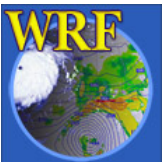
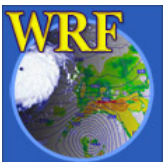

ARW Tutorial Summary

Wei Wang



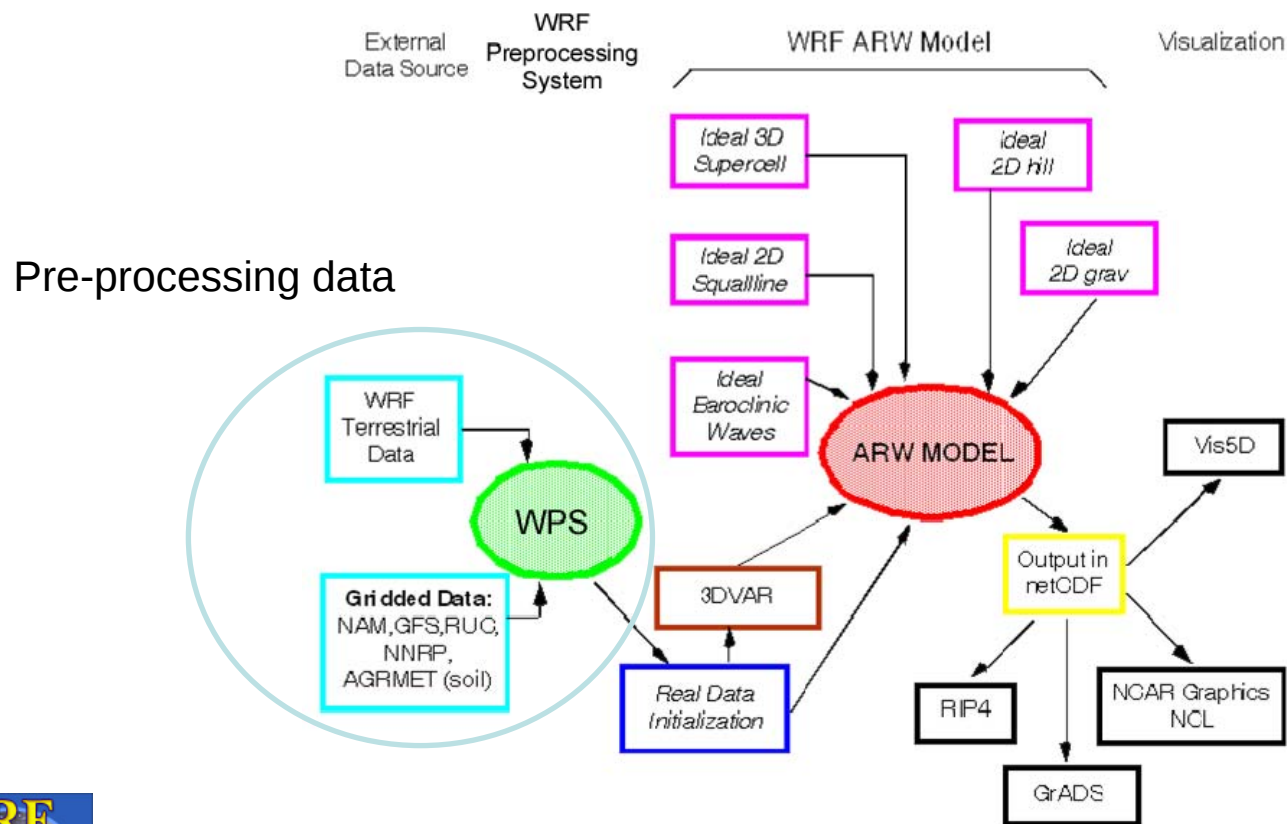
Before you start..

- 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

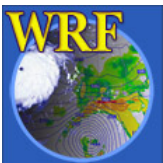
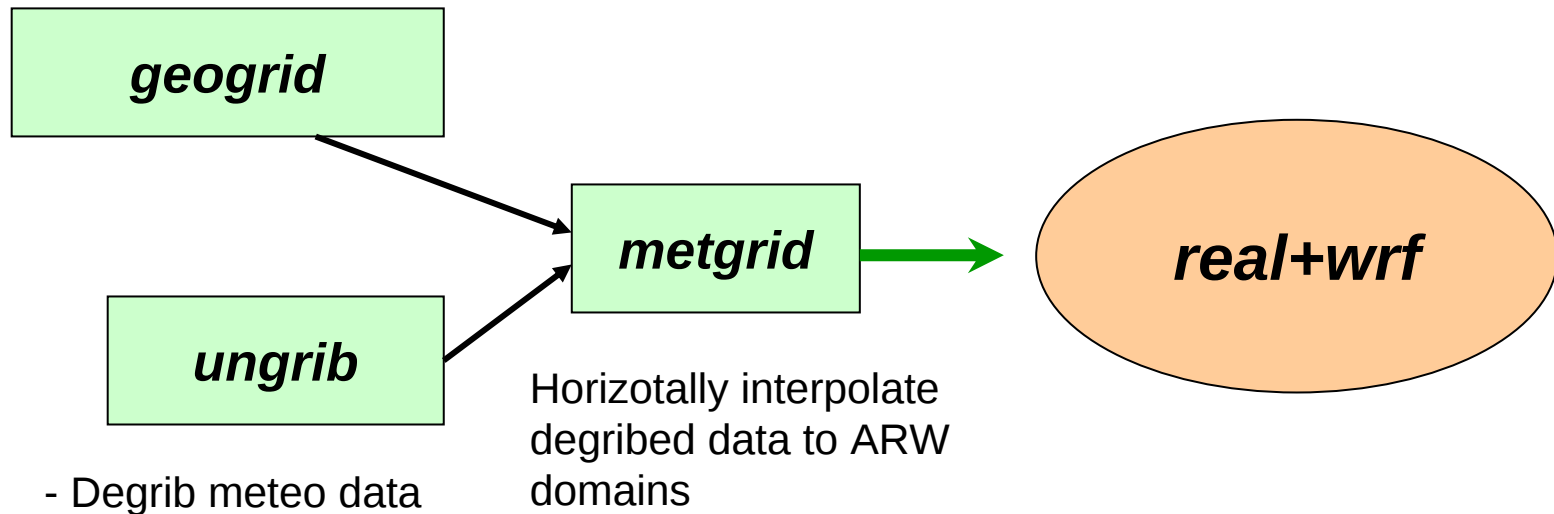
WRF ARW Modeling System Flow Chart (for WRFV2)



WPS Program Summary

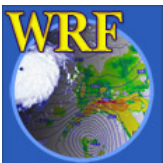
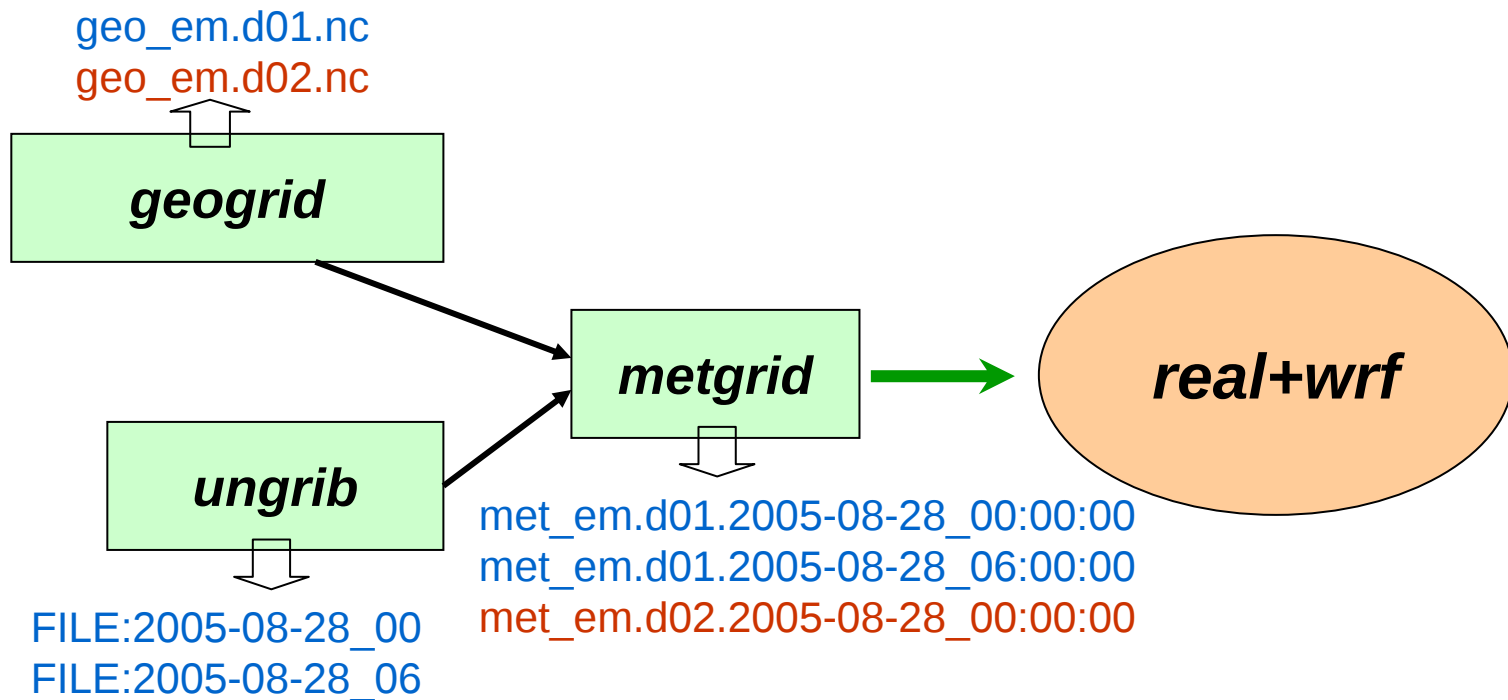
WPS Program Components

- Configure domains
- Obtain static fields



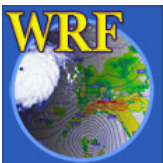
WPS Program Summary

WPS Program Components and outputs



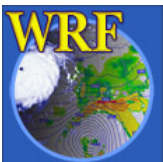
To install *WPS*

- Type `configure` in `WPS/` directory 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`



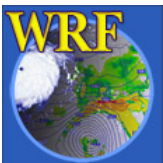
To run *geogrid*

- Download static data
- Edit namelist: `WPS/namelist.wps`
- Run *geogrid* by typing `geogrid.exe`
(or `mpirun -np N geogrid.exe`, if
the code is compiled with MPI)
- Look for output in `WPS/`:
`geo_em.d01.nc`, `geo_em.d02.nc`, ...
and `geogrid.log`



To run *ungrib*

- Edit namelist: `WPS/namelist.wps` - time information is important
- Locate your external met data, and use `link_grib.csh` to link those files to `WPS/` directory
- Type `./ungrib.exe` to run
- Look for output in `WPS/` with file names like `FILE:{date_string}`. Remember you can define the file prefixes



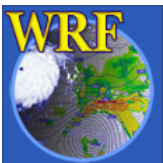
To run *metgrid*

- Edit namelist: `WPS/namelist.wps`
- Type `./metgrid.exe` to run (or `mpirun -np N metgrid.exe` if the code is compiled with MPI)
- Look for output in `WPS/` :
 - `met_em.d01.{date_string}`
 - `met_em.d02.{date_string}`
- Standard output in `metgrid.log`



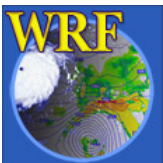
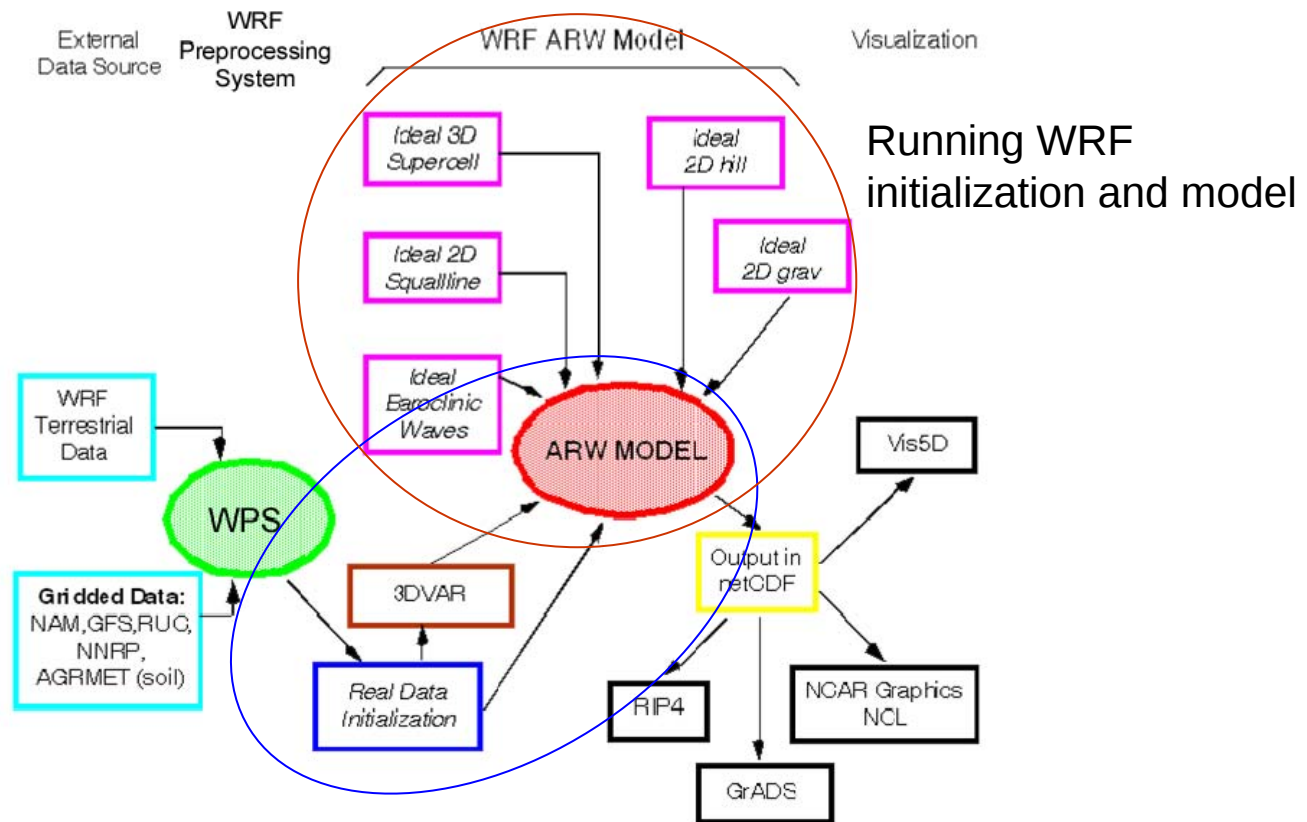
Resources

- On the web, User's Guide from <http://www.mmm.ucar.edu/wrf/users/>
- In the WPS directory: README
- Free data on the web: <http://www.mmm.ucar.edu/wrf/users/>
- Intermediate file format: described in User's Guide



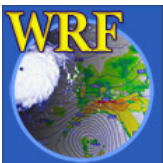
ARW Modeling System Flowchart

WRF ARW Modeling System Flow Chart (for WRFV2)



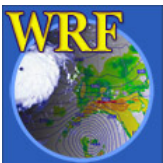
To compile an *idealized* case

- Type `./configure` in `WRFV2/`
- Choose an option
- Edit `configure.wrf`, if necessary
- Type `./compile` to see all options
- Choose a test case, and compile, e.g.
`./compile em_b_wave >& compile.log`
- Check directory `main/` for `wrf.exe` and `ideal.exe`



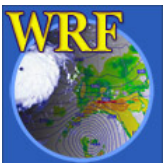
To run an *idealized* case

- cd to `./test/em_b_wave`
- Edit `namelist.input`
- Run the initialization program by typing
`./ideal.exe`
to create `wrfinput_d01`
- Type this to run the model:
`./wrf.exe` or
`mpirun -np N wrf.exe`



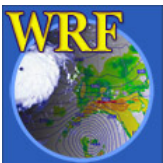
To compile for a *real-date* case

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



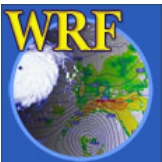
To run an *real-data* case

- cd to `./test/em_real`
- Edit `namelist.input`
- Run the initialization program by typing
`./real.exe`
to create `wrfinput_d01`, `wrfbdy_d01`
- 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/>

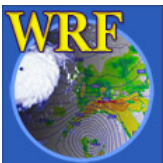
- In the WRFV2 directory: README and run/README.namelist

Complete listing: Registry.EM, and registry.io_boilerplate

and look for 'namelist'

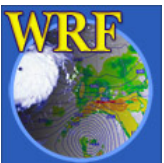
- Other documents on the web:

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



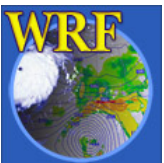
Resources

- 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



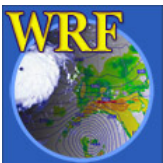
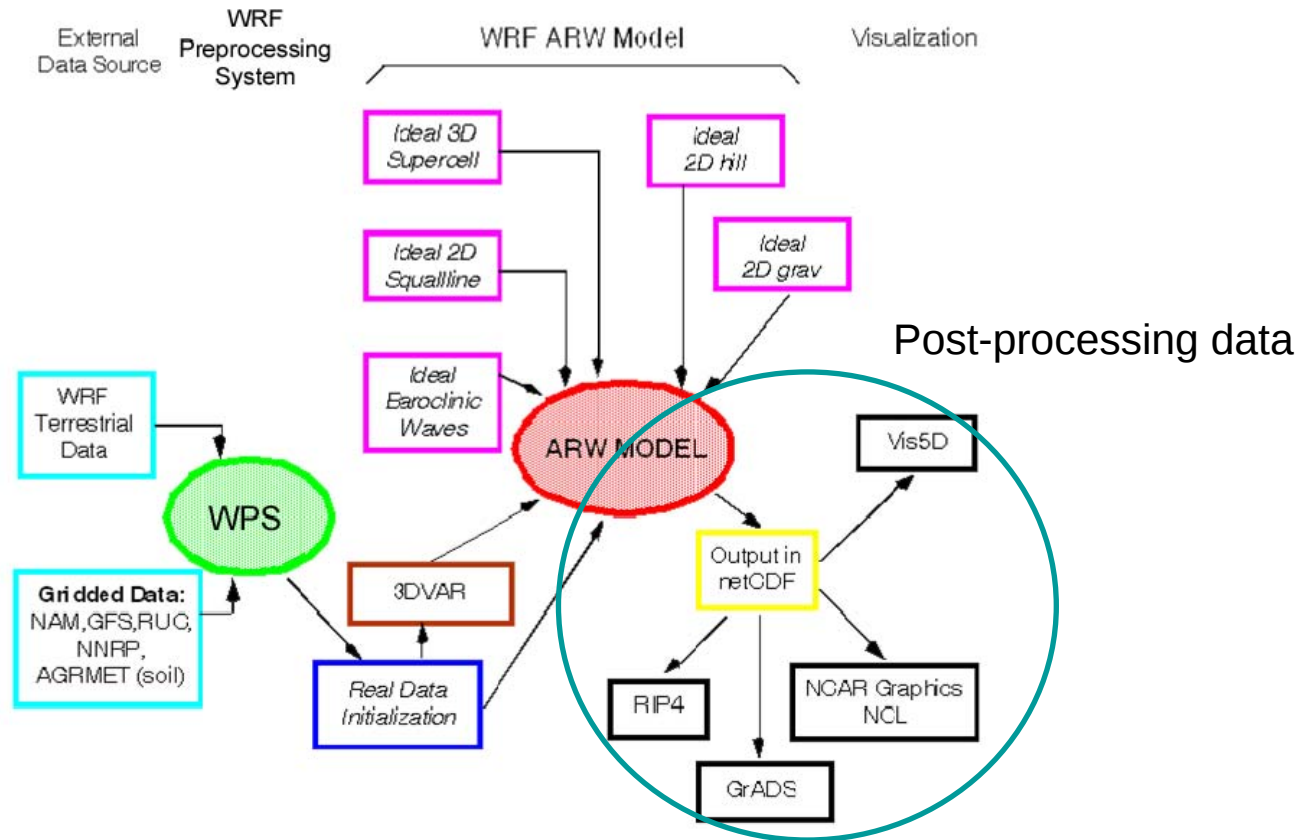
Resources

- 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>

- WPS GUI:

<http://www.wrfportal.org/DomainWizard.html>



Resources

- wrfhelp desk:

wrfhelp@ucar.edu

- User Forum:

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

