



BPintar

(BMKG's Portable Integrated NWP and
Assessment Report)

Center for Standardization and Instruments of BMKG

What is BPintar?

- BMKG's Portable Integrated NWP and Assessment Report
- Developed version of PNTOL (Plug-N-Run NWP Tool) created by Kyung Jeon Park

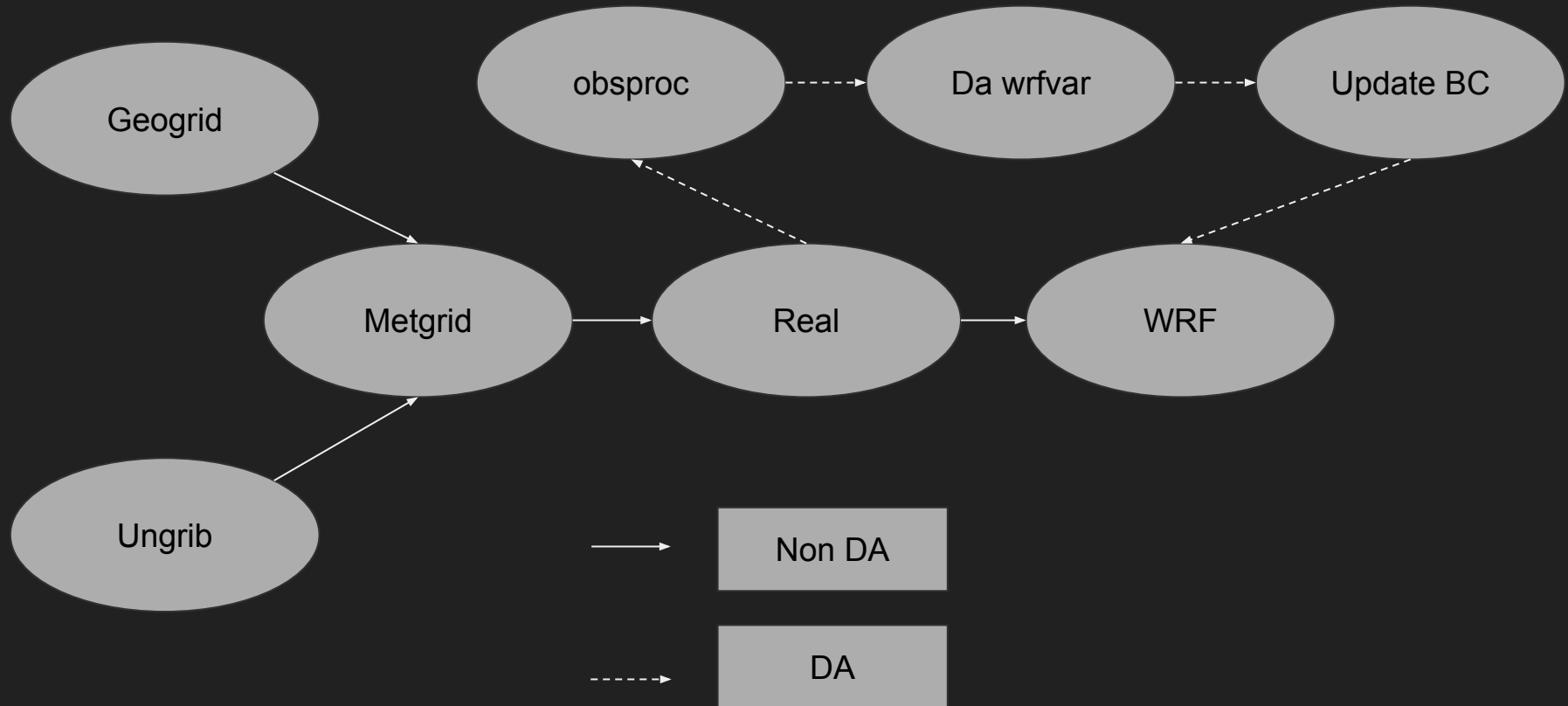
https://docs.google.com/document/d/1Agpabjw5fSUD0EH1Fbmt-xdLXp3s0EOJY_SW0CSyxXs/edit

- We're still in the development stage right now
- Ubuntu persistent run (Using USB media)
- Added features:
 - 3DVAR (local observation data)
 - HARP (HirLAM Aladdin R Packages) Verification tool (<https://github.com/harphub/harp>)

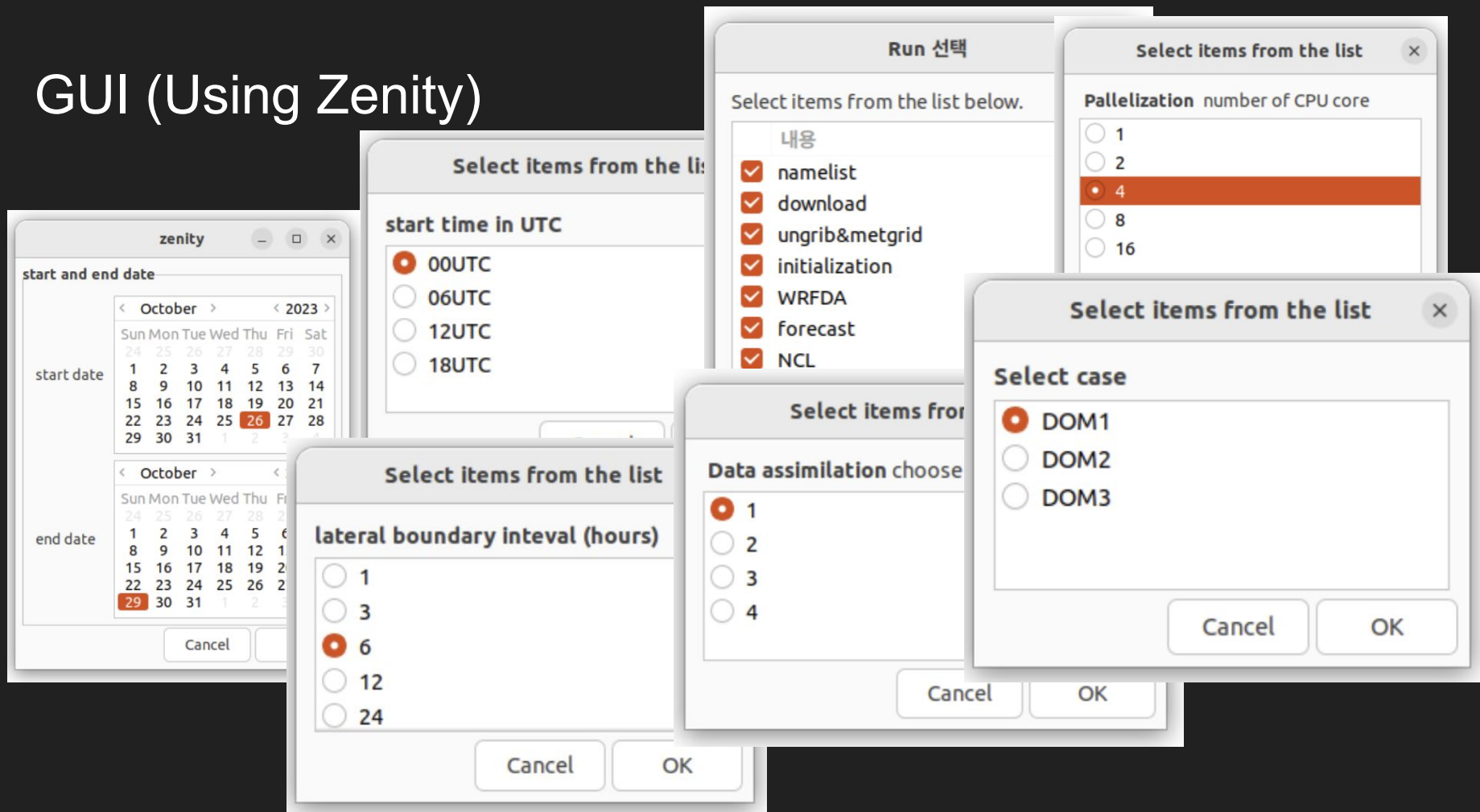
Why BPintar?

- Portable
- Easy to install
- Integrated NWP System (WRF, display and analysis)
- Comes with GUI (Graphical User Interfaces)
- Automatic run
- 3DVAR local data assimilation and verification System Included
- Intended for lightweight running and training purposes
- Open for development

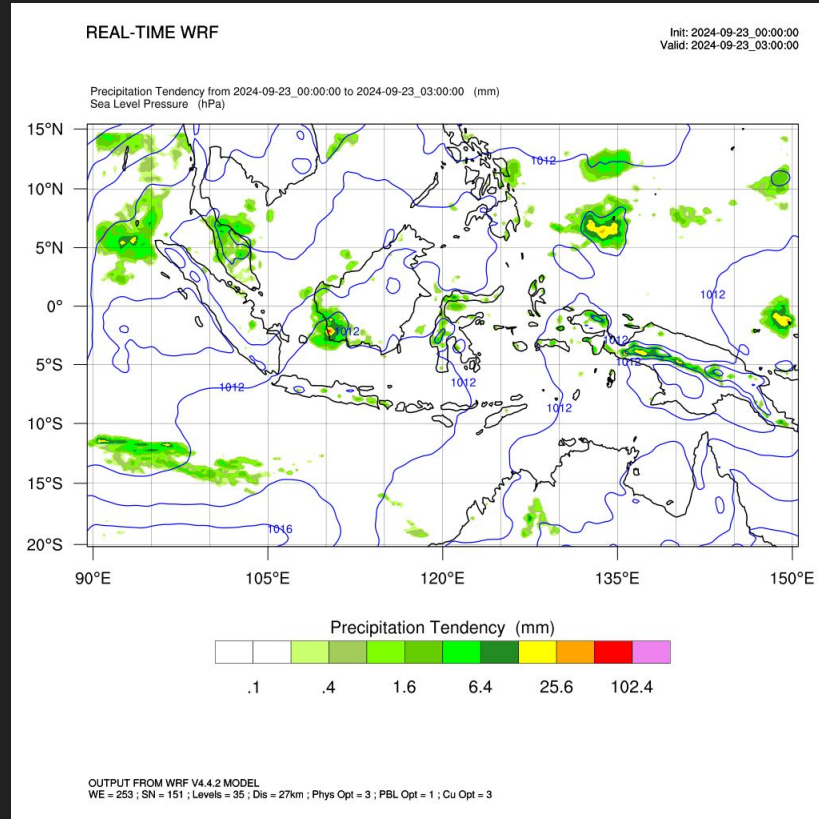
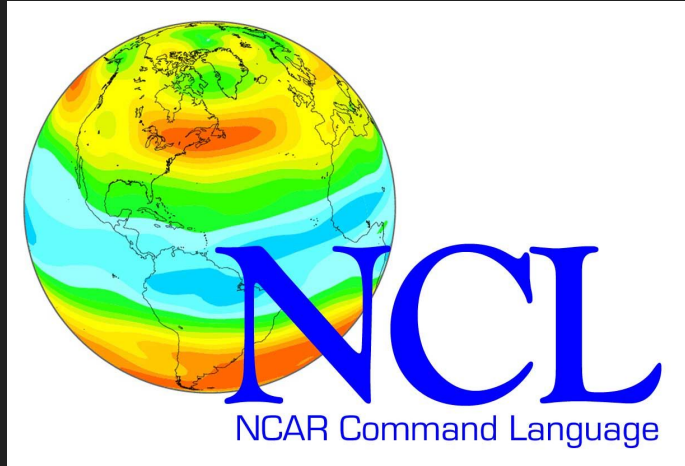
Precompiled WRF Binaries



GUI (Using Zenity)

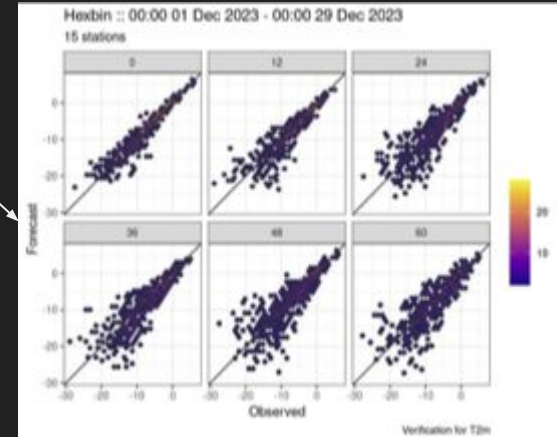
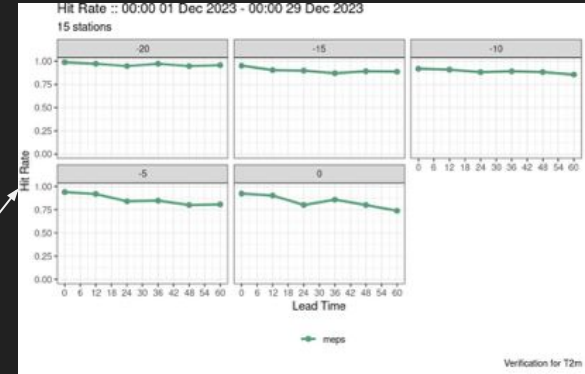
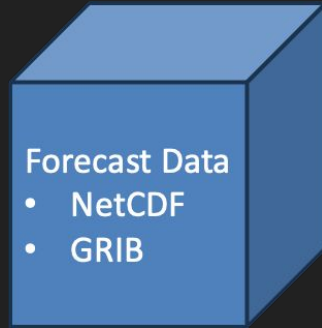


Display Software (NCL on Conda Python)



<https://github.com/harphub/harp>

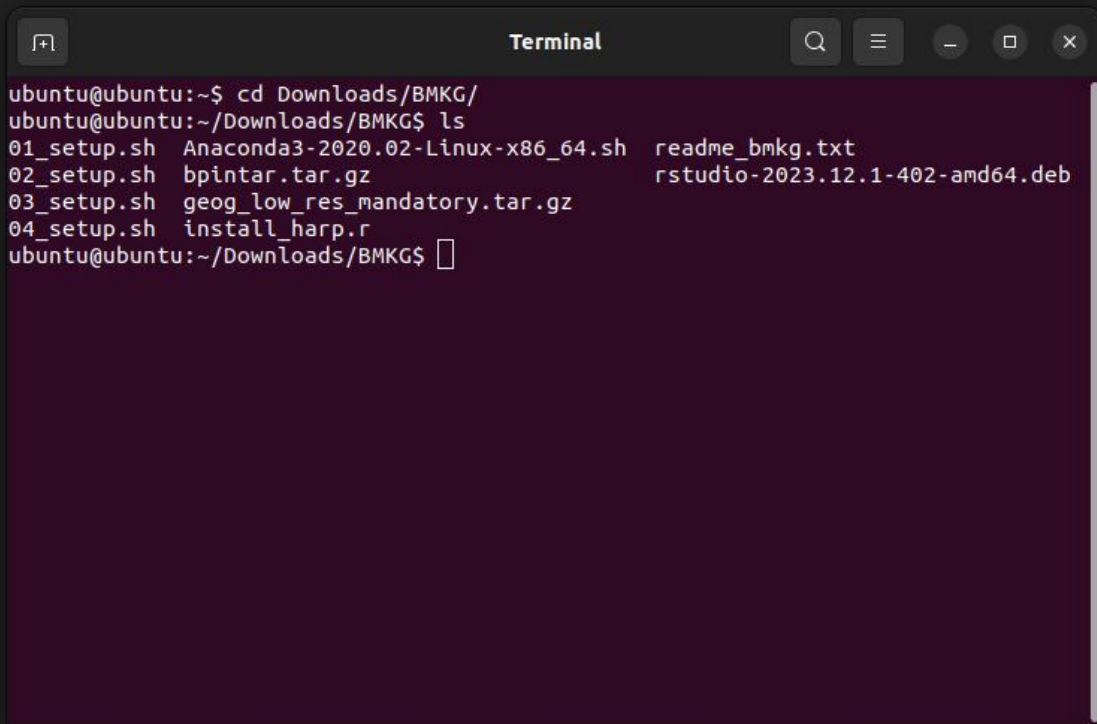
HARP Integrated



How to Install?

(01_setup.sh)

- Go to downloads/BMKG folder
 - `cd /home/ubuntu/Downloads/BMKG`
- Open terminal and run linux shell script
 - `bash 01_setup.sh`
 - `exit` (type exit after finish)



```
Terminal
ubuntu@ubuntu:~$ cd Downloads/BMKG/
ubuntu@ubuntu:~/Downloads/BMKG$ ls
01_setup.sh  Anaconda3-2020.02-Linux-x86_64.sh  readme_bmkg.txt
02_setup.sh  bpintar.tar.gz                      rstudio-2023.12.1-402-amd64.deb
03_setup.sh  geog_low_res_mandatory.tar.gz
04_setup.sh  install_harp.r
ubuntu@ubuntu:~/Downloads/BMKG$
```


02_setup.sh

- Go to downloads/BMKG folder
 - `cd /home/ubuntu/Downloads/BMKG`
- Open new terminal and continue with run `02_setup.sh` (to install Anaconda)
 - `bash 02_setup.sh`
 - hit enter button
 - type “yes” for license terms
 - hit enter to confirm location
 - type “yes” to initialize Anaconda
 - exit (type exit after finish)

```
ubuntu@ubuntu: ~/Downloads/BMKG
ubuntu@ubuntu:~/Downloads/BMKG$ bash 02_setup.sh

Welcome to Anaconda3 2020.02

In order to continue the installation process, please review the license
agreement.
Please, press ENTER to continue
>>> 
```

```
ubuntu@ubuntu: ~/Downloads/BMKG
A stand-alone version of pycryptodome.

libsodium
A software library for encryption, decryption, signing
and more.

pynacl
A Python binding to the Networking and Cryptography
library with the stated goal of improving usability, security
and performance.

Last updated February 25, 2020

Do you accept the license terms? [yes|no]
[no] >>> yes

Anaconda3 will now be installed into this location:
/home/ubuntu/anaconda3

- Press ENTER to confirm the location
- Press CTRL-C to abort the installation
- Or specify a different location below

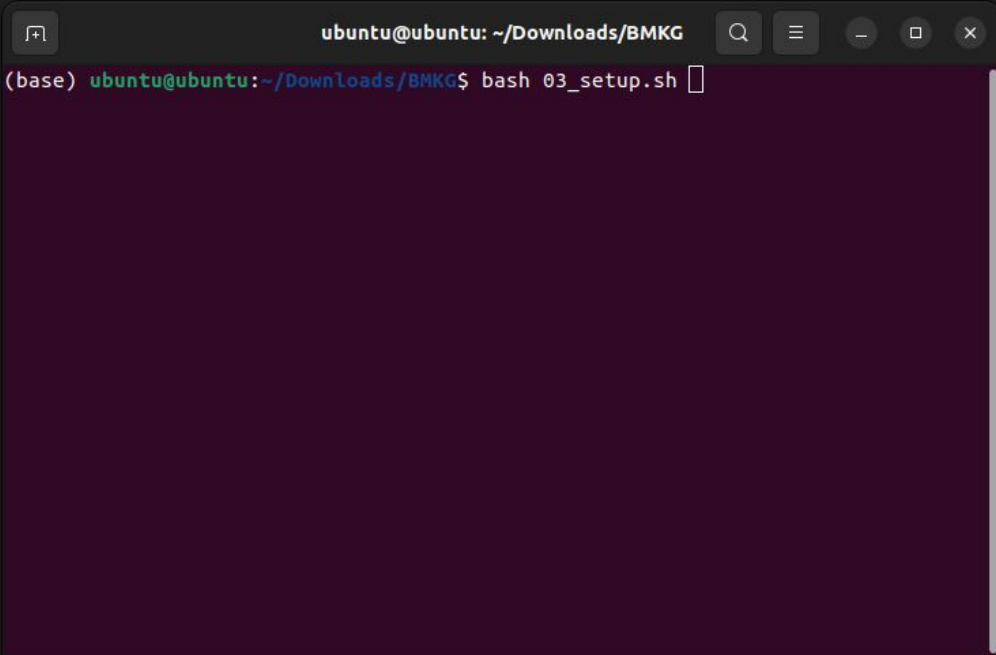
[/home/ubuntu/anaconda3] >>> 
```

```
ubuntu@ubuntu: ~/Downloads/BMKG
wheel pkgs/main/linux-64
widgetsnbextension pkgs/main/linux-64
wrap pkgs/main/linux-64
wurlitzer pkgs/main/linux-64
xlrd pkgs/main/linux-64
xlswriter pkgs/main/noarch:
xlwt pkgs/main/linux-64
xmldict pkgs/main/noarch:
xz pkgs/main/linux-64
yaml pkgs/main/linux-64
yapf pkgs/main/noarch:
zeromq pkgs/main/linux-64
zict pkgs/main/noarch:
zipp pkgs/main/noarch:
zlib pkgs/main/linux-64
zstd pkgs/main/linux-64

Preparing transaction: done
Executing transaction: done
Installation finished.
Do you wish the installer to initialize
Anaconda? [yes|no]
[no] >>> yes
```

03_setup.sh

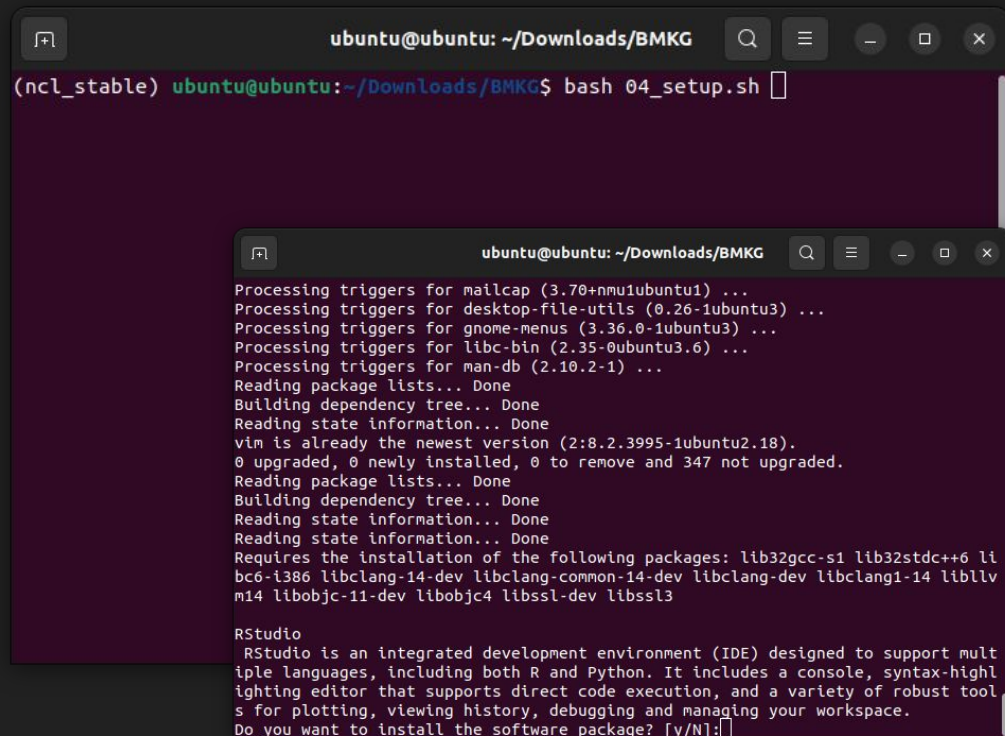
- Go to downloads/BMKG folder
 - `cd /home/ubuntu/Downloads/BMKG`
- Open new terminal and continue with run `03_setup.sh` (to install NCL)
 - `bash 03_setup.sh`
 - hit enter button
 - type “yes” for license terms
 - hit enter to confirm location
 - exit (type exit after finish)

A terminal window with a dark background and light text. The title bar at the top reads 'ubuntu@ubuntu: ~/Downloads/BMKG'. Below the title bar, the prompt '(base) ubuntu@ubuntu:~/Downloads/BMKG\$' is followed by the command 'bash 03_setup.sh'. The rest of the terminal area is empty, indicating the command has been executed and the output is not visible in this frame.

```
ubuntu@ubuntu: ~/Downloads/BMKG
(base) ubuntu@ubuntu:~/Downloads/BMKG$ bash 03_setup.sh
```

04_setup.sh

- Go to downloads/BMKG folder
 - `cd /home/ubuntu/Downloads/BMKG`
 - `bash 04_setup.sh`
 - hit enter button
 - type “yes” and hit enter button to install r software package

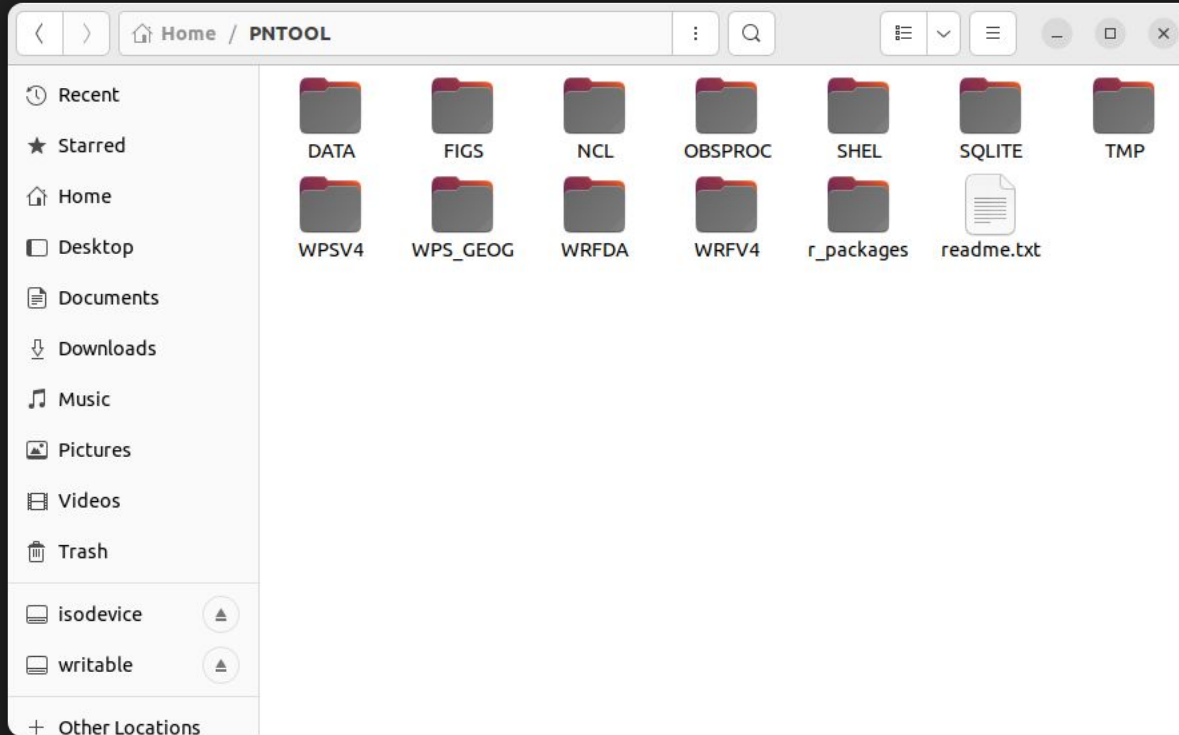


```
ubuntu@ubuntu: ~/Downloads/BMKG
(nc1_stable) ubuntu@ubuntu:~/Downloads/BMKG$ bash 04_setup.sh

Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu3) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for libc-bin (2.35-0ubuntu3.6) ...
Processing triggers for man-db (2.10.2-1) ...
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
vim is already the newest version (2:8.2.3995-1ubuntu2.18).
0 upgraded, 0 newly installed, 0 to remove and 347 not upgraded.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Requires the installation of the following packages: lib32gcc-s1 lib32stdc++6 libbc6-i386 libclang-14-dev libclang-common-14-dev libclang-dev libclang1-14 libllv
m14 libobjc-11-dev libobjc4 libssl-dev libssl3

RStudio
RStudio is an integrated development environment (IDE) designed to support mult
iple languages, including both R and Python. It includes a console, syntax-highl
ighting editor that supports direct code execution, and a variety of robust tool
s for plotting, viewing history, debugging and managing your workspace.
Do you want to install the software package? [y/N]:
```

Run BPintar

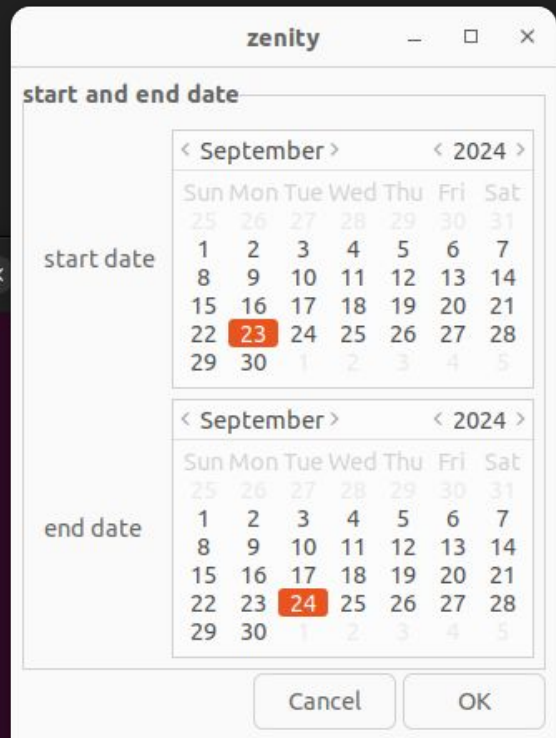


Folder list

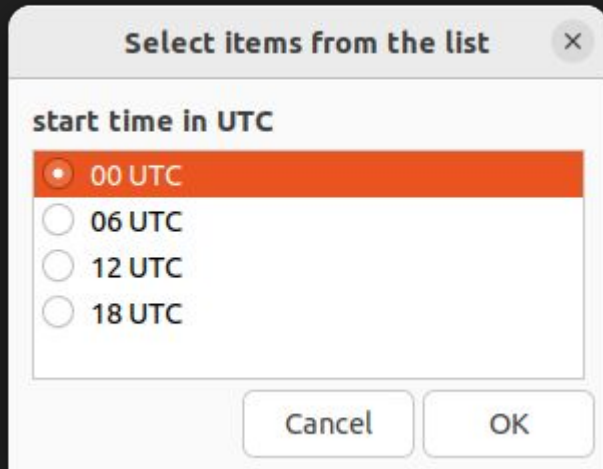
- DATA
 - Assimilate : local data observation (synop, aws, sound, etc)
 - GFS : GFS Initial condition
 - OBS: observation data for HARP
- FIGS = Picture from NCL output
- NCL = NCL installation folder
- OBSPROC = WRF obsproc pre-compiled binary folder
- SHEL = All script and domain folder
 - CASE : Domain name and folder output of WRF process (wrfout data)
- SQLITE
 - OBS = sqlite database for observation data
 - Static = station list for harp
 - Wrfout = sqlite database for forecast data
- TMP = Temporary folder
- WPSV4 = Pre-compiled WPS binary
- WPS_GEOG = WPS GEOG file
- WRFDA = Pre-compiled WRFDA binary
- WRFV4 = Pre-compiled WRF binary
- r_packages = r packages installed folder

- Go to PNT00L folder
 - `cd /home/ubuntu/PNT00L/SHEL`
- Run `main_run.sh` and select the forecast date
 - `./main_run.sh`

```
ubuntu@ubuntu: ~/PNT00L/SHEL
(ncl_stable) ubuntu@ubuntu:~/PNT00L/SHEL$ ./main_run.sh
```

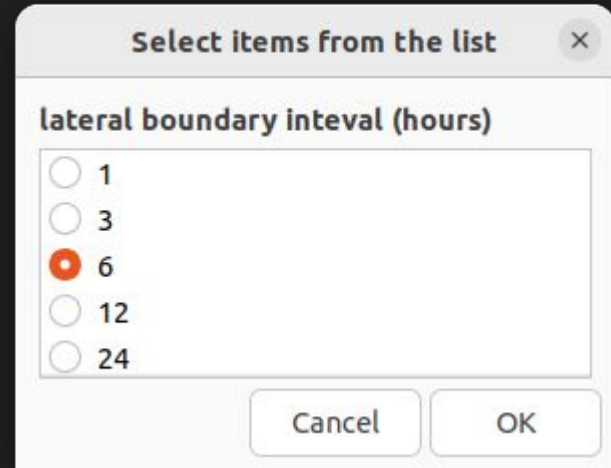


- Select initial condition and hit “OK”



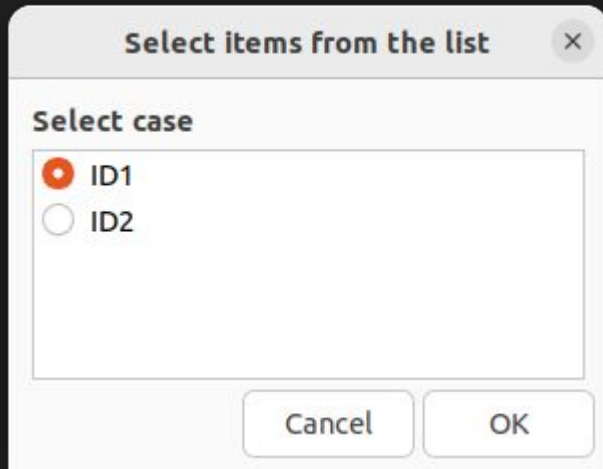
A dialog box titled "Select items from the list" with a close button (X) in the top right corner. The main text is "start time in UTC". Below this, there is a list of radio buttons with corresponding time values: "00 UTC", "06 UTC", "12 UTC", and "18 UTC". The "00 UTC" option is selected, indicated by a filled orange circle and an orange highlight bar. At the bottom, there are two buttons: "Cancel" and "OK".

- Select lateral boundary interval and hit “OK”

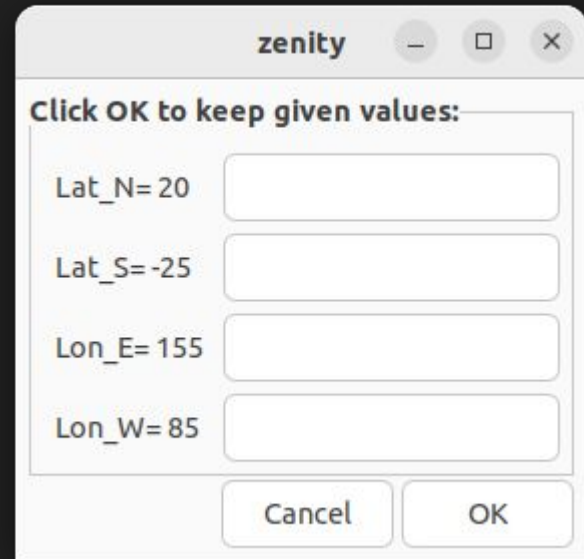


A dialog box titled "Select items from the list" with a close button (X) in the top right corner. The main text is "lateral boundary interval (hours)". Below this, there is a list of radio buttons with corresponding interval values: "1", "3", "6", "12", and "24". The "6" option is selected, indicated by a filled orange circle. At the bottom, there are two buttons: "Cancel" and "OK".

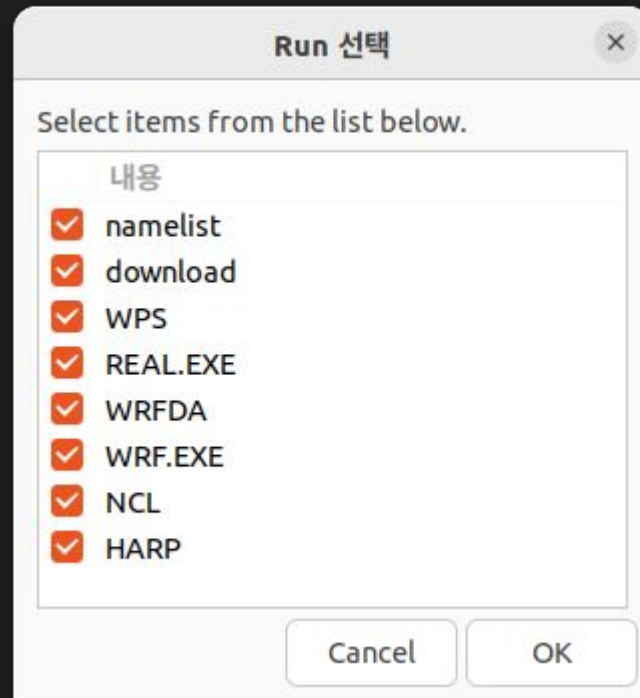
- Select case and hit “OK”



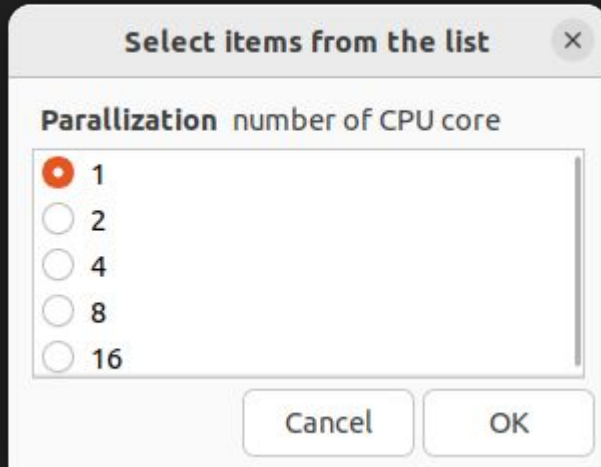
- Select domain range for GFS data (default value are listed) and hit “OK”



- You may select processes from item list from following window.
- Additional pop-up window will appear if WRFDA selected (checked)

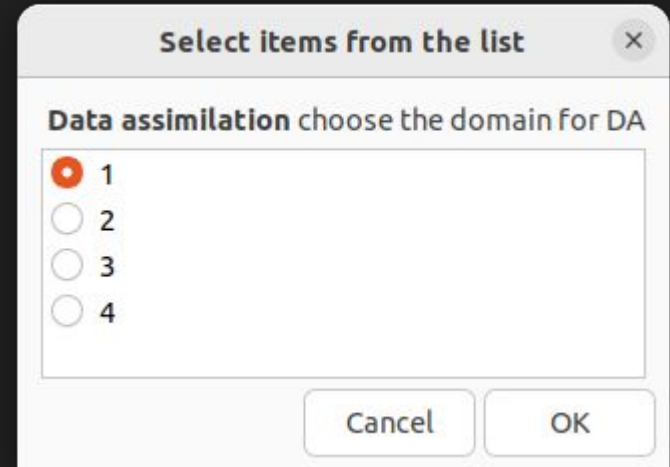


- Select number of processor (based on your machine configuration)



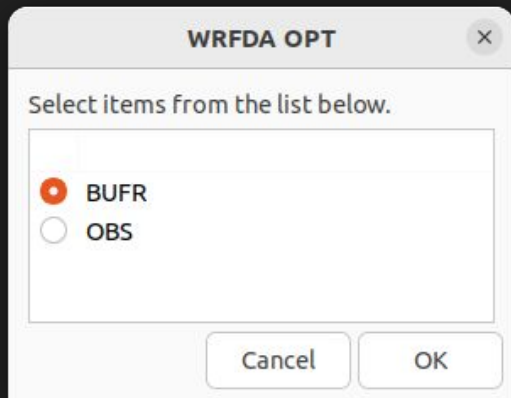
A screenshot of a dialog box titled "Select items from the list" with a close button (X) in the top right corner. The dialog contains a section labeled "Parallization" with the subtitle "number of CPU core". Below this, there is a list of radio buttons with the following values: 1, 2, 4, 8, and 16. The radio button for "1" is selected, indicated by a red dot. At the bottom of the dialog, there are two buttons: "Cancel" and "OK".

- Select assimilation domain



A screenshot of a dialog box titled "Select items from the list" with a close button (X) in the top right corner. The dialog contains a section labeled "Data assimilation" with the subtitle "choose the domain for DA". Below this, there is a list of radio buttons with the following values: 1, 2, 3, and 4. The radio button for "1" is selected, indicated by a red dot. At the bottom of the dialog, there are two buttons: "Cancel" and "OK".

- You may select data assimilation type
 - BUFR = bufr data format will be download from NCEP website
 - OBS = Using local observation data (you must prepare your own data with the special format)
- And finally with until all processes finish



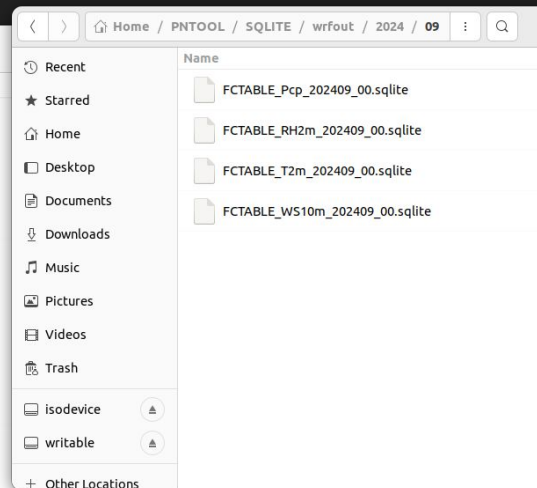
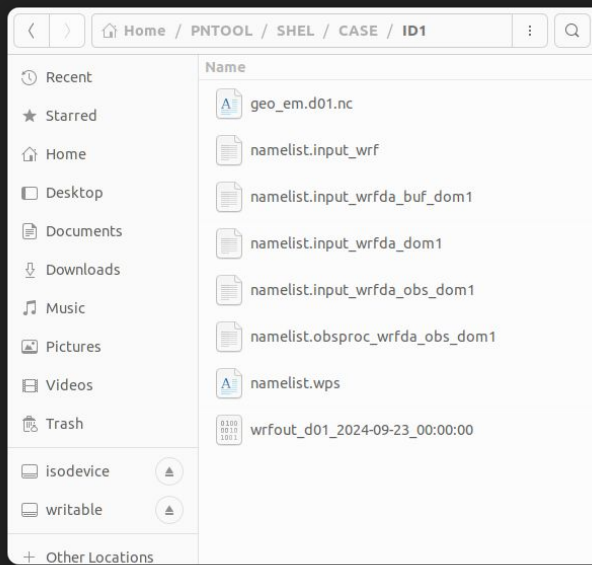
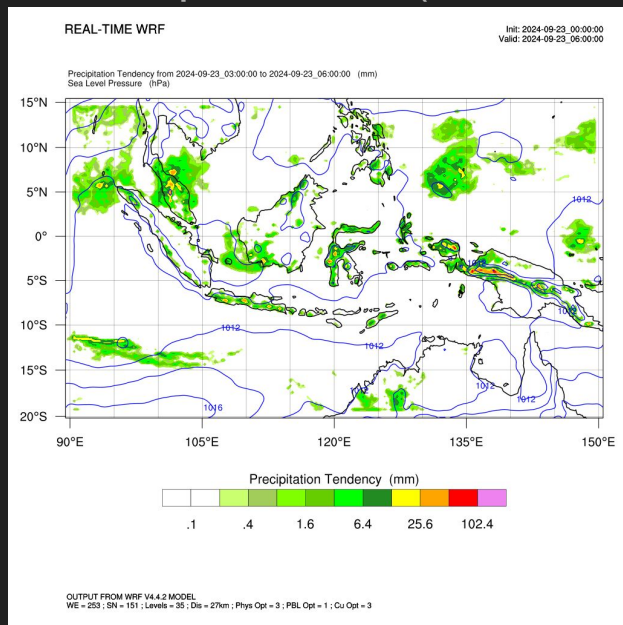
```

ubuntu@ubuntu: ~/PNT00L/SHEL
24-09-24_00:00:00', '2024-09-24_00:00:00',
main_shell end: prepare namelist
main_shell start: gfs download
run_days = 1
bdy_int = 6
nhour_fcst = 24
run1_gfs start time : 2024092300
GFS download starting time:Tue Sep 24 10:10:21 UTC 2024
=====
=====
dir check
/home/ubuntu/PNT00L/SHEL
filedan1: gdas.t00z.prepbufr.nr
filedafull1: https://nomads.ncep.noaa.gov/pub/data/nccf/com/obsproc/prod/gdas.20
240923/gdas.t00z.prepbufr.nr
filedan2: gdas.t00z.gpsro.tm00.bufr_d.nr
filedafull2: https://nomads.ncep.noaa.gov/pub/data/nccf/com/obsproc/prod/gdas.20
240923/gdas.t00z.gpsro.tm00.bufr_d.nr
downloading : https://nomads.ncep.noaa.gov/pub/data/nccf/com/obsproc/prod/gdas.
20240923/gdas.t00z.prepbufr.nr
% Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload   Total     Spent    Left     Speed
  4  71.0M    4 3395k    0     0  67336      0  0:18:26  0:00:51  0:17:35  141k

```

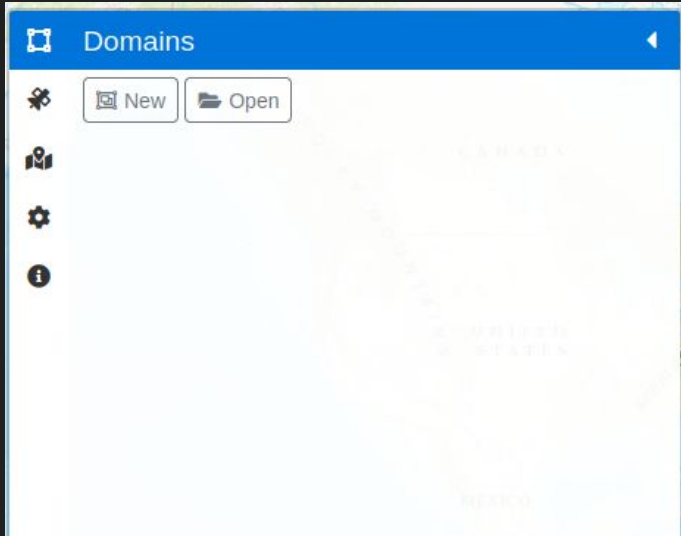
Output

- Picture format (/home/ubuntu/PNTOOL/FIGS)
- Netcdf format/wrfout (/home/ubuntu/PNTOOL/SHEL/CASE/{case id})
- Sqlite format (/home/ubuntu/PNTOOL/SQLITE/wrfout)



Create New Domain

- Go to <https://jiririchter.github.io/WRFDomainWizard/>
- Create new and select your area of interest (drag and drop)



Click save and download

Domains

NewOpen

wrf_coreARW

map_projlambert

ref_latref_lon-1.674110.503

truelat1-1.674

truelat2-1.674

stand_lon110.503

dx dy90009000÷÷××

Grids

d01

parent_grid_ratio1

i_parent_start j11

e_we e_sn3635

geog_data_resdefault

corners (lat,lon)

W

E

N

-0.297, 109.087

-0.297, 111.919

S

-3.050, 109.085

-3.050, 111.921

UpdateSaveResetnamelist.input

namelist.wps

```
&share
wrf_core      = 'ARW'
max_dom       = 1
start_date    = '2024-08-02_03:00:00'
end_date      = '2024-08-02_18:00:00'
interval_seconds = 21600
io_form_geogrid = 2
debug_level   = 0
/

&geogrid
parent_id     = 1
parent_grid_ratio = 1
i_parent_start = 1
j_parent_start = 1
e_we         = 36
e_sn         = 35
geog_data_res = 'default'
dx           = 9000
dy           = 9000
map_proj      = 'lambert'
ref_lat       = -1.674
ref_lon       = 110.503
truelat1      = -1.674
truelat2      = -1.674
pole_lat      = 90
pole_lon      = 0
stand_lon     = 110.503
geog_data_path = 'geog'
opt_geogrid_tbl_path = './geogrid/'
/

&ungrib
out_format    = 'WPS'
```

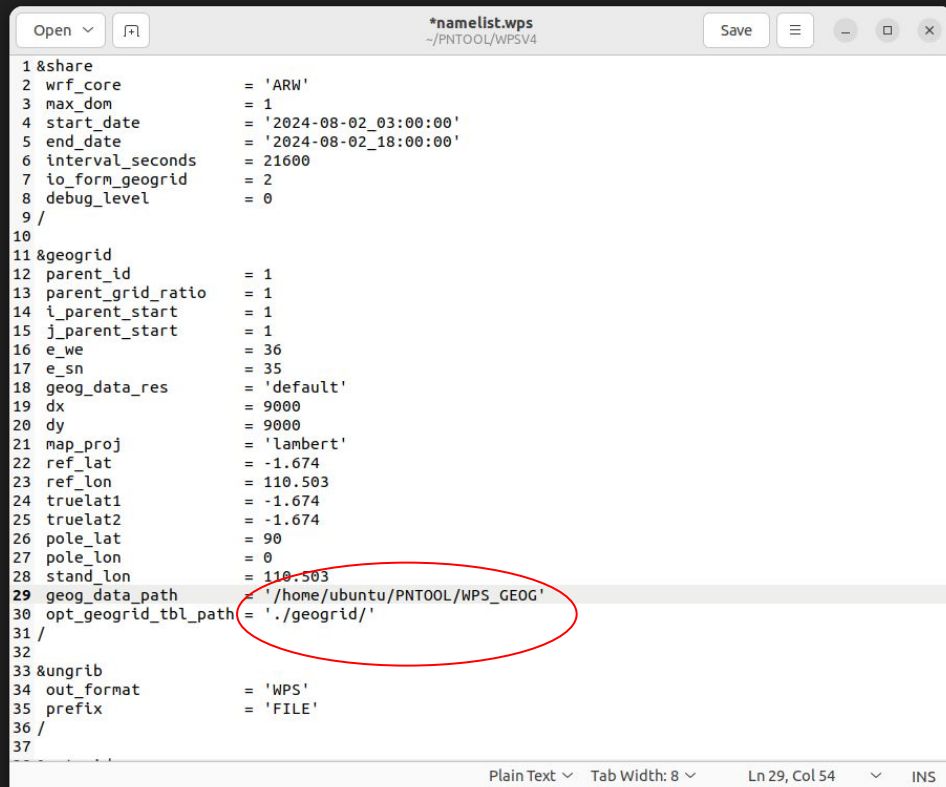
Download

Copy

Close

Create geo_em file

- Copy downloaded namelist.wps to WPSV4 folder
 - `cd /home/ubuntu/download`
 - `cp namelist.wps /home/ubuntu/PNTOOL/WPSV4`
 - `cd /home/ubuntu/PNTOOL/WPSV4`
 - `ln -sf geogrid/GEOGRID.TBL .`
 - `gedit namelist.wps` (as shown)
 - `./geogrid.exe`
- The output will be generated (geo_em.d01.nc)

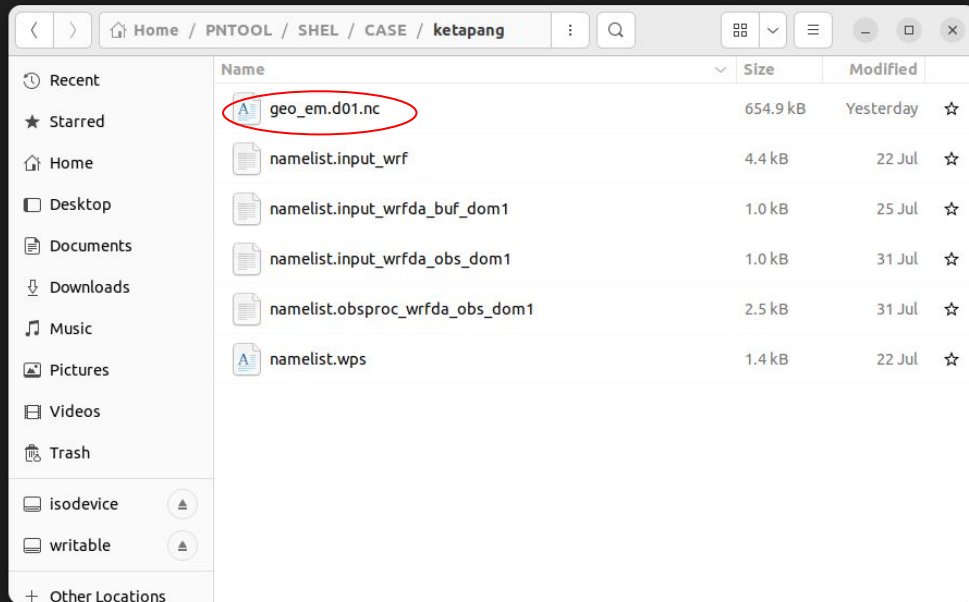


```
*namelist.wps
~/PNTOOL/WPSV4

1 &share
2 wrf_core           = 'ARW'
3 max_dom            = 1
4 start_date          = '2024-08-02_03:00:00'
5 end_date            = '2024-08-02_18:00:00'
6 interval_seconds    = 21600
7 io_form_geogrid     = 2
8 debug_level         = 0
9 /
10
11 &geogrid
12 parent_id          = 1
13 parent_grid_ratio   = 1
14 i_parent_start      = 1
15 j_parent_start      = 1
16 e_we                = 36
17 e_sn                = 35
18 geog_data_res       = 'default'
19 dx                  = 9000
20 dy                  = 9000
21 map_proj            = 'lambert'
22 ref_lat             = -1.674
23 ref_lon             = 110.503
24 truelat1            = -1.674
25 truelat2            = -1.674
26 pole_lat            = 90
27 pole_lon            = 0
28 stand_lon           = 110.503
29 geog_data_path       = '/home/ubuntu/PNTOOL/WPS_GEOG'
30 opt_geogrid_tbl_path = './geogrid/'
31 /
32
33 &ungrib
34 out_format          = 'WPS'
35 prefix              = 'FILE'
36 /
37
```

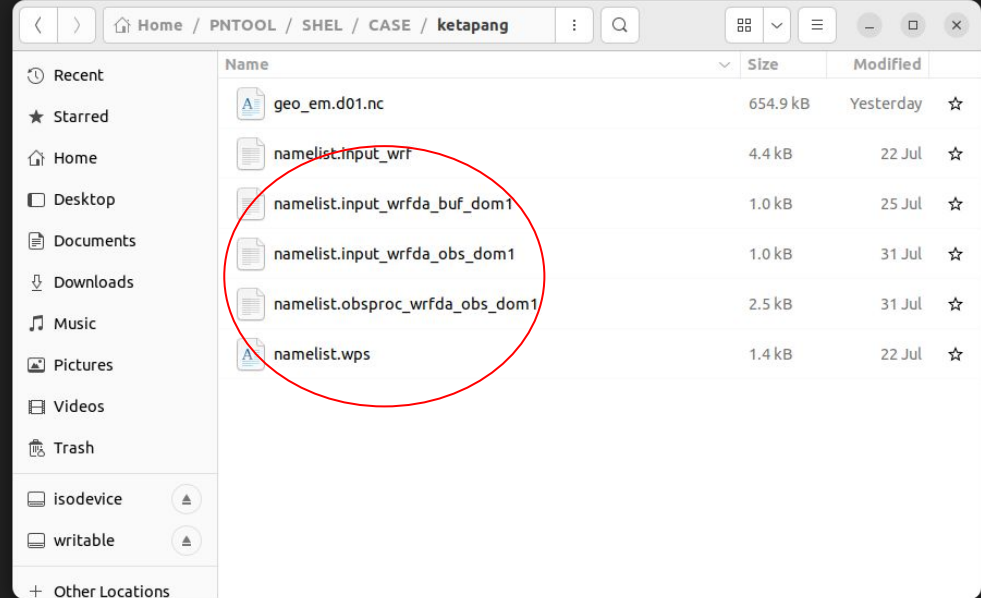

Creating new case name

- Copy folder ID1 to different name (ketapang) in
/home/ubuntu/PNTOOL/SHEL/CASE
 - `cd /home/ubuntu/PNTOOL/SHEL/CASE`
 - `cp -r ID1 ketapang`
 - `cd ketapang`
- Copy file `geo_em.d01.nc` generated from geogrid to this folder
 - `cp /home/ubuntu/PNTOOL/WPSV4/geo_em.d01.nc .`

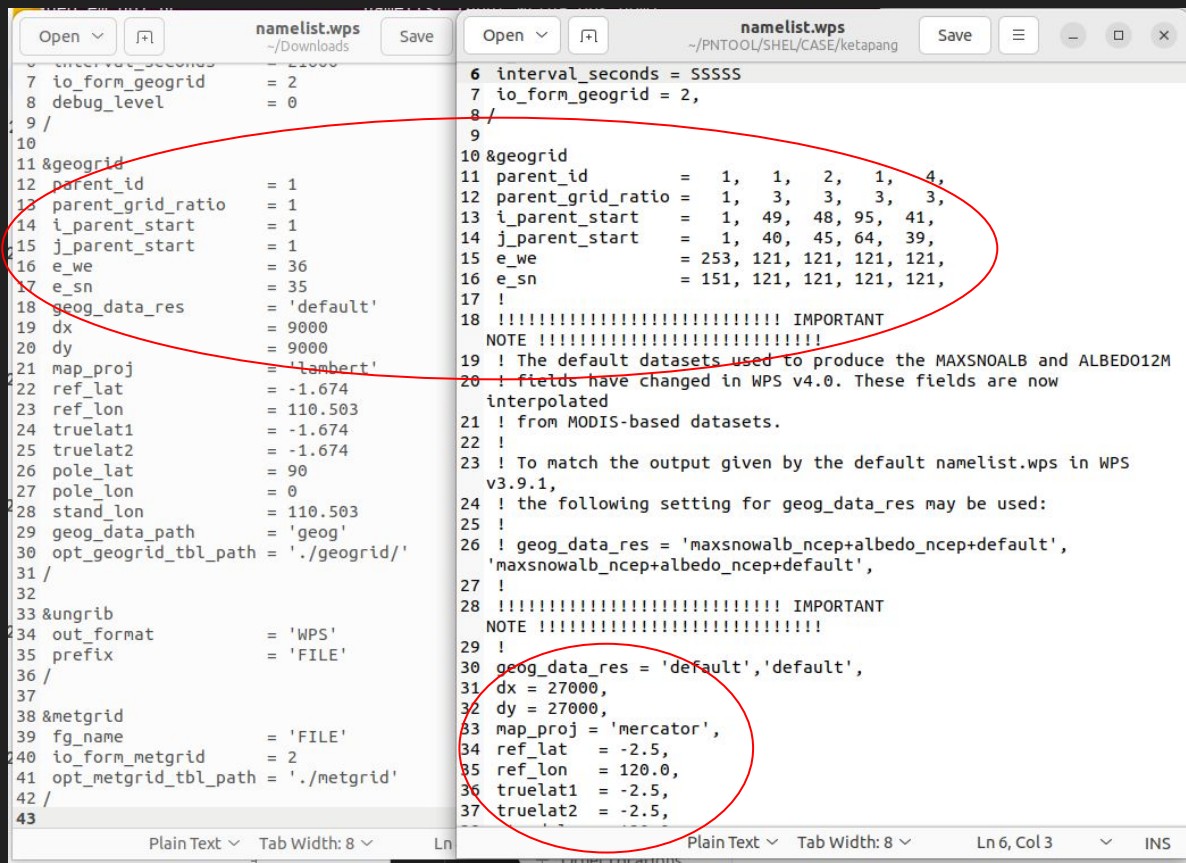


Edit all namelist file

- PNTOL comes with 5 (five) namelist file
- When creating new domain, we also need to edit these file to match with geo_em data
- There are several parts that we have to look for, mainly grid setting and grid resolution



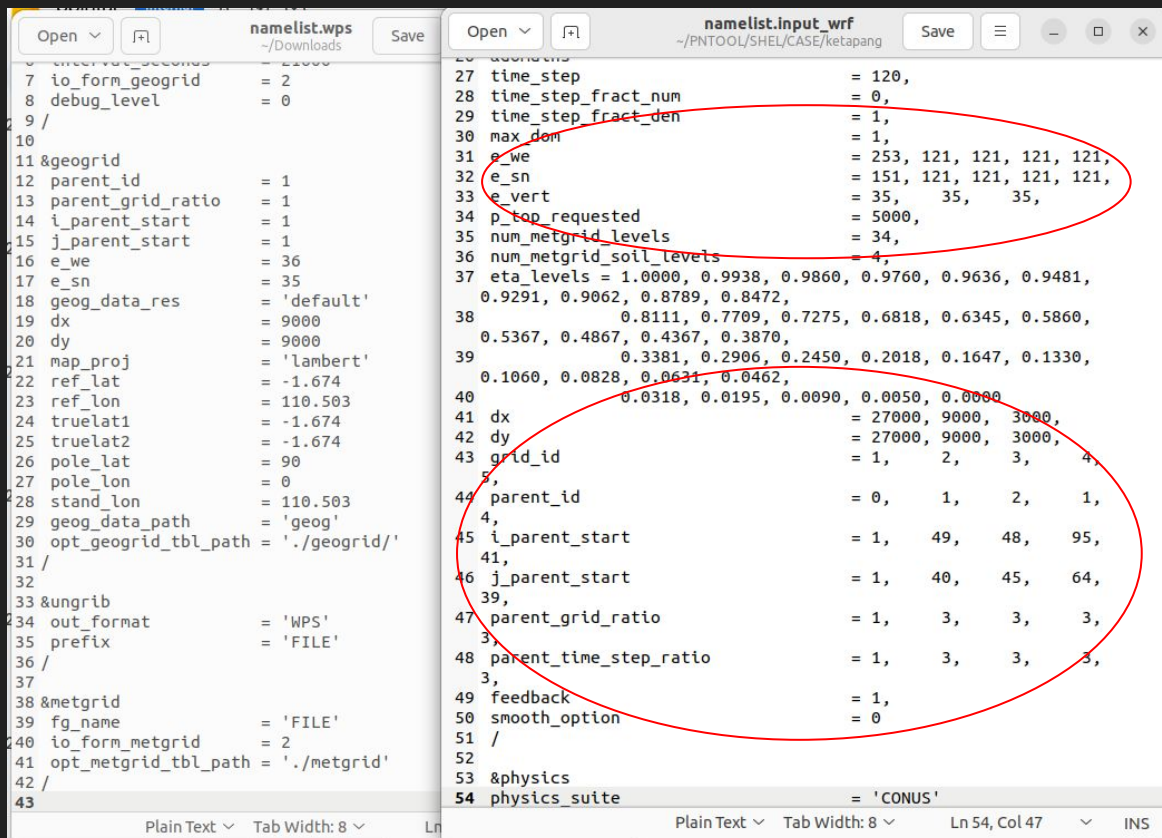
namelist.wps



```
7 io_form_geogrid = 2
8 debug_level = 0
9 /
10
11 &geogrid
12 parent_id = 1
13 parent_grid_ratio = 1
14 i_parent_start = 1
15 j_parent_start = 1
16 e_we = 36
17 e_sn = 35
18 geog_data_res = 'default'
19 dx = 9000
20 dy = 9000
21 map_proj = 'lambert'
22 ref_lat = -1.674
23 ref_lon = 110.503
24 truelat1 = -1.674
25 truelat2 = -1.674
26 pole_lat = 90
27 pole_lon = 0
28 stand_lon = 110.503
29 geog_data_path = 'geog'
30 opt_geogrid_tbl_path = './geogrid/'
31 /
32
33 &ungrib
34 out_format = 'WPS'
35 prefix = 'FILE'
36 /
37
38 &metgrid
39 fg_name = 'FILE'
40 io_form_metgrid = 2
41 opt_metgrid_tbl_path = './metgrid'
42 /
43
```

```
6 interval_seconds = SSSSS
7 io_form_geogrid = 2,
8 /
9
10 &geogrid
11 parent_id = 1, 1, 2, 1, 4,
12 parent_grid_ratio = 1, 3, 3, 3, 3,
13 i_parent_start = 1, 49, 48, 95, 41,
14 j_parent_start = 1, 40, 45, 64, 39,
15 e_we = 253, 121, 121, 121, 121,
16 e_sn = 151, 121, 121, 121, 121,
17 !
18 !!!!!!!!!!!!!!!!!!!!!!!!!!!!! IMPORTANT
19 NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!!!!
20 ! The default datasets used to produce the MAXSNOALB and ALBEDO12M
21 ! fields have changed in WPS v4.0. These fields are now
22 ! interpolated
23 ! from MODIS-based datasets.
24 !
25 ! To match the output given by the default namelist.wps in WPS
26 ! v3.9.1,
27 ! the following setting for geog_data_res may be used:
28 !
29 ! geog_data_res = 'maxsnowalb_ncep+albedo_ncep+default',
30 ! 'maxsnowalb_ncep+albedo_ncep+default',
31 !
32 !!!!!!!!!!!!!!!!!!!!!!!!!!!!! IMPORTANT
33 NOTE !!!!!!!!!!!!!!!!!!!!!!!!!!!!!
34 !
35 geog_data_res = 'default','default',
36 dx = 27000,
37 dy = 27000,
38 map_proj = 'mercator',
39 ref_lat = -2.5,
40 ref_lon = 120.0,
41 truelat1 = -2.5,
42 truelat2 = -2.5,
```

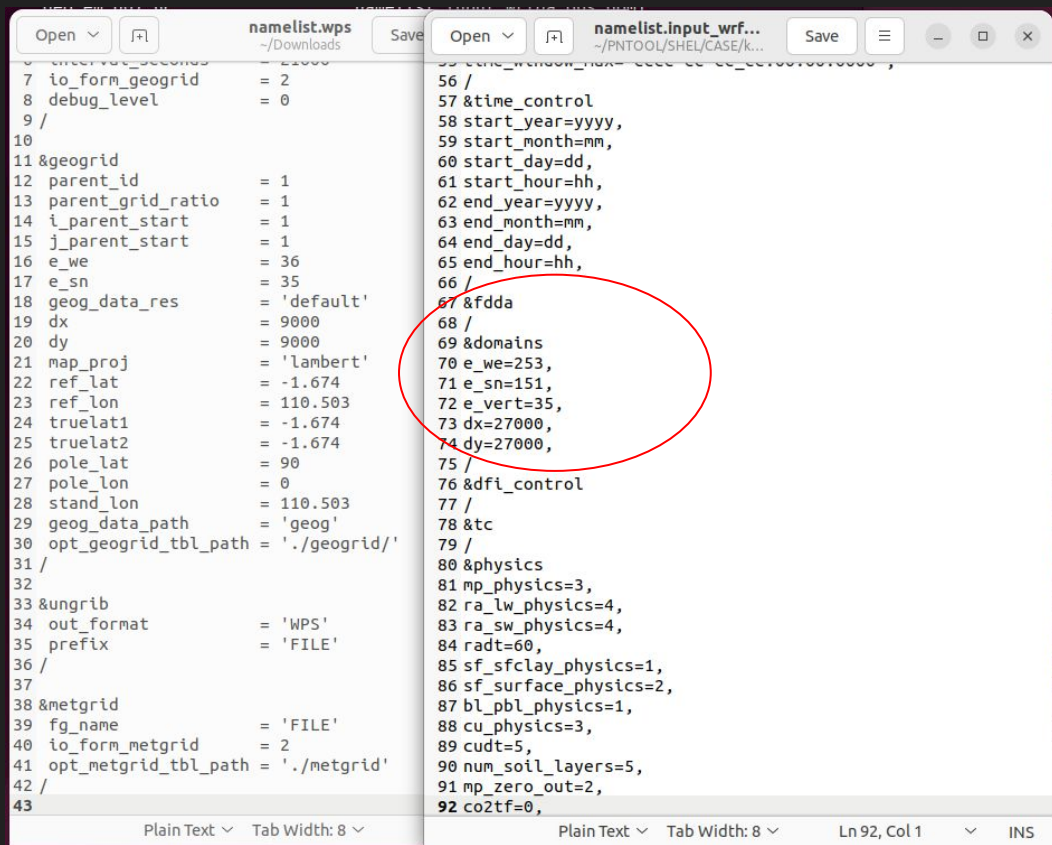
namelist.input_wrf



```
7 io_form_geogrid = 2
8 debug_level = 0
9 /
10
11 &geogrid
12 parent_id = 1
13 parent_grid_ratio = 1
14 i_parent_start = 1
15 j_parent_start = 1
16 e_we = 36
17 e_sn = 35
18 geog_data_res = 'default'
19 dx = 9000
20 dy = 9000
21 map_proj = 'lambert'
22 ref_lat = -1.674
23 ref_lon = 110.503
24 truelat1 = -1.674
25 truelat2 = -1.674
26 pole_lat = 90
27 pole_lon = 0
28 stand_lon = 110.503
29 geog_data_path = 'geog/'
30 opt_geogrid_tbl_path = './geogrid/'
31 /
32
33 &ungrib
34 out_format = 'WPS'
35 prefix = 'FILE'
36 /
37
38 &metgrid
39 fg_name = 'FILE'
40 io_form_metgrid = 2
41 opt_metgrid_tbl_path = './metgrid'
42 /
43
```

```
27 time_step = 120,
28 time_step_fract_num = 0,
29 time_step_fract_den = 1,
30 max_dom = 1,
31 e_we = 253, 121, 121, 121, 121,
32 e_sn = 151, 121, 121, 121, 121,
33 e_vert = 35, 35, 35,
34 p_top_requested = 5000,
35 num_metgrid_levels = 34,
36 num_metgrid_soil_levels = 4,
37 eta_levels = 1.0000, 0.9938, 0.9860, 0.9760, 0.9636, 0.9481,
38 0.9291, 0.9062, 0.8789, 0.8472,
39 0.8111, 0.7709, 0.7275, 0.6818, 0.6345, 0.5860,
40 0.5367, 0.4867, 0.4367, 0.3870,
41 0.3381, 0.2906, 0.2450, 0.2018, 0.1647, 0.1330,
42 0.1060, 0.0828, 0.0631, 0.0462,
43 0.0318, 0.0195, 0.0090, 0.0050, 0.0000
44 dx = 27000, 9000, 3000,
45 dy = 27000, 9000, 3000,
46 grid_id = 1, 2, 3, 4,
47 parent_id = 0, 1, 2, 1,
48 i_parent_start = 1, 49, 48, 95,
49 j_parent_start = 1, 40, 45, 64,
50 parent_grid_ratio = 1, 3, 3, 3,
51 parent_time_step_ratio = 1, 3, 3, 3,
52 feedback = 1,
53 smooth_option = 0
54 /
55 &physics
56 physics_suite = 'CONUS'
```

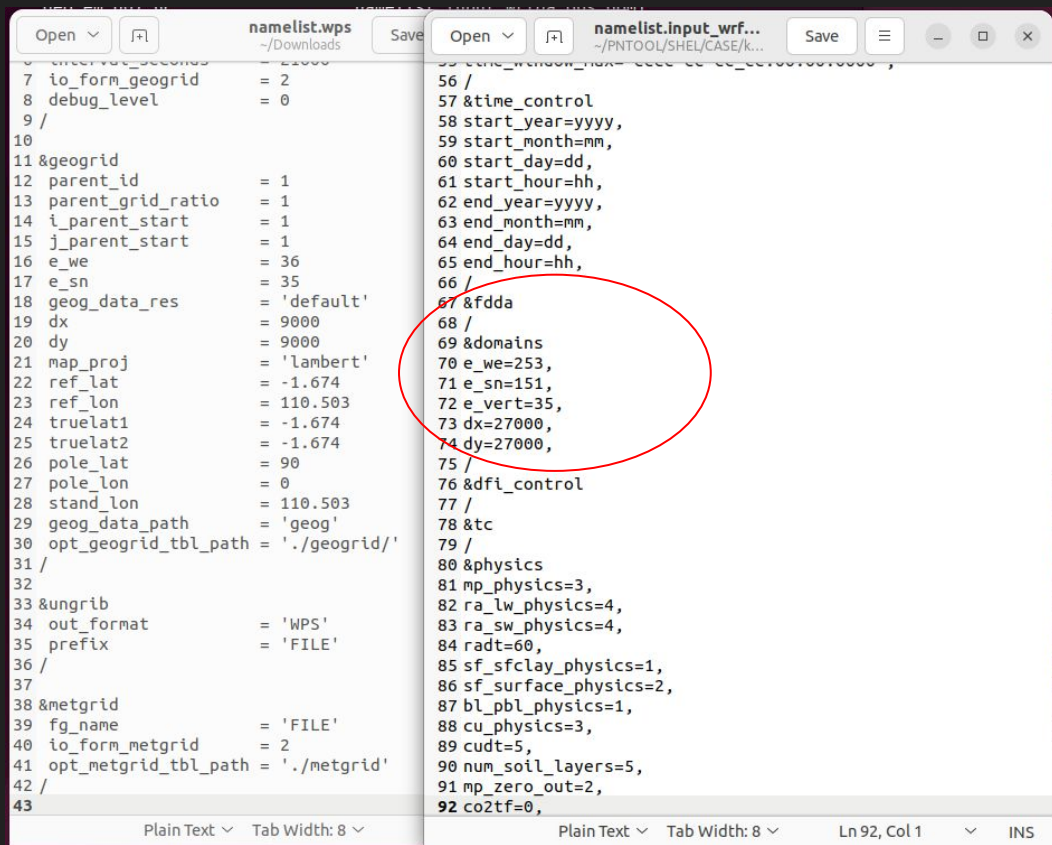
namelist.input_wrda_buf_dom1



```
7 io_form_geogrid = 2
8 debug_level = 0
9 /
10
11 &geogrid
12 parent_id = 1
13 parent_grid_ratio = 1
14 i_parent_start = 1
15 j_parent_start = 1
16 e_we = 36
17 e_sn = 35
18 geog_data_res = 'default'
19 dx = 9000
20 dy = 9000
21 map_proj = 'lambert'
22 ref_lat = -1.674
23 ref_lon = 110.503
24 truelat1 = -1.674
25 truelat2 = -1.674
26 pole_lat = 90
27 pole_lon = 0
28 stand_lon = 110.503
29 geog_data_path = 'geog'
30 opt_geogrid_tbl_path = './geogrid/'
31 /
32
33 &ungrib
34 out_format = 'WPS'
35 prefix = 'FILE'
36 /
37
38 &metgrid
39 fg_name = 'FILE'
40 io_form_metgrid = 2
41 opt_metgrid_tbl_path = './metgrid'
42 /
43
```

```
56 /
57 &time_control
58 start_year=yyyy,
59 start_month=mm,
60 start_day=dd,
61 start_hour=hh,
62 end_year=yyyy,
63 end_month=mm,
64 end_day=dd,
65 end_hour=hh,
66 /
67 &fdda
68 /
69 &domains
70 e_we=253,
71 e_sn=151,
72 e_vert=35,
73 dx=27000,
74 dy=27000,
75 /
76 &dfi_control
77 /
78 &tc
79 /
80 &physics
81 mp_physics=3,
82 ra_lw_physics=4,
83 ra_sw_physics=4,
84 radt=60,
85 sf_sfclay_physics=1,
86 sf_surface_physics=2,
87 bl_pbl_physics=1,
88 cu_physics=3,
89 cudt=5,
90 num_soil_layers=5,
91 mp_zero_out=2,
92 co2tf=0,
```

namelist.input_wrda_obs_dom1



```
namelist.wps
~/Downloads
Open Save
7 io_form_geogrid = 2
8 debug_level = 0
9 /
10
11 &geogrid
12 parent_id = 1
13 parent_grid_ratio = 1
14 i_parent_start = 1
15 j_parent_start = 1
16 e_we = 36
17 e_sn = 35
18 geog_data_res = 'default'
19 dx = 9000
20 dy = 9000
21 map_proj = 'lambert'
22 ref_lat = -1.674
23 ref_lon = 110.503
24 truelat1 = -1.674
25 truelat2 = -1.674
26 pole_lat = 90
27 pole_lon = 0
28 stand_lon = 110.503
29 geog_data_path = 'geog'
30 opt_geogrid_tbl_path = './geogrid/'
31 /
32
33 &ungrib
34 out_format = 'WPS'
35 prefix = 'FILE'
36 /
37
38 &metgrid
39 fg_name = 'FILE'
40 io_form_metgrid = 2
41 opt_metgrid_tbl_path = './metgrid'
42 /
43

namelist.input_wrf...
~/PNT00L/SHEL/CASE/k...
Open Save
56 /
57 &time_control
58 start_year=yyyy,
59 start_month=mm,
60 start_day=dd,
61 start_hour=hh,
62 end_year=yyyy,
63 end_month=mm,
64 end_day=dd,
65 end_hour=hh,
66 /
67 &fdda
68 /
69 &domains
70 e_we=253,
71 e_sn=151,
72 e_vert=35,
73 dx=27000,
74 dy=27000,
75 /
76 &dfi_control
77 /
78 &tc
79 /
80 &physics
81 mp_physics=3,
82 ra_lw_physics=4,
83 ra_sw_physics=4,
84 radt=60,
85 sf_sfclay_physics=1,
86 sf_surface_physics=2,
87 bl_pbl_physics=1,
88 cu_physics=3,
89 cudt=5,
90 num_soil_layers=5,
91 mp_zero_out=2,
92 co2tf=0,
```


namelist.obsproc_wrda_obs_dom1

```
namelist.wps
~/Downloads
Open Save
7 io_form_geogrid = 2
8 debug_level = 0
9 /
10
11 &geogrid
12 parent_id = 1
13 parent_grid_ratio = 1
14 i_parent_start = 1
15 j_parent_start = 1
16 e_we = 36
17 e_sn = 35
18 geog_data_res = 'default'
19 dx = 9000
20 dy = 9000
21 map_proj = 'lambert'
22 ref_lat = -1.674
23 ref_lon = 110.503
24 truelat1 = -1.674
25 truelat2 = -1.674
26 pole_lat = 90
27 pole_lon = 0
28 stand_lon = 110.503
29 geog_data_path = 'geog'
30 opt_geogrid_tbl_path = './geogrid/'
31 /
32
33 &ungrib
34 out_format = 'WPS'
35 prefix = 'FILE'
36 /
37
38 &metgrid
39 fg_name = 'FILE'
40 io_form_metgrid = 2
41 opt_metgrid_tbl_path = './metgrid'
42 /
43

namelist.obsproc_w...
~/PNT00L/SHEL/CASE/k...
Open Save
47 base_strat_temp = 215.0,
48 base_tropo_pres = 20000.0
49 /
50
51 &record7
52 IPROJ = 3,
53 PHIC = -2.5,
54 XLONG = 120.0,
55 TRUELAT1= -2.5,
56 TRUELAT2= -2.5,
57 MOAD_CEN_LAT = -2.5,
58 STANDARD_LON = 120.0,
59 /
60
61 &record8
62 IDD = 1,
63 MAXNES = 1,
64 NESTIX = 253, 200, 136, 181, 211,
65 NESTJX = 151, 200, 181, 196, 211,
66 DIS = 27, 10., 3.3, 1.1, 1.1,
67 NUMC = 1, 1, 2, 3, 4,
68 NESTI = 1, 49, 28, 35, 45,
69 NESTJ = 1, 40, 25, 65, 55,
70 /
71
72 &record9
73 PREPBUFR_OUTPUT_FILENAME = 'prepbufr_output_filename',
74 PREPBUFR_TABLE_FILENAME = 'prepbufr_table_filename',
75 OUTPUT_OB_FORMAT = 2
76 use_for = '3DVAR',
77 num_slots_past = 3,
78 num_slots_ahead = 3,
79 write_synop = .true.,
80 write_ship = .true.,
81 write_metar = .true.,
82 write_buoy = .true.,
83 write_pilot = .true.,
84 write_sound = .true.,
```

References

- https://docs.google.com/document/d/1Agpabjw5fSUD0EH1Fbmt-xdLXp3s0EOJY_SW0CSyxXs/edit
- https://www2.mmm.ucar.edu/wrf/users/docs/user_guide_v4/v4.4/contents.html
- <https://www.ncl.ucar.edu/>
- <https://jiririchter.github.io/WRFDomainWizard/>
- <https://github.com/harphub/harp>

Thank You