Instructions for Running the Feedback Suite on Cheyenne

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All of the code you will need is in the directory /glade/u/home/bkravitz/controller (copy the entire directory). Each run will need its own copy of this directory because there are run-specific things in it. I like to put it in the case directory for the run.

The only file in the feedback suite that you will need to modify is main.py. Here are the things you can modify (note that many of these things are strings, so they’ll need to be in quotes):

runname = Whatever the run name is (e.g., feedbackrun1).

casepath = Wherever the case path is. I’ve got it set up so it will use the run name, but you can specify the absolute path if you like.

maindir = The location of the controller directory.

scratchdir = The script requires some temporary space. It will then delete the directory when it’s done. I would recommend NOT using a directory that already exists unless you really don’t care about it. If this directory doesn’t exist, the script will make it.

frequency = ‘1y’ (leave this alone)

maxrest = Set this to some really large number that’s at least as large as number of years in the simulation you want to do. If this is shorter than the length of the run, after that many resubmits, the controller will exit without doing anything, but the run will keep going.

pathtocontrol = You shouldn’t need to mess with this.

variables = You shouldn’t need to mess with this.

archivepaths = This is the location of the history files that the scripts will read in. These must be on spinning disk, and the entire time history must be accessible (see note below).

varlocs = This is where the variables are (see note below).

These runs can take up a lot of space. The controller needs access to the entire time history (monthly output) of the variables it requires, but only those variables. A quick solution to this would be to define a new fincl variable in the namelist such that TREFHT is spit out into (for example) cam.h5 with monthly frequency. Then cam.h5 is small, and you can keep it all on spinning disk. Make sure you change the variable varlocs from cam.h0 to cam.h5.

Other things you need to modify:

* In the file **st\_archive**, toward the very end of the file, there will be a line that says  
  $logger->info("st\_archive process complete.");  
  Below that line and before the call “exit 0;”, you should add the line  
  system("python /path/to/controller/main.py");  
  where you replace “/path/to/controller/” with wherever the python scripts are. [Note that these instructions work up to version 2.1.1. There were some st\_archive changes after that point, and you may need to modify this step.]
* In the file **user\_nl\_cam**, you will need to modify “ext\_frc\_specifier” to have four additional lines:  
   'SO2 -> 0.\*/glade/scratch/bkravitz/inputfiles/SO2\_geoeng\_2-2499\_serial\_1Tg\_24.9-25.1km\_15.6N\_180E\_0.95x1.25\_c160502.nc'  
   'SO2 -> 0.\*/glade/scratch/bkravitz/inputfiles/SO2\_geoeng\_2-2499\_serial\_1Tg\_24.9-25.1km\_15.6S\_180E\_0.95x1.25\_c160502.nc'  
   'SO2 -> 0.\*/glade/scratch/bkravitz/inputfiles/SO2\_geoeng\_2-2499\_serial\_1Tg\_22.7-22.9km\_30.6N\_180E\_0.95x1.25\_c160502.nc'  
   'SO2 -> 0.\*/glade/scratch/bkravitz/inputfiles/SO2\_geoeng\_2-2499\_serial\_1Tg\_22.7-22.9km\_30.6S\_180E\_0.95x1.25\_c160502.nc'  
  (Insert commas after each line, where appropriate.) You may want to copy those four files to a more permanent directory than scratch.  
  [Note that if these files no longer exist, please email me, and I will get you new ones. Or ones that are more applicable to what you want to do.]
* In **env\_run.xml**, change “RESUBMIT” to however many years you want to do (like usual). Note: Make sure that “STOP\_N” and “STOP\_OPTION” refer to 12 months. The controller is set up to run every year, and if it is called more or less frequently than that, unpredictable things will happen.

The algorithm will spit out a logfile in the “maindir” directory. Please do not move or manually modify this logfile unless you really know what you’re doing. The script uses it.

Explicit feedback for climate modeling

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