**Logging into Derecho**

1. Log in to Derecho

ssh -X -Y [jayent@derecho.hpc.ucar.edu](mailto:jayent@derecho.hpc.ucar.edu)

Sign in with the assigned password/ Duo verification

1. Create directory for Project

mkdir EAS-5555

1. Copy the WRF and WPS executables to your home directory

cd /glade/work/wrfhelp/derecho\_pre\_compiled\_code

Locate executables

cp -rp wrfv4.1 ~/EAS-5555/

Copy wrf executables to local computer

r: recursively go through all directories and copy all. p: preserve timestamp

~/ means $HOME, which means /glade/u/home/<username>

cp -rp wpsv4.1 ~/EAS-5555/

Copy wps executables to local computer

1. Download DATA for the WPS preprocessing system

cd ~/EAS-5555/

mkdir DATA

cd DATA

wget <https://www2.mmm.ucar.edu/wrf/TUTORIAL_DATA/matthew_1deg.tar.gz>

tar -xvf matthew\_1deg.tar.gz

Unzip data

1. Complie WRF (to produce real.exe, wrf.exe)

cd ~/EAS-5555/wrfv4.1

./compile

1. Complie WPS (to produce geogrid.exe, ungrib.exe, metgrid.exe)

cd ~/EAS-5555/wpsv4.1

./compile

1. Modify namelist.wps and namelist.input

cd ~/EAS-5555/wpsv4.1

nano namelist.wps

&share

wrf\_core = 'ARW',

max\_dom = 1,

start\_date = '2016-10-06\_00:00:00',

end\_date = '2016-10-08\_00:00:00',

interval\_seconds = 21600

io\_form\_geogrid = 2,

/

max\_dom = 1

parent\_id = 1,

parent\_grid\_ratio = 1,

i\_parent\_start = 1,

j\_parent\_start = 1,

e\_we = 91,

e\_sn = 100,

geog\_data\_res = 'default',

dx = 27000,

dy = 27000,

map\_proj = 'mercator',

ref\_lat = 28.00,

ref\_lon = -75.00,

truelat1 = 30.0,

truelat2 = 60.0,

stand\_lon = -75.0,

geog\_data\_path = '/glade/work/wrfhelp/WPS\_GEOG/'

1. Run ungrib

cd ~/EAS-5555/wpsv4.1/

Navigate to WPS directory

ln -sf ungrib/Variable\_Tables/Vtable.GFS Vtable

Link Vtable from the directory ungrib/Variable\_Tables/ to current directory

./link\_grib.csh path\_to\_data

Link input GRIB data

ls -alstr to check if successful

./ungrib.exe

1. Run geogrid

./geogrid.exe

1. Run metgrid

./metgrid.exe

1. Run wrf

cd ~/EAS-5555/wrfv4.1/test/em\_real/

Navigate back to the directory where the executable can be accessed

ln -sf ~/EAS-5555/wpsv4.1/met\_em.d01.2016-10\* .

Link the files we just created in the WPS directory to the WRF directory

nano namelist.input

run\_days = 0,

run\_hours = 48,

run\_minutes = 0,

run\_seconds = 0,

start\_year = 2016,

start\_month = 10,

start\_day = 06,

start\_hour = 00,

end\_year = 2016,

end\_month = 10,

end\_day = 08,

end\_hour = 00,

interval\_seconds = 21600

input\_from\_file = .true.,

history\_interval = 180,

frames\_per\_outfile = 1,

restart = .false.,

restart\_interval = 1440,

time\_step = 150,

max\_dom = 1,

e\_we = 91,

e\_sn = 100,

e\_vert = 45,

num\_metgrid\_levels = 32

dx = 27000,

dy = 27000,

Edit namelist.input

1. Run real.exe

./real.exe

Use cat rsl.error.0000 to check success

./wrf.exe

1. View outputs

module load ncview

ncview filename

1. Create Shell Script to automate ([WikiHow](https://www.wikihow.com/Write-a-Shell-Script-Using-Bash-Shell-in-Ubuntu))

Go to the directory where the script will be stored

cd ~/EAS-5555

vim AutomateWRF.sh

i

To allow you to insert/ start typing (i for insert), Alternatively use nano

#!/bin/bash

Shebang line. Runs program /bin/bash with ListDir.sh as first argument

Type the contents of the script

<Exit>

: wq

chmod +x ListDir.sh

Change access permissions to run scripts on Unix

./ListDir.s

Runs the script

Continue from here

<https://www2.mmm.ucar.edu/wrf/OnLineTutorial/Basics/wrf.php>