Snow Depth Processing

January 2018
Stefanie Kagone

Updated July 2016 – new input data source (NASA)
Updated September 2017 – new version (Version 7) of SWE data in netcdf format
Updated Aug 28, 2018 - CY - added scheduler task name

Contents

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)
ctyddd – region boundaries (e.g. irq)

Required Software/Access

a) ArcGIS 10 and python
a) Access to python development/production (DEV/PROD) servers
b) Access to web data location for data staging

Data processing

Python script for daily scheduled run

The python script is running daily as a scheduled task. The scheduled task used is
`FEWS_NET_Tasks\Daily_Snowdepth` which runs at **3:02 PM (CT)** everyday.

Model Setup
- Model is set up to process today's date (on 8/20 processing 8/20)
- The python script is set up as a scheduled task every day at 3.02 pm.
- There is a logfile, 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) Retrieve raster from netcdf file for snow depth in mm - LIS_NOAH36_Asia_snow_depth_mm_ YYYYMMDD00.tif
2) Set values < 0 to 0
   >> Save as
   <data_path>\Asia\CentralAsia\Daily\SnowDepth\geotiff\YYYY\LIS_NOAH32_Asia_snow_depth_ mm_YYYYMMDD.tif

Part 2: Upload grid for EWX
3) Upload Snow depth grid with naming convention data.YYYY.DDD.tiff to:
   <data_path>\SnowDepth\Center_Asia\daily

Part 3: Create Snow Depth Graphic

4) Create graphics for regions (CAA, IRQ)
5) Add NOHRSC_SD.lyr file to ArcMap template and replace data source with Snow Depth .tif file
6) Change title in map to reflect the right date
7) Export to PNG and PDF format
   >> Save as
   data\\Asia\\CentralAsia\\...\\Daily\\SnowDepth\\graphics\\YYYY\\sdYYYYMMDD.png or .pdf

Part 4: Create Difference grid

8) Snowdepth grid – mean snowdepth = Difference
   >> Save as
   <data_path>\Asia\CentralAsia\Daily\SnowDepth\geotiffdif\YYYY\sd_difYYYYMMDD.tif

Part 5: Create Snow Depth Difference Graphic

9) Create graphics for 6 regions (CAA, SCA, AFGBSN, TAJ, PAK, IRQ)
10) Add sd_dif20160101_2000.lyr file to ArcMap template and replace data source with Snow Depth Difference .tif file
11) Change title in map to reflect the right date
12) Export to PNG and PDF format
    >> Save as
    data\\Asia\\CentralAsia\\...\\Daily\\SnowDepth\\graphics\\YYYY\\saYYYYMMDD.png or .pdf

Part 6: Data Delivery

13) Upload Graphics to location <web_data_path>
The Snow Depth maps are deliverables and need to be staged on<web_data_path> when completed (included in daily model run). Each region has its own folder.

Folder locations (<web_data_path>):
asia\\centralasia\\daily\\snowdepth\\graphics
asia\\middleeast\\iraq\\daily\\snowdepth\\graphics

Part 7: Helpful Notes

- Contact Info for the input data at NASA is: Jossy P. Jacob (jossy.p.jacob@nasa.gov)
- In a leap year Feb 29 is not processed

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.
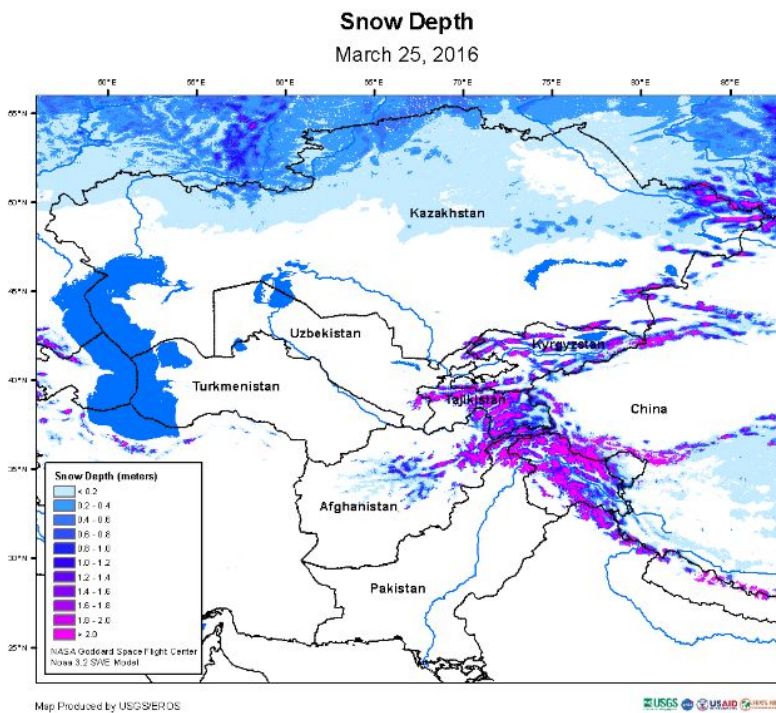Enter the date to be processed as arguments after the script name.

Results

Maps

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

Snow Depth
March 25, 2016

Snow Depth Difference Anomaly
March 25, 2016 minus Average (2002-2016)