf $CASE.diag.tar
```

Step 7: Create new run comparison script from a recent script.

The scripts are labeled by case name, so if there is a case similar to the case you have run, copy that script. DO NOT modify any scripts already there, unless you created them. In the example below, I have used b40.lm850-1850.1deg.001 as our initial comparison script.

```
% cd /datalocal/ccpa/adrienne/diag/scripts  
% cp b40.lm850-1850.1deg.001.csh $CASE.csh
```

- edit new run script (\$CASE.csh)
 - casename
 - years (year1, year2) - Need 4 digits: 850 => 0850

- ncase
- figpath

Step 8: Run comparison script

```
% $CASE.csh
```

NOTE:png files should write to \$webdir, which is defined in \$CASE.csh. When updating an existing case, the files will automatically overwrite the existing png files. However, if you have placed them into a subdirectory, you need to point to the new directory, either in the script, or by moving them manually after running. (e.g., amwg/\$CASE/CCR/*.png)

Step 9: Create new html page

```
% cd $webdir
```

```
% cp b40.lm850-1850.1deg.001_series.html $CASE.html
```

edit \$CASE.html for your case.

Option 1: Archive script should have these lines in it. Data will automatically be extracted as the archiver is working.

```
#-----
# Determine necessary environment variables
#-----

cd /fs/cgd/csm/runs/ccsm4_0/b40.lm850-1850.1deg.001

source ./Tools/ccsm_getenv || exit -1

# copy files to diagnostic directories

cd $DOUT_S_ROOT/atm/hist
source ~adrienne/diag4/setdir
mkdir $DIAGROOT $DIAGDIR $DIAGDIR/hist
cp *.h0*.nc $HISTDIR
if (! -e $DIAGDIR/startyear) then
  cd $HISTDIR
  set year = `ls -1 *h0* | head -1 | sed -e 's/^h0\./g' | sed -e 's/-./g'`
  cd $DIAGDIR
  echo $year >& startyear
endif
cd $CASEROOT

#-----
# run the long term archiver
#-----

$CASETOOLS/ccsm_l_archive.csh

cd ~adrienne/diag4
sdiag $CASE
```

Option 2: Run offline for previously completed experiments (Bluefire)

1. Pre-stage atm history files on /ptmp/LOGNAME/diag4_ccr/\$CASE/hist
2. copy -R ~adrienne/diag4/setdir ~
3. edit sdiag (if required - e.g., if USER is not the owner of the RESTDIR)
4. Usage: ./sdiag \$CASE
5. tar file will be written to MSS: /CCSM/csm/\$CASE/diagnostics/\$CASE.diag.tar