**The program of Downloading and Processing NWS Weather Data**

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# Source Code Location

 The source codes of the program are stored in the server PC: C:\Program Files (x86)\NMSU\RSET\src\Data\Processing\NWS\grib2\src\”), and you can download the source codes from the following link:

[NWS code(Revised by Xiufen Cui on 2015/07/14)](http://rsetserver.sws.uiuc.edu/docs/NWS.zip)

# The Program Structure

 The dlscript.bat(“C:\Program Files (x86)\NMSU\RSET\src\Data\Processing\NWS\grib2\src\”) is called by the task scheduler “RSET\_NWS\_DOwnload1” to download the NWS data, and calculate the daily reference et.

This calls the hh\_download\_script file which is used to downloads the data

After this it then calls the hh\_et\_dailycal(today) to calculate the daily et

This in turn calls hh\_convert\_script, hh\_import script, hh\_get\_daily\_data and hh\_cal\_ref\_et\_daily

Hh\_convert\_script is used to convert the GRIB2 date to the CSV data files

hh\_import script imports all needed data for calculation by calling hh\_date2\_doy and hh\_import\_data

hh\_import\_data imports data and hh\_date2\_doy converts the date to day of the year

hh\_get\_daily\_data gets the data for each day

hh\_cal\_ref\_et\_daily calculates the daily reference et

Dlscript.bat

hh\_et\_dailycal

hh\_download\_script

Hh\_import\_script

hh\_convert\_script

hh\_get\_daily\_data

hh\_cal\_ref\_et\_daily

Download.bat

hh\_date2doy

hh\_import\_data

# Change on 2015/07 by Xiufen Cui

## dlscript.bat file

In dlscript.bat file, change “hh\_et\_dailycal(today)” into “hh\_et\_dailycal”. Why to make this change? First of all, window OS cannot recognize “today” as an input parameter in .bat file. Secondly, “hh\_download\_script” is always downloading the tomorrow’s NWS data, so it is more reasonable to process the same day’s data in “hh\_et\_dailycal”. So I remove the parameter of “hh\_et\_dailycal” here, and will always process the tomorrow’s data just downloaded by “hh\_download\_script” in matlab code.

## ds.terrainh.bin file

NOAA is working on add the 2.5km grid data to NDGD RTMA dataset, only the sky cover element is still 5km grid data, all the other elements are 2.5km grid data, so we should update the ds.terrainh.bin file in the folder “C:\Program Files (x86)\NMSU\RSET\src\Data\Processing\NWS\grib2\src\”, the old one is renamed into “ds.terrainh\_5km.bin”.

## hh\_import\_script.m file

This file imports the NWS data into a struct “metdat”. For 2.5km grid data, the size of one-day “metdat” data will be  2953665(grid points)X14(elements)X24(hours)X8 bytes = 7571MB>7G RAM memory. The server has only 12G RAM memory, it isn’t enough to run this function, which will cause “out of memory” error. In fact, there are only 8 useful elements for calculating the solar radiation, and we don’t need to import them into one struct. So this file is discarded.

## hh\_get\_daily\_data.m file

There is two main change in this file, the first one is to get the 2.5km sky-cover data by interpolation using “griddata()” and nearest method. The other change is it achieves the one element’s data once from one NWS data file, so it will only take 2953665(grid points)X24(hours)X8 bytes = 540MB RAM memory . Compared to 7G, this decreases greatly the need of RAM memory, so the “out of memory” issue got solved. The new program structure is simplified as follows:

Dlscript.bat

hh\_et\_dailycal

hh\_download\_script

hh\_cal\_ref\_et\_daily

hh\_get\_daily\_data

hh\_convert\_script

Download.bat