

Sea Ice/Ocean and Land Ice Breakout Session

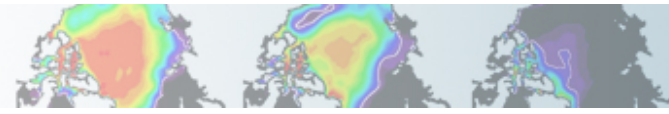
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Outline

- Review case setup.
- G compset.
- Discuss ice and ocean namelists and SourceMods.
- Best practices / pitfalls.
- Your friends: The Users Guides.
- Exercise.



Review Case Setup

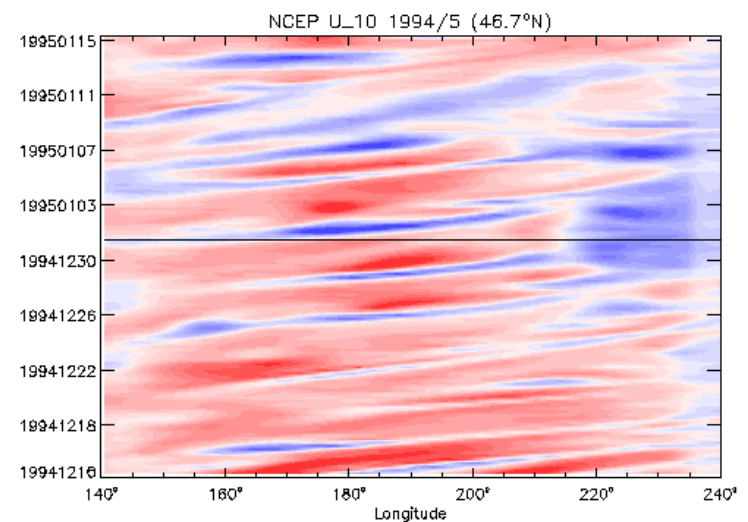
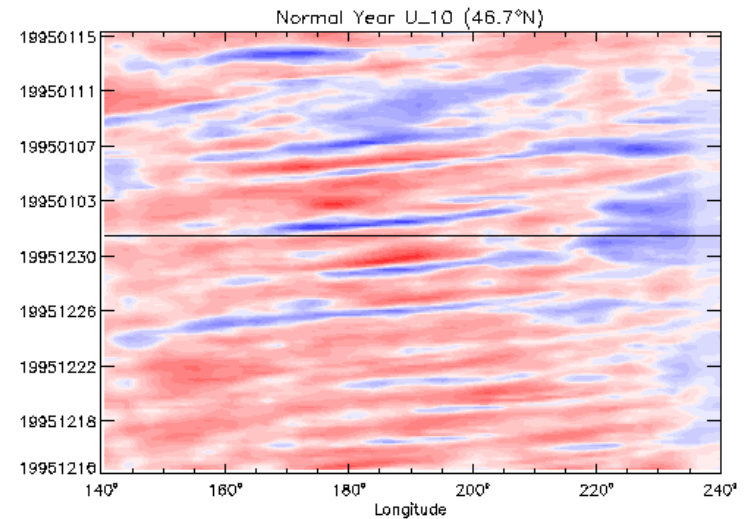
- > `setenv CASE1 $MY_CASES/g_1850_ecosys.01`
- > `cd $CCSMROOT/scripts`
- > `./create_newcase -compset G_1850_ECOSYS -
res T62_gx3v7 -mach bluefire -case $CASE1`

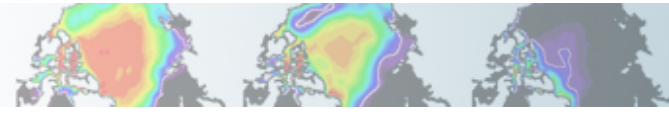


Review Case Setup (2)

G_1850_ECOSYS:

- Coupled ice/ocean case with “normal-year” atmospheric forcing.
- Climatological annual cycle with anomalies on top.
- Preserve “weather” noise.





Ocean and Ice Namelists

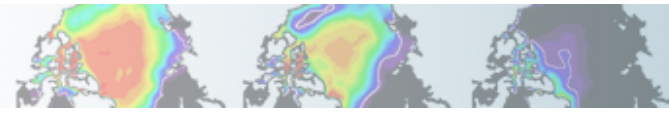
```
> cd $CASE1
```

```
> cd Buildconf
```

```
> ls
```

```
cice.buildnml.csh
```

```
pop2.buildnml.csh
```

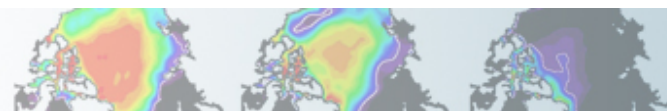



SourceMods

```
> cd $CASE1
```

```
> ls SourceMods
```

```
src.cice    src.pop2
```



Your Friends: The Users Guides

CESM Users Guide:

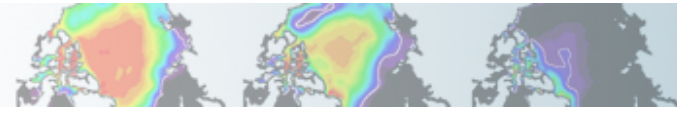
<http://www.cesm.ucar.edu/models/cesm1.0>

CICE Users Guide:

<http://www.cesm.ucar.edu/models/cesm1.0/cice>

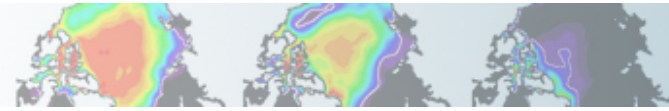
POP2 and Ecosystem Users Guides:

<http://www.cesm.ucar.edu/models/cesm1.0/pop2>



Exercise

Now on to what you'll be working on ...



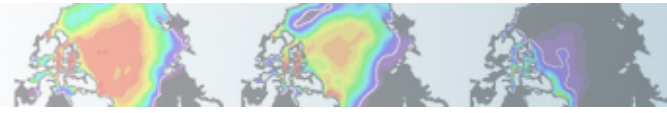
Ice- and Ocean-Model Exercises

- Baseline case: low-resolution 1850 ice-ocean ecosystem case
- Series of “one-off” science experiments
- Data analysis exercise
- Advanced exercises



General Recommendations

- Plan ahead: organize and lay out your case directories logically before you begin your research.
- Choose unique, meaningful case names for your experiments and develop your own sensible case-naming conventions.
- Document your cases and any changes made before and during a run, such as source-code modifications, pe-layout changes, timestep adjustments, bugfixes, etc. The README.case file is a natural place for this documentation.
- Before you modify any case files, make and keep a copy of the original.
- #BSUB -U 37591059#4 (today's reservation)



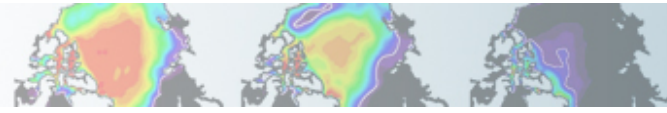
General Recommendations

- **Do** establish a shared location for CESM source code and input data to allow colleagues to access common code and minimize storage. The disk space allotted to inputdata should be large enough to hold the input datasets you'll need for your experiments.
- **Don't** overwrite input data files in the inputdata directories – create new files instead -- and modify your \$CASE scripts accordingly.
- **Don't** modify source code or scripts in your CESM download directory – use SourceMods directories instead.



Production-Run Recommendations

- Check the throughput measures of your case before running production runs. If needed, improve the loadbalancing of your case before beginning your production runs.
- Write model restart files frequently enough, to protect against mid-run machine or model failures.
- Choose the length of a run segment somewhat conservatively, to allow for potential throughput variations caused by system loads.



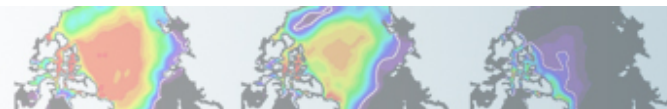
Debugging Suggestions

- Check your most recent log files in your \$RUNDIR. You may need to check more than one of them; start with cesm.log.* (look for “Exit” in the cesm.log file and look at lines preceding and following for information). Examine component log files, too.
- Are all restart files available? Do all of the rpointer files point to the same model date?
- Set INFO_DEBUG = 2 in env_run.xml and resubmit to get more output diagnostics.
- Confirm that you rebuilt your executables if you have made source-code modifications.
- Rebuild with DEBUG TRUE and resubmit for a short run.



Ocean-Model Debugging Tools and Suggestions

- If your run fails because the ocean model solutions don't converge, try cutting the ocean timestep by 20% and rerunning.
- If you encounter an ocean-model convergence failure very shortly after the ocean model starts running, the most likely cause is “bad” forcing received from the coupler.
- Double-precision ocean tavg files can be useful in debugging, but do not use in production runs!
- Create ocean restart files in netCDF format; they're useful if you want to view early-time evolution of your solutions.



Getting Help/Getting Involved

- Read the documentation. Has anyone looked at ice or ocn documentation yet?
- Use the cesm bulletin board (<http://bb.cgd.ucar.edu/>) to tap into community expertise and to share solutions to common problems
- Send mail to cesm-help@cgd.ucar.edu
- Join a CESM Working Group