NCMRWF Reanalysis Data Service Web portal Version 0.2

Date : 16-Aug-2022

IMDAA - WRF

Follow the below steps to run the WRF (version 4.0) model by feeding in the IMDAA regional reanalysis data

1. Login to https://rds.ncmrwf.gov.in and choose "**IMDAA 1-Hourly Single Level Dataset**", then select the below variables
   - 1.1. 10m U-Component of Wind
   - 1.2. 10m V-Component of Wind
   - 1.3. 2m Temperature
   - 1.4. Surface Temperature (skin)
   - 1.5. Mean Sea Level Pressure
   - 1.6. Surface Pressure
   - 1.7. 2m Relative Humidity
   - 1.8. Soil Moisture Layer1 (0-0.1 m below ground)
   - 1.9. Soil Moisture Layer2 (0.1-0.35 m below ground)
   - 1.10. Soil Moisture Layer3 (0.35-1 m below ground)
   - 1.11. Soil Moisture Layer4 (1-3 m below ground)
   - 1.12. Soil Temperature Layer1 (0-0.1 m below ground)
   - 1.13. Soil Temperature Layer2 (0.1-0.35 m below ground)
   - 1.14. Soil Temperature Layer3 (0.35-1 m below ground)
   - 1.15. Soil Temperature Layer4 (1-3 m below ground)
   - 1.16. Land Cover (Land Sea Mask)
   - 1.17. Model Terrain Height

2. Choose year, month, day, hour . For eg, 2000, January, 01 day, 6 hourly intervals (00, 06, 12, 18)

3. Select "GRIB" file format

4. Select either whole region or subset (use lat, lon box to reduce the domain)

5. Click the Submit button. After a successful process of submitted query, you will receive an email with a data download link (wget shell script). Download and run that .sh script, it will download multiple grib files. (Make a new folder and keep .sh script inside that folder, then execute the script).

6. Now again choose "**IMDAA 3-Hourly Pressure Level Dataset**", then select the below variables
   6.1. U-Component of Wind
   6.2. V-Component of Wind
   6.3. Temperature
   6.4. Geopotential Height
   6.5. Relative Humidity

7. Select "all pressure levels"

8. Select the same year, month, day, and hour (**same as in step 2**)

9. Select "GRIB" file format

10. Click the Submit button. After a successful process of submitted query, you will receive an email with a data download link (wget shell script). Download and run that .sh script, it will download multiple grib files. Make sure to keep .sh script inside the previously created folder (where surface fields grib2 files are downloaded), then execute the script.

11. Now merge all downloaded grib files using cat cmd
    cat *grb2 > IMDAA.grib2 # merge all vars

12. Now split by date and forecast hour of merged file using wgrib2 (preferably version 2.0.7, available at following website https://www.cpc.ncep.noaa.gov/products/wesley/wgrib2/ and https://www.ftp.cpc.ncep.noaa.gov/wd51we/wgrib2/)

eg:

```
date=${yyyy}${mm}${dd} !!!!! four-digit year, two-digit month, and two-digit day
for hour in 00 06 12 18;do
rundate=$date${hour}
wgrib2 IMDAA.grib2 -match_fs "=${rundate}" -match_fs "anl" -grib_out
IMDAA_${rundate}z.grib2
done
```

13. Above cmd will split IMDAA.grib2 file by date and hour

14. Now you can remove (rm -rf *grb2 IMDAA.grib2) a previously merged file (step 11).

15. Download VTable and METGRID from https://github.com/NCMRWF/UMRider/tree/master/tables/WRF-Noah

16. Include the following lines in your namelist.input (under domains sections)

```
num_metgrid_levels        = 25,
num_metgrid_soil_levels   = 4,
```

17. Read this README file to follow up remaining steps to run WRF model

Note: You may choose other available variables as well if you have proper VTable entry.

This page will be updated in the future if required.