

WRF & WPS: COMPILATION PROCESS

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INSTALLING STEPS

- ***Check system requirements***
- Installing libraries
- Obtain source code
- Compile WRF
- Compile WPS
- Download static geographical data & initial/BC datasets

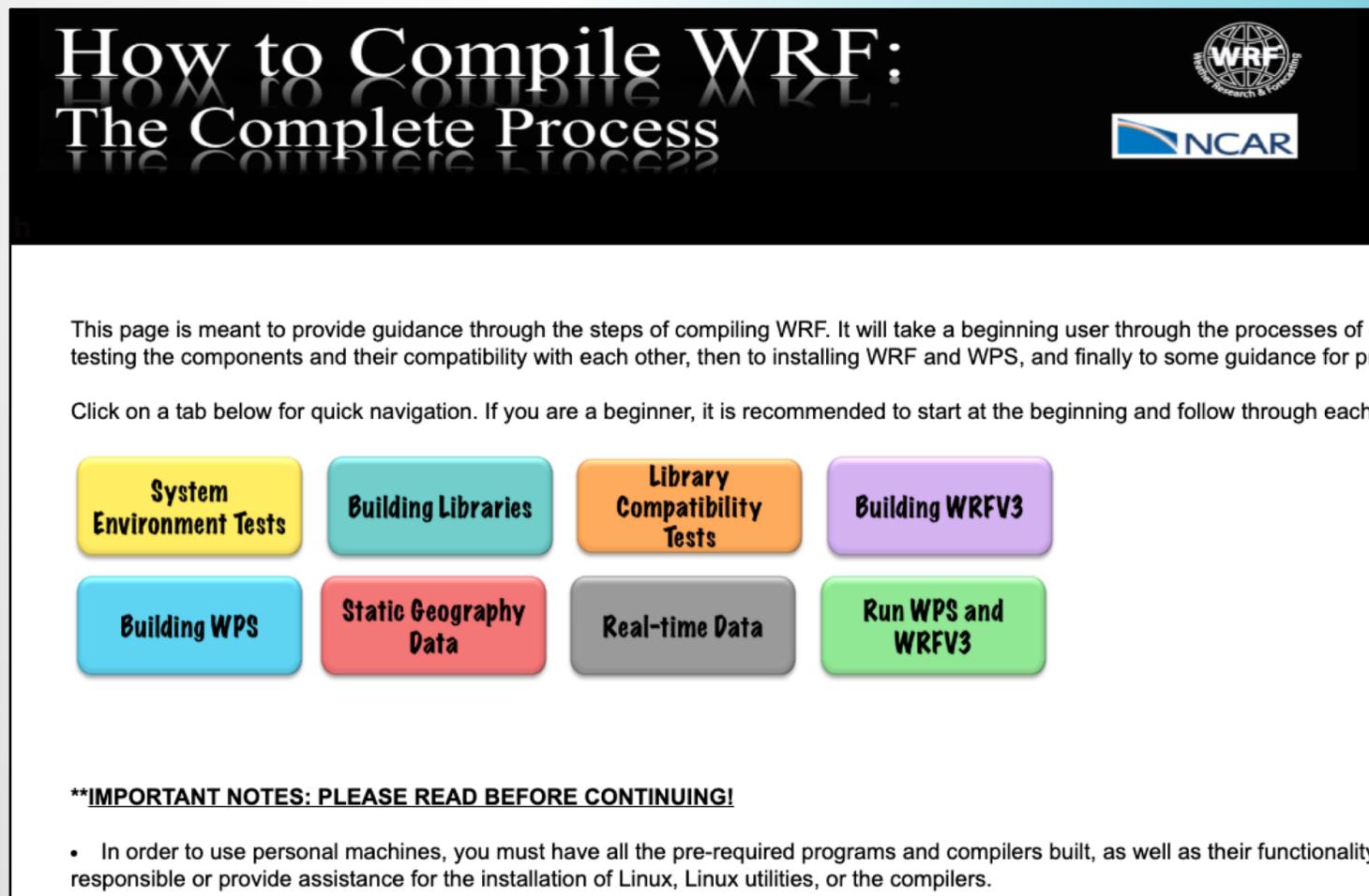
SYSTEM REQUIREMENTS

- On what kinds of systems will WRF run?
 - Generally any 32- or 64-bit hardware, running a UNIX-like operating system
 - You may also use dual-booting into a UNIX-like OS (e.g., Windows with Linux built parallel)
- Examples of acceptable systems:
 - Laptops, desktops, and clusters running Linux
 - Laptops and desktops running MacOS
 - Clusters running Unix-like: Linux, AIX

CHECK SYSTEM REQUIREMENTS

- Webpage:

http://www2.mmm.ucar.edu/wrf/OnLineTutorial/compilation_tutorial.php



How to Compile WRF: The Complete Process



This page is meant to provide guidance through the steps of compiling WRF. It will take a beginning user through the processes of testing the components and their compatibility with each other, then to installing WRF and WPS, and finally to some guidance for production runs.

Click on a tab below for quick navigation. If you are a beginner, it is recommended to start at the beginning and follow through each step.

System Environment Tests	Building Libraries	Library Compatibility Tests	Building WRFV3
Building WPS	Static Geography Data	Real-time Data	Run WPS and WRFV3

****IMPORTANT NOTES: PLEASE READ BEFORE CONTINUING!**

- In order to use personal machines, you must have all the pre-required programs and compilers built, as well as their functionality tested. We can provide assistance for the installation of Linux, Linux utilities, or the compilers.

CHECK SYSTEM REQUIREMENTS

- It is mandatory to have a Fortran (e.g., gfortran) compiler, a C compiler, and cpp on your system. To test whether these exist on your system, type:

- `which gfortran`

- `which cpp`

- `which gcc`

- *If installed, you will be given a path for each*

- Fortran compiler should be a version that supports Fortran2003 standard (at least v4.6)

- Check this by typing (csh e.g.):

```
gcc --version
```

- Tests available for checking that your fortran compiler is built properly, and that it is compatible with the C compiler.

System Environment Tests

1. First and foremost, it is very important to have a gfortran compiler, as well as gcc and cpp. To test whether these exist on the system, type the following:

```
◦ which gfortran
◦ which cpp
◦ which gcc
```

If you have these installed, you should be given a path for the location of each.

We recommend using a Fortran compiler that supports Fortran2003 standard (version 4.6 or later). To determine the version of gfortran you have, type:

```
gcc --version
```

2. Create a new, clean directory called `Build_WRF`, and another one called `TESTS`.

3. There are a few simple tests that can be run to verify that the fortran compiler is built properly, and that it is compatible with the C compiler.

NOTE: If any of these tests fail, you will need to contact the systems administrator at your institution for help, as these are specific to your particular environment, and we do not have the resources to support these types of errors.

Below is a tar file that contains the tests. Download the tar file and place it in the `TESTS` directory.

[Fortran and C Tests Tar File](#)

To unpack the tar file, type:

```
tar -xf Fortran_C_tests.tar
```

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INSTALLING LIBRARIES

- NetCDF (needed by WRF and WPS)
 - netCDF Version 3 or 4
 - If using netCDF4 capabilities
http://www2.mmm.ucar.edu/wrf/users/building_netcdf4.html
- Optional libraries for GRIB2 meteorological data support
 - JasPer (JPEG 2000 “lossy” compression library)
 - PNG (“lossless” compression library)
 - Zlib (compression library used by PNG)
- Optional MPI library (for building in parallel):
 - E.g., MPICH2 or OpenMPI

INSTALLING LIBRARIES

- Installation of these libraries (MPICH2, NetCDF, JasPer, zlib, and libpng) is NOT part of the WPS and WRF installation scripts
- Downloads for the libraries, with installation instructions, and library compatibility tests are also included on the compilation website
- **VERY IMPORTANT!**
Make sure these libraries are installed using the same compilers as will be used to install WRF and WPS

BEFORE INSTALLING LIBRARIES: SET ENVIRONMENT VARIABLES

- > `setenv DIR directory-where-your-tar-files-are`
- > `setenv CC gcc`
- > `setenv CXX g++`
- > `setenv FC gfortran`
- > `setenv FCFLAGS -m64 # FCFLAGS may be needed on some systems`
- > `setenv F77 gfortran`
- > `setenv FFLAGS -m64 # FFLAGS may be needed on some systems`
- > `setenv JASPERLIB $DIR/grib2/lib`
- > `setenv JASPERINC $DIR/grib2/include`
- > `setenv LDFLAGS -L$DIR/grib2/lib`
- > `setenv CPPFLAGS -I$DIR/grib2/include`

****Keep these set until all libraries are built****

INSTALLING LIBRARIES: NETCDF

```
> tar xzvf netcdf-4.1.3.tar.gz      # no '.gz' if downloaded to
                                     # most Macs

> cd netcdf-4.1.3

> ./configure --prefix=$DIR/netcdf --disable-dap \
--disable-netcdf-4 --disable-shared

> make

> make install

> setenv PATH $DIR/netcdf/bin:$PATH

> setenv NETCDF $DIR/netcdf

> cd ..
```

INSTALLING LIBRARIES: MPICH2

In principle, any implementation of the MPI-2 standard should work with WRF; however, we have the most experience with MPICH

```
> tar xzvf mpich-3.0.4.tar.gz      # no '.gz' if downloaded to
                                   # most Macs
> cd mpich-3.0.4
> ./configure --prefix=$DIR/mpich
> make
> make install
> setenv PATH $DIR/mpich/bin:$PATH
> cd ..
```

INSTALLING LIBRARIES: ZLIB

```
> tar xzvf zlib-1.2.7.tar.gz           # no '.gz' if downloaded to
                                        # most Macs
> cd zlib-1.2.7
> ./configure --prefix=$DIR/zlib
> make
> make install
> cd ..
```

INSTALLING LIBRARIES: LIBPNG

```
> tar xzvf libpng-1.2.50.tar.gz    # no '.gz' if downloaded to  
                                   # most Macs  
> cd libpng-1.2.50  
> ./configure --prefix=$DIR/libpng  
> make  
> make install  
> cd ..
```

INSTALLING LIBRARIES: JASPER

```
> tar xzvf jasper-1.900.1.tar.gz # no '.gz' if downloaded to  
# most Macs  
> cd jasper-1.900.1  
> ./configure --prefix=$DIR/jasper  
> make  
> make install  
> cd ..
```

INSTALLING LIBRARIES: COMPATIBILITY

- Make sure libraries are compatible with compilers

- Test 1

- Fortran + C + netCDF

- Test 2

- Fortran + C + netCDF + MPI

Library Compatibility Tests

- Once the target machine is able to make small Fortran and C executables (what was verified in the System Environment Tests section), and after the NetCDF and MPI libraries are constructed (two of the libraries from the Building Libraries section), to emulate the WRF code's behavior, two additional small tests are required. We need to verify that the libraries are able to work with the compilers that are to be used for the WPS and WRF builds.

NOTE: If any of these tests fail, you will need to contact the systems administrator at your institution for help, as these are specific to your particular environment, and we do not have the resources to support these types of errors.

Below is a tar file that contains these tests. Download this tar file and place it in the `TESTS` directory, and then "cd" into the `TESTS` directory:

[Fortran_C_NETCDF_MPI_tests.tar](#)

To unpack the tar file, type:

```
tar -xf Fortran_C_NETCDF_MPI_tests.tar
```

- There are 2 tests:

1. **Test #1:** Fortran + C + NetCDF

The NetCDF-only test requires the include file from the NETCDF package be in this directory. Copy the file here:

```
cp ${NETCDF}/include/netcdf.inc .
```

INSTALLING STEPS

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OBTAIN WRF & WPS CODE

- WRF & WPS source code from:

http://www2.mmm.ucar.edu/wrf/users/download/get_source.html

- Click 'New User,' and then register, or
- Click 'Returning User,' enter your email, and go to the information page.

WRF SOURCE CODE REGISTRATION AND DOWNLOAD

Beginning with V4.0 of the WRF/WRFDA/WRF-Chem/WPS code, all release downloads and corresponding information will be available from our public WRF-Model GitHub page. **For code downloads prior to V4.0, click [here](#).**

There are 2 methods to obtain the WRF-Modeling System source code:

1. The recommended method is to clone the code from our public GitHub repository. This can be done in the command-line. This options requires an installation of git (which most modern systems likely already have – you can check with the command (csh e.g.): which git). This method provides more flexibility to update the version and facilitates the most direct method for contributing development back into the WRF-Model code base.

WRF Model Source Code (includes WRF, WRFDA, & WRF-Chem):

```
git clone https://github.com/wrf-model/WRF
```

WRF Preprocessing System Source Code :

```
git clone https://github.com/wrf-model/WPS
```

See the archives page for all [release notes](#).

Since V4.0, WRFDA/WRFPlus code is now fully-integrated into the WRF code. See the [WRFDA V4.0 Update Summary](#) and chapter 6 of the [Users Guide](#) for additional information.

2. The second method is to aquire the code through the archive file on GitHub. The disadvantage to this method is the lack of flexibility with the ability to troubleshoot with version control. Archive files are provided in both zip and tar.gz formats. Each release provides an archive file, and users should download the archive file for the most relevant released version.

WRF Model Archive File (includes WRF, WRFDA, WRF-Chem)

WRF Preprocessing System (WPS) Model Archive File

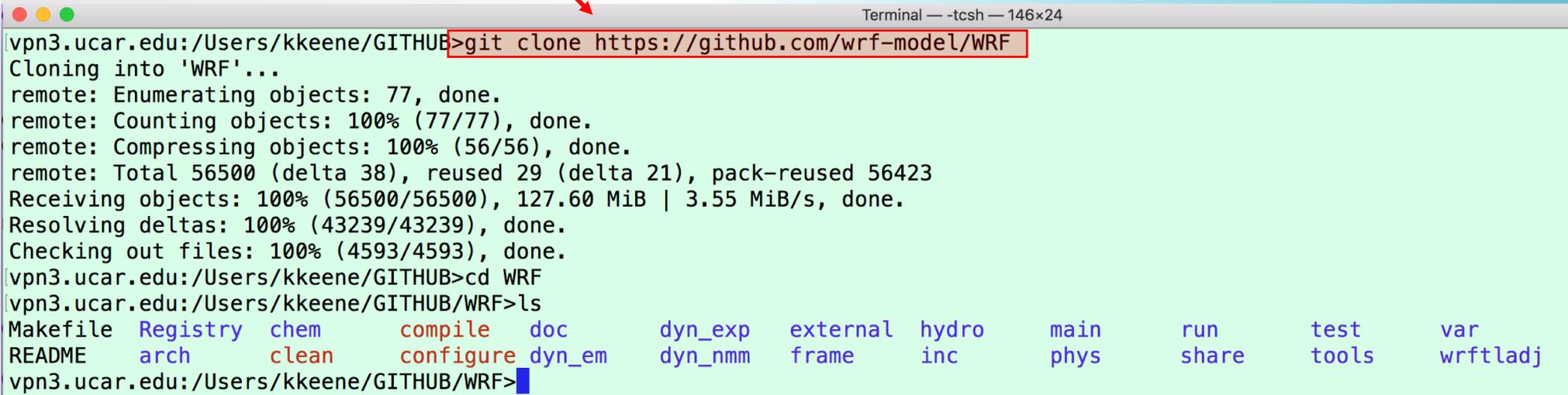
Code available from GitHub!

2 Methods to obtain code:

- Clone from Github
- Download archived tar file from GitHub

OBTAIN WRF & WPS CODE

- Cloning WRF from GitHub repository:



```
Terminal — -tcsh — 146x24
vpn3.ucar.edu:/Users/kkeene/GITHUB>git clone https://github.com/wrf-model/WRF
Cloning into 'WRF'...
remote: Enumerating objects: 77, done.
remote: Counting objects: 100% (77/77), done.
remote: Compressing objects: 100% (56/56), done.
remote: Total 56500 (delta 38), reused 29 (delta 21), pack-reused 56423
Receiving objects: 100% (56500/56500), 127.60 MiB | 3.55 MiB/s, done.
Resolving deltas: 100% (43239/43239), done.
Checking out files: 100% (4593/4593), done.
vpn3.ucar.edu:/Users/kkeene/GITHUB>cd WRF
vpn3.ucar.edu:/Users/kkeene/GITHUB/WRF>ls
Makefile  Registry  chem      compile  doc      dyn_exp  external  hydro    main     run      test     var
README   arch     clean    configure dyn_em   dyn_nmm  frame     inc      phys    share   tools   wrftladj
vpn3.ucar.edu:/Users/kkeene/GITHUB/WRF>
```

**Must have 'git' installed on your system!

INSTALLING STEPS

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CHOOSING A COMPILER

- **Compile**

- WRF V4.0
- dmpar/nesting
- 4 processors

Compiler	Compile Time	Run Time
GNU 6.3.0 **FREE**	6.82 Mins	3.92 Mins
Intel 17.0.1	46.77 Mins	2.20 Min

- **Run**

- Single domain
- Small domain (75x70), 30km resolution
- 12 hours
- 8 processors

STEP 1: CONFIGURE FOR WRF

- Inside the WRF/ directory, type: `./configure`

```
$JASPERLIB or $JASPERINC not found in environment, configuring to build without grib2 I/O...
-----
Please select from among the following Linux x86_64 options:

 1. (serial)  2. (smpar)  3. (dmpar)  4. (dm+sm)  PGI (pgf90/gcc)
 5. (serial)  6. (smpar)  7. (dmpar)  8. (dm+sm)  PGI (pgf90/pgcc): SGI MPT
 9. (serial) 10. (smpar) 11. (dmpar) 12. (dm+sm)  PGI (pgf90/gcc): PGI accelerator
13. (serial) 14. (smpar) 15. (dmpar) 16. (dm+sm)  INTEL (ifort/icc)
                                     17. (dm+sm)  INTEL (ifort/icc): Xeon Phi (MIC architecture)
18. (serial) 19. (smpar) 20. (dmpar) 21. (dm+sm)  INTEL (ifort/icc): Xeon (SNB with AVX mods)
22. (serial) 23. (smpar) 24. (dmpar) 25. (dm+sm)  INTEL (ifort/icc): SGI MPT
26. (serial) 27. (smpar) 28. (dmpar) 29. (dm+sm)  INTEL (ifort/icc): IBM POE
30. (serial) 31. (dmpar) 32. (serial) 33. (smpar) 34. (dmpar) 35. (dm+sm)  GNU (gfortran/gcc)
36. (serial) 37. (smpar) 38. (dmpar) 39. (dm+sm)  IBM (xlf90_r/cc_r)
40. (serial) 41. (smpar) 42. (dmpar) 43. (dm+sm)  PGI (ftn/gcc): Cray XC CLE
44. (serial) 45. (smpar) 46. (dmpar) 47. (dm+sm)  CRAY CCE (ftn $(NOOMP)/cc): Cray XE and XC
48. (serial) 49. (smpar) 50. (dmpar) 51. (dm+sm)  INTEL (ftn/icc): Cray XC
52. (serial) 53. (smpar) 54. (dmpar) 55. (dm+sm)  PGI (pgf90/pgcc)
56. (serial) 57. (smpar) 58. (dmpar) 59. (dm+sm)  PGI (pgf90/gcc): -f90=pgf90
60. (serial) 61. (smpar) 62. (dmpar) 63. (dm+sm)  PGI (pgf90/pgcc): -f90=pgf90
64. (serial) 65. (smpar) 66. (dmpar) 67. (dm+sm)  INTEL (ifort/icc): HSW/BDW
68. (serial) 69. (smpar) 70. (dmpar) 71. (dm+sm)  INTEL (ifort/icc): KNL MIC
72. (serial) 73. (smpar) 74. (dmpar) 75. (dm+sm)  FUJITSU (frtpx/fccpx): FX10/FX100 SPARC64 IXfx/Xlfx

Enter selection [1-75] : 34
-----
Compile for nesting? (1=basic, 2=preset moves, 3=vortex following) [default 1]: █
```

- Configuration output: `configure.wrf`

CONFIGURE OPTIONS FOR WRF

DEBUGGING OPTIONS

- `./configure -d`
 - No optimization
 - Extra debugging
- `./configure -D`
 - No optimization
 - Checks uninitialized variables, floating point traps, etc.
- `./configure -r8`
 - Double-precision
 - Works for GNU, Intel, & PGI compilers



PARALLEL COMPILE OPTION FOR WRF

- To build WRF with multiple compilers, set (csh e.g.):

```
setenv J "-j 2"
```

Before or after configure

# of Processors	Time to Compiler
1	17.25 Mins
2	9.95 Mins
3	8.05 Mins
4	6.82 Mins
5	6.32 Mins
6	6.12 Mins

Compiled with GNU V6.3.0

STEP 2: COMPILE WRF

- In the WRF/ directory, type:
`./compile em_case >& log.compile`

Where `em_case` is one of the following
(type `./compile` to see all options)

`em_real` (3d real case)

`em_quarter_ss`
`em_b_wave`
`em_les`
`em_heldsuarez`
`em_tropical_cyclone`
`em_convrad`

} 3d Ideal

`em_hill2d_x`
`em_squall2d_x`
`em_squall2d_y`
`em_grav2d_x`
`em_seabreeze2d_x`

} 2d Ideal

`em_scm_xy` (1d ideal)

****Compilation should take ~30 mins****

SUCCESSFUL COMPILATION

- If the compilation is successful, you should see these executables in **WRF/main** (non-zero size):

Real data case:

wrf.exe – model executable

real.exe – real data initialization

ndown.exe – one-way nesting

tc.exe – for tc bogusing (can only be run serially)

Ideal case:

wrf.exe – model executable

ideal.exe – ideal case initialization

***Note:** Each ideal case compile creates a different executable, but with the same name

- These executables are linked to 2 different directories (**WRF/run** and **WRF/test/em_real**). You can go to either place to run WRF.

UNSUCCESSFUL COMPILATION

- Use your 'log.compile' file to search for errors!
 - Search for 'Error' with a capital 'E'
- Use our [Frequently Asked Questions forum page](#) for help
- Visit the wrfhelp Forum:
<http://forum.mmm.ucar.edu/>
- Before recompiling:
 - Issue a '**clean -a**'
 - Reconfigure
 - * If you need to make changes to the configure.wrf file, do this after issuing ./configure, and then save the edited file.
 - Recompile

INSTALLING STEPS

- Check system requirements
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STEP 1: CONFIGURE FOR WPS

- Inside the WPS/ directory, type:
`./configure`

```
$JASPERLIB or $JASPERINC not found in environment. Using default values for library paths...
-----
Please select from among the following supported platforms.
1. Linux x86_64, gfortran (serial)
2. Linux x86_64, gfortran (serial_NO_GRIB2)
3. Linux x86_64, gfortran (dmpar)
4. Linux x86_64, gfortran (dmpar_NO_GRIB2)
5. Linux x86_64, PGI compiler (serial)
6. Linux x86_64, PGI compiler (serial_NO_GRIB2)
7. Linux x86_64, PGI compiler (dmpar)
8. Linux x86_64, PGI compiler (dmpar_NO_GRIB2)
9. Linux x86_64, PGI compiler, SGI MPT (serial)
10. Linux x86_64, PGI compiler, SGI MPT (serial_NO_GRIB2)
11. Linux x86_64, PGI compiler, SGI MPT (dmpar)
12. Linux x86_64, PGI compiler, SGI MPT (dmpar_NO_GRIB2)
```

- Always choose a **serial** compile for WPS (even if you compile WRF with a parallel option)
 - Exception: You are using a VERY large domain
 - *NOTE: if you do compile WPS in parallel, ungrib.exe must run serially
- Configuration output: `configure.wps`

STEP 2: COMPILE WPS

- In the WPS/ directory, type:

```
./compile >& log.compile
```

- Compilation should be quick.
- If successful, these executables should be in your WPS/ directory (linked from their source code directories):

```
geogrid.exe -> geogrid/src/geogrid.exe
```

```
ungrib.exe -> ungrib/src/ungrib.exe
```

```
metgrid.exe -> metgrid/src/metgrid.exe
```

UNSUCCESSFUL WPS COMPILATION

No geogrid.exe or metgrid.exe

- Make sure WRF compiled successfully.
 - WPS makes use of the external I/O libraries in the *WRF/external/* directory - The libraries are built when WRF is installed
- Check that you are using the same compiler (and version) as used to compile WRF.
- Check that you are using the same netCDF (and version) as used to build WRF.
- Have you changed the name or path of the WRF/ directory?
 - If so, you need to change the following line in the `configure.wps` file:

```
WRF_DIR = ../WRF
```
 - Beginning V4.0: set `WRF_DIR` environment variable (prior to `configure`):

```
setenv WRF_DIR path_to_WRF/WRF
```
 - Save the `configure` file and recompile

UNSUCCESSFUL WPS COMPILATION

No ungrib.exe

- Make sure jasper, zlib, and libpng libraries are correctly installed.
- Make sure that you are using the correct path and format for the following lines in the configure.wps file

```
COMPRESSION_LIBS = -L/${DIR}/UNGRIB_LIBRARIES/lib -ljasper -lpng -lz  
COMPRESSION_INC = -I/${DIR}/UNGRIB_LIBRARIES/include
```

Save configure.wps and recompile

./CLEAN -A

- The './clean -a' command should be used when modifications have been made to the configure.wrf(wps) file, or any changes to the registry. If so, issue 'clean -a' prior to recompiling.
- Modifications to subroutines within the code will require a recompile, but **DO NOT** require a 'clean -a', nor a reconfigure. Simply recompile. This compilation should be much faster than a clean compile.

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DOWNLOAD STATIC GEOGRAPHICAL DATA

- From the WRF Download page:

http://www2.mmm.ucar.edu/wrf/users/download/get_sources_new.php

WRF SOURCE CODE REGISTRATION AND DOWNLOAD

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```
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```

WRF Preprocessing System Source Code :

```
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```

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WRF Model Archive File (includes WRF, WRFDA, WRF-Chem)

WRF Preprocessing System (WPS) Model Archive File

Click Here

WPS Geographical Static Data To access the WPS Geographical Static Data Downloads page, [click here](#).

DOWNLOAD STATIC GEOGRAPHICAL DATA

- Geographical Input and Data Download Page:

http://www2.mmm.ucar.edu/wrf/users/download/get_sources_wps_geog.html

`geog_high_res_mandatory.tar.gz`

~ 29 GB when
uncompressed

WRF Preprocessing System (WPS) Geographical Input Data Mandatory Fields Downloads

Click on file (link) below to download individual data files

[Download Highest Resolution of each Mandatory Field](#)

[Download Lowest Resolution of Each Mandatory Field](#)

*Note: ~29G Uncompressed (2.6G Compressed)

albedo_modis	x	x
greenfrac_fpar_modis	x	x
greenfrac_fpar_modis_5m		x
lai_modis_10m	x	x
lai_modis_30s	x	
maxsnowalb_modis	x	x
modis_landuse_20class_30s_with_lakes	x	
modis_landuse_20class_5m_with_lakes		x
orogwd_2deg	x	
orogwd_1deg	x	x
orogwd_30m	x	
orogwd_20m	x	

This is the one
you want

STATIC GEOGRAPHICAL DATA: OTHER OPTIONS

- Geographical Input and Data Download Page:

http://www2.mmm.ucar.edu/wrf/users/download/get_sources_wps_geog.html

WPS Geographical Input Data Mandatory for Specific Applications		
CLICK ON FILE (LINK) BELOW TO DOWNLOAD INDIVIDUAL DATA FILES	MANDATORY USE	Combined TAR Files
clayfrac_5m	Thompson MP Scheme (<i>mp_physics=28</i>) and chem	Thompson28 and Chem Tar File
erod		
sandfrac_5m		
crop	NoahMP LSM (<i>sf_surface_physics=4</i>)	NoahMP Tar File
groundwater		
soilgrids		
nlcd2011_can_ll_9s	Pleim-Xiu LSM (<i>sf_surface_physics=7</i>) U.S. Only	Pleim-Xiu Tar File
nlcd2011_imp_ll_9s		
nlcd2011_ll_9s		
NUDAPT44_1KM	Urban Physics (<i>sf_urban_physics=1, 2</i>)	

Optional WPS Geographical Input Data		
CLICK ON FILE (LINK) BELOW TO DOWNLOAD INDIVIDUAL DATA FILES	OPTIONAL USE	Combined TAR Files
albedo_ncep	Simulations Older than Year 2000	Older Than 2000 Tar File
greenfrac		
landuse_30s_with_lakes		
maxsnowalb		
bnu_soiltype_bot	Alternative Data Source for all LSM's	Alternative LSM Data Tar File
bnu_soiltype_top		
modis_landuse_20class_15s	Alternative High-resolution Data	
modis_landuse_20class_15s_with_lakes		
	Alternative High-	

DOWNLOAD DATASETS

- From the WRF Users' page: <http://www2.mmm.ucar.edu/wrf/users/>

WRF USERS PAGE

Home Model System User Support **Download** Doc / Pub Links Physics

Downloads Overview
 WRF
 WPS Geographic Static Fields
 Post-processing and Utilities
 WRF Testing Framework
Input Data for WRF ←
 NCEP ftp

WRF MODEL USER GUIDE

Welcome to the WRF Model User Guide. WRF (Weather Research and Forecasting) is a numerical weather prediction system designed for both meteorological research and numerical weather prediction. WRF offers a host of options for atmospheric modeling and can run on a variety of platforms. WRF excels in a broad range of scales ranging from tens of meters to thousands of kilometers, including the following applications:

- Meteorological studies

Step 1: Click Download, then scroll down and click 'Input Data from NCAR'

Step 2: Click the dataset you wish to use (for this example, we will use 'FNL from GFS')

*Note: The NOMADS site has several types of useful data: <http://nomads.ncdc.noaa.gov>

Available GRIB Datasets from NCAR

Dataset	Spatial Resolution	Temporal Resolution	Temporal Availability	Vtable
NCEP Final Analysis (GFS-FNL) <i>ds083.0</i>	2.5 degree	12-hourly	1997-04-01 to 2007-06-30	Vtable.GFS
NCEP Final Analysis (GFS-FNL) <i>ds083.2</i>	1 degree	6-hourly	1999-07-30 to current	
NCEP GDAS Final Analysis <i>ds083.3</i>	0.25 degree	6-hourly	2015-07-08 to current	
NCEP GFS <i>ds084.1</i>	0.25 degree	3-hourly (for first 240 hrs) 12-hourly (hrs 240-384)	2015-01-15 to current	
NCEP/NCAR Reanalysis (NNRP) <i>ds090.0</i>	209 km	6-hourly	1948-01-01 to current	Vtable.NNRP
NCEP Climate Forecast System Reanalysis (CFSR) <i>ds093.0</i>	0.3, 0.5, 1.0, 1.9, & 2.5 degree	6-hourly	1979-01-01 to 2011-01-01	Vtable.CFSR_press_pg06

DOWNLOAD DATASETS (CONT'D)

Step 3: Register, or sign-in (if you already have an account)

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NCAR UCAR | **Research Data Archive**
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NCEP GDAS/FNL 0.25 Degree Global Tropospheric Analyses and Forecast Grids
 ds083.3 | DOI: 10.5065/D65Q4T4Z

For assistance, contact [Riley Conroy](#) (303 497-2467).

[Description](#) [Data Access](#) [Documentation](#) [Software](#) [Metrics](#)

Help with this page: [RDA dataset description page video tour](#)

Step 4: Click 'Data Access'

Step 5: Click 'Web File Listing' for the span of years you need

NCEP GDAS/FNL 0.25 Degree Global Tropospheric Analyses and Forecast Grids
 ds083.3 | DOI: 10.5065/D65Q4T4Z ☆

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Mouse over the table headings for detailed descriptions

Data File Downloads			Customizable Data Requests	Other Access Methods	NCAR-Only Access	
Web Server Holdings	Globus Transfer Service (GridFTP)	Data Format Conversion	Subsetting	THREDDS Data Server	Central File System (GLADE) Holdings	Tape Archive (HPSS) Holdings
Web File Listing	Request Globus Transfer	Get Converted Files	Get a Subset	TDS Access	GLADE File Listing	HPSS File Listing

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View listings of our Internet-accessible* data file holdings and download the files. You can download files one-by-one by clicking their links, or you can take advantage of the tools that we provide that will allow you to easily download many files. Your options are:

Faceted Browse	Complete File List
Interactively browse the Internet-accessible collection of data files and make selections to create a list of only the files you need. Please note that this is not a subsetting service. You will still receive whole	View a hierarchical listing of the full collection of data files

Step 6: Click 'Complete File List'

[Description](#) [Data Access](#) [Documentation](#)

[Web server holdings]

Group/Subgroup Summary

Group ID	Data Description
▼ Hide Detail Information	
NCEP-GDAS_FNL0P25	NCEP GDAS 0.25 Degree 0.25 Degree
2015	NCEP GDAS 0.25 Degree Final Analy
2016	NCEP GDAS 0.25 Degree Final Analy
2017	NCEP GDAS 0.25 Degree Final Analy
2018	NCEP GDAS 0.25 Degree Final Analy
2019	NCEP GDAS 0.25 Degree Final Analy
TOTAL	1/5 Group/Subgroups

Step 7: Choose the year

[Description](#) [Data Access](#) [Doc](#)

[Web server holdings]

◀◀ 2019 — NCEP GDAS 0.25 Degree Fi

Subgroup Summary

Group ID	Data Description
2019-01	NCEP GDAS 0.25 Degree Final Analy
2019-02	NCEP GDAS 0.25 Degree Final Analy
2019-03	NCEP GDAS 0.25 Degree Final Analy
2019-04	NCEP GDAS 0.25 Degree Final Analy
2019-05	NCEP GDAS 0.25 Degree Final Analy
2019-06	NCEP GDAS 0.25 Degree Final Analy

Step 8: Choose the month

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Globus download [What is Globus?](#)

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- Currently **3 Files (609.21M)** selected [Clear Selection](#)

[Scroll to **END** of the filelist]

<input type="checkbox"/> ?	INDEX	File Name↓↑	Size↓↑	Data Format	Date Archived↓↑
<input type="checkbox"/>	1	gdas1.fnl0p25.2019050100.f00.grib2 i	176.0M	GRIB2	05/01/2019
<input type="checkbox"/>	2	gdas1.fnl0p25.2019050100.f03.grib2 i	201.1M	GRIB2	05/01/2019
<input checked="" type="checkbox"/>	3	gdas1.fnl0p25.2019050100.f06.grib2 i	208.1M	GRIB2	05/01/2019
<input checked="" type="checkbox"/>	4	gdas1.fnl0p25.2019050100.f09.grib2 i	211.5M	GRIB2	05/01/2019
<input checked="" type="checkbox"/>	5	gdas1.fnl0p25.2019050106.f00.grib2 i	189.5M	GRIB2	05/02/2019
<input type="checkbox"/>	6	gdas1.fnl0p25.2019050106.f03.grib2 i	206.2M	GRIB2	05/02/2019
<input type="checkbox"/>	7	gdas1.fnl0p25.2019050106.f06.grib2 i	211.0M	GRIB2	05/02/2019
<input type="checkbox"/>	8	gdas1.fnl0p25.2019050106.f09.grib2 i	210.5M	GRIB2	05/02/2019

Step 8: Choose a box for each time span that you need

Step 9: Once you have chosen all your times, choose a method to download the files

QUESTIONS?