

Testing the Cheyenne environment

This homework is meant to check that the main functionalities you will need to set up and run CESM, and look at CESM output are working properly. If you encounter any errors while following any steps in this exercise, please contact cislhelp@ucar.edu and include your error message(s) in your email.

Note: in what follows, a line beginning with “>” indicates commands that you should type at the command line of your terminal window.

Step 1: Log into Cheyenne

1. Open a terminal window.
2. Look up your username that was created with your account. In step3, “yourusername” should be replaced by your username.
3. **> ssh -X -Y yourusername@cheyenne.ucar.edu**
4. When prompt to enter a password, use the method that was provided to you, either:
 - a. A pin + a Yubikey.
 - b. A “CIT” password in conjunction with the Duo Mobile app.
5. If all goes well, you should see something like this: “yourusername@cheyenne4:~>”
If that is the case, CONGRATULATIONS, you successfully connected to Cheyenne.
Note: the number 4 after “cheyenne” could be any number between 1 and 6.
Now you are located in your home directory (/glade/u/home/yourusername).

Step 2: Edit a batch file to input your project

1. Copy a simple test case to your home directory:
> cp -r /glade/p/cesm/tutorial/Tutorial_Setup_homework .
2. Go to the newly added folder:
> cd Tutorial_Setup_homework
3. Edit a batch file to run an experiment on Cheyenne: (you can use your preferred editor, here I use “vim”)
> vim runCISM.cheyenne
4. Look for “NCGD0039” (by using the command “/” in vim): “/NCGD0039”
The cursor should now be located at the letter “N”.
5. Delete the project code number NCGD0039. Using vim, you achieve this by hitting the letter “x” 8 times (or hitting “D”).
6. Enter the “insert” mode. Using vim, simply type “i”
At this point you should see “-- INSERT --” at the bottom left of your window.
7. Enter the project code that was provided to you.
8. Exit the “Insert” mode by typing the “escape” button.
9. Save and exit the program. In vim you do this by typing “:wq”

If everything worked according to plan, CONGRATULATIONS you successfully modified a batch script.

Step 3: Submit a job (this will ensure you have been added to the project number used for the tutorial).

1. Type the following command:
> qsub runCISM.cheyenne
2. If this action is successful, you will see something like this in your window:
"2753055.chadmin1.ib0.cheyenne.ucar.edu"
The number in front of ".chadmin" is your job number.
3. Look at the status of your job:
> qstat -u yourusername

If you do not see anything, chances are your simulation is done! If that is the case, CONGRATULATIONS, you submitted a job successfully. In the "S" column, you may also see Q (which means your job is in the queue) or R (which means the job is running).

Step 4: Look at the output with ncvview (to make sure they have X-forwarding set up)

1. If you are curious about the simulation you just submitted, it is a 1 year control run of an Antarctic ice sheet spinup :).

If the run is successful, you should now have a file named "out_Antarctica_8km.ctrl.nc" in /glade/u/home/yourusername/Tutorial_Setup_homework. Let's take a look at it. To do so you could use ncvview or ferret or any other software of your choice. For convenience here, we will use ncvview.

First, load the module:

> module load ncvview

Note: once the module is loaded, you do not need to reload it for your current session.

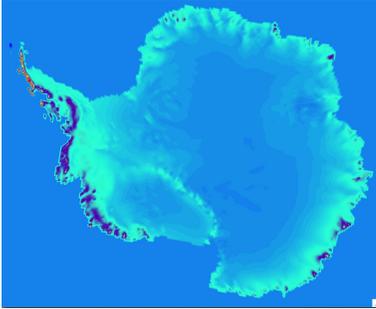
Now, you can look at the result with:

> ncvview out_Antarctica_8km.ctrl.nc

A pop up window should show up which looks like this:



2. Select a field in the "var" section, say "acab" (the accumulation of ice). If all goes well, you should see something like this:



If you do, CONGRATULATIONS, your account on Cheyenne is configured and you are ready to begin the practical sessions of the CSM tutorial.

Practical tips:

It is impractical to always have to load modules by hand when starting a new Cheyenne session in a terminal window. One way around this is to enter the list of modules to load in your `.bashrc` file. To do so:

> vim ~/.bashrc

Enter the Insert mode and add the following lines in your script:

```
module purge
module load ncarenv
module load nco
module load ncview
```

Save and exit. These modules come in handy often. In order to execute this program for your existing session:

> source ~/.bashrc

Next time you begin a new session, you should not need to load these modules manually, they will automatically be loaded for you.

Here is what each command will do once the script is executed:

Module purge: unloads all the previously loaded modules during your session.

Module load ncarenv: loads all the modules present in `ncarenv` (there are many of them).

Module load nco: loads the NetCDF operator language which allows you to manipulate NetCDF files at the command line.

Module load ncview: loads the `ncview` command to visualize NetCDF files.