

Installation of or Conversion to WRFV3

1. Decide on a BASEDIR, and make the directory if necessary.

```
mkdir /path/to/yourBaseDir
```

It is strongly recommended that you do *not* use an old directory used with WRFV2

2. Export BASEDIR. I suggest adding this to ~/.bashrc as *everything* depends on it.

```
export BASEDIR=yourBaseDir
```

3. Ensure that \$BASEDIR/bin is in your PATH

```
export PATH+=:$BASEDIR/bin
```

4. Make sure you have enough space: Note that the unpacked geog is 16GiB! But see the notes at the end.

5. Untar raspGM.tgz, raspGM-bin.tgz, geog.tar.gz and rangs.tgz in \$BASEDIR

```
cd $BASEDIR
```

```
tar xzf raspGM.tgz
```

```
tar xzf raspGM-bin.tgz
```

```
tar xzf geog.tar.gz
```

```
tar xzf rangs.tgz
```

You should have at least

bin	GM	HTML	rasp.site.parameters	lib
region.TEMPLATE			rasp.site.runenvironment	RUN.TABLES

6. Examine \$BASEDIR/rasp.site.runenvironment. If you have an old version, amend the new copy in the light of this. If you already have the “rangs” database, adjust as necessary. Otherwise you should untar rangs.tgz in \$BASEDIR/lib.

Note also the flag for “CURR_ONLY”. If true, files produced for a run for REGIONXYZ+1 yield files named *param.curr.HHMM1st.d2...* and not *param.curr+1.HHMM1st.d2...*

7. Examine rasp.site.parameters in the light of your old rasp.site.parameters, if you have this. Note the addition of \$PROXY for curl; uncomment / adjust as necessary.
8. If you are doing a first-time installation, Go the the very last page and continue from there.

If you are converting from a working WRFV2 installation, continue with the steps below.

9. Copy the whole of region.TEMPLATE to REGIONXYZ

```
cp -a region.template REGIONXYZ
```

10. Copy your old wrfsi.nl for REGIONXYZ to \$BASEDIR/REGIONXYZ

11. In directory REGIONXYZ, run **wrfsi2wps.pl** to make a new

```
namelist.wps.template
cd REGIONXYZ
wrfsi2wps.pl
```

12. You may need to adjust wrfsi.nl – it tells you what to do. If you change wrfsi.nl, you will also need to copy it to your website if your website uses the cgi-bin utilities ij2latlon.PL or latlon2 ij.PL

13. Run **plotgrids**. This is only a confirmation that your region is what you expect; it is non critical if it should fail.

Ensure that the white line encloses your area of interest, and remember that there must be a five point region inside the white line for RASP, so it needs to be bigger than the actual area of interest – how much bigger depends on the resolution. If change is needed, adjust wrfsi.nl and return to Step 10. You *can* adjust namelist.wps.template, but this is not recommended as it may result in complaints from plotgrids, and you may need an accurate wrfsi.nl for your website.

14. Update namelist.input.template to your new namelist.wps.template by running **wps2input.pl** This also creates namelist.wps for you (needed by geogrid.exe).

15. Run **geogrid.exe** and check that it finishes with

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!   Successful completion of geogrid.           !
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

If there is a problem, also check geogrid.log

16. Copy your old **rasp.run.parameters.REGIONXYZ** to directory REGIONXYZ

17. Copy your old **rasp.region_data.ncl** (AKA **rasp.ncl.region.data**) and **rasp.site_load*.ncl** files from your old NCL (or GM) directory to \$BASEDIR/GM You may wish to also save the old files as examples to help with your mods.

18. There is now a single library for ncl entitled **ncl_jack_fortran.so** which is in \$BASEDIR/GM/LIB

If you insist on running a 32-bit version of ncl, copy DrJack's **ncl_jack_fortran.so** and **wrf_user_fortran_util_0.so** to \$BASEDIR/GM/LIB

19. Run the program(!): do

```
runGM REGIONXYZ &
```

Note that you do not need to run this in the REGIONXYZ directory

Check progress with

```
tail -f $BASEDIR/REGIONXYZ/LOG/GM.printout
```

NOTES:

- The directory stucture has changed *completely*:

All executables are now in are now in \$BASEDIR/bin (although GM.pl is still copied to \$BASEDIR/REGIONXYZ from \$BASEDIR/bin/GM-master.pl)

Everything related to REGIONXYZ is now in \$BASEDIR/REGIONXYZ

- GM.{printout,stdout,stderr} are in \$BASEDIR/REGIONXYZ/LOG
 - GRIB files are in \$BASEDIR/REGIONXYZ/GRIB
 - All NCL logfiles are also in \$BASEDIR/REGIONXYZ/LOG
 - All HTML output is in \$BASEDIR/REGIONXYZ/HTML This is a link to \$BASEDIR/HTML, which might also be a link (say to /var/www/html).
 - The OUT directory (in \$BASEDIR/REGIONXYZ) no longer has a REGIONXYZ subdirectory
- You will need a bucketload of OS-supplied utilities, but runGM checks for them. Be aware that the code requires ncl V6. If you have compiled this and/or it is installed in a non-standard place (e.g. /opt/bin), make sure that this is in your \$PATH.
 - This code does not do Windowed runs, nor Threaded runs.
 - You need the “geog” database *only* if you are building a domain, specifically if you are going to run geogrid.exe. If you have, in \$BASEDIR/REGIONXYZ, the following files in **bold**, *appropriate for your region*, you do not need it:

geo_em.d01.nc	namelist.wps
geo_em.d02.nc	namelist.input.template
geogrid.log	namelist.input
wps_show_dom.png	namelist.input.template
wrfsl.nl	

The non-bold files are optional, but recommended. Note that you can prepare these files on another machine, and ship them to a “production” machine.

- This V3.6.1 setup uses “adaptive time_step” for wrf.exe. Tests have indicated that the “fully automatic” mode can sometimes crash. The scripts provide a namelist.input.template that limits time_step to 10*dx where dx is the domain grid resolution in km. If you still get crashes, you can revert to a manual time_step setting (set use_adaptive_time_step to “.false” and adjust the value of time_step). Alternatively you can adjust max_time_step.

You may need to read

http://www2.mmm.ucar.edu/wrf/users/docs/user_guide_V3/users_guide_chap5.htm#adaptive (and understand it!) Search also for “adaptive time step” when viewing that page.

- This version supports ETA and GFSN (0.5 degree resolution only) and GFSA (at 0.25 degree resolution, with all 48 levels – i.e. the main parameters and the additional parameters). GFSA is **highly recommended** for use outside the USA.

Installation Testing

If you are doing a first time installation, it is strongly recommended that you test the setup with a known working Region. There are two cases:

If you are in the US, you should test using the PANOCHE region. This uses ETA initialisation data, which has better resolution than GFS. Ship PANOCHE.tgz and unpack in \$BASEDIR

If you are not in the US, ship Ukregions.tgz and unpack in \$BASEDIR. I suggest running UK12 as it is the quickest to run (and it's only a test!).