# How McIDAS-V can support JPSS activities



Hurricane Lane – S-NPP – Day Night Band
24 August 2018, 2:20am HST
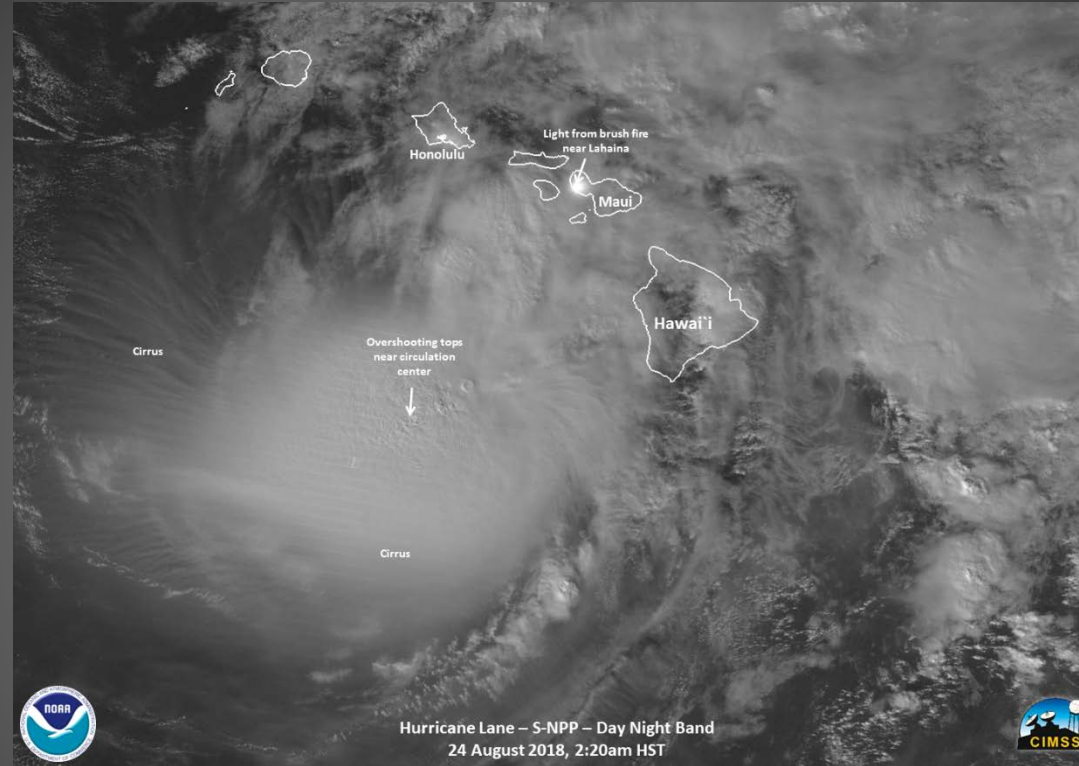
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# Outline

- Utilization of McIDAS-V in JPSS activities

- Overview of instruments supported

- Current Capabilities and Gaps of McIDAS-V

- Examples

# Utilization of McIDAS-V

➢ McIDAS-V has proven useful in the creation of imagery used in both social media as well as in the analysis of imagery

➢ Multiple products, including Level 2 products, from the JPSS program can be displayed

➢ However, there are some critical gaps in McIDAS-V that if addressed, could make it a more powerful tool.

# Suomi NPP/NOAA-20

- It has 5 instruments which retrieve data regarding the atmosphere, land and ocean. 3 of these instruments can be displayed in McIDAS-V

  - VIIRS
  - CERES
  - CrIS
  - ATMS
  - OMPS

# Advanced Technology Microwave Sounder (ATMS)

- 22 microwave channels, combining all the channels of the preceding AMSU-A1, AMSU-A2, and AMSU-B sensors into a single package

- Provides sounding observations needed to retrieve profiles of atmospheric temperature and moisture for forecasting models and continuity for climate monitoring purposes.
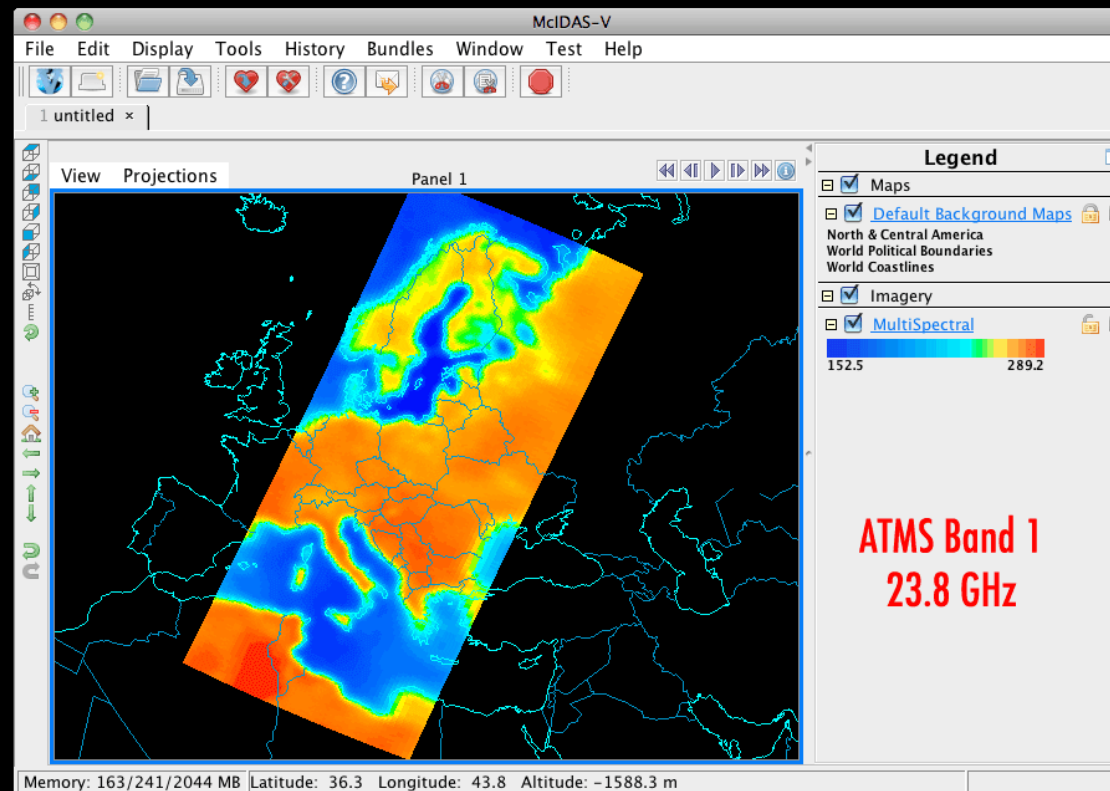
# Cross-track Infrared Sounder (CrIS)

- 1,305 infrared spectral channels
- Designed to provide high vertical resolution information on the atmosphere's structure of temperature and water vapor.



CrIS Brightness Temperatures 07-06-2016 17:30:00Z
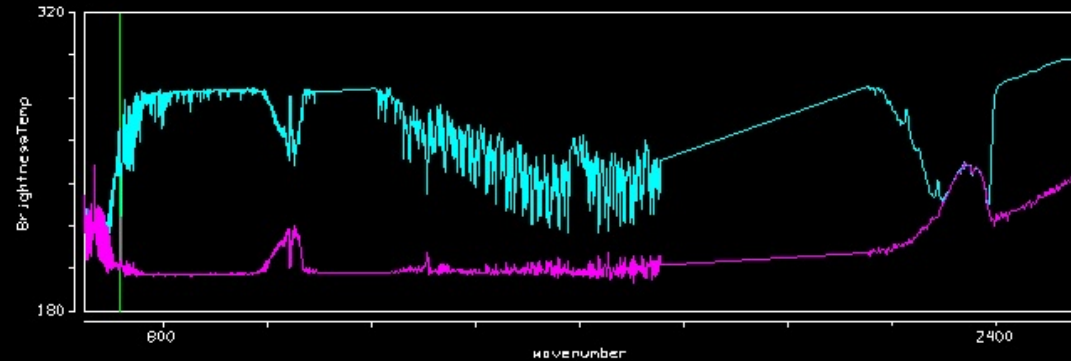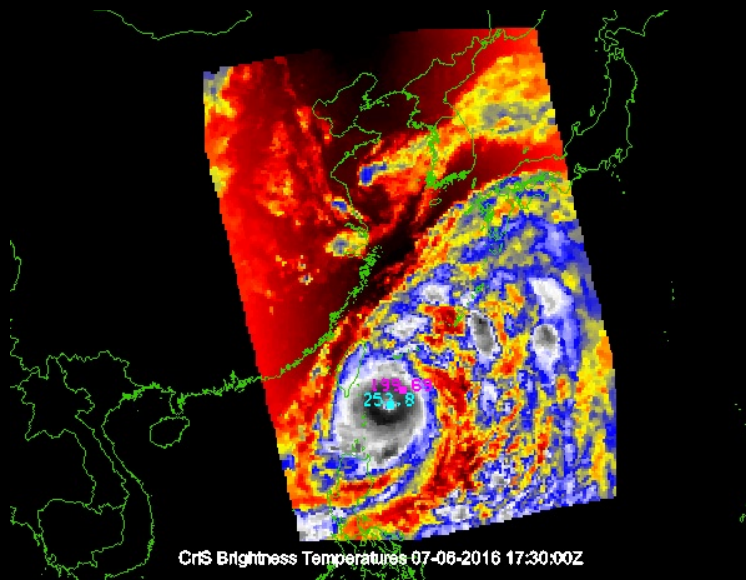
# S-NPP/NOAA-20 Capabilities

▫ Support for CrIS Full Spectrum data.

▫ Chooser rename to JPSS (But still under development?)

▫ Reordering of fields provided now (e.g. M bands used to be listed out of order in multibanded VIIRS files)

▫ Better time formatting in scripting functions

▫ Generalization and renaming of scripting functions, with deprecation warnings provided

▫ Support for visualizing granules which straddle the dateline (note, this issue occurs with other polar and geo data)

# McIDAS-V Gaps for JPSS

- Support for OMPS
  - Needed for comparisons and visualizations with other instruments

- Support for Active Fires product
  - While there is a work around using data from FIRMS, being able to read in the VAFP would be of great help to users for training

- Support for NUCAPS
  - Currently there is no method to display the profiles as well as other products from NUCAPS outside of IDL/MATLAB and AWIPS2 This means that users outside of the NWS (ex. JMA, EUMETSAT) are not able to realize or display NUCAPS data easily. There is also no training tool for NUCAPS.
  - McIDAS-V could fill that gap by allowing NUCAPS soundings and other products to be displayed on top of other products

- Output in other GIS-type formats (ex. geoTIF)
  - Google KML/KMZ files often either don't display properly in other GIS viewers other than Google Earth.
  - This is needed for comparisons and interactions with other groups, both in cal/val and other activities.

- Automatic support for MiRS products
  - Right now it is either a special plugin for older MiRS data or a "secret" plugin for newer MiRS data. Standardizing this as a core part of McV would allow it to be used as a training tool and for better usage by non-US users.

- Default support for JPSS Enterprise EDR products
  - With the transition to enterprise algorithms, the ability to aggregate these products and visualize a swath would be useful to users of the L2 products. Right now, you have to do select each granule individually.
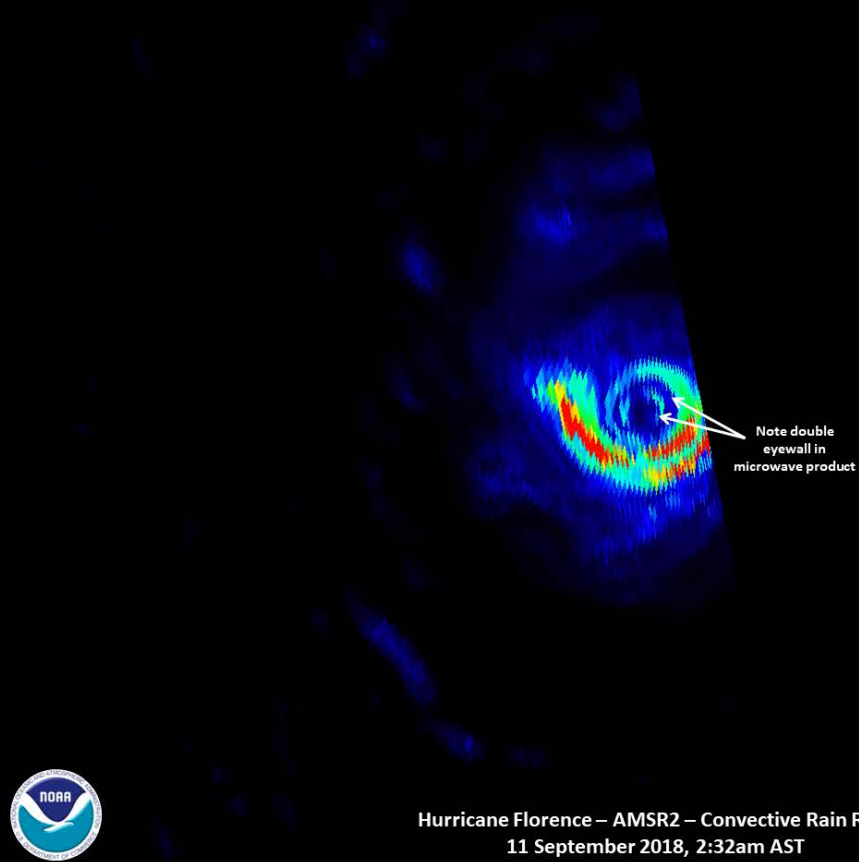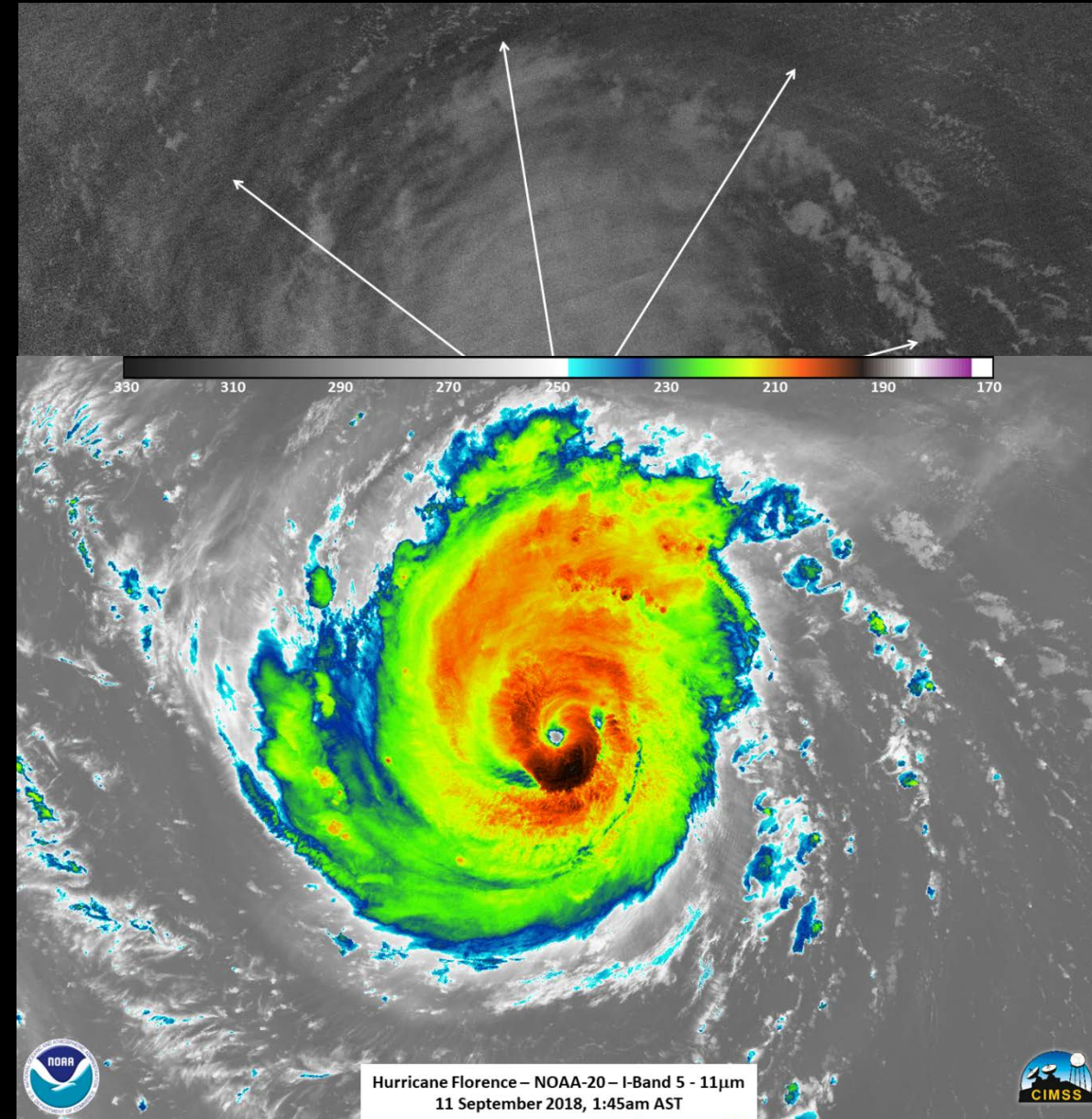
# Examples

# Pre-storm examples
# Hurricane Florence

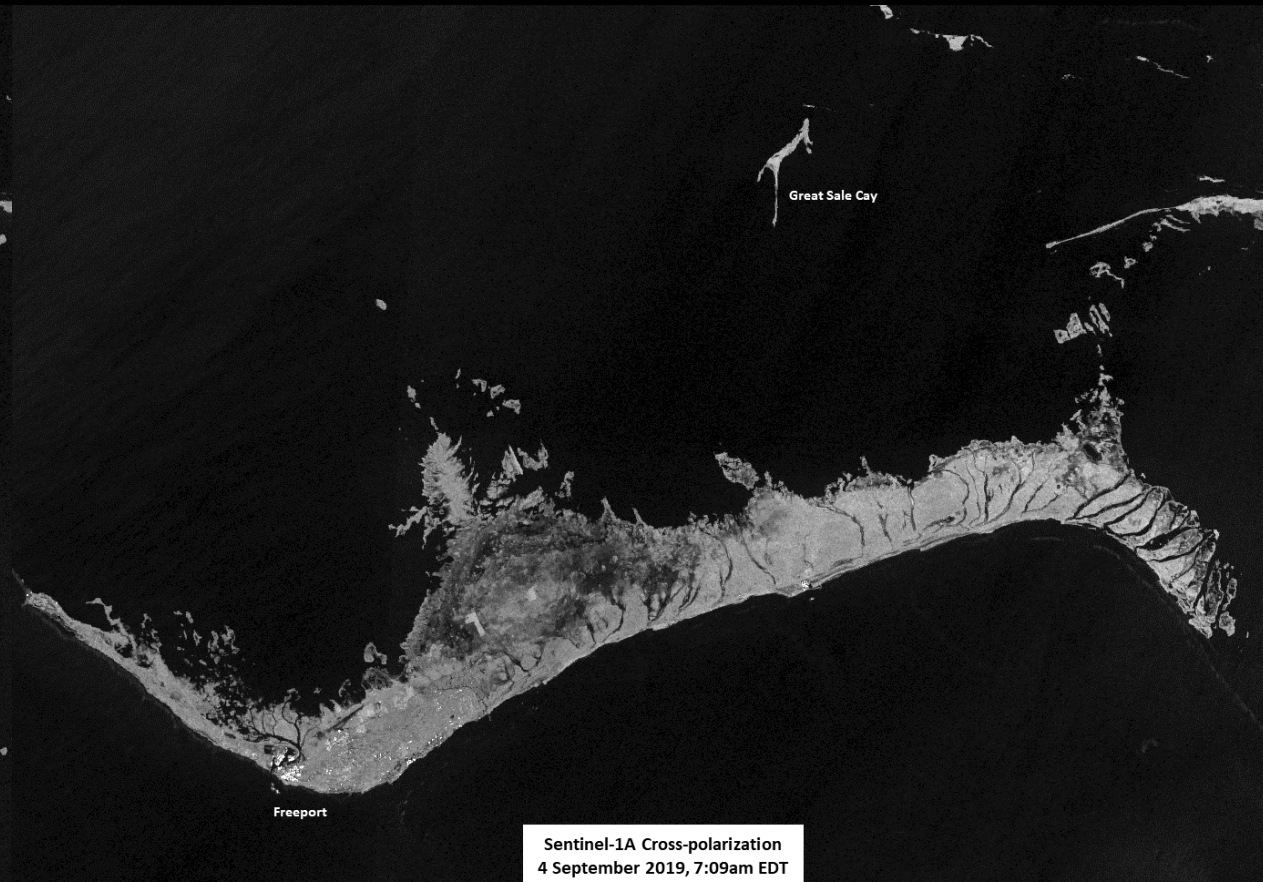Note double eyewall in microwave product

Hurricane Florence – AMSR2 – Convective Rain Rate
11 September 2018, 2:32am AST

Hurricane Florence – NOAA-20 – I-Band 5 - 11μm
11 September 2018, 1:45am AST

# Hurricane Dorian



Great Sale Cay

Freeport

Sentinel-1A Cross-polarization
29 August 2019, 7:10am EDT

Great Sale Cay

Freeport

Sentinel-1A Cross-polarization
4 September 2019, 7:09am EDT

Sentinel-1A/B acquired by ESA/Copernicus, provided by Christopher Jackson, NOAA/STAR/SOCD
Contains modified Copernicus Sentinel data 2019

Hurricane Dorian – AMSR2 – 89.0 GHz AV BT
1 September 2019, 3:04am EDT
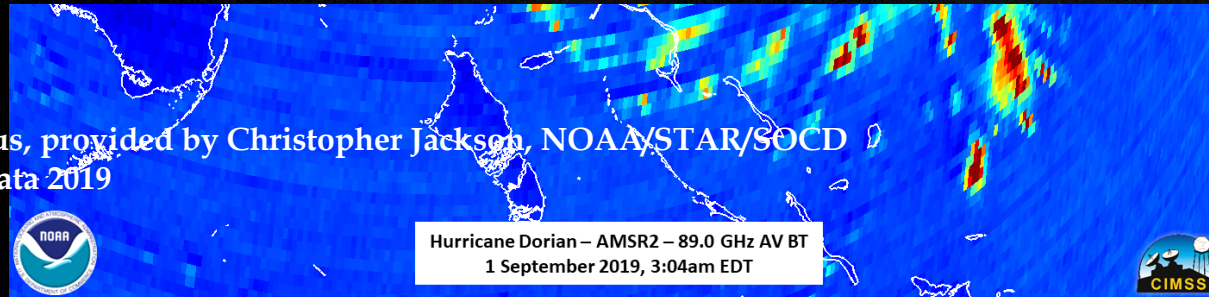
# Support of FEMA's National Level Exercised 2018 ("Hurricane Cora")

# South Korean Wildfires

# 7.1M Ridgecrest Earthquake response

At 10:33am PDT on 4 July, a 6.4M earthquake centered in the Searles Valley, a remote area of Kern County about 100 miles north of Los Angeles, occurred. The next day, a 7.1M occured at 8:20 pm PDT on 5 July (03:20 UTC, 6 July)

https://www.usgs.gov/news/update-magnitude-71-earthquake-southern-california

- ▣ The difference between reference Day Night Band imagery from 3 July and imagery on the morning of 6 July 2019 (2:18am PDT) showed large areas of power areas. These area were consistent with information from the public utilities
- ▣ This imagery was provided to FEMA, who provided it to other stakeholders.



VIIRS – NOAA-20 – Day Night Band
6 July 2019, 2:18am PDT
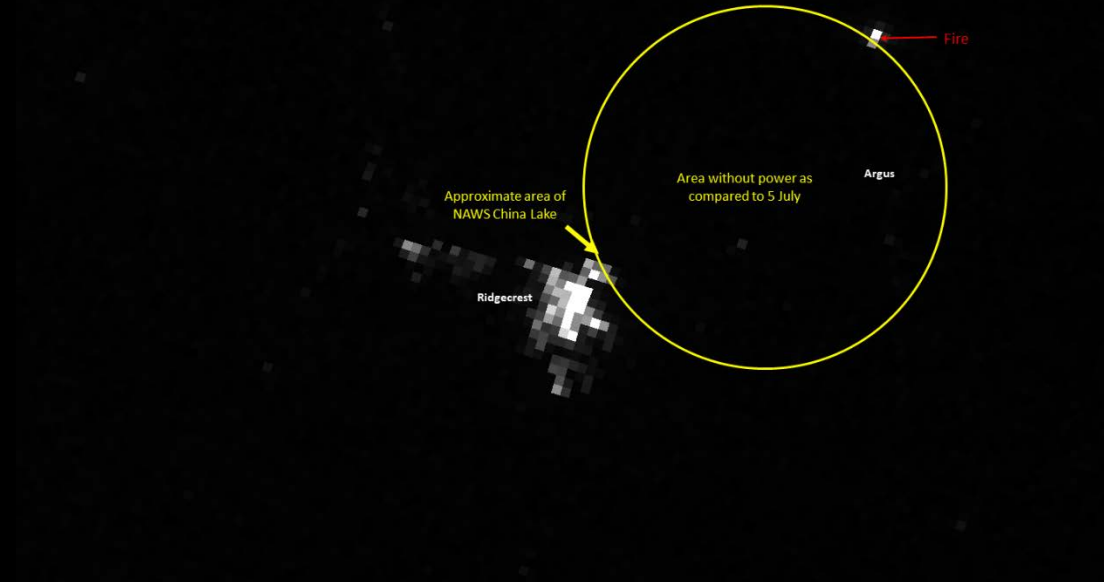
# Summary

➢ McIDAS-V is a very versatile tool, helping to bring in a number of datasets that can be used for a wide variety of purposes (imagery analysis, training, etc.)

➢ However, there are some improvements to McIDAS-V which would allow for more wide-spread usage. These are primarily in the ability to read in Level-2 products from the JPSS Program