For visually checking the results of your run, we have provided a Python script that plots 2-m temperature, hourly precipitation, cloud cover, and 10-m wind at a user inputted time range. In addition, a forecast loop GIF will be created for each forecast product.

Anaconda

You will need to load Anaconda first. Here are some examples of how to do this:

In an HPC, you can use modules to load Anaconda. Otherwise, follow the following instructions. Find download link here: https://www.anaconda.com/products/individual. Scroll to the bottom to the "Anaconda Installers" section and copy the download link for the appropriate version

```
$ cd $HOME
$ wget <download_link>
$ conda install <Anaconda_excecutable_name>
$ export PATH=$HOME/anaconda3/bin:$PATH
```

Install Libraries

```
$ conda install -c conda-forge -y cartopy
$ conda install -y netCDF4
```

Download Files

```
$ cd $SCRATCH
```

Get natural earth files

```
$ wget
https://ftp.emc.ncep.noaa.gov/EIB/UFS/SRW/v1p0/natural_earth/natural_
earth_ufs-srw-release-v1.0.0.tar.gz
$ tar -xzf natural_earth_ufs-srw-release-v1.0.0.tar.gz
$ wget <TODO_new_URL>
```

Run Script

Navigate to the run directory of your experiment

```
$ cd $SCRATCH/<expt_name>/run
```

Create symbolic link to plotting script

```
$ ln -sf dir/of/plot_mrw.py .
```

Run script

```
$ python3 plot_mrw.py (Start time)<YYYYMMDDHH> (Start Forecast
hour)<HHH> (End Forecast hour)<HHH> <Natural Earth Directory>
```

For example

```
$ python3 plot_mrw.py 2019082900 000 048 $SCRATCH/natural_earth
```

View Results

A utility typically used to visualize the resulting images in png format is `display`. If it is available on your platform, you can use the command:

```
$ display *.png
```

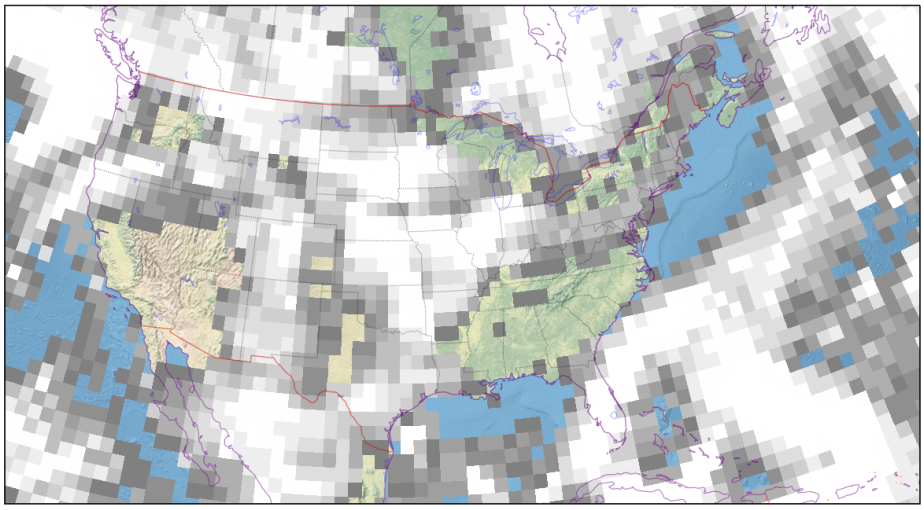
To view the GIFs and files, you could also use scp to transfer files to your local computer.

Sample Output

The sample plots are below. They are consistent with the Hurricane Dorian initial conditions and tag `ufs-v1.1.0`. Your results may look different if you are using a different branch or tag. Your results will also look different just because you are running on a platform different from what we used to generate the plots.

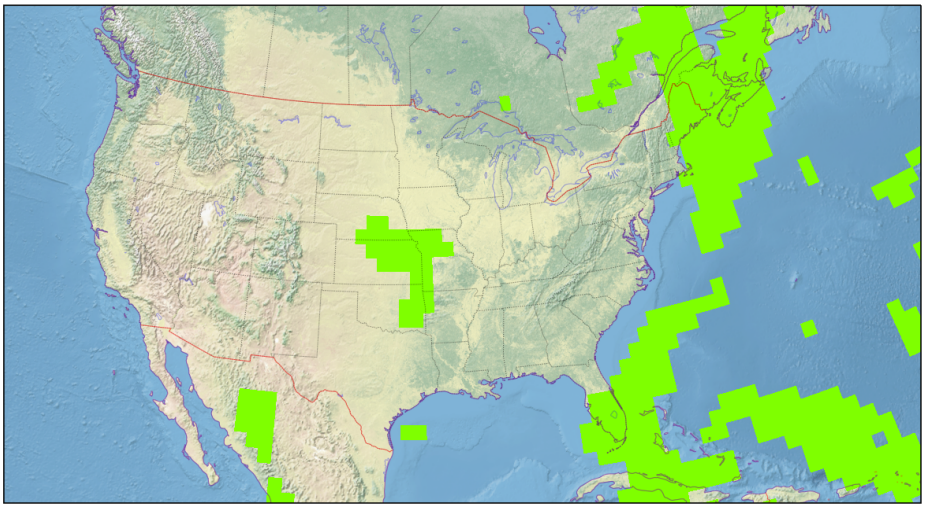
Now that you completed this step, you may be interested in trying to change a namelist option and run a second test to check your dexterity and understanding of how results will change. If you are interested in doing that, please visit the UFS Portal to take our graduate student test which will give you instructions to take that leap, and will also provide important information for our development work

UFS MRW Cloud Cover (%)
initialized: 2019082900 valid: 2019082901 (f048)



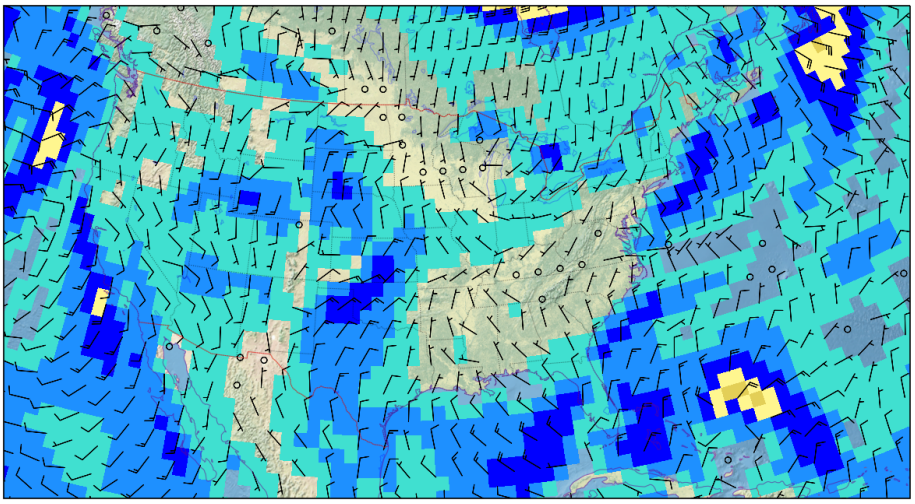
10 20 30 40 50 60 70 80 90 100
Cloud Cover (%)

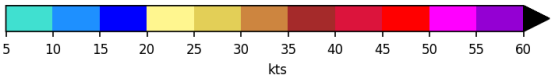
UFS MRW Hourly Accumulated Precipitation (in)
initialized: 2019082900 valid: 2019082901 (f048)



0.01 0.1 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.5 3 4 5 7 10 15 20
in

UFS MRW 10-m Winds (kts)
initialized: 2019082900 valid: 2019082901 (f048)





UFS MRW 2-m Temperature (°F)
initialized: 2019082900 valid: 2019082901 (f048)