

Snow Water Equivalent Processing

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Updated July 2016 – new input data source (NOHRSC/NASA)

Updated September 2017 – new version (Version 7) of SWE data in netcdf format

Updated January 2018 – remove Excel charts function from process, now created with GeoEngine

Updated April 2018 - Moving process to new python development/production servers. When started there will no longer produce the charts, also added writing an output to new web storage.

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Data

NASA is processing the data instead of NOHRSC since January 2016, the link for the data is https://portal.nccs.nasa.gov/lisdata_pub/FEWSNET/Asia_LIS7_2018/

a) NASA_LIS_NOAH36_201610020000.d01.nc

Abbreviations:

YYYY – year (e.g. 2013)

YY - year (e.g. 13)

MM – month

DD - day

cty – region (e.g. afg, irq, pak, taj)

ctydd – region boundaries (e.g. afgbsn, irq, pak, taj)

Required Software/Access

- a) ArcGIS 10 and python
- b) Access to python development/production (DEV/PROD) servers
- c) Access to earlywarning.cr.usgs.gov web storage for data staging

Data processing

Python script for daily scheduled run

The python script is running daily as a scheduled task and no manual processing is needed.

Model Setup

- Script is set up to process the day with actual date (on 8/20 processing 8/20)
- The python script is set up as a scheduled task every day.
- There is a log file, documenting each processing run, located on the python DEV/PROD servers under D:\FEWS\DataPortal\logs
- LEAP YEAR NOTE: If the processing year is a leap year, NASA doesn't provide the Feb 29th. Therefore, to not have a missing day in the year for EWX data, those files have a Julian date of 1 offset.
data.x.059.tif = Feb 28th
data.x.060.tif = Mar 1st → this would be in leap year Feb 29th
data.x.061.tif = Mar 2nd
data.x.365.tif = Dec 31st
This way all years always have 365 days.

Python Script Description

Part 1: Download Snow Depth grid

Download input NOAH file from http://portal.nccs.nasa.gov/lisdata_pub/FEWSNET/Asia_LIS7_YYYY/NASA_LIS_NOAH36_201610020000.d01.nc

- 1) Unzip .tgz file to retrieve file for swe in mm - LIS_NOAH32_Asia_swe_mm_YYYYMMDD00.tif
- 2) Set values < 0 to 0
>> Save as
<data_path>\Asia\CentralAsia\Daily\SWE\geotiff\YYYY\LIS_NOAH32_Asia_swe_mm_YYYYMMD
D.tif

Part 4: Create Anomaly grid

- 3) SWE grid – mean SWE = Difference (mean => WY2001-2002 to WY2015-2016)
>> Save as
<data_path>\Asia\CentralAsia\Daily\SWE\geotiff\dif\YYYY\swe_difYYYYMMDD.tif

Part 3: Create SWE Graphic

- 4) Create graphics for regions (IRQ)
- 5) Open map templates for the regions in the Central Asia Data Portal (ctydd SWE.mxd)
- 6) Add NOHRSCswe1.lyr file and replace data source from downloaded SWE grid
- 7) Change title in map to reflect the processing date
- 8) Export to PNG and PDF format
 - >> Save as
 - <data_path>\Asia\CentralAsia\Daily\SWE\graphics\YYYY\swYYYYMMDD.png or .pdf

Part 5: Create Snow Depth Difference Graphic

- 9) Create graphics for 4 regions (AFGBSN, AFGDAM, TAJ, PAK, IRQ)
- 10) Add swe_diff_20150101.lyr file to ArcMap template and replace data source with SWE Difference .tif file
- 11) Change title in map to reflect the processing date
- 12) Export to PNG and PDF format
 - >> Save as
 - <data_path>\Asia\CentralAsia\Daily\SWE\graphics\YYYY\saYYYYMMDD.png or .pdf

Part 6: Data Delivery

13) Upload Graphics to location \\scienceweb1\shared\fews
The SWE maps are deliverables and need to be staged on \\scienceweb1\shared\fews AND
<web_data> when completed (included in daily model run). Each region has its own folder.

Folder locations (<web_data>):

asia\centralasia\daily\swe\graphics and anomaly\graphics
asia\middleeast\iraq\daily\swe\graphics and anomaly\graphics

Part 7: Helpful Notes

- Every year on October 1 starts a new season
- In a leap year Feb 29 is not processed
- NASA data contact: Jossy Jacob (jossy.p.jacob@nasa.gov)

Manual processing with python script

Once in a while the daily input data is not yet available when the scheduled script is scheduled. If the input data is a day or more delayed then the script needs to be run manually until caught up.

Run the batch script allregions_daily_swe.py located <data_portal>\bin in command prompt and enter the date to be processed as arguments after the script name. This script will run all regions at once.

```
C:\Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Windows\system32>D:
D:\>D:\FEWS\DataPortal\bin\allregions_daily_swe.py 2017 09 28_
```

Results

Maps

Maps are created using ArcMap 10.3.1. Regions are Central Asia and all subregions.



