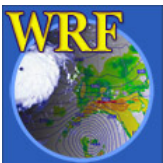
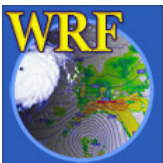

ARW Tutorial Summary

Wei Wang



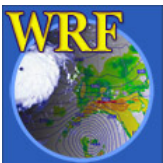
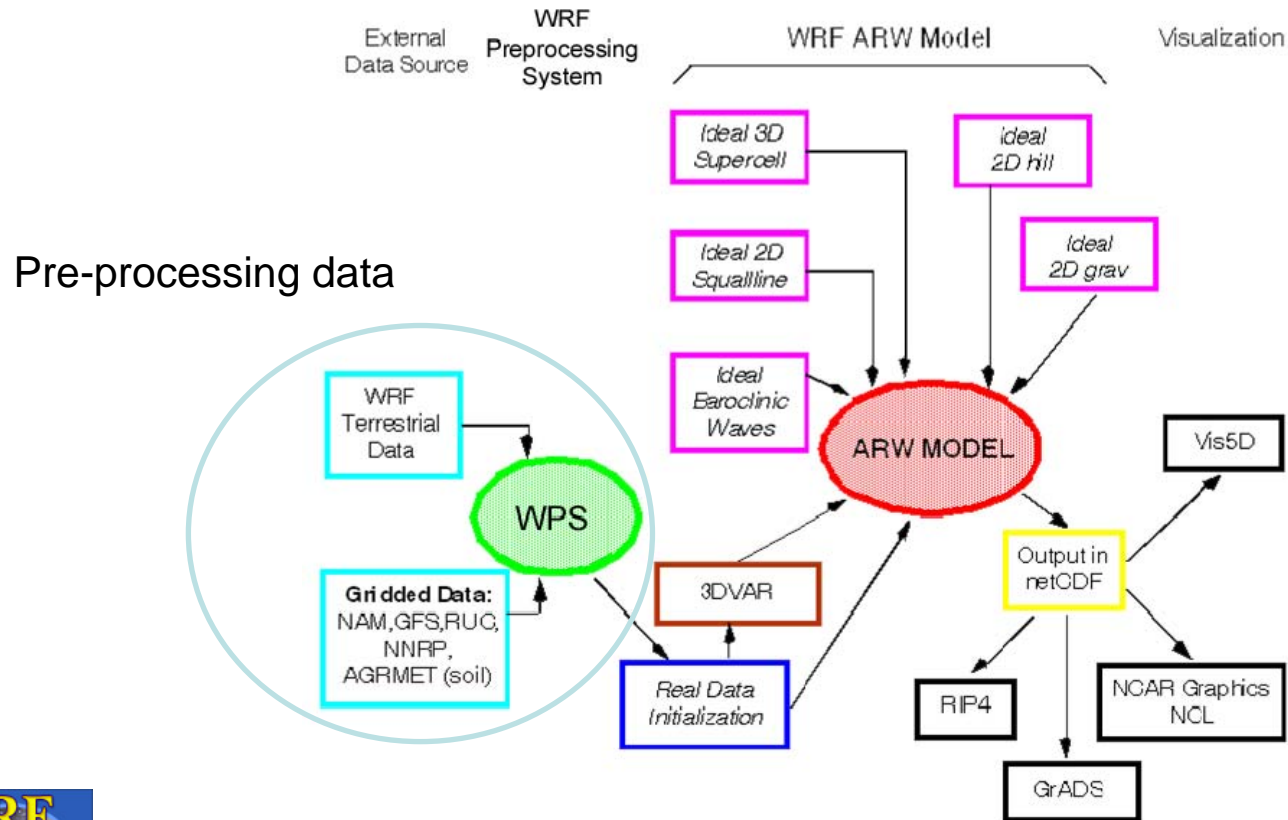
Before you start..

- Make sure you have
 - Fortran 90/95 compile
 - C and/or gcc compiler
 - Perl
 - netCDF and mpich installed using the same compiler for ARW software
 - Appropriate software library for graphics



ARW Modeling System Flowchart

WRF ARW Modeling System Flow Chart (for WRFV2)



WPS Program Summary

WPS Program Components

- Configure domains
- Obtain static fields

geogrid

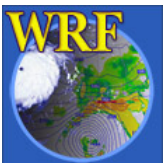
ungrid

- Degrib meteo data

metgrid

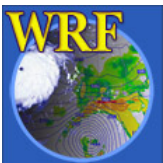
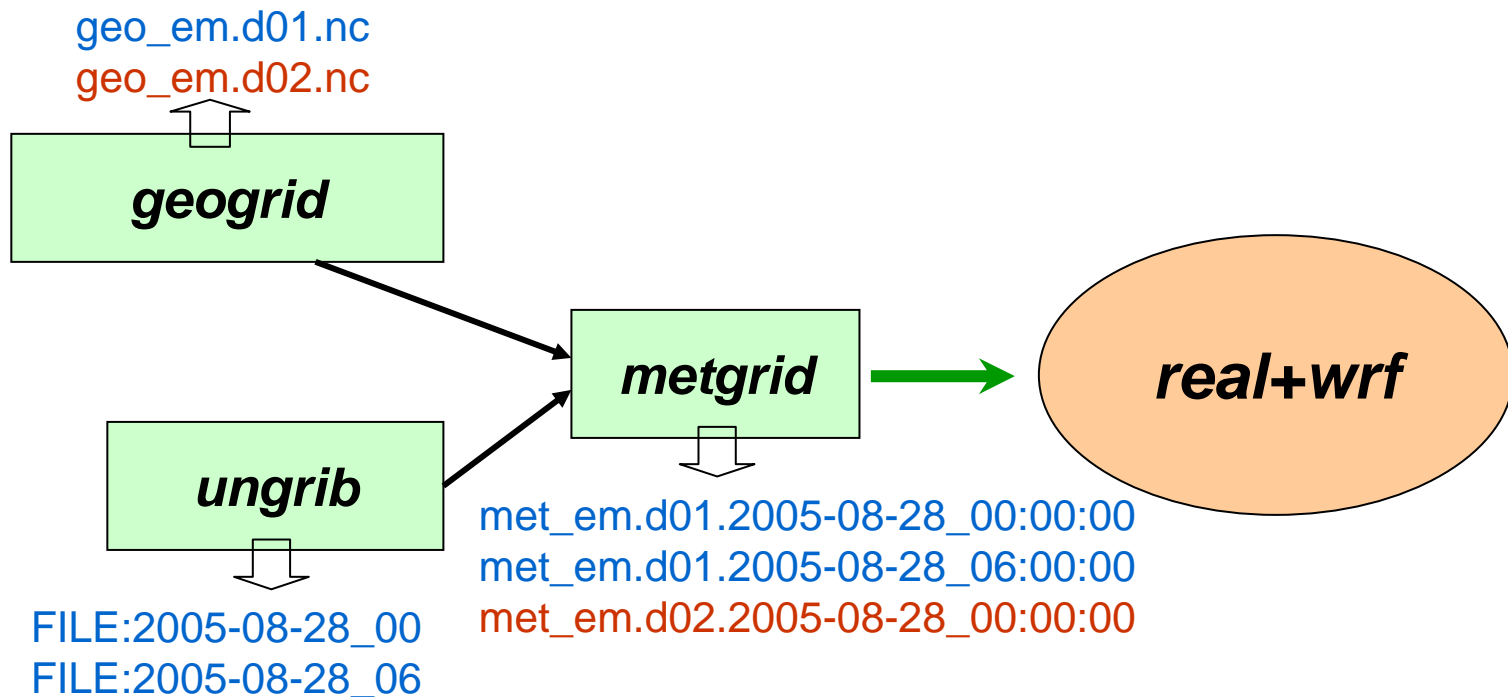
Horizontally interpolate
degribed data to ARW
domains

real+wrf



WPS Program Summary

WPS Program Components and outputs



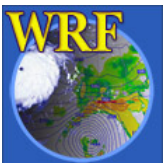
To install *WPS*

- **Type** `configure` in `WPS/` to create `configure.wps`
- **Type** `compile >& compile.out` to install
- **Check** `compile.out` for possible compile errors
- **Check for executables** (`*.exe`) in `WPS/` :
 - `geogrid.exe`
 - `ungrib.exe`
 - `metgrid.exe`



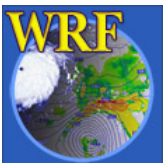
To run *geogrid*

- Edit namelist: `WPS/namelist.wps`
- Run geogrid by typing `geogrid.exe`
- Look for output in `WPS/:`
`geo_em.d01.nc`, `geo_em.d02.nc`, ...
and `geogrid.log`



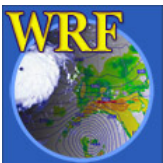
To run *ungrib*

- Edit namelist: `WPS/namelist.wps`
- Locate your external met data, and use `link_grib.csh` to link those files to `WPS/`
- Look for output in `WPS/` with file names like `FILE:{date_string}`



To run *metgrid*

- **Edit namelist:** `WPS/namelist.wps`
- **Look for output in** `WPS/:`
 - `met_em.d01.{date_string}`
 - `met_em.d02.{date_string}`
- **Standard output in**
`WPS/metgrid.log`



Resources

- Will be available on the web:

<http://www.mmm.ucar.edu/wrf/users/>

- User's Guide

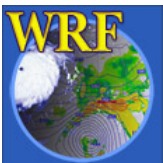
- In the WPS directory: README

- Free data on the web:

<http://www.mmm.ucar.edu/wrf/users/>

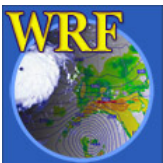
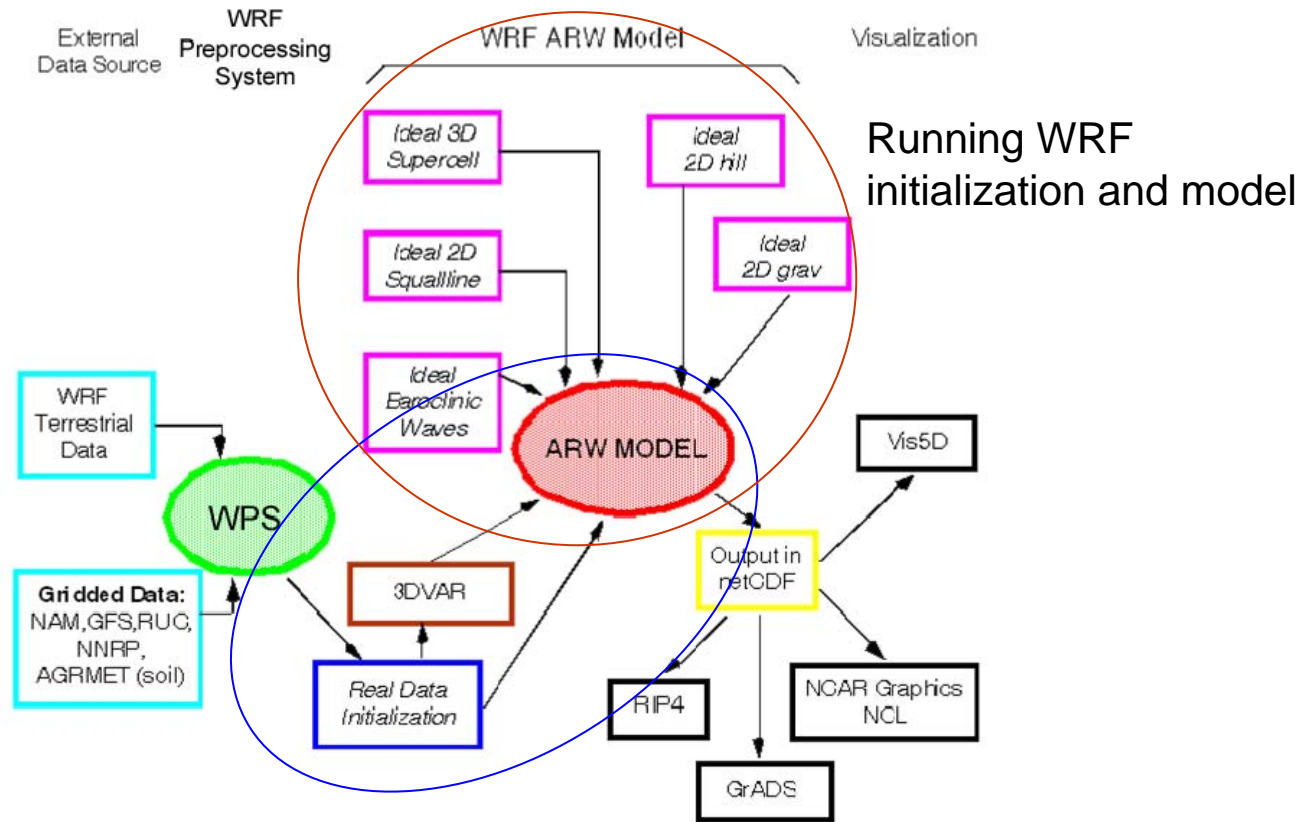
- Intermediate file format:

Future user's guide



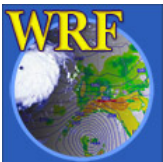
ARW Modeling System Flowchart

WRF ARW Modeling System Flow Chart (for WRFV2)



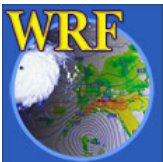
To compile an *idealized* case

- Type `./configure` in `WRFV2/`
- Choose an option
- Edit `configure.wrf`, if necessary
- Type `./compile` to see all options
- Type this to compile one of them:
`./compile em_b_wave >& logfile`
- Check directory `main/` for `wrf.exe` and `ideal.exe`



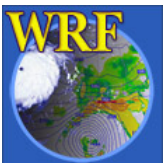
To run an *idealized* case

- cd to `./test/em_b_wave`
- Edit `namelist.input`
- Type this to create `wrfinput_d01:`
`./ideal.exe`
- Type this to run the model:
`./wrf.exe` **Or**
`mpirun -np N wrf.exe`



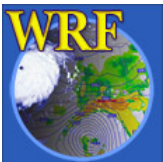
To compile *real* case

- Type `./configure` in `WRFV2/`
- Choose an option
- Edit `configure.wrf`, if necessary
- Type this to compile:
`./compile em_real >& logfile`
- Check directory `main/` for `wrf.exe`
and `real.exe`



To run a *real data* case

- cd to `./test/em_real`
- **Edit** `namelist.input`
- **Type this to create** `wrfinput_d01` and `wrfbdy_d01`:
`./real.exe`
- **Type this to run the model:**
`./wrf.exe` or
`mpirun -np N wrf.exe`



Check output

- Type

```
tail wrf.out or  
tail rsl.out.0000
```

- Type

```
ncdump -v Times \  
wrfout_d01_{date_string}
```

- Make plots

- Compare with data



Resources

- On the web:

<http://www.mmm.ucar.edu/wrf/users/>

- In the WRFV2 directory: README and run/README.namelist

Complete listing: Registry.EM

and look for 'namelist-'

- Other documents on the web:

<http://www.mmm.ucar.edu/wrf/users/>

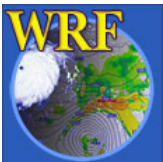


Resources

- Registry.EM file:

http://www.mmm.ucar.edu/wrf/WG2/software_2.0/index.html

- Learn what other available namelists are
- Learn how to add an existing variable to history output file
- Learn how to add a variable to the source code



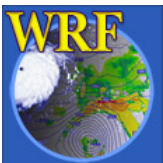
Resources

- Learn what other scientists have done:

<http://www.mmm.ucar.edu/wrf/users/supports/workshop.html>

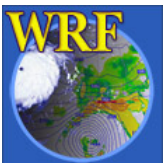
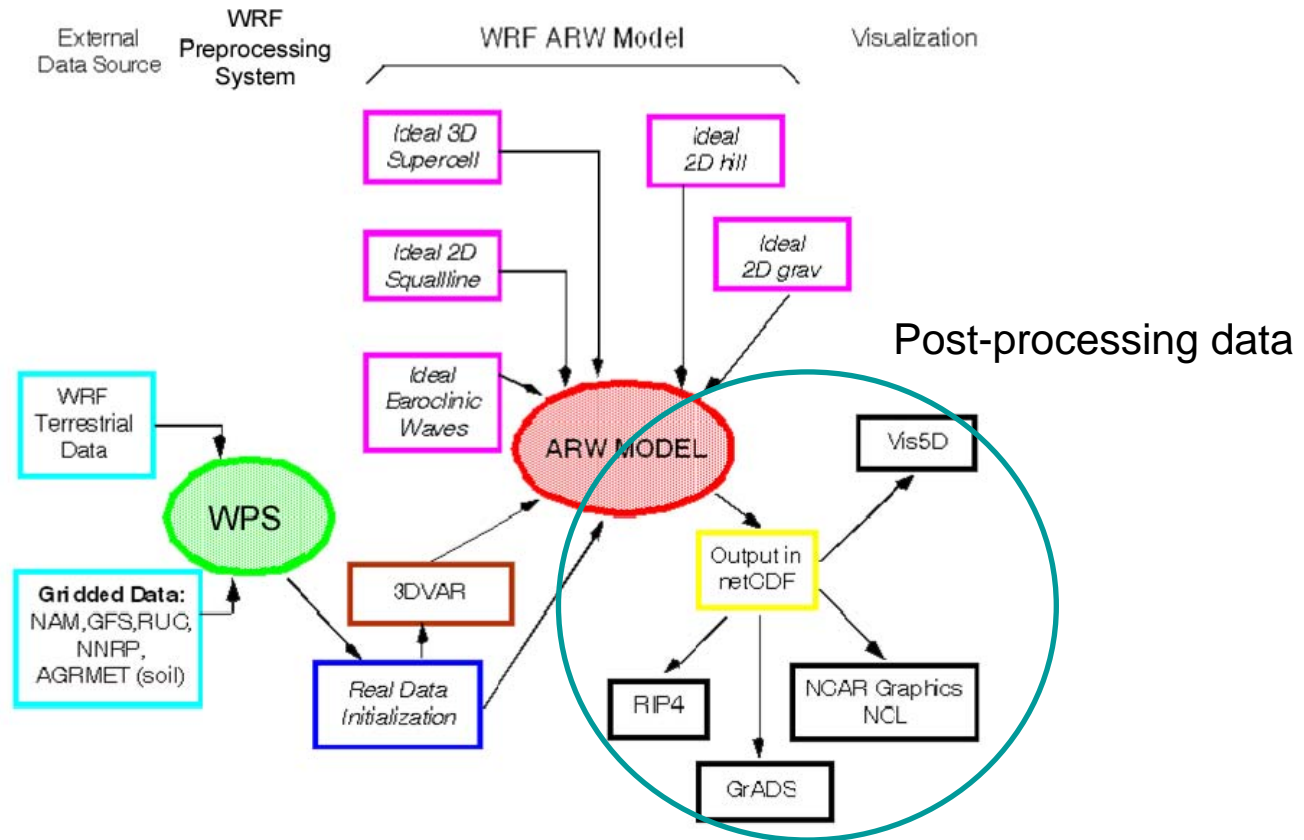
- Find real-time forecast online:

<http://www.wrf-model.org/plots/wrfrealtime.php>



ARW Modeling System Flowchart

WRF ARW Modeling System Flow Chart (for WRFV2)



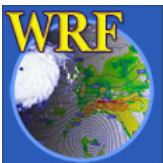
Resources

- Utility programs:

<http://www.mmm.ucar.edu/wrf/users/utilities/util.htm>

- Graphics programs:

<http://www.mmm.ucar.edu/wrf/users/graphics/WRF-post-processing.htm>



Resources

- wrfhelp desk:

wrfhelp@ucar.edu

- User Forum:

http://tornado.meso.com/wrf_forum/

