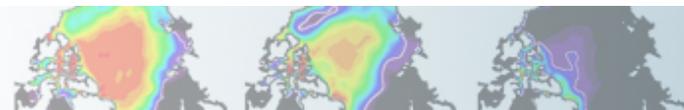


# Exercise Overview



- **Exercise 1: Namelist modification**  
**Customize your history output**
- **Exercise 2: Code modification**  
**Change a tuning parameter**
- **Exercise 3: Namelist + Code modification**  
**Add a new output field to the code**
- **Quiz**



# Exercise 1: Customizing history files



Create a case called “b.day4.001” using the compset B1850 at f19\_g17 resolution. Set the run length to 1 month.

In addition to the monthly history file “h0”, output:

- “h1” file with instantaneous values of T, Q, U and V every 3 hour.
- “h2” file with time-average values of T, Q, U and V every 24 hour.

Write one h1 file and one h2 file for every day of the month.

(Hint: - Use namelist variables: *nhtrfq*, *mfilt*, *fincl*. Look at the online documentation for these variables)

# Exercise 1: Check your solution



When your run is completed,

**(1) check that your archive directory contains the files:**

b.day4.001.cam.h0.0001-01.nc

b.day4.001.cam.h1.0001-01-01-00000.nc

b.day4.001.cam.h2.0001-01-01-00000.nc

b.day4.001.cam.h1.0001-01-02-00000.nc

b.day4.001.cam.h2.0001-01-02-00000.nc

...

...

b.day4.001.cam.h1.0001-01-31-00000.nc

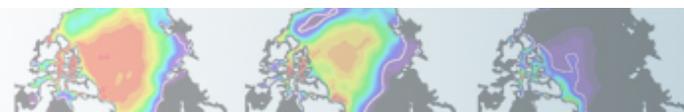
b.day4.001.cam.h2.0001-01-31-00000.nc

**(2) Compare the contents of the h1 and h2 files using “ncdump”.**

```
ncdump -h b.day4.001.cam.h1.0001-01-01-00000.nc
```

```
ncdump -h b.day4.001.cam.h2.0001-01-01-00000.nc
```

**Look at the variables attributes. What is the difference between the 2 files ?**



## Exercise 2: Modify a parameter, zInd



Create a case called “b.day4.002” using the compset B1850 at f19\_g17 resolution. Change the value of zInd (roughness length for soil ) to zInd = 0.02\_r8 and make a 1-month run.

**Hint:** Locate your subroutine using `grep -r zInd *`

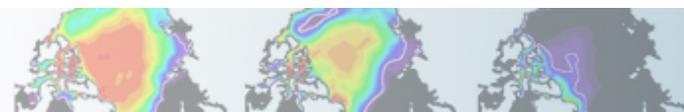
### Check your solution:

Compare the land file for “b.day4.001” and “b.day4.002” and make sure that the 2 runs are different.

You can use `ncdiff` to look at the difference between the 2 runs.

```
ncdiff /glade/scratch/$user/archive/b.day4.002/Ind/hist/b.day4.002.clm2.h0.0001-01.nc /glade/scratch/$user/archive/b.day4.001/Ind/hist/b.day4.001.clm2.h0.0001-01.nc diff.nc
```

How does it affect the fraction of ground covered by snow ?



# Exercise 3: Add an output field



Create a case called “b.day4.003” using the compset B1850 at f19\_g17 resolution. Add an output field for the temperature at 750 mbar. Output daily values of T750 and T500 in the “h1” history file. Make a 1-month run.

## Hint:

- Use T500 as a template for your changes.
- Find the subroutine containing T500 using `grep -r T500 *`

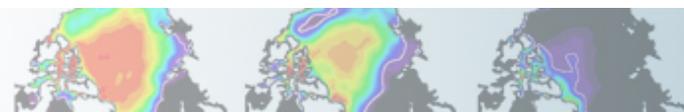
## Check your solution

When the run is completed,

- check the field T750 and T500 are in the file h1
- create a file with the difference between T750-T500 (\*)
- look at the difference with `ncview`.

(\*) For instance, you can use `ncap2`

```
ncap2 -s 'T750_minus_T500=T750-T500' b.day4.003.cam.h1.0001-01-01-00000.nc T750-T500.nc
```





# Quiz

**At the end of the practical, please go to the online course and take the quiz.**

**<http://courses.comet.ucar.edu/course/view.php?id=196>**

**The quiz covers what you have learned during the practicals this week.**

**Don't forget to write your name, email and institution.**

**To answer the questions, you can use documentation, ask questions to others or to the helper. This is the way you will use CESM in the future.**

**If you cannot complete the quiz by the end of the practical session, please finish it before Friday morning, so I have enough time to grade it.**

**“Special prize” for those who get everything right !!!**

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**Welcome to the 2015 CESM tutorial course area**

Here you'll find pre-requisite activities for the course, along with links to daily lectures and practical sessions, as well as course quizzes and surveys.

**Prerequisite Activities**

Please complete the following activity before 08/10/2015 to ensure you are prepared for the tutorial. Your answers and feedback help us tailor the course to the needs of this year's and future classes, so don't forget to respond to the survey!

- Unix Tutorial Module
  - Description: This module, from The COMET Program, will help those new to computing in the geosciences become familiar with working in a command line environment. You can learn about the basics of Unix file structures, how to navigate in a Unix environment, and you'll get to practice creating, storing and searching for files. The expected length is 15-30 minutes for users with some Unix experience, and 30-60 minutes for novices.
  - Unix Tutorial Module Survey
    - Please take this very brief, optional, anonymous survey to tell us what you thought about the unix tutorial module.

**Daily Course Lecture and Practical Session Materials**

To access lecture and practical session materials, go to the link below:  
<http://www2.cesm.ucar.edu/events/tutorials/2015/coursework>

Thursday, Aug. 13

- CESM Quiz ← **CESM quiz**