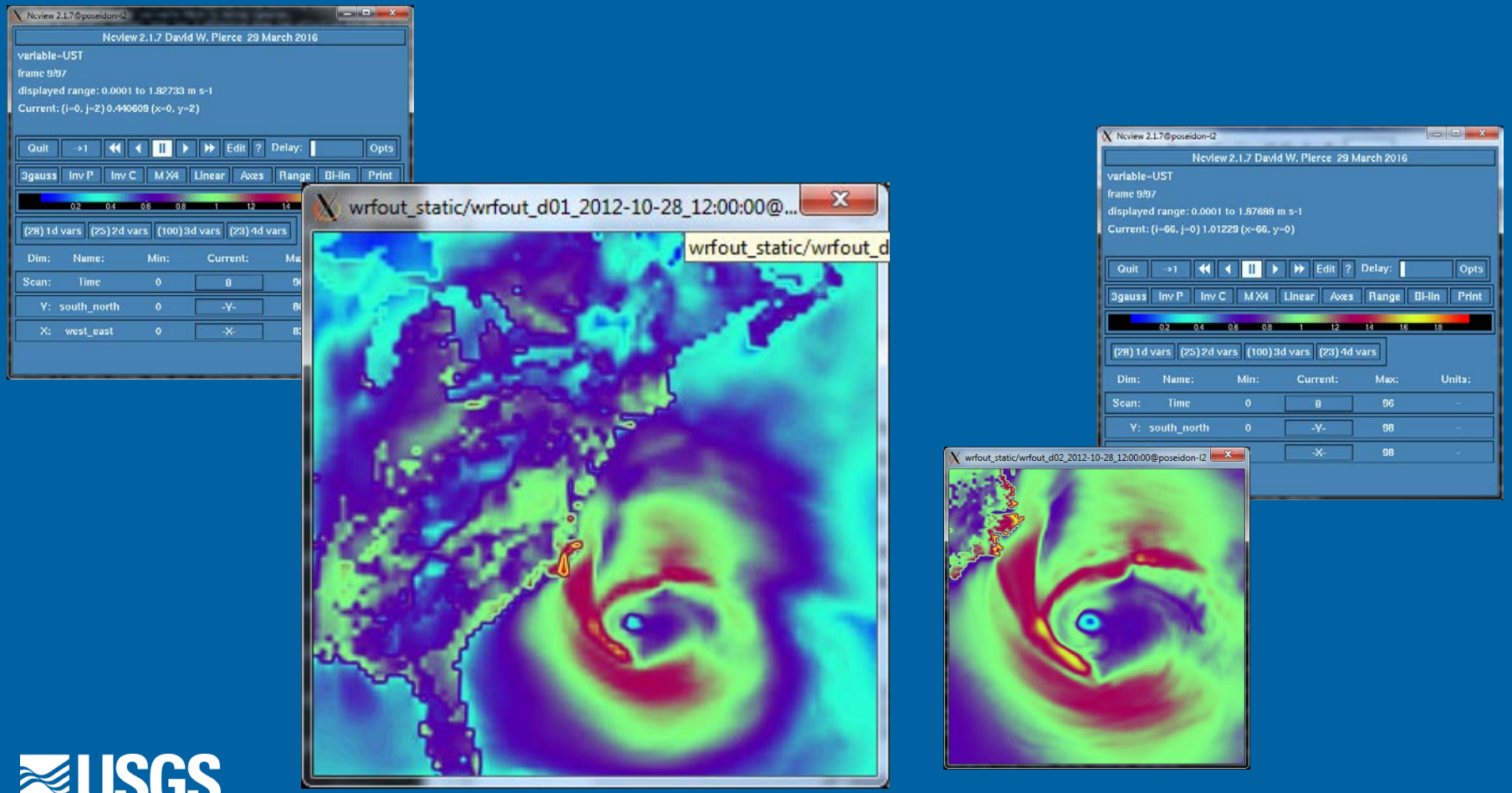
WRF Application in COAWST

Hurricane Sandy – Static Nest
Oct 2012

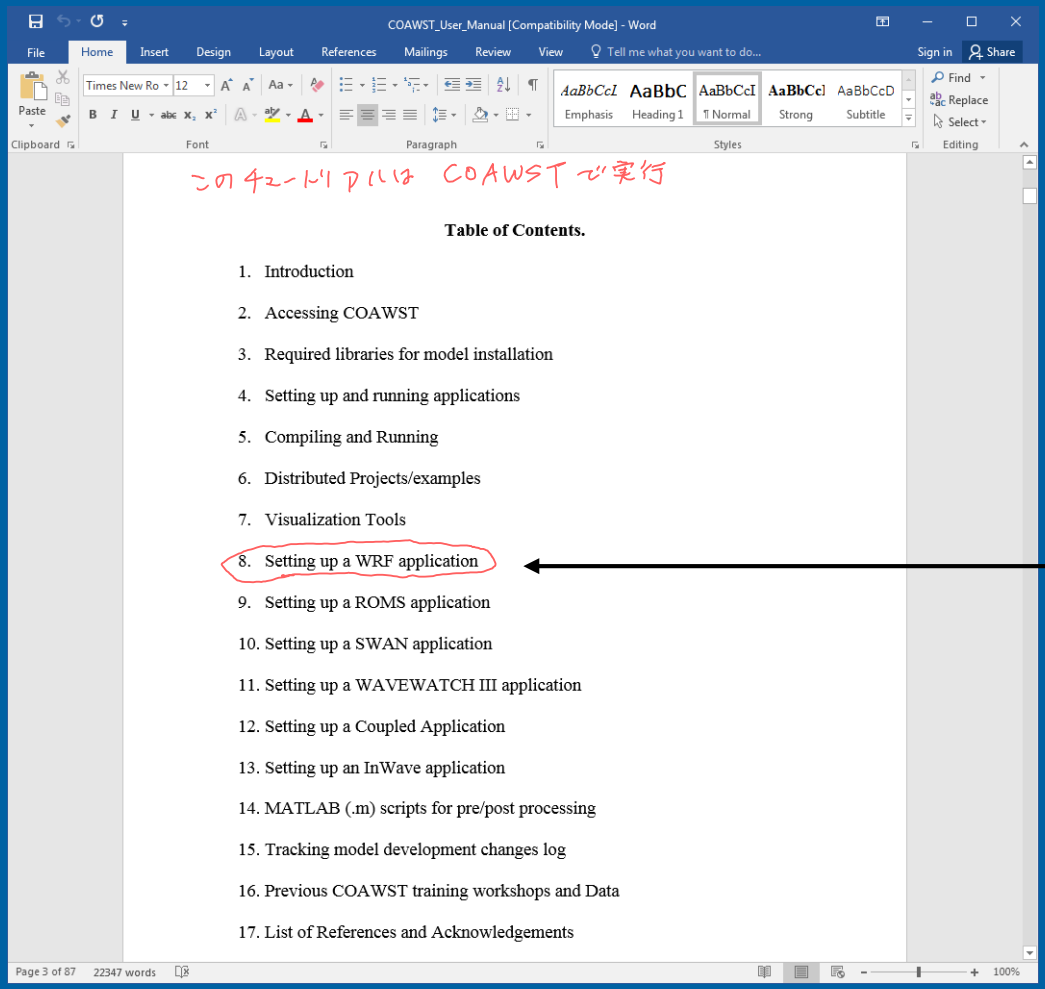
Monday afternoon 29:00~



Domain 01

Domain 02

COAWST User Manual



We use H Sandy application as an example for Chapter 8.

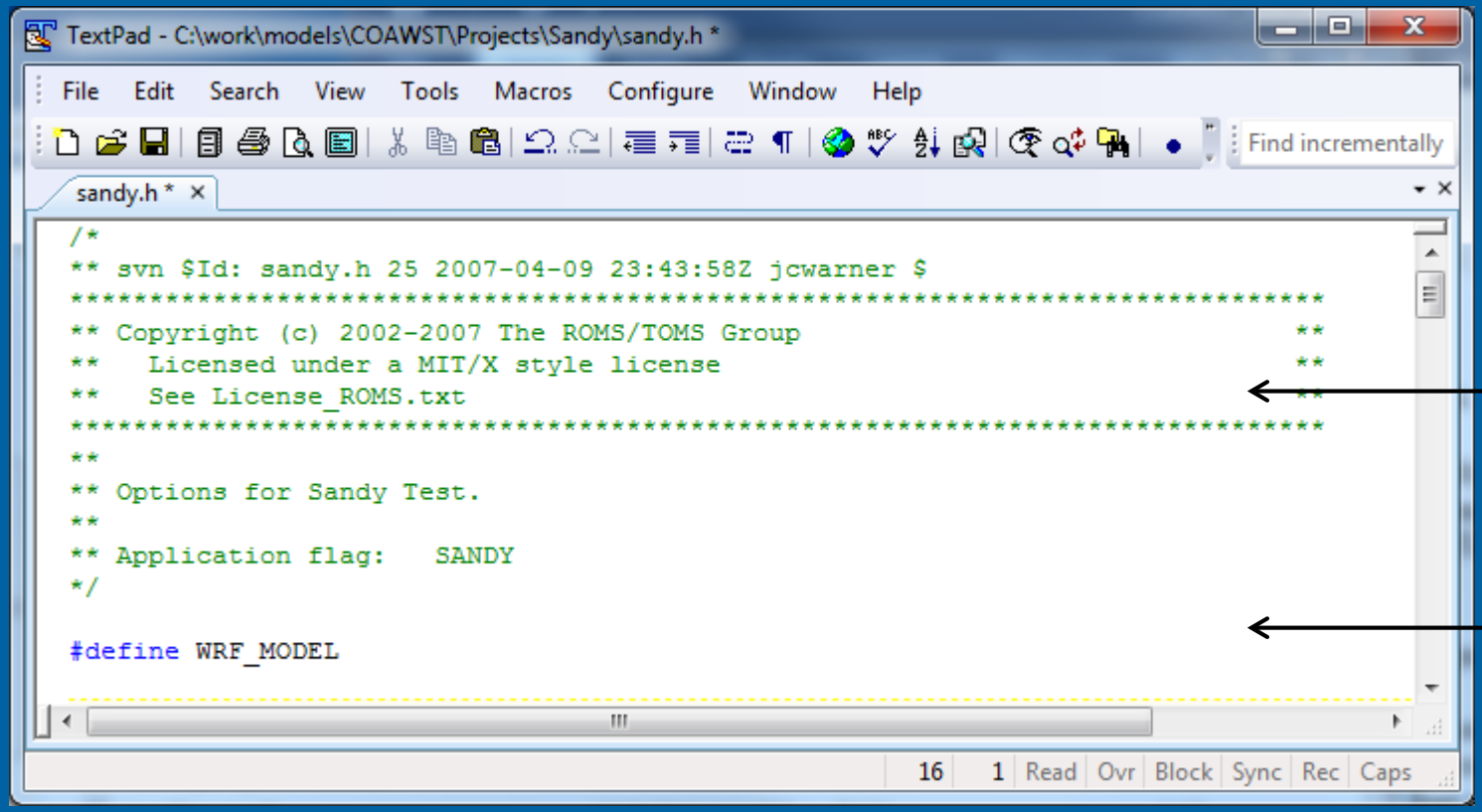
WRF Application: Hurricane Sandy

Main Steps:

1) Build WRF
2) Build WPS
3) Geogrid
4) Ungrib
5) Metgrid
6) Real.exe
7) Run wrf.exe [coawst.exe]
8) Visualize Output

USGS

1) Build WRF - sandy.h



comments

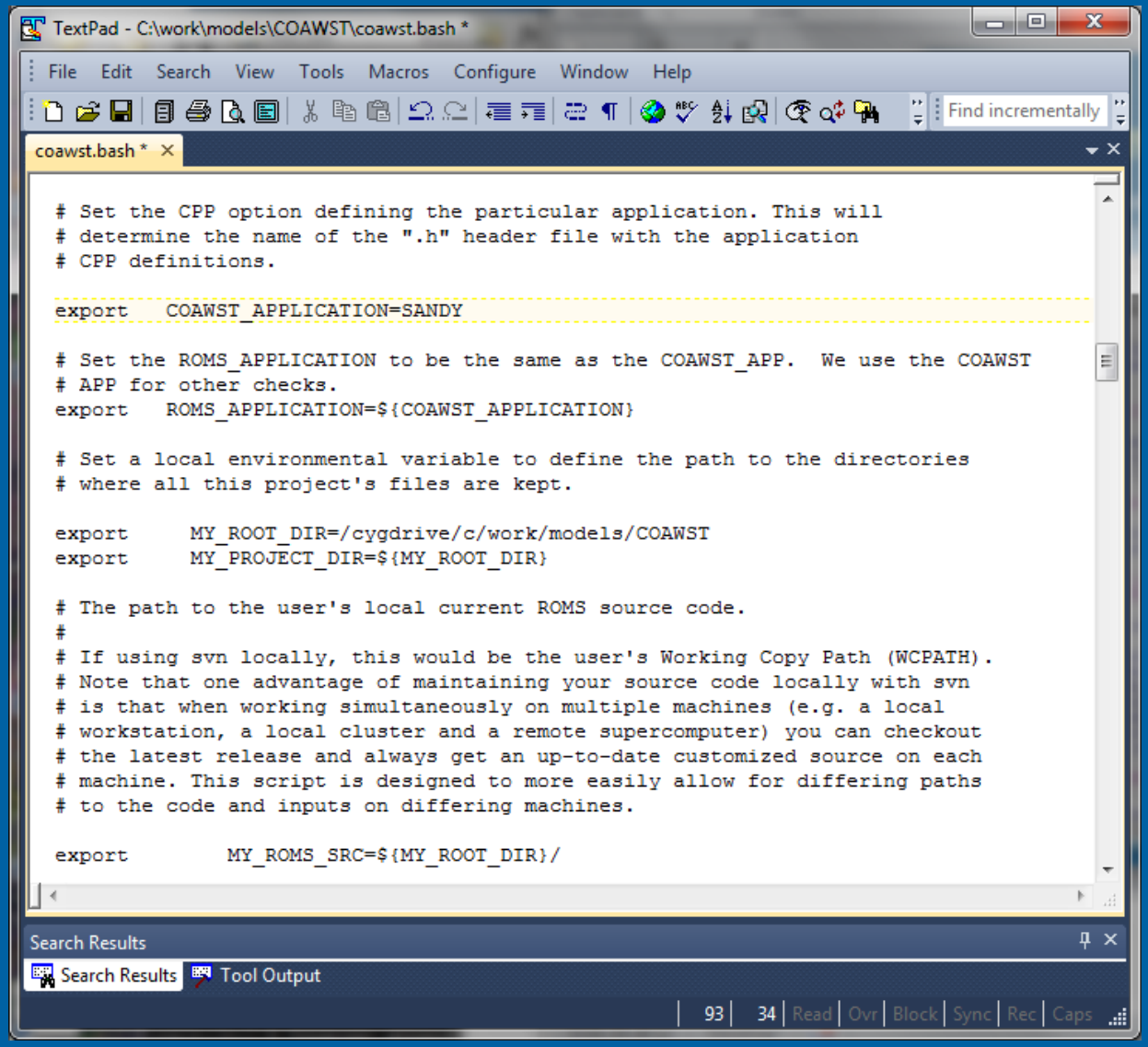
commands

- Determine an application name, let's use SANDY
- Therefore, the header file needs to be named: sandy.h
- Create a file called sandy.h and add #define WRF_MODEL.
- save the file in a folder, let's use Projects/Sandy

USGS

1) Build WRF - coawst.bash

very complicated to allow flexibility, but just need to change a few key things.



App name

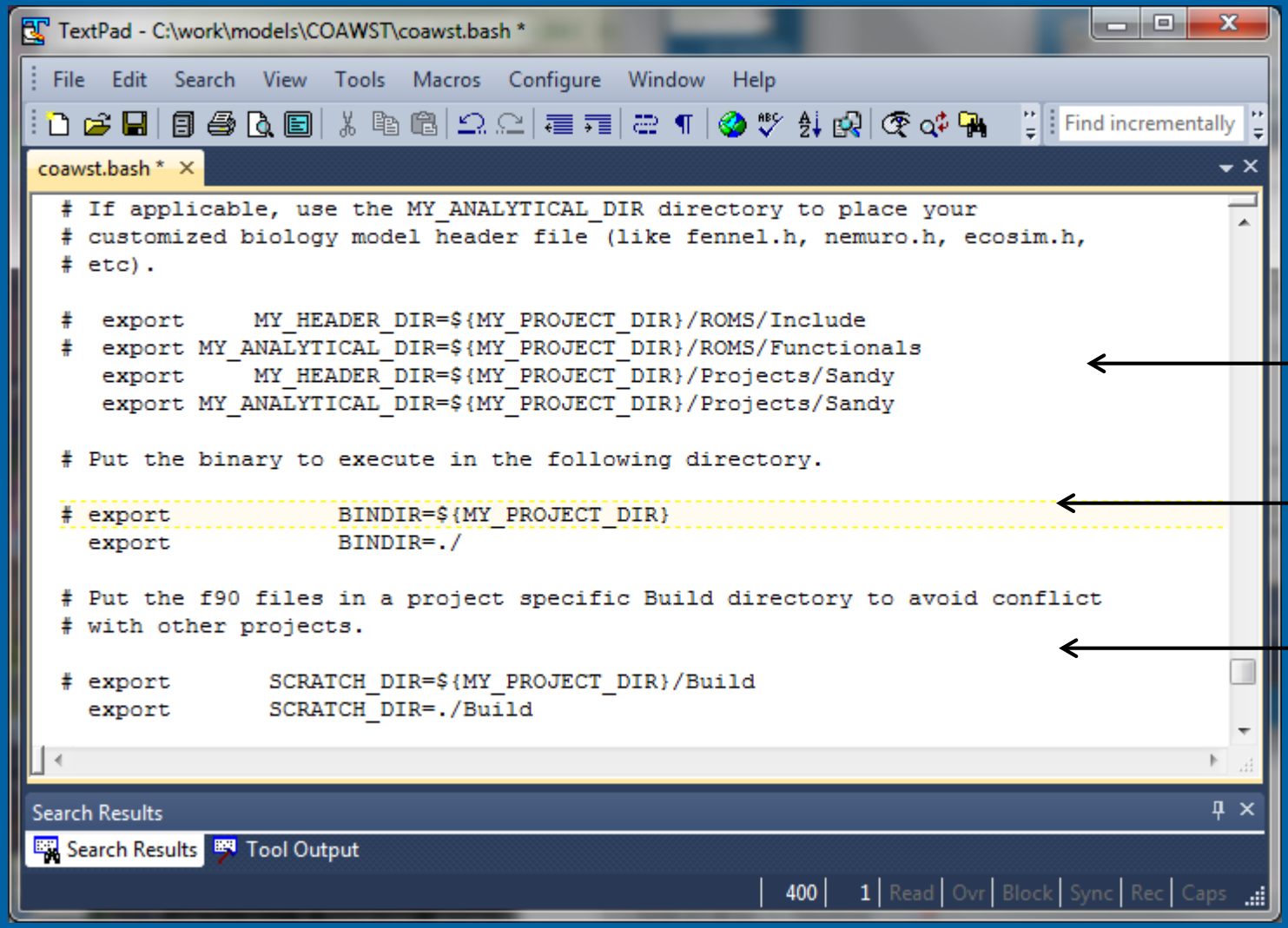
root dir to base other names on

where are your project files

where is the source code

1) Build WRF - coawst.bash

very complicated to allow flexibility, but just need to change a few key things.

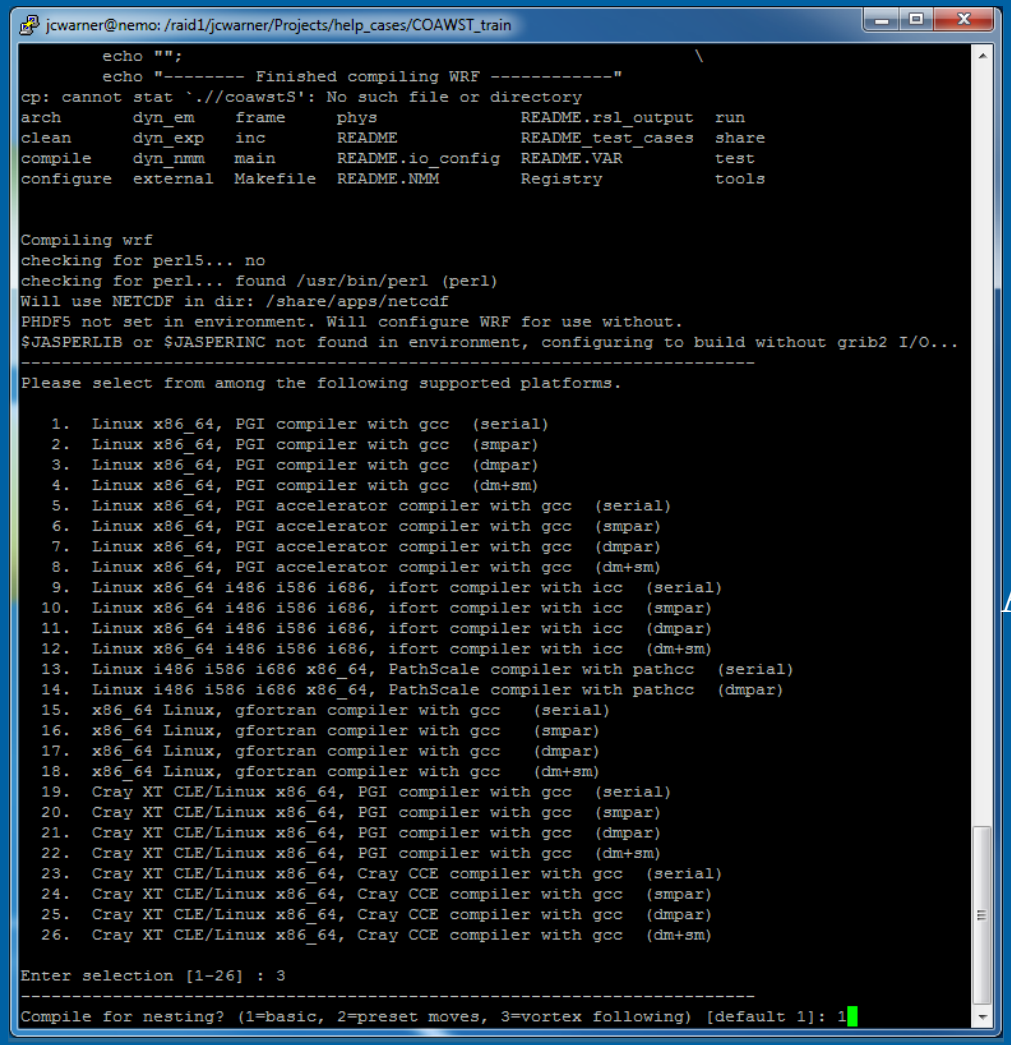


where is the *.h file

where *exe is placed

Build dir

1) Build WRF – command prompt



cd to where the coawst.bash file is located.

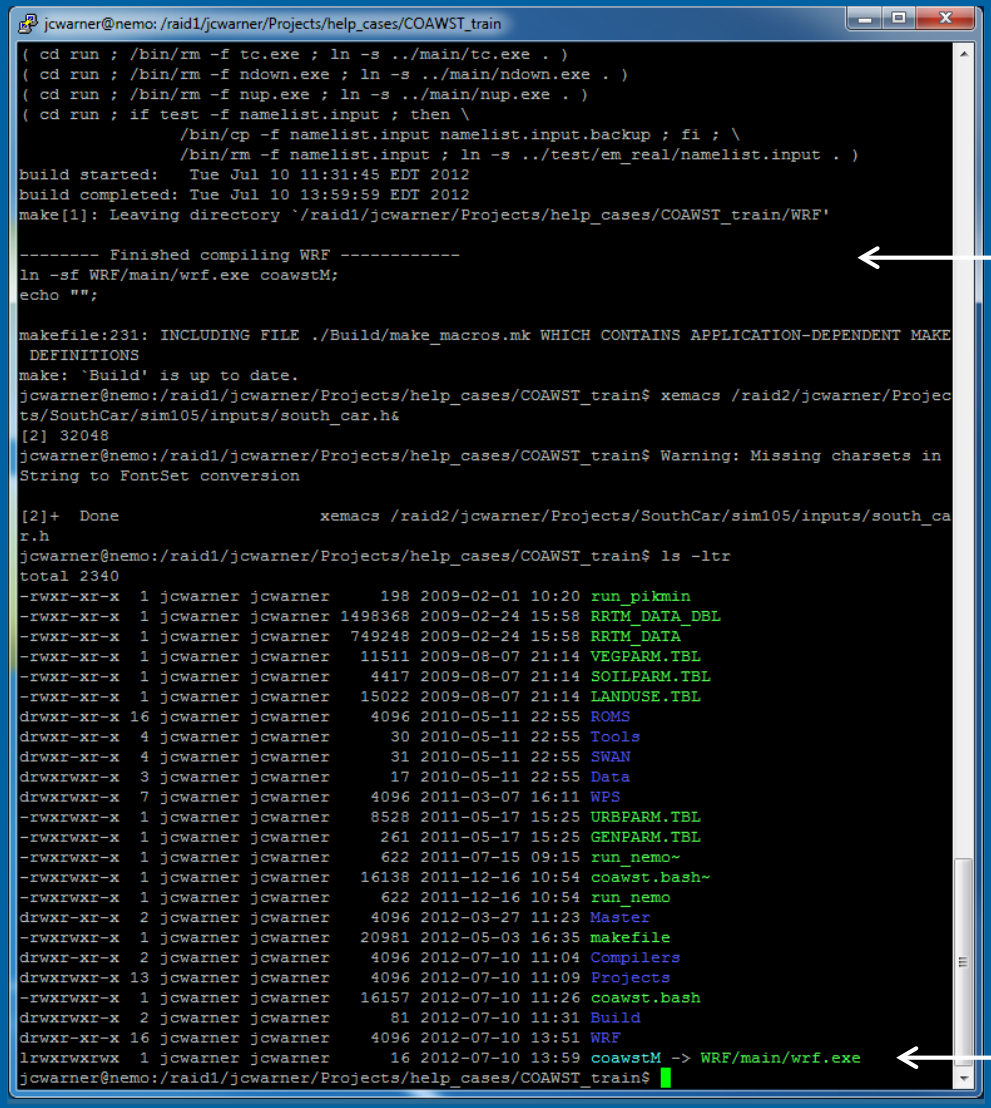
at the command prompt type:
./coawst.bash

follow the WRF prompts….

3 – pick what is on your system !
When coupled:
Always use dmpar (=distributed mem parallel).
Do not use smpar (= shared mem parallel).

1 – basic nesting

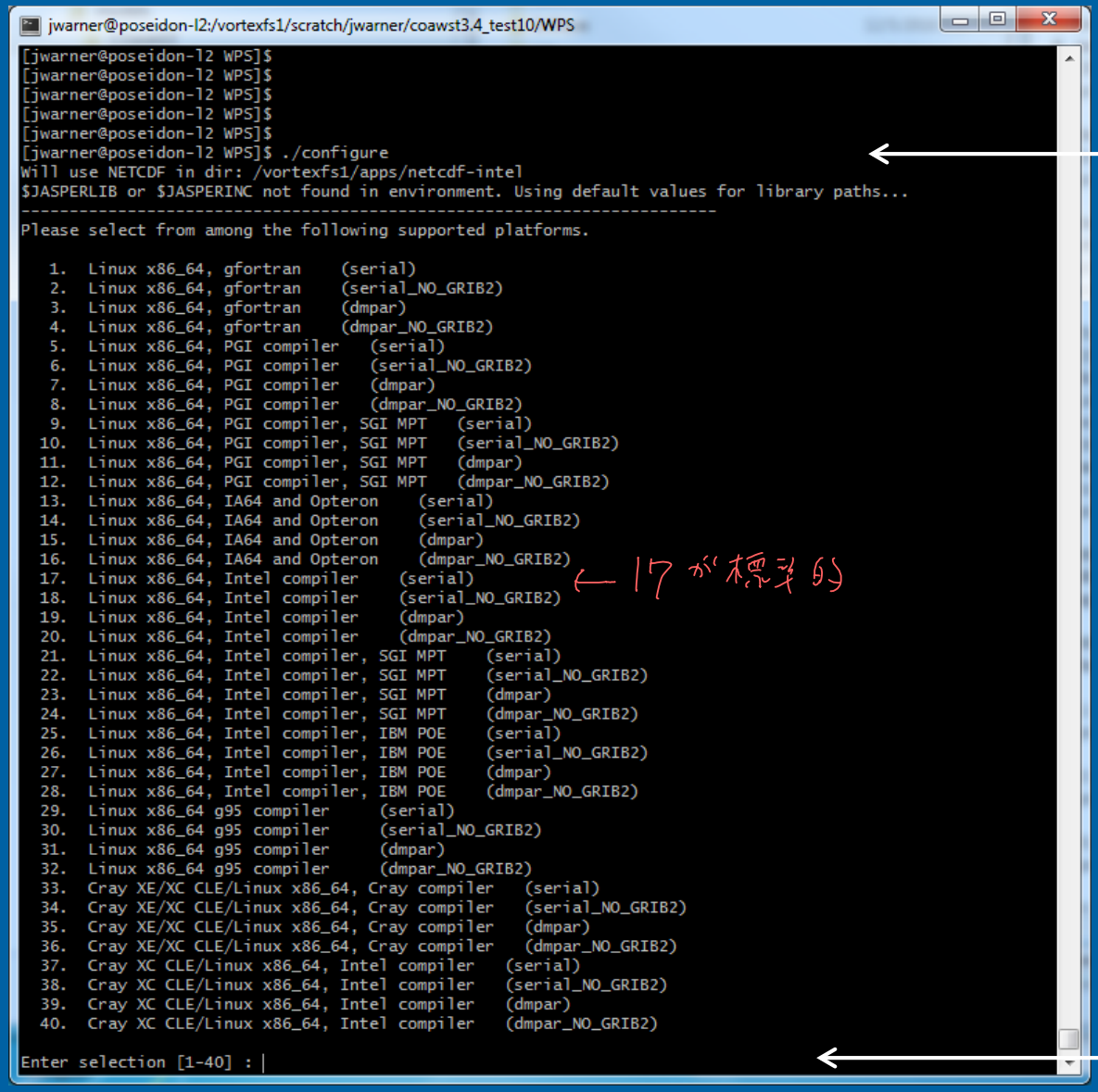
1) Build WRF – coawstM = wrf.exe



finished compiling WRF

ls -ltr shows coawstM points to wrf.exe

2) Build WPS



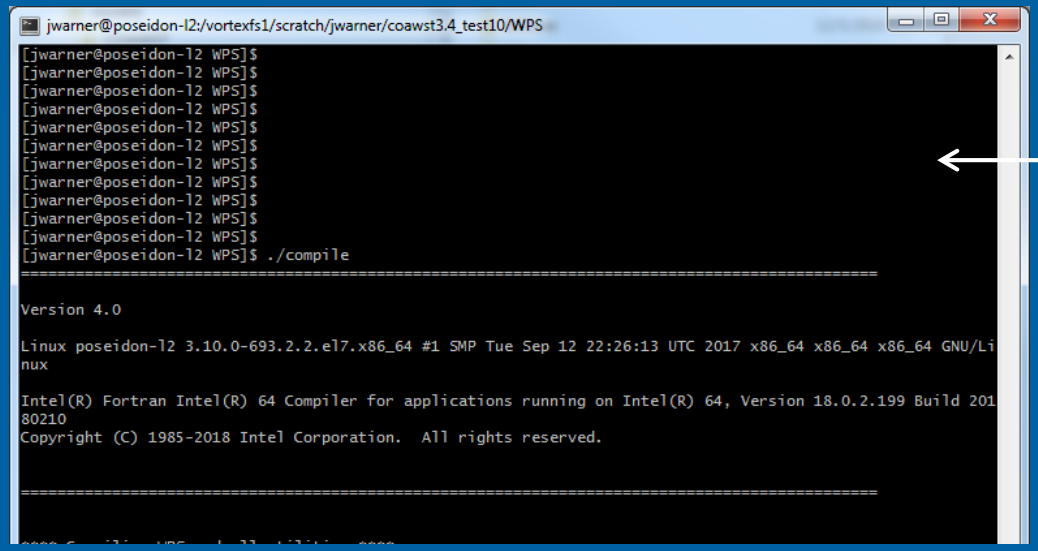
cd to WPS
./configure

https://github.com/wrf-model/WPS

The Grib Edition 2 compression requires three libraries external to the WPS source code: zlib, png, and jasper. It is recommended that users request support from their system administrators when installing these packages. Users can compile the code without these libraries by selecting the "NO GRIB2" options in the build.

Select your compiler option

2) Build WPS



./compile

When done, do an
ls –ltr
And see geogrid.exe, ungrib.exe, and metgrid.exe

USGS

3) Geogrid create a grid

TextPad - C:\work\models\COAWST\WPS\namelist.wps

File Edit Search View Tools Macros Configure Window Help

namelist.wps

```
&share
 wrf_core = 'ARW',
 max_dom = 2,
 start_date = '2012-10-28_12:00:00','2012-10-28_12:00:00',
 end_date   = '2012-10-30_12:00:00','2012-10-30_12:00:00',
 interval_seconds = 21600
 io_form_geogrid = 2,
/

&geogrid
 parent_id         =   1,   1,
 parent_grid_ratio =   1,   3,
 i_parent_start    =   1,  33,
 j_parent_start    =   1,   8,
 e_we              =  85, 100,
 e_sn              =  82, 100,
 !
 !!!!!!!!!!!!!!!!!!!!!!!!!!!! IMPORTANT NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!!!
 ! The default datasets used to produce the MAXSNOALB and ALBEDO12M
 ! fields have changed in WPS v4.0. These fields are now interpolated
 ! from MODIS-based datasets.
 !
 ! To match the output given by the default namelist.wps in WPS v3.9.1,
 ! the following setting for geog_data_res may be used:
 !
 ! geog_data_res = 'maxsnowalb_ncep+albedo_ncep+default', 'maxsnowalb_ncep+albedo_ncep+default',
 !
 !!!!!!!!!!!!!!!!!!!!!!!!!!!! IMPORTANT NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!!!
 !
 geog_data_res = 'default','default',
 dx = 30000,
 dy = 30000,
 map_proj = 'lambert',
 ref_lat   =  37.50,
 ref_lon   = -75.00,
 truelat1  =  30.0,
 truelat2  =  60.0,
 stand_lon = -75.0,
 geog_data_path = '/stor400b/jbzambon/jcw/sandy/static_nest/wps/geog'
/

&ungrib
 out_format = 'WPS',
 prefix = 'NAM',
/

&metgrid
 fg_name = 'NAM', 'RTG',
 io_form_metgrid = 2,
/
```

← データソース
(2ページでダウンロード済)

For Help, press F1 | 22 | 3 | Read | Ovr | Block | Sync | Rec | Caps

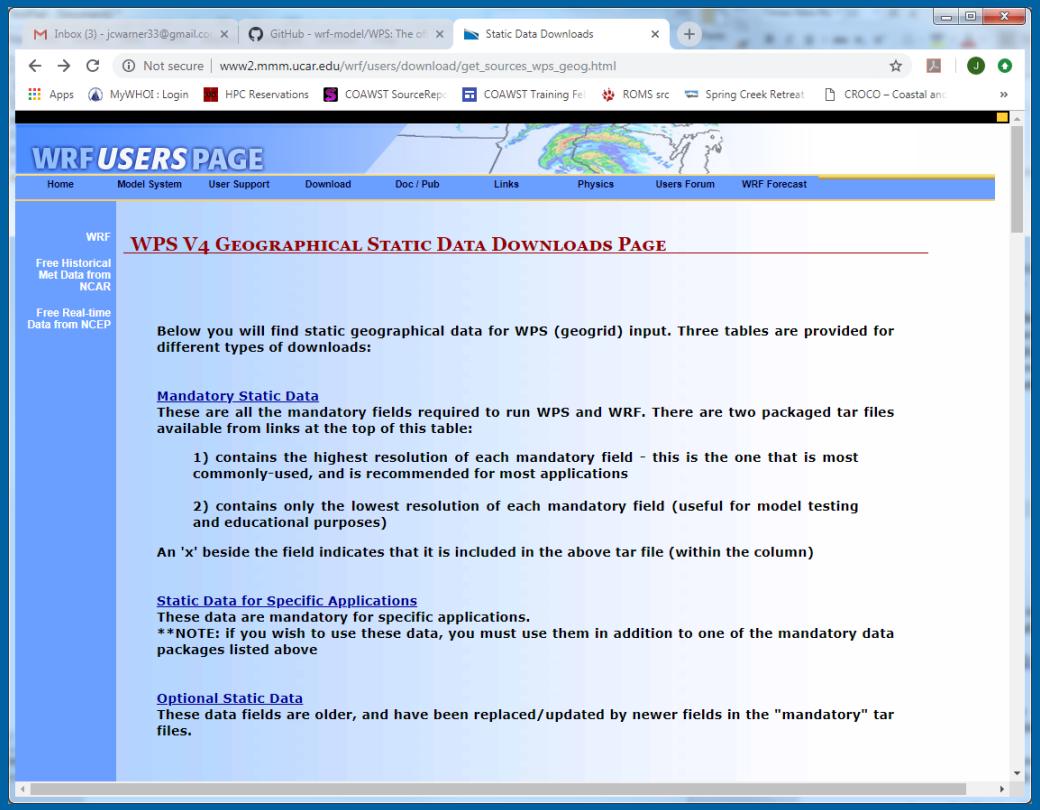
WPS/namelist.wps

Set the &share and &geogrid options

3) Geogrid create a grid

Get the geogrid data from this page:
http://www2.mmm.ucar.edu/wrf/users/download/get_sources_wps_geog.html

We chose the geog_high_res_mandatory.tar.gz.
Copy this file to a directory and untar the file
tar -xvf geog_high_res_mandatory.tar.gz
Set the geog_data_path in the namelist.wps file to this directory.

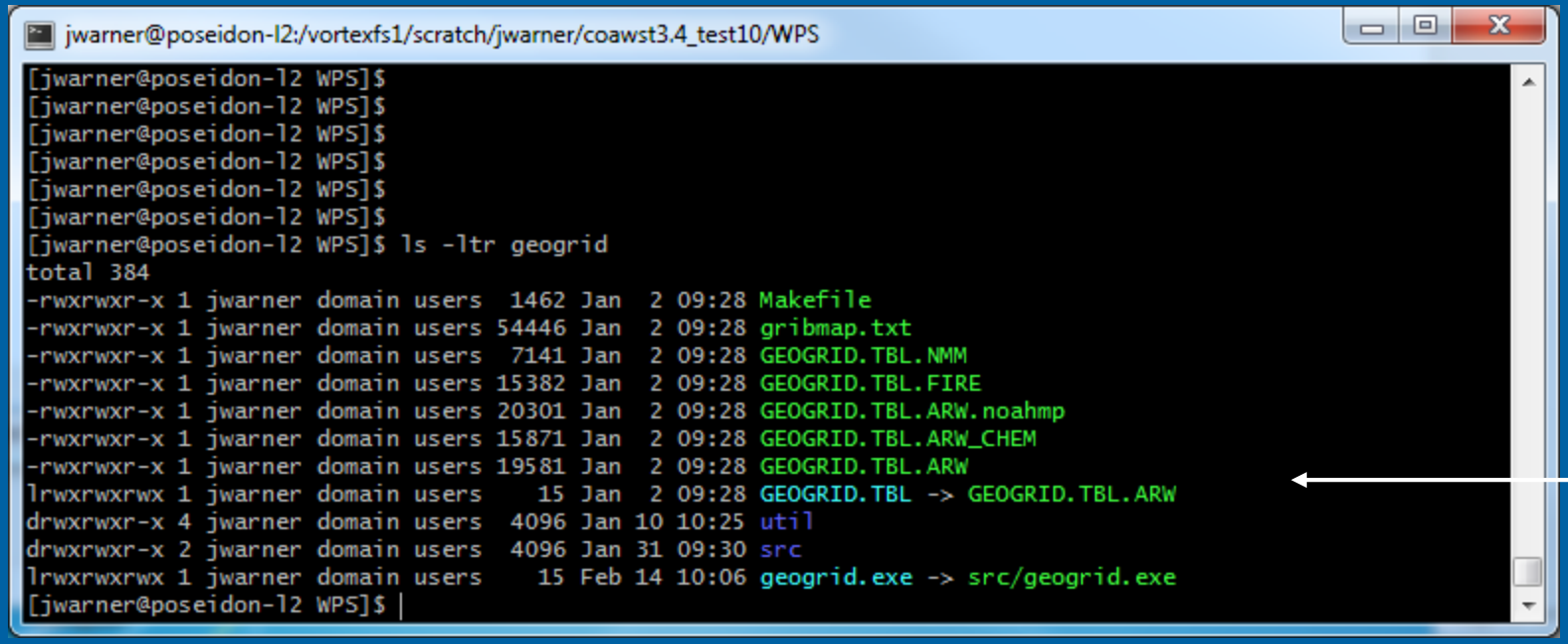


USGS

3) Geogrid create a grid

Link the Geogrid Table.
> ls –ltr WPS/geogrid/*.TBL
should return
> geogrid/GEOGRID.TBL -> GEOGRID.TBL.ARW

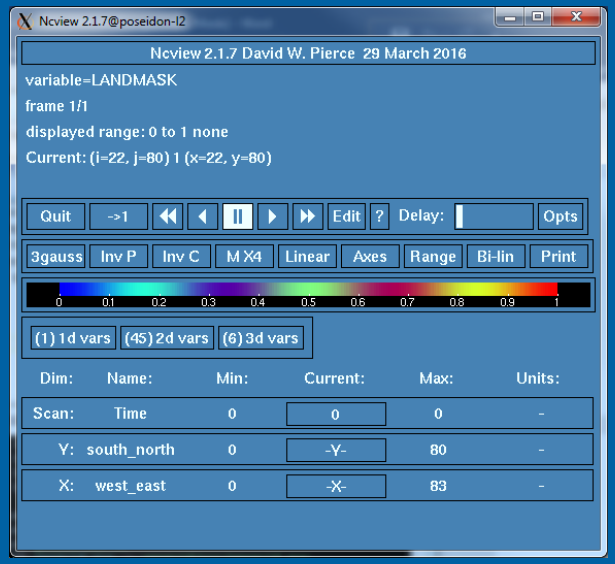
3d) run geogrid
>WPS ./geogrid.exe
and get back a complete successful information.

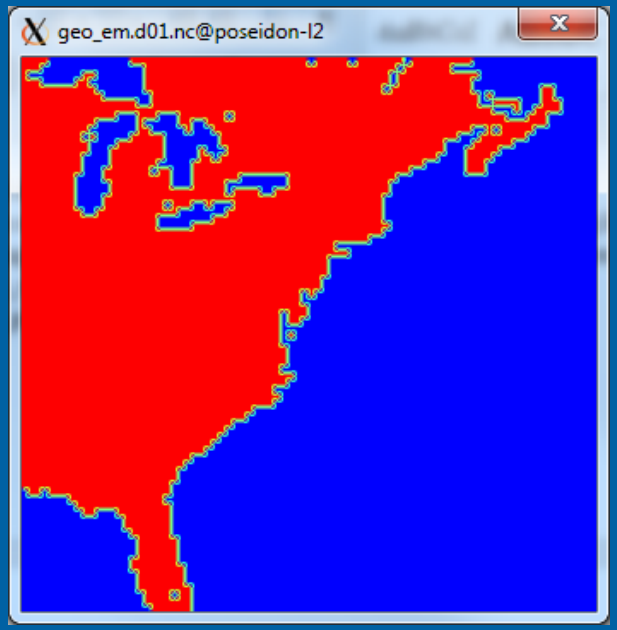


3) Geogrid create a grid

Run geogrid
>WPS ./geogrid.exe
and get back a complete successful information.

ls –ltr should show geo_em.d01.nc and geo_em.d02.nc files. Use ncview or some other viewer to check it out. Also look in geogrid.log.



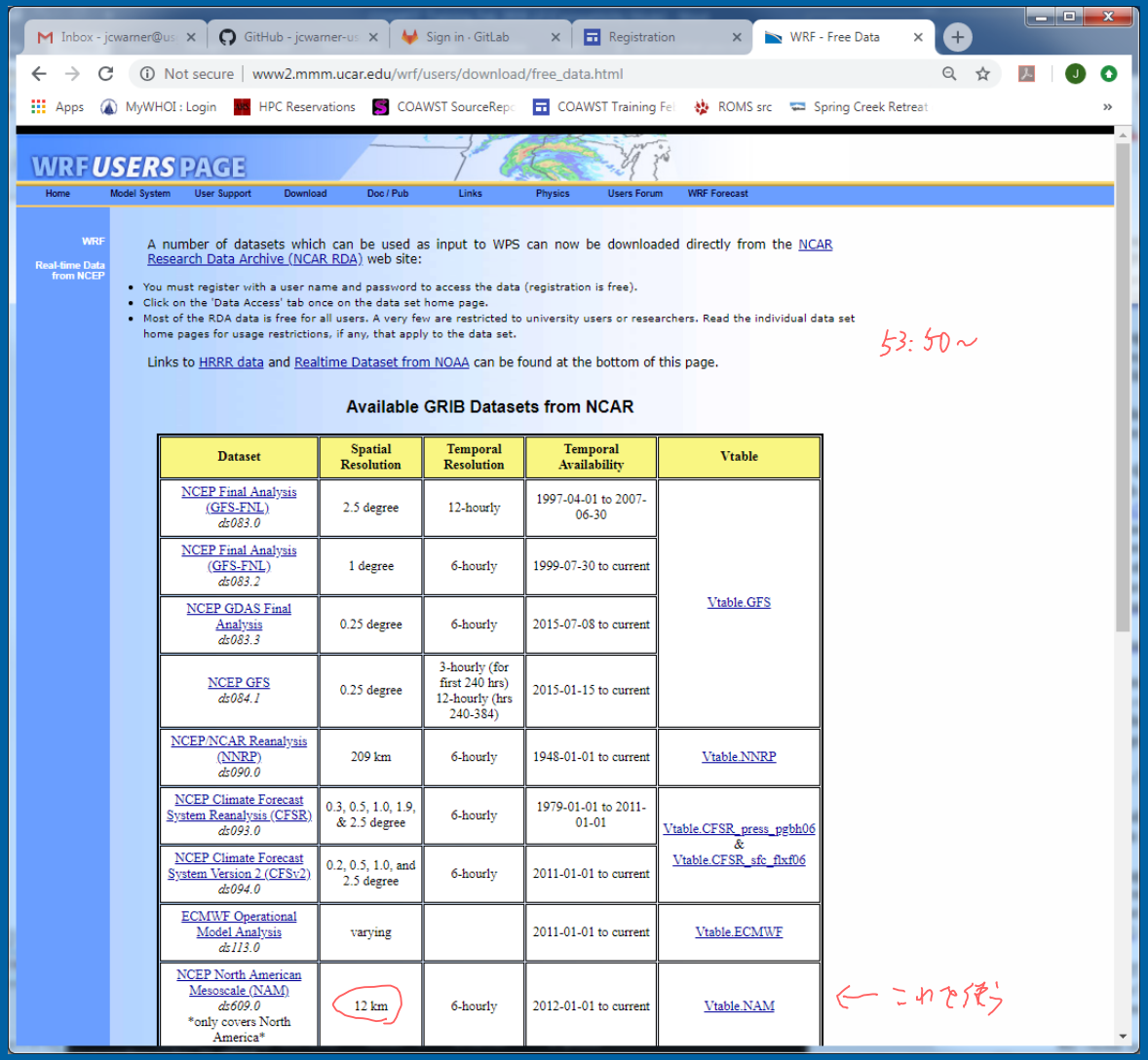


2D var
landmask

4) Ungrib: convert grb to wps format

Get grib data for initial and boundary conditions. You can start here:
http://www2.mmm.ucar.edu/wrf/users/download/free_data.html

NAM Data



Not secure | www2.mmm.ucar.edu/wrf/users/download/free_data.html

WRF USERS PAGE

Home | Model System | User Support | Download | Doc / Pub | Links | Physics | Users Forum | WRF Forecast

WRF
Real-time Data from NCEP

A number of datasets which can be used as input to WPS can now be downloaded directly from the NCAR Research Data Archive (NCAR RDA) web site:

- You must register with a user name and password to access the data (registration is free).
- Click on the 'Data Access' tab once on the data set home page.
- Most of the RDA data is free for all users. A very few are restricted to university users or researchers. Read the individual data set home pages for usage restrictions, if any, that apply to the data set.

53:50～

Links to HRRR data and Realtime Dataset from NOAA can be found at the bottom of this page.

Available GRIB Datasets from NCAR

Dataset	Spatial Resolution	Temporal Resolution	Temporal Availability	Vtable
NCEP Final Analysis (GFS-FNL) *ds083.0*	2.5 degree	12-hourly	1997-04-01 to 2007-06-30	Vtable.GFS
NCEP Final Analysis (GFS-FNL) *ds083.2*	1 degree	6-hourly	1999-07-30 to current	
NCEP GDAS Final Analysis *ds083.3*	0.25 degree	6-hourly	2015-07-08 to current	
NCEP GFS *ds084.1*	0.25 degree	3-hourly (for first 240 hrs) 12-hourly (hrs 240-384)	2015-01-15 to current	
NCEP/NCAR Reanalysis (NNRP) *ds090.0*	209 km	6-hourly	1948-01-01 to current	Vtable.NNRP
NCEP Climate Forecast System Reanalysis (CFSR) *ds093.0*	0.3, 0.5, 1.0, 1.9, & 2.5 degree	6-hourly	1979-01-01 to 2011-01-01	Vtable.CFSR_press_pgbh06 & Vtable.CFSR_sfc_flxf06
NCEP Climate Forecast System Version 2 (CFSv2) *ds094.0*	0.2, 0.5, 1.0, and 2.5 degree	6-hourly	2011-01-01 to current	
ECMWF Operational Model Analysis *ds113.0*	varying		2011-01-01 to current	Vtable.ECMWF
NCEP North American Mesoscale (NAM) *ds609.0* *only covers North America*	12 km	6-hourly	2012-01-01 to current	Vtable.NAM

←これを使う

We used NAM 12 km data

4) Ungrib: convert grb to wps format

NAM Data

```
jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/ungrib_data
[jwarner@poseidon-l2 ungrib_data]$
[jwarner@poseidon-l2 ungrib_data]$
[jwarner@poseidon-l2 ungrib_data]$ pwd
/vortexfs1/scratch/jwarner/coawst3.4_test10/ungrib_data
[jwarner@poseidon-l2 ungrib_data]$ ls
ecmwf  nam  rtg
[jwarner@poseidon-l2 ungrib_data]$ ls nam/
20121027.nam.t00z.awphys00.grb2.tm00  20121030.nam.t00z.awphys00.grb2.tm00
20121027.nam.t06z.awphys00.grb2.tm00  20121030.nam.t06z.awphys00.grb2.tm00
20121027.nam.t12z.awphys00.grb2.tm00  20121030.nam.t12z.awphys00.grb2.tm00
20121027.nam.t18z.awphys00.grb2.tm00  20121030.nam.t18z.awphys00.grb2.tm00
20121028.nam.t00z.awphys00.grb2.tm00  20121031.nam.t00z.awphys00.grb2.tm00
20121028.nam.t06z.awphys00.grb2.tm00  20121031.nam.t06z.awphys00.grb2.tm00
20121028.nam.t12z.awphys00.grb2.tm00  20121031.nam.t12z.awphys00.grb2.tm00
20121028.nam.t18z.awphys00.grb2.tm00  20121031.nam.t18z.awphys00.grb2.tm00
20121029.nam.t00z.awphys00.grb2.tm00  20121101.nam.t00z.awphys00.grb2.tm00
20121029.nam.t06z.awphys00.grb2.tm00  20121101.nam.t06z.awphys00.grb2.tm00
20121029.nam.t12z.awphys00.grb2.tm00  20121101.nam.t12z.awphys00.grb2.tm00
20121029.nam.t18z.awphys00.grb2.tm00  20121101.nam.t18z.awphys00.grb2.tm00
[jwarner@poseidon-l2 ungrib_data]$
```

Put the grib data in a folder

```
jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/WPS
-rw-rw-r-- 1 jwarner domain users       4319 Feb 14 10:03 configure.wps
drwxrwxr-x 4 jwarner domain users       4096 Feb 14 10:06 geogrid
lrwxrwxrwx 1 jwarner domain users         23 Feb 14 10:06 geogrid.exe -> geogrid/src/geogrid.exe
lrwxrwxrwx 1 jwarner domain users         21 Feb 14 10:06 ungrib.exe -> ungrib/src/ungrib.exe
drwxrwxr-x 3 jwarner domain users       4096 Feb 14 10:06 metgrid
lrwxrwxrwx 1 jwarner domain users         23 Feb 14 10:06 metgrid.exe -> metgrid/src/metgrid.exe
drwxrwxr-x 4 jwarner domain users       4096 Feb 14 10:06 ungrib
drwxrwxr-x 3 jwarner domain users       4096 Feb 14 10:06 util
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAA -> ../ungrib_data/nam/20121027.nam.t00z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAB -> ../ungrib_data/nam/20121027.nam.t06z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAC -> ../ungrib_data/nam/20121027.nam.t12z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAD -> ../ungrib_data/nam/20121027.nam.t18z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAE -> ../ungrib_data/nam/20121028.nam.t00z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAF -> ../ungrib_data/nam/20121028.nam.t06z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAG -> ../ungrib_data/nam/20121028.nam.t12z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAH -> ../ungrib_data/nam/20121028.nam.t18z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAI -> ../ungrib_data/nam/20121029.nam.t00z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAJ -> ../ungrib_data/nam/20121029.nam.t06z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAK -> ../ungrib_data/nam/20121029.nam.t12z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAL -> ../ungrib_data/nam/20121029.nam.t18z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAM -> ../ungrib_data/nam/20121030.nam.t00z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAN -> ../ungrib_data/nam/20121030.nam.t06z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAO -> ../ungrib_data/nam/20121030.nam.t12z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAP -> ../ungrib_data/nam/20121030.nam.t18z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAQ -> ../ungrib_data/nam/20121031.nam.t00z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAR -> ../ungrib_data/nam/20121031.nam.t06z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAS -> ../ungrib_data/nam/20121031.nam.t12z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAT -> ../ungrib_data/nam/20121031.nam.t18z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAU -> ../ungrib_data/nam/20121101.nam.t00z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAV -> ../ungrib_data/nam/20121101.nam.t06z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAW -> ../ungrib_data/nam/20121101.nam.t12z.awphys00.grb2.tm00
lrwxrwxrwx 1 jwarner domain users         55 Feb 14 16:17 GRIBFILE.AAX -> ../ungrib_data/nam/20121101.nam.t18z.awphys00.grb2.tm00
[jwarner@poseidon-l2 WPS]$
```

cd WPS

link the NAM files to common names that WPS will recognize.
> ./link_grid.csh /WPS/path_the _files_are_in/2012*.tm00

Do an ls -ltr and see all the GRIBFILE.AAA etc ….linking to all the nam data files

4) Ungrib: convert grb to wps format

NAM Data

```
jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/WPS
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$ ls -ltr V*
lrwxrwxrwx 1 jwarner domain users 33 Jan 31 08:49 Vtable -> ungrib/Variable_Tables/Vtable.NAM
[jwarner@poseidon-l2 WPS]$
```

link a Vtable to the NAM data with:
>ln –sf ungrib/Variable_Tables/Vtable.NAM Vtable

```
jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/WPS
[jwarner@poseidon-l2 WPS]$ ls -ltr
total 5051520
-rwxrwxr-x 1 jwarner domain users       6338 Jan  2 09:28 README
-rwxrwxr-x 1 jwarner domain users      11514 Jan  2 09:28 configure
-rwxrwxr-x 1 jwarner domain users       4796 Jan  2 09:28 compile
-rwxrwxr-x 1 jwarner domain users       1765 Jan  2 09:28 clean
-rwxrwxr-x 1 jwarner domain users        654 Jan  2 09:28 namelist.wps.nmm
-rwxrwxr-x 1 jwarner domain users       1637 Jan  2 09:28 namelist.wps.global
-rwxrwxr-x 1 jwarner domain users       2077 Jan  2 09:28 namelist.wps.fire
-rwxrwxr-x 1 jwarner domain users       2749 Jan  2 09:28 namelist.wps.all_options
-rwxrwxr-x 1 jwarner domain users       1331 Jan  2 09:28 link_grib.csh
drwxrwxr-x 2 jwarner domain users       4096 Jan 10 10:25 arch
-rw-rw-r-- 1 jwarner domain users      22736 Jan 16 13:44 geogrid.log
-rw-rw-r-- 1 jwarner domain users         47 Jan 16 16:22 ungrib.out
-rwxrwxr-x 1 jwarner domain users       1331 Jan 17 10:11 namelist.wps~
-rw-rw-r-- 1 jwarner domain users        652 Jan 17 10:11 ungrib.log
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-31_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_12
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_06
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_18
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_12
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_06
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_18
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_12
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_06
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_18
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_00
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-28_18
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-28_12
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-30_00
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_18
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_12
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_06
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-30_12
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-30_06
lrwxrwxrwx 1 jwarner domain users         33 Jan 31 08:49 Vtable -> ungrib/Variable_Tables/Vtable.NAM
-rw-rw-r-- 1 jwarner domain users 2529198080 Jan 31 09:19 gribs.tar
```

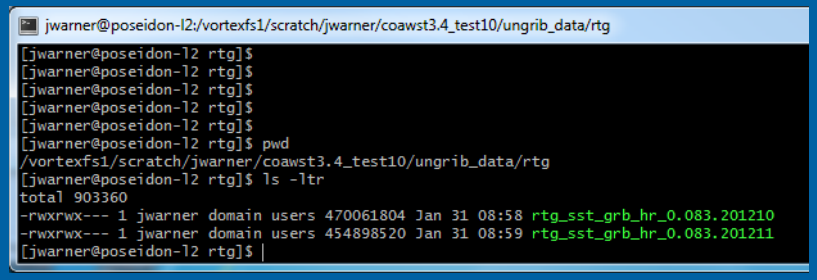
Run ungrib
> ./ungrib.exe >& ungrib.out &
Edit the .out file and see if there were any problems.
do an ls and see files:

NAM:2012-10-29_00
…
NAM:2012-10-30_06

4) Ungrib: convert grb to wps format

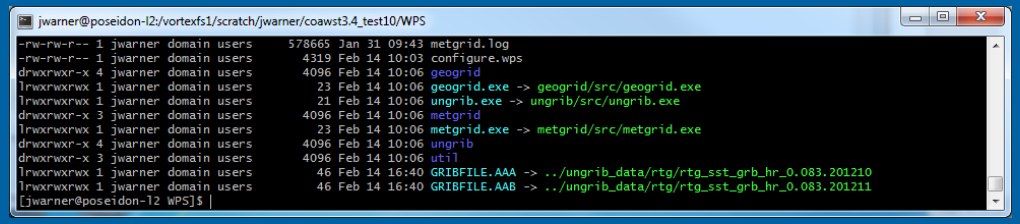
SST Data

SST データ



Go here for SST data: ftp://polar.ncep.noaa.gov/pub/history/sst for the times that you want, and put into a folder. We used: rtg_high_res/ rtg_sst_grb_hr_0.083.201210.gz and rtg_sst_grb_hr_0.083.201211.gz

このデータセットはサービス終了.
ghrsst を利用する



cd WPS
remove links to nam gribfiles using rm GRIBFILE*

Then link to the sst data using
./link_grib.csh path_the _files_are_in/rtg_sst_grb_hr*

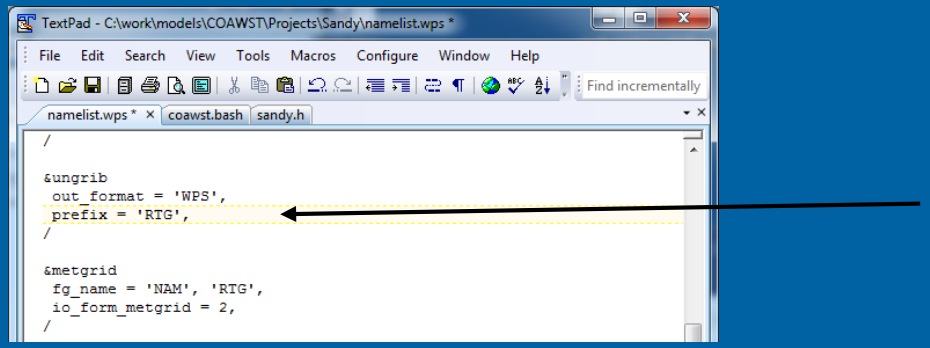
USGS

4) Ungrib: convert grb to wps format

SST Data

```
jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/WPS
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$ ls -ltr Vt*
lrwxrwxrwx 1 jwarner domain users 33 Feb 14 16:43 Vtable -> ungrib/Variable_Tables/Vtable.SST
[jwarner@poseidon-l2 WPS]$
```

link a Vtable using
ln -sf ungrib/Variable_Tables/**Vtable.SST** Vtable



WPS/namelist.wps and change &ungrib
prefix = 'NAM'
to
prefix = 'RTG' SST

```
jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/WPS
[jwarner@poseidon-l2 WPS]$ ls -tlr
total 5051520
-rwxrwxr-x 1 jwarner domain users       6338 Jan  2 09:28 README
-rwxrwxr-x 1 jwarner domain users      11514 Jan  2 09:28 configure
-rwxrwxr-x 1 jwarner domain users       4796 Jan  2 09:28 compile
-rwxrwxr-x 1 jwarner domain users       1765 Jan  2 09:28 clean
-rwxrwxr-x 1 jwarner domain users        654 Jan  2 09:28 namelist.wps.nmm
-rwxrwxr-x 1 jwarner domain users       1637 Jan  2 09:28 namelist.wps.global
-rwxrwxr-x 1 jwarner domain users       2077 Jan  2 09:28 namelist.wps.fire
-rwxrwxr-x 1 jwarner domain users       2749 Jan  2 09:28 namelist.wps.all_options
-rwxrwxr-x 1 jwarner domain users       1331 Jan  2 09:28 link_grib.csh
drwxrwxr-x 2 jwarner domain users       4096 Jan 10 10:25 arch
-rw-rw-r-- 1 jwarner domain users      22736 Jan 16 13:44 geogrid.log
-rw-rw-r-- 1 jwarner domain users         47 Jan 16 16:22 ungrib.out
-rwxrwxr-x 1 jwarner domain users       1331 Jan 17 10:11 namelist.wps~
-rw-rw-r-- 1 jwarner domain users        652 Jan 17 10:11 ungrib.log
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-31_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_12
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_06
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_18
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_12
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_06
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-29_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_18
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_12
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_06
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-28_00
-rwxrwx--- 1 jwarner domain users   37325032 Jan 24 16:14 RTG:2012-10-30_18
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_00
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-28_18
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-28_12
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-30_00
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_18
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_12
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-29_06
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-30_12
-rwxrwx--- 1 jwarner domain users  227104992 Jan 24 16:18 NAM:2012-10-30_06
```

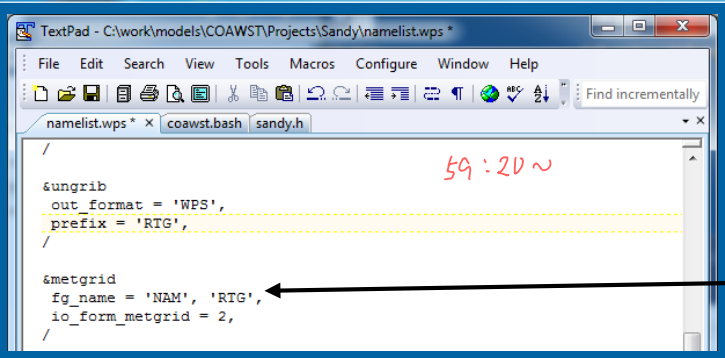
Run ungrib for the SST data
./ungrib.exe >& ungrib_sst.out &
edit the .out file and see that all went well. do an ls and see files:
RTG:2012-10-28_00 up to
RTG:2012-10-31_00

SST

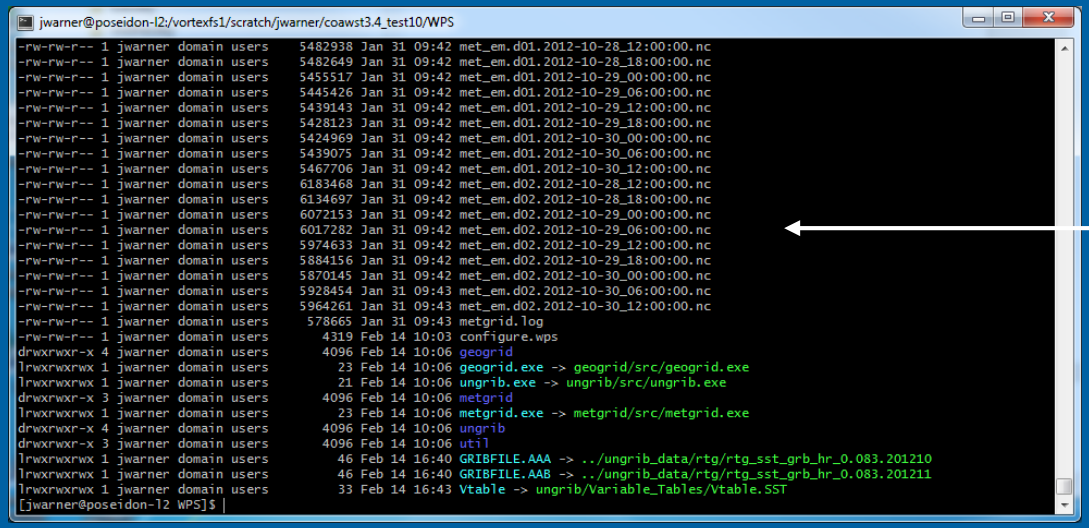
5) Metgrid: interp met data to grid

```
[jwarner@poseidon-l2 WPS]$
[jwarner@poseidon-l2 WPS]$ ls -ltr metgrid
total 464
-rwxrwxr-x 1 jwarner domain users 17012 Jan  2 09:28 METGRID.TBL.NMM.rap
-rwxrwxr-x 1 jwarner domain users 15896 Jan  2 09:28 METGRID.TBL.NMM
-rwxrwxr-x 1 jwarner domain users 17117 Jan  2 09:28 METGRID.TBL.ARW.ruc
-rwxrwxr-x 1 jwarner domain users 23671 Jan  2 09:28 METGRID.TBL.ARW.rap
-rwxrwxr-x 1 jwarner domain users 34892 Jan  2 09:28 METGRID.TBL.ARW
-rwxrwxr-x 1 jwarner domain users 25668 Jan  2 09:28 METGRID.TBL.AFWA
lrwxrwxrwx 1 jwarner domain users    15 Jan  2 09:28 METGRID.TBL -> METGRID.TBL.ARW
-rwxrwxr-x 1 jwarner domain users  1434 Jan  2 09:28 Makefile
-rwxrwxr-x 1 jwarner domain users 54446 Jan  2 09:28 gribmap.txt
drwxrwxr-x 2 jwarner domain users  8192 Jan 31 09:30 src
lrwxrwxrwx 1 jwarner domain users    15 Feb 14 10:06 metgrid.exe -> src/metgrid.exe
[jwarner@poseidon-l2 WPS]$
```

> ls –ltr WPS/metgrid
> should show METGRID.TBL -> METGRID.TBL.ARW



edit
WPS/namelist.wps and change the fg_name to
fg_name = 'NAM', ~~'RTG'~~ SST



run metgrid
in WPS/ run ./metgrid.exe
As it runs you see …. processing NAM, RTG, …
When done check that the met files were made.
Do an ls –ltr and see the met_em.d01** files.
met_em.d01.2012-10-28_12:00:00.nc …
met_em.d01.2012-10-30_12:00:00.nc

met_em.d02.2012-10-28_12:00:00.nc …
met_em.d02.2012-10-30_12:00:00.nc

6) real.exe to create Init and BC files.

cd WRF/test/em_real
edit the namelist.input ← 編集する

TextPad - C:\work\models\COAWST\Projects\Sandy\namelist.input

File Edit Search View Tools Macros Configure Window Help

namelist.input

```
&time_control
run_days                            = 0,
run_hours                           = 48,
run_minutes                         = 0,
run_seconds                         = 0,
start_year                          = 2012, 2012, 2012,
start_month                         = 10,   10,   10,
start_day                           = 28,   28,   28,
start_hour                          = 12,   12,   12,
start_minute                        = 00,   00,   00,
start_second                        = 00,   00,   00,
end_year                            = 2012, 2012, 2012,
end_month                           = 10,   10,   10,
end_day                             = 30,   30,   30,
end_hour                            = 12,   12,   12,
end_minute                          = 00,   00,   00,
end_second                          = 00,   00,   00,
interval_seconds                    = 21600
input_from_file                     = .true.,.true.,.false.,
history_interval                    = 30,   30,   60,
frames_per_outfile                  = 1000, 1000, 1000,
restart                             = .false.,
restart_interval                    = 5000,
io_form_history                     = 2
io_form_restart                     = 2
io_form_input                       = 2
io_form_boundary                    = 2
debug_level                         = 0
auxinput4_inname                    = "wrflowinp_d<domain>"
auxinput4_interval                  = 360, 360, 360,
io_form_auxinput4                   = 2
/
```

For Help, press F1 | 1 | 1 | Read | Ovr | Block | Sync | Rec | Caps

TextPad - C:\work\models\COAWST\Projects\Sandy\namelist.input

File Edit Search View Tools Macros Configure Window Help

namelist.input

```
&domains
time_step                           = 180,
time_step_fract_num                 = 0,
time_step_fract_den                 = 1,
max_dom                             = 2,
e_we                                = 85,    100,   94,
e_sn                                = 82,    100,   91,
e_vert                              = 48,    48,    48,
p_top_requested                     = 5000,
num_metgrid_levels                  = 40,
num_metgrid_soil_levels             = 4,
dx                                  = 30000, 10000,  3333.33,
dy                                  = 30000, 10000,  3333.33,
grid_id                             = 1,     2,     3,
parent_id                           = 0,     1,     2,
i_parent_start                      = 1,     33,    30,
j_parent_start                      = 1,     8,     30,
parent_grid_ratio                   = 1,     3,     3,
parent_time_step_ratio              = 1,     3,     3,
feedback                            = 1,
smooth_option                       = 0
nproc_x                             = 1
nproc_y                             = 1
/

&physics
mp_physics                          = 6,     6,     6,
cu_physics                          = 1,     1,     0,
ra_lw_physics                       = 1,     1,     1,
ra_sw_physics                       = 1,     1,     1,
bl_pbl_physics                      = 1,     1,     1,
sf_sfclay_physics                   = 1,     1,     1,
sf_surface_physics                  = 2,     2,     2,
radt                                = 30,    30,    30,
bldt                                = 0,     0,     0,
cudt                                = 5,     5,     5,
icloud                              = 1,
surface_input_source                = 1,
num_soil_layers                     = 4,
num_land_cat                        = 21,
sf_urban_physics                    = 0,     0,     0,
sst_update                          = 1,
/
```

namelist.wps と同じ

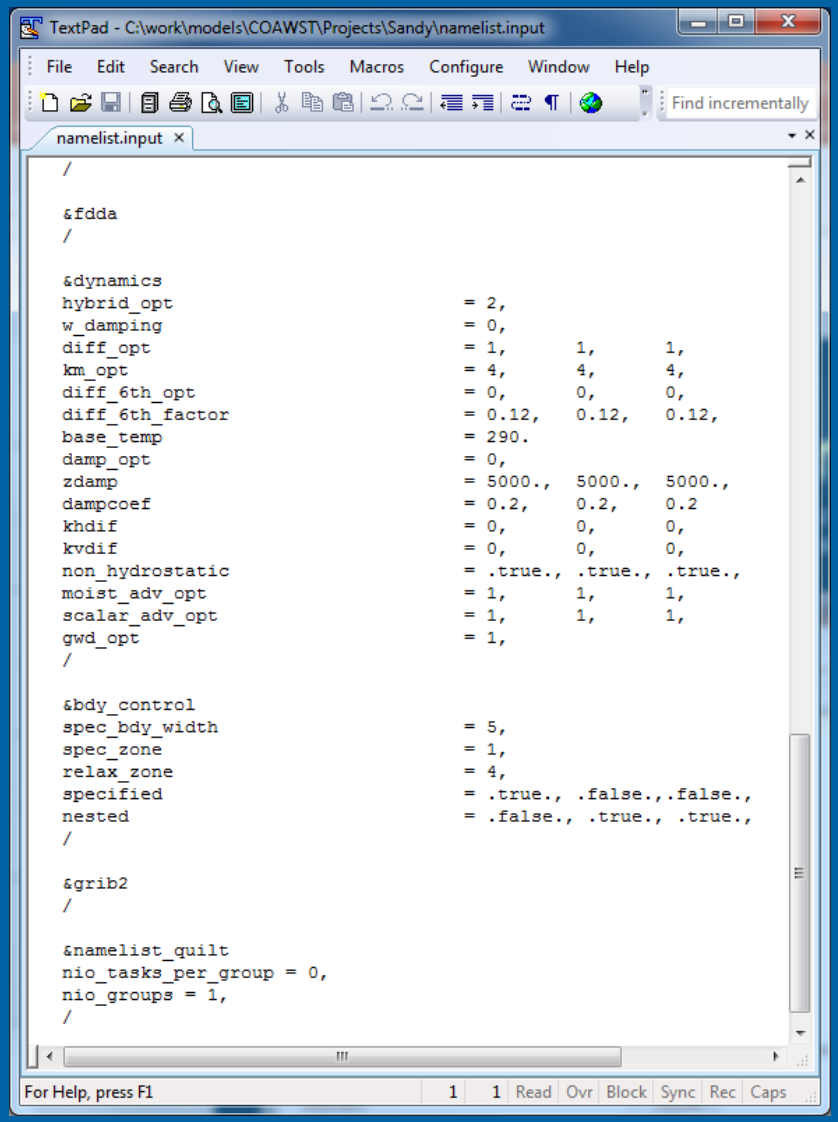
Grid

I set to = 1x1 serial

For Help, press F1 | 1 | 1 | Read | Ovr | Block | Sync | Rec | Caps

6) real.exe to create Init and BC files.

cd WRF/test/em_real
edit the namelist.input



6) real.exe to create Init and BC files.

jwarner@poseidon-l2:/vortexfs1/scratch/jwarner/coawst3.4_test10/WRF/test/em_real

```
[jwarner@poseidon-l2 em_real]$ ls -ltr *.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-28_12:00:00.nc -> ../../../WPS/met_em.d01.2012-10-28_12:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-28_18:00:00.nc -> ../../../WPS/met_em.d01.2012-10-28_18:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-29_00:00:00.nc -> ../../../WPS/met_em.d01.2012-10-29_00:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-29_06:00:00.nc -> ../../../WPS/met_em.d01.2012-10-29_06:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-29_12:00:00.nc -> ../../../WPS/met_em.d01.2012-10-29_12:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-29_18:00:00.nc -> ../../../WPS/met_em.d01.2012-10-29_18:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-30_00:00:00.nc -> ../../../WPS/met_em.d01.2012-10-30_00:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-30_06:00:00.nc -> ../../../WPS/met_em.d01.2012-10-30_06:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d01.2012-10-30_12:00:00.nc -> ../../../WPS/met_em.d01.2012-10-30_12:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-28_12:00:00.nc -> ../../../WPS/met_em.d02.2012-10-28_12:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-28_18:00:00.nc -> ../../../WPS/met_em.d02.2012-10-28_18:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-29_00:00:00.nc -> ../../../WPS/met_em.d02.2012-10-29_00:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-29_06:00:00.nc -> ../../../WPS/met_em.d02.2012-10-29_06:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-29_12:00:00.nc -> ../../../WPS/met_em.d02.2012-10-29_12:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-29_18:00:00.nc -> ../../../WPS/met_em.d02.2012-10-29_18:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-30_00:00:00.nc -> ../../../WPS/met_em.d02.2012-10-30_00:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-30_06:00:00.nc -> ../../../WPS/met_em.d02.2012-10-30_06:00:00.nc
lrwxrwxrwx 1 jwarner domain users 46 Jan 31 09:51 met_em.d02.2012-10-30_12:00:00.nc -> ../../../WPS/met_em.d02.2012-10-30_12:00:00.nc
[jwarner@poseidon-l2 em_real]$
```

cd to WRF/test/em_real and link the met files to here.

> ln –sf /raid1/jcwarner/Models/WRF/WPS/met_em.d01.~~2003-09~~* .

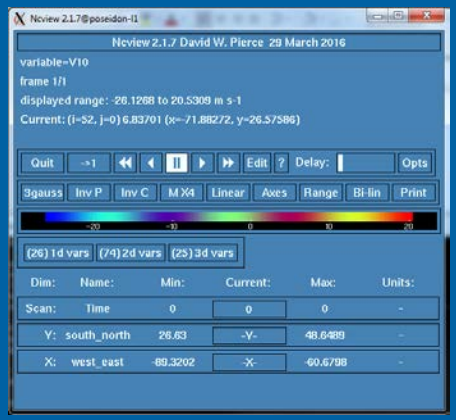
run the real program

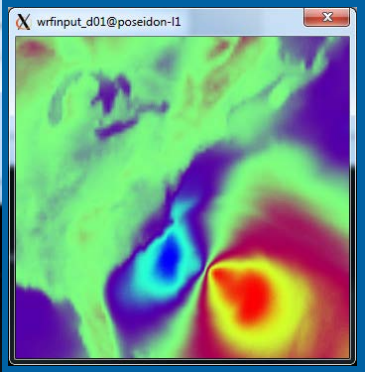
run ./real.exe

When done, check to see that it made

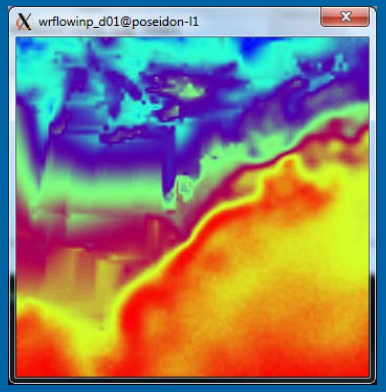
wrfinput _d01 _d02, wrfbdy _d01, and wrflowinp _d01 _d02 netcdf files.

wrfinput_d01





wrflowinp_d01



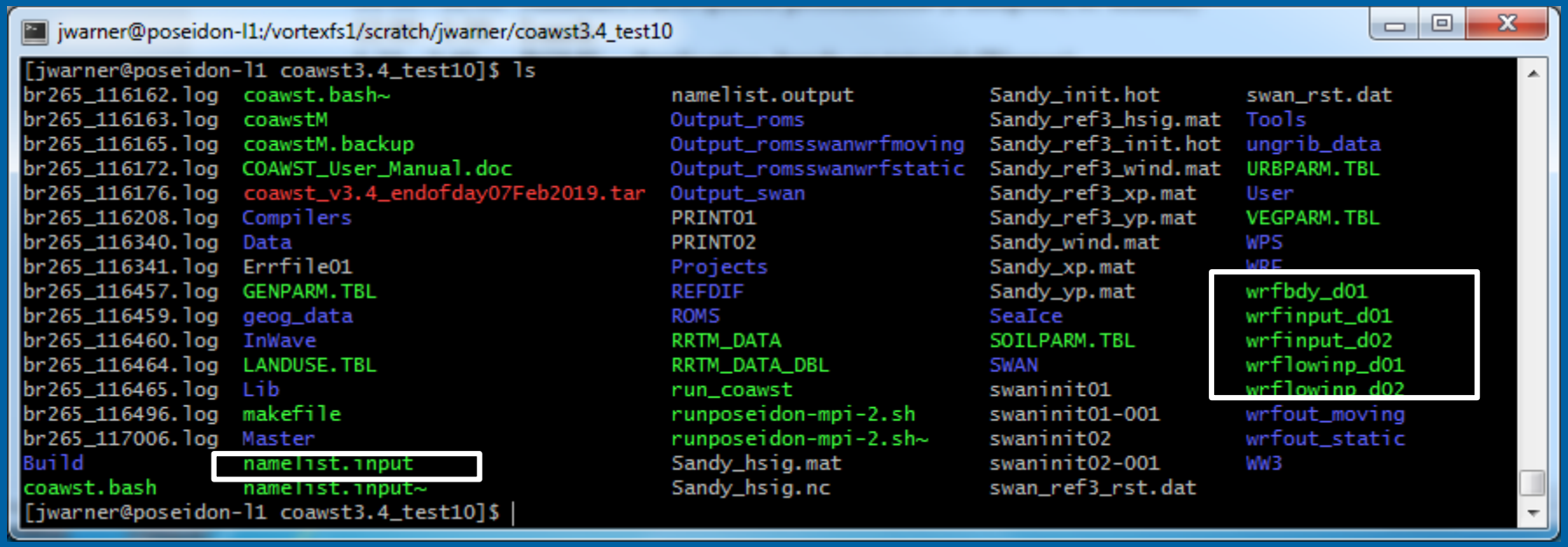
7) Run WRF wrf.exe [coawst.exe]

Now we are ready to run WRF.
We already compiled wrf back in step 1.
coawstM points to wrf.exe

This is the only time you will get a wrf.exe. All other builds I don’t let wrf.exe to be created.
But you always should get a coawstM .
Always point to coawstM.

USGS

7) Run WRF wrf.exe [coawst.exe]

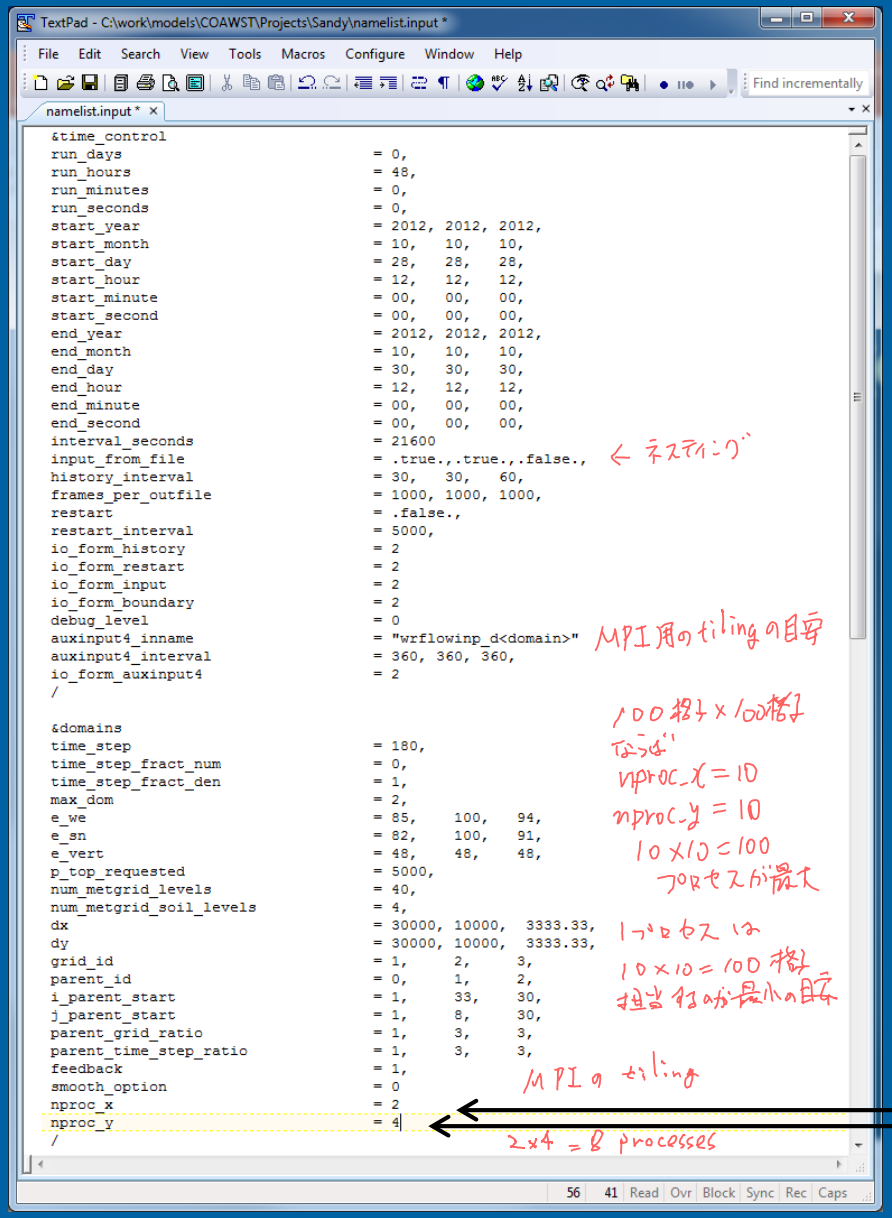


place all of your files at the root dir (upper level dir). The files are:

- namelist.input
- wrfbdy_d01
- wrfinput_d01
- wrflowinp_d02
- wrfinput_d02
- wrflowinp_d01

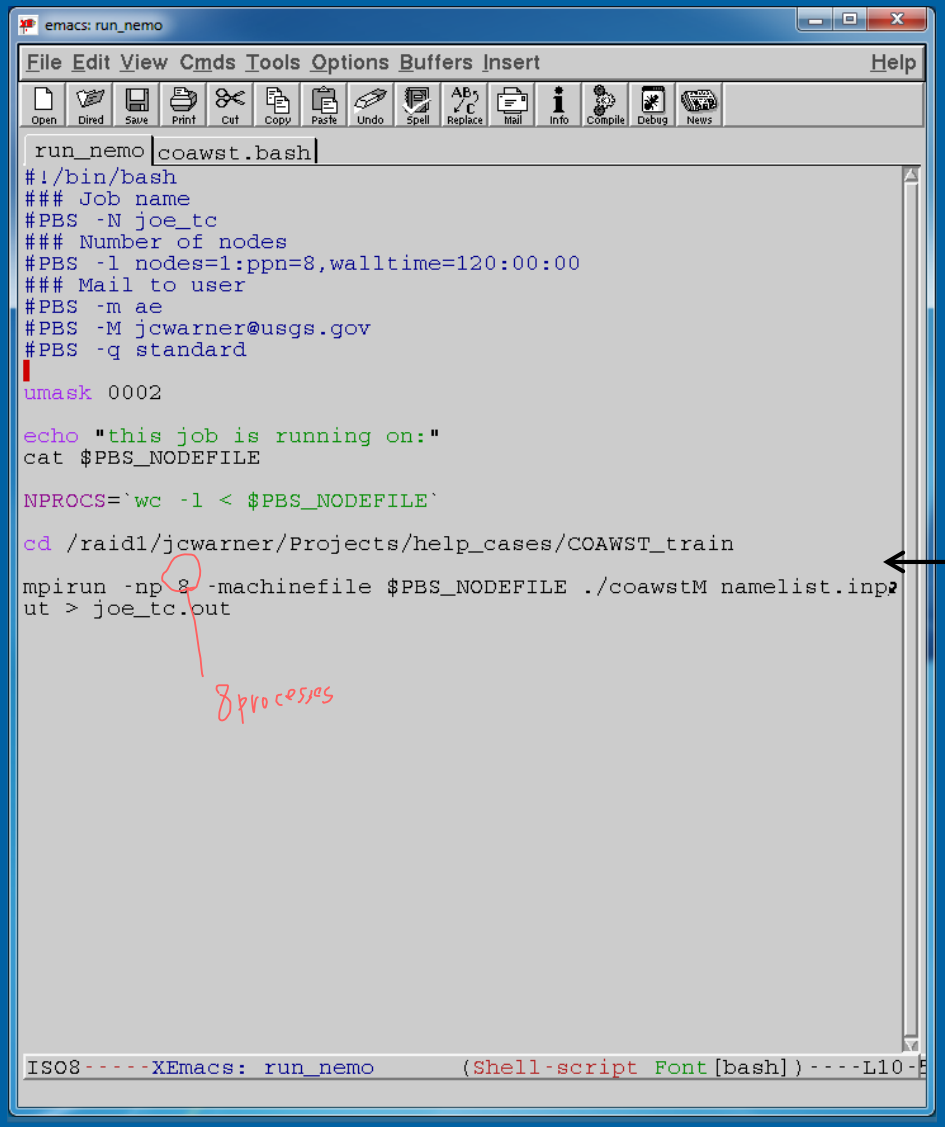
USGS

7) Run WRF wrf.exe [coawst.exe]



edit namelist.input and
set tiling:
nproc_x = _____
nproc_y = _____

7) Run WRF wrf.exe [coawst.exe]

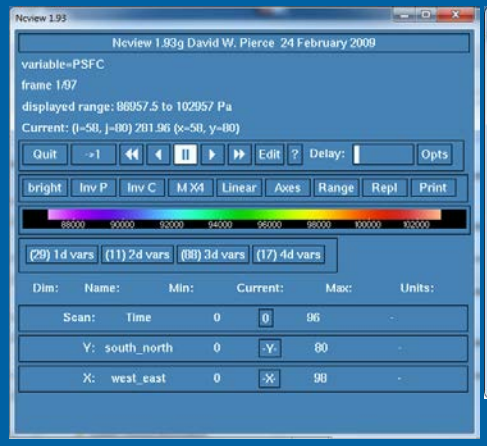


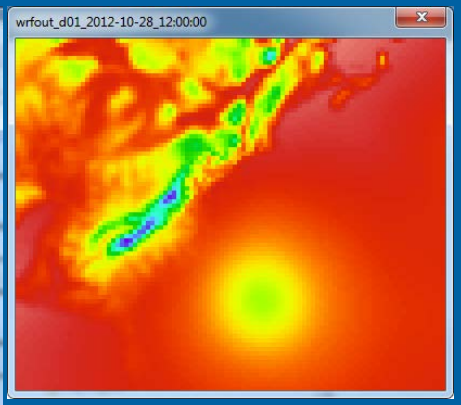
- set your run time commands
a) point to ./coawstM
b) np = nproc_x*nproc_y from last slide

- at command prompt we use ./run_nemo

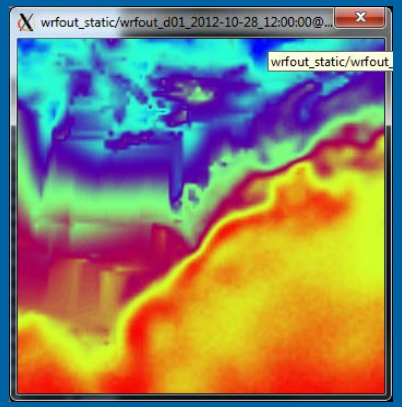
8) Output

~ 1:17:00

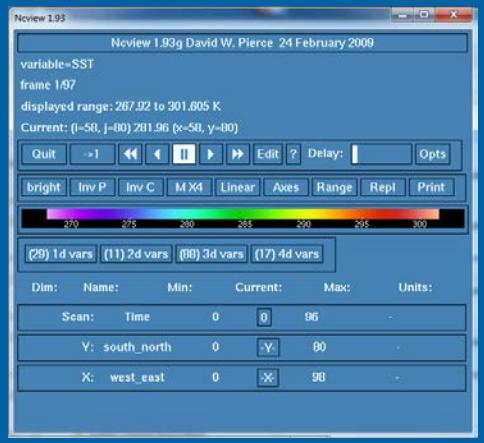




PSFC



SST




```
jcwarner@nemo: /raid3/jcwarner/Projects/coawst_v3.1/sandy2
drwxrwxr-x  2 jcwarner jcwarner      28672 2014-08-22 16:40 Build
-rwxrwxr-x  1 jcwarner jcwarner   46290226 2014-08-22 16:40 coawstM
drwxrwxr-x  2 jcwarner jcwarner       4096 2014-08-23 20:49 Output
-rw-rw-r--  1 jcwarner jcwarner        935 2014-08-23 20:55 swaninit01
-rw-rw-r--  1 jcwarner jcwarner     570334 2014-08-23 20:55 namelist.output
-rw-rw-r--  1 jcwarner jcwarner        935 2014-08-23 20:55 swaninit02
-rw-rw-r--  1 jcwarner jcwarner    5451976 2014-08-24 00:24 Sandy_ocean_avg.nc
-rw-rw-r--  1 jcwarner jcwarner   18921960 2014-08-24 00:24 Sandy_ocean_ref3_avg.nc
-rw-rw-r--  1 jcwarner jcwarner 1843343388 2014-08-24 00:29 wrfout_d02_2012-10-28_12:00:00
-rw-rw-r--  1 jcwarner jcwarner  339615352 2014-08-24 00:29 Sandy_ocean_his.nc
-rw-rw-r--  1 jcwarner jcwarner   12188216 2014-08-24 00:29 Sandy_ocean_rst.nc
-rw-rw-r--  1 jcwarner jcwarner 1508460588 2014-08-24 00:29 wrfout_d01_2012-10-28_12:00:00
-rw-rw-r--  1 jcwarner jcwarner   16763667 2014-08-24 00:29 Sandy_init3.hot
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_watlev.mat
-rw-rw-r--  1 jcwarner jcwarner    3918560 2014-08-24 00:29 Sandy_ref3_vel.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_tmbot.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_rtp.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_hsig.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_fric.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_dissip.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_depth.mat
-rw-rw-r--  1 jcwarner jcwarner    1958560 2014-08-24 00:29 Sandy_ref3_botlev.mat
-rw-rw-r--  1 jcwarner jcwarner      40096 2014-08-24 00:29 Sandy_ref3_yp.mat
-rw-rw-r--  1 jcwarner jcwarner      40096 2014-08-24 00:29 Sandy_ref3_xp.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_wlen.mat
-rw-rw-r--  1 jcwarner jcwarner    3918560 2014-08-24 00:29 Sandy_ref3_wind.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_wdir.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_ubot.mat
-rw-rw-r--  1 jcwarner jcwarner    1959344 2014-08-24 00:29 Sandy_ref3_qb.mat
-rw-rw-r--  1 jcwarner jcwarner    6164467 2014-08-24 00:29 PRINT01
-rw-rw-r--  1 jcwarner jcwarner   28933735 2014-08-24 00:29 Sandy_ref3_init3.hot
-rw-rw-r--  1 jcwarner jcwarner     854996 2014-08-24 00:29 PRINT02
-rw-rw-r--  1 jcwarner jcwarner  630724364 2014-08-24 00:29 Sandy_ocean_ref3_his.nc
-rw-rw-r--  1 jcwarner jcwarner   22620624 2014-08-24 00:29 Sandy_ocean_ref3_rst.nc
jcwarner@nemo:/raid3/jcwarner/Projects/coawst_v3.1/sandy2$ ncview wrfout_d01_2012-10-28_12\:00\:00 &
```

You should get these 2 files

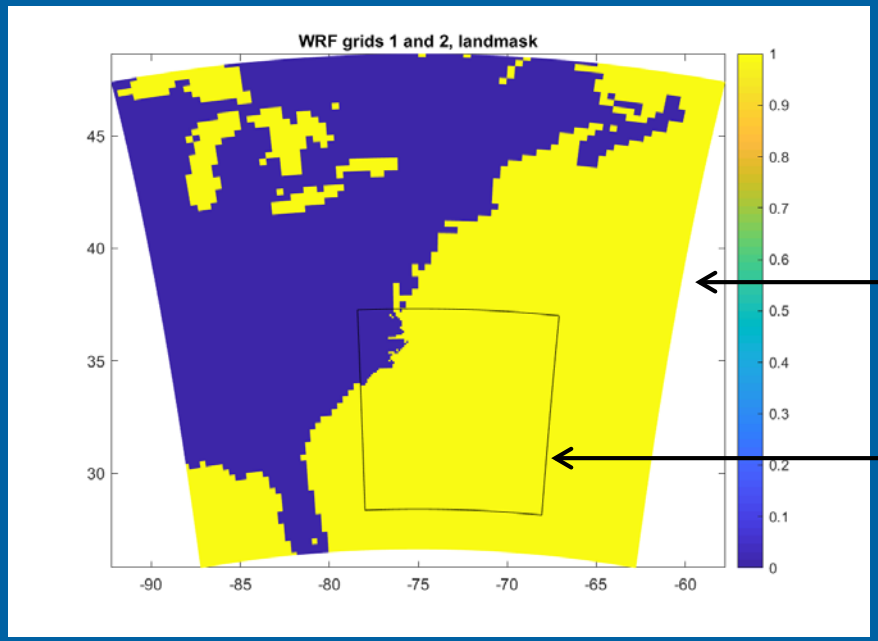

USGS

WRF Moving nest

2:00 ~

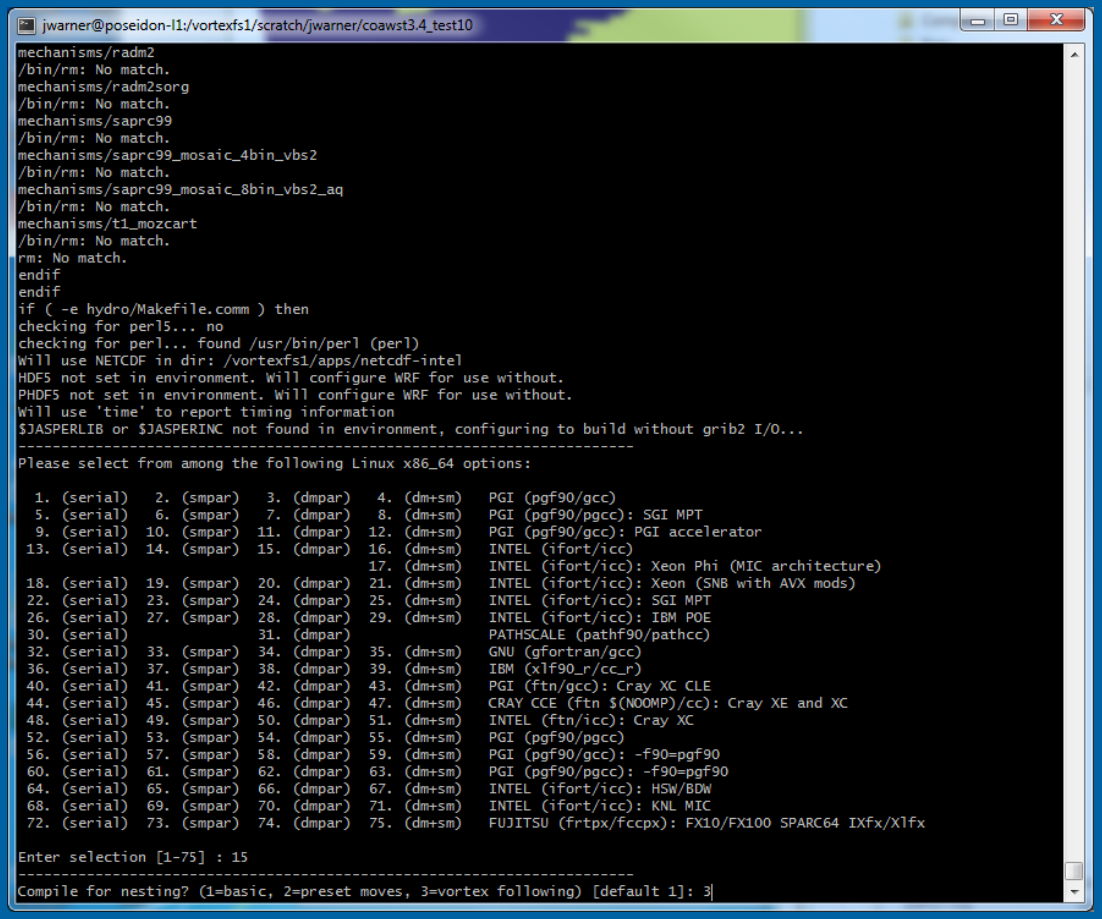
The last example we compiled WRF application for a parent and a static nest. We now look at creating a moving nest.

The moving nest will start at the same location as the static nest. This may or may not be the best choice for your application.
But this is just a test case to demonstrate the procedure.



USGS

Build WRF – command prompt



cd to where the coawst.bash file is located.

at the command prompt type:
./coawst.bash

follow the WRF prompts….

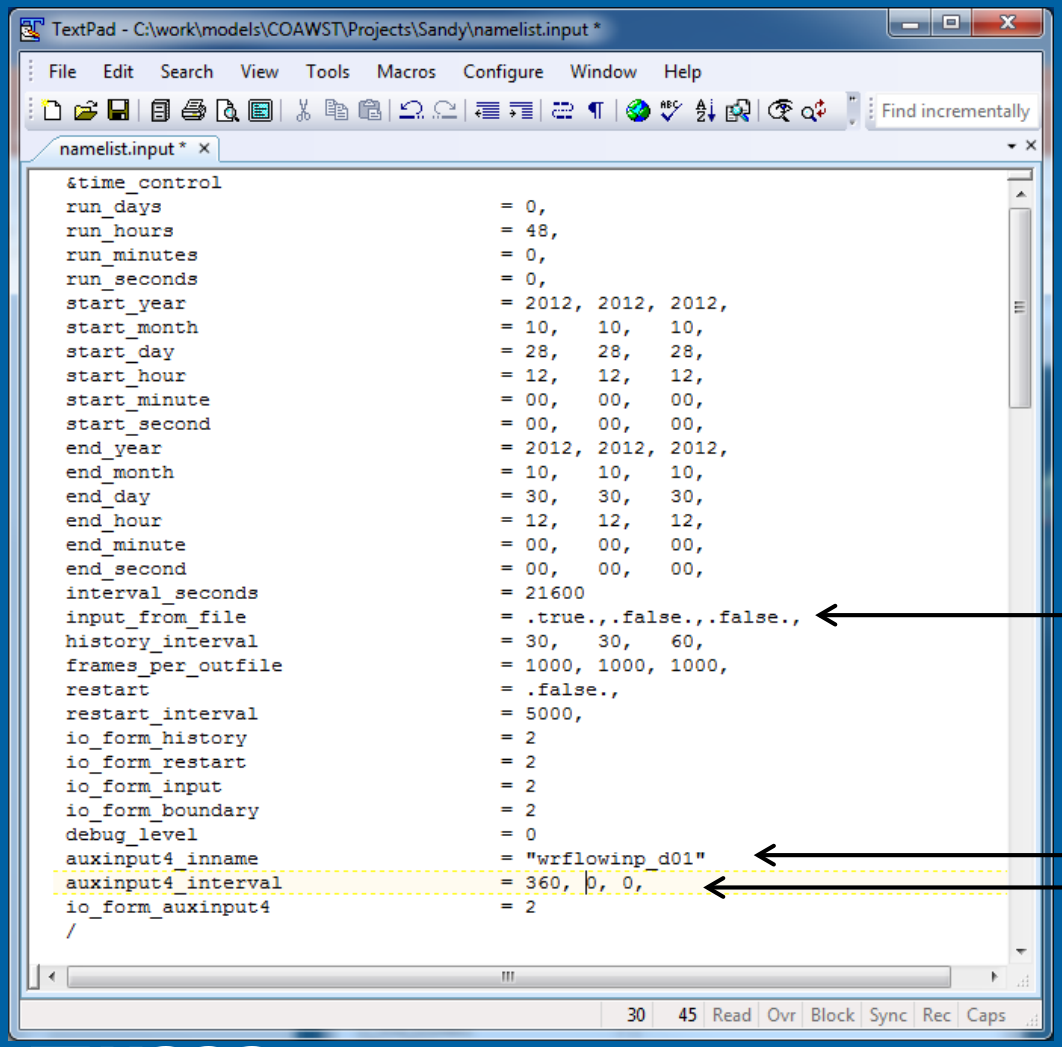
15 – pick what is on your system !
Always use dmpar (=distributed mem parallel).
Do not use smpar (= shapred mem parallel).

3 – vortex following

vortex-following は hurricane の vortex を自動的に follow する.

USGS

Edit namelist.input



change to .true, .false.

change to wrflow_d01

change to 360, 0

USGS

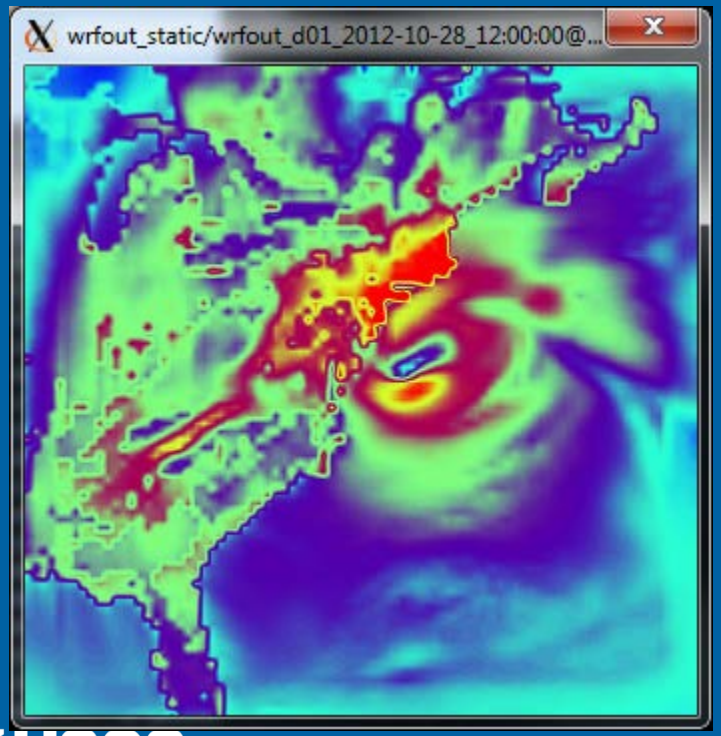
You can ignore 3rd column because we set max dom = 2

run wrf and output

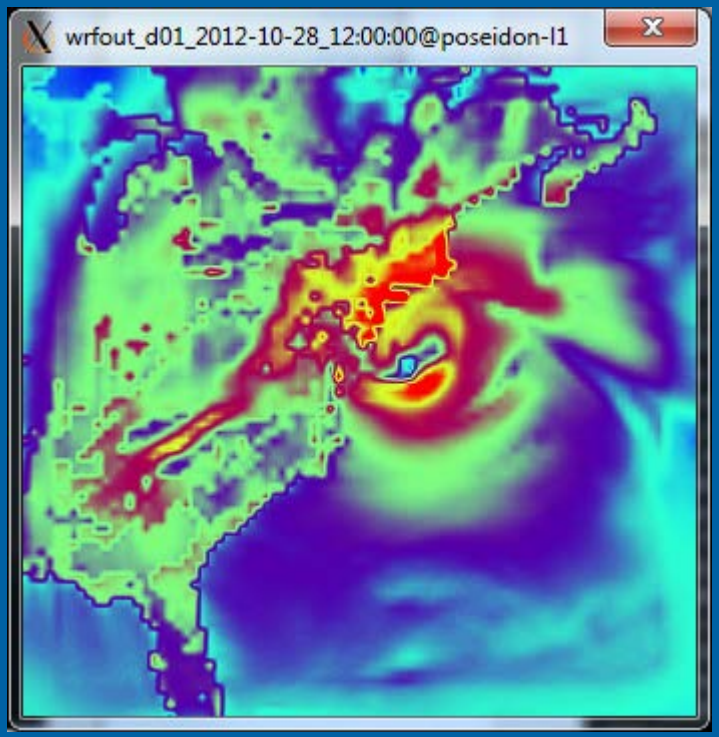
Run wrf as before (point to coawstM)

Output for d02 should now move !!

Static nest



Moving nest



USGS