VIIRS and MODIS AWIPS products from CSPP/IMAPP

William Straka[1], David Hoese[1], Eva Schiffer[1], Ray Garcia[1], Kathy Strabala[1]

### [1] CIMSS/SSEC, University of Wisconsin-Madison
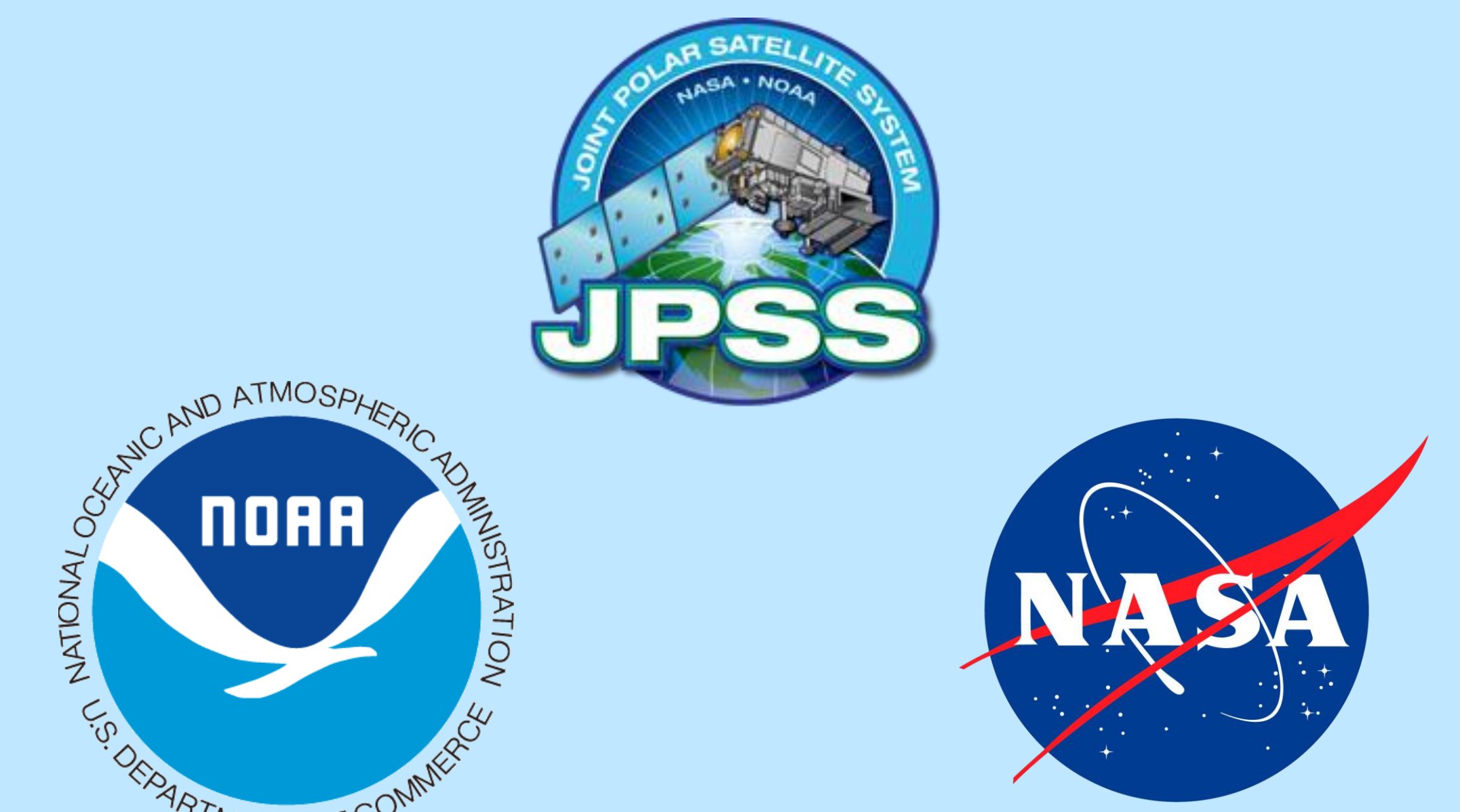
Polar2Grid

Polar-orbiting multi-band meteorological sensors such as VIIRS and MODIS pose substantial challenges for taking imagery "the last mile" to forecast offices, scientific analysis environments, and the general public. To do this quickly and easily, an open-source, modular application system, Polar2Grid, has been created by the Cooperative Institute for Meteorological Satellite Studies at the University of Wisconsin. Polar2Grid provides and automates tools for converting VIIRS and MODIS products into a variety of output formats, including GeoTIFF, AWIPS and AWIPS2, as well as NinJo forecasting workstations. Polar2Grid also includes perceptual enhancements for products such as the VIIRS Day-Night Band (DNB), and performs conversions and projections in seconds on large swaths of data. Data from several direct broadcast antennas are providing VIIRS data, processed by CSPP and polar2grid, to Weather Forecast Offices (WFOs) in Alaska, Hawaii and the continental United States. In the near future, polar2grid will replace the current system used to produce MODIS AWIPS data in the near future for the continental US, as well as producing MODIS imagery for the Hawaii WFOs.

MODIS products

| Product Name |
| --- |
| 0.64 µm Reflectance* |
| 0.86 µm Reflectance*[1] |
| 1.36 µm Reflectance |
| 2.1 µm Reflectance |
| 3.7 µm Brightness Temperature |
| 6.7 µm Brightness Temperature |
| 11 µm Brightness Temperature |
| 11-3.7 µm Brightness Temperature Difference (Night Only) |
| Land Surface Temperature |
| NDVI |
| SST |

* - Uses 250m data as input
[1] – New product
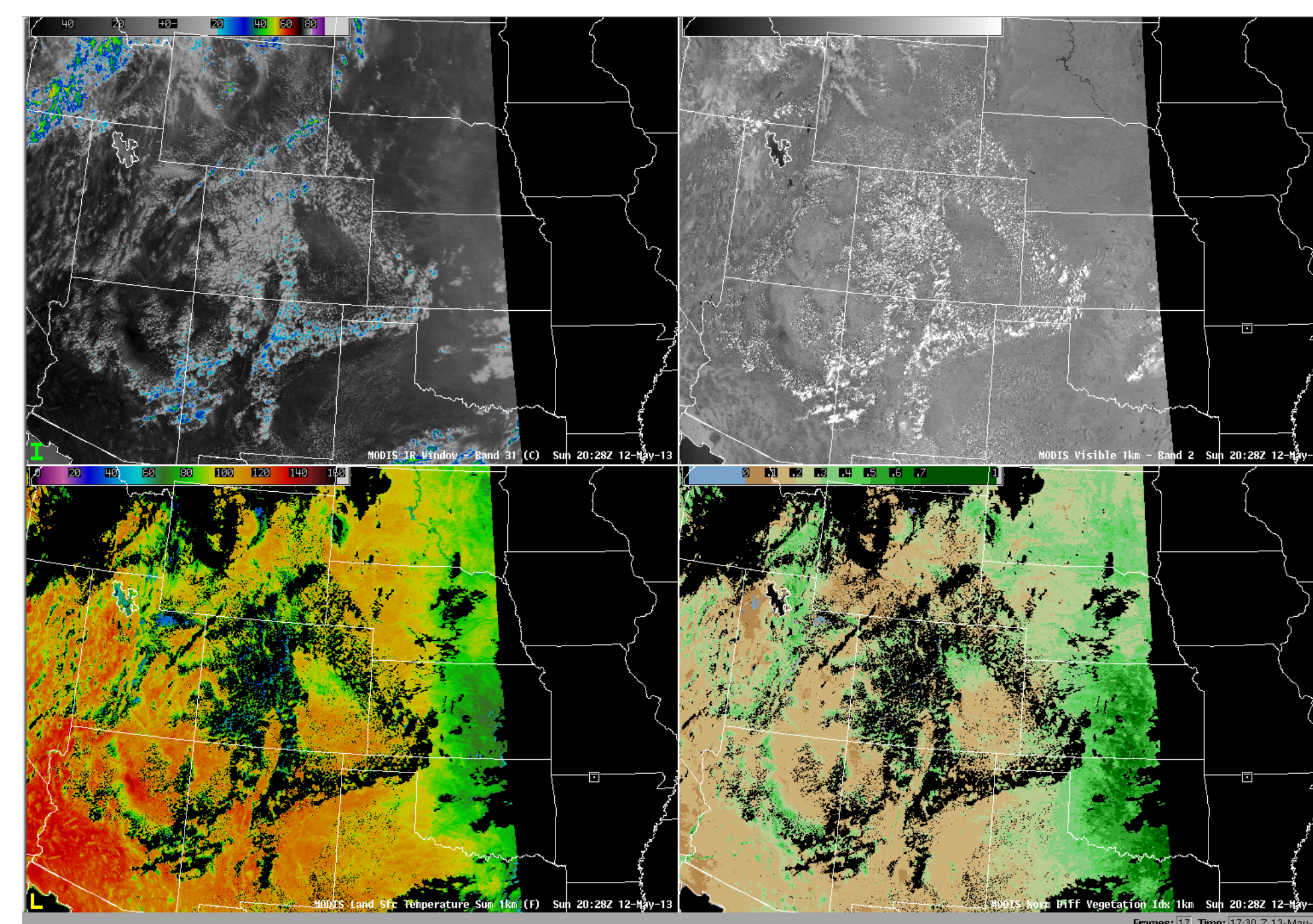
VIIRS Products

"Traditional" Imagery

Product Name
0.64 µm Reflectance
0.86 µm Reflectance
1.6 µm Reflectance
3.7 µm Brightness Temperature
11 µm Brightness Temperature
11-3.7 µm Brightness Temperature Difference (Night Only)
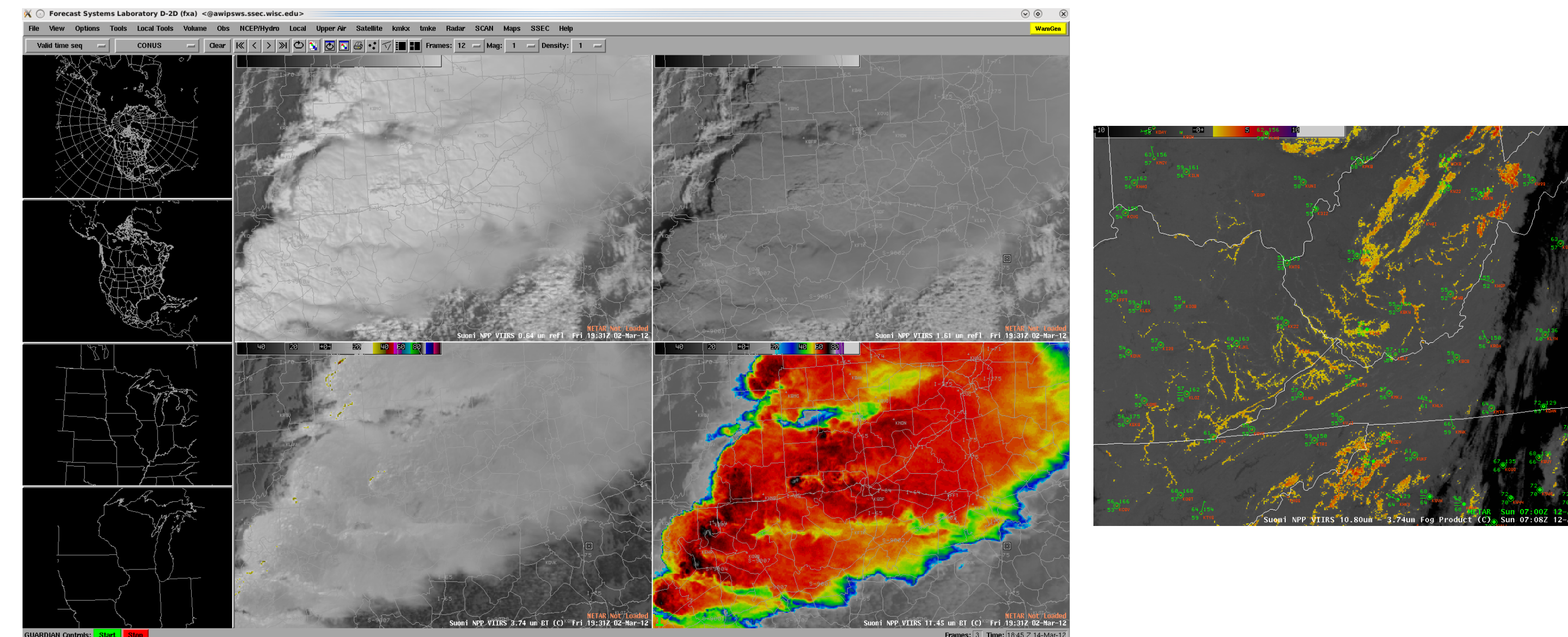
Day Night Band

The day-night band" of the Visible Infrared Imaging Radiometer Suite (VIIRS) is a new sensor for civilian users, which can detect light in a range of wavelengths from green to near-infrared. The DNB is scaled in three regimes based on solar zenith angle using a histogram equalization method. This allows us to display day and night data together in one image, and make the maximum use of all of the data no matter how many regimes are included in a swath.

This band has proven useful by the WFOs in looking at various features, including ice extent at night and low clouds, which are not seen even by the traditional 11-3.7mm brightness temperature difference algorithm.
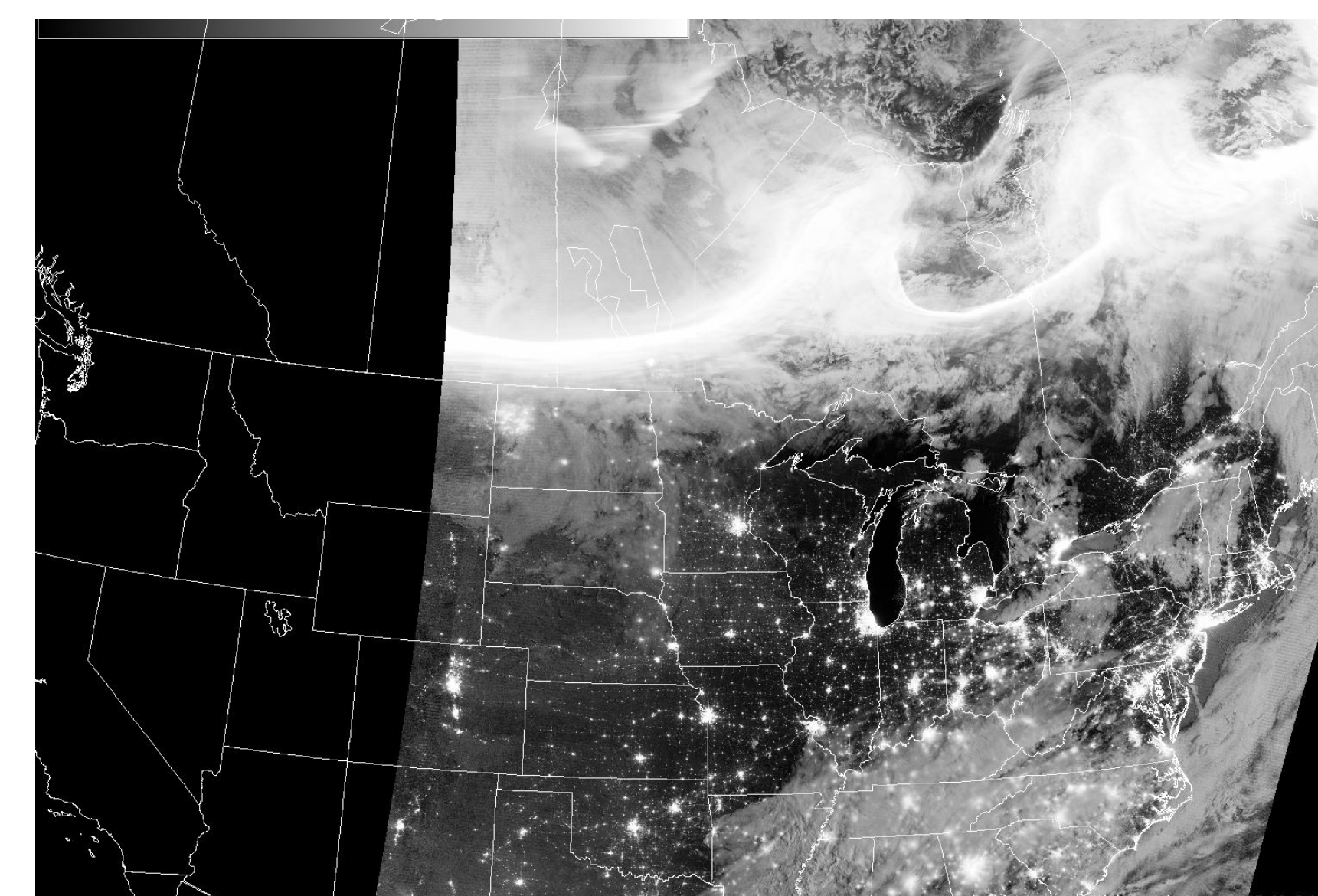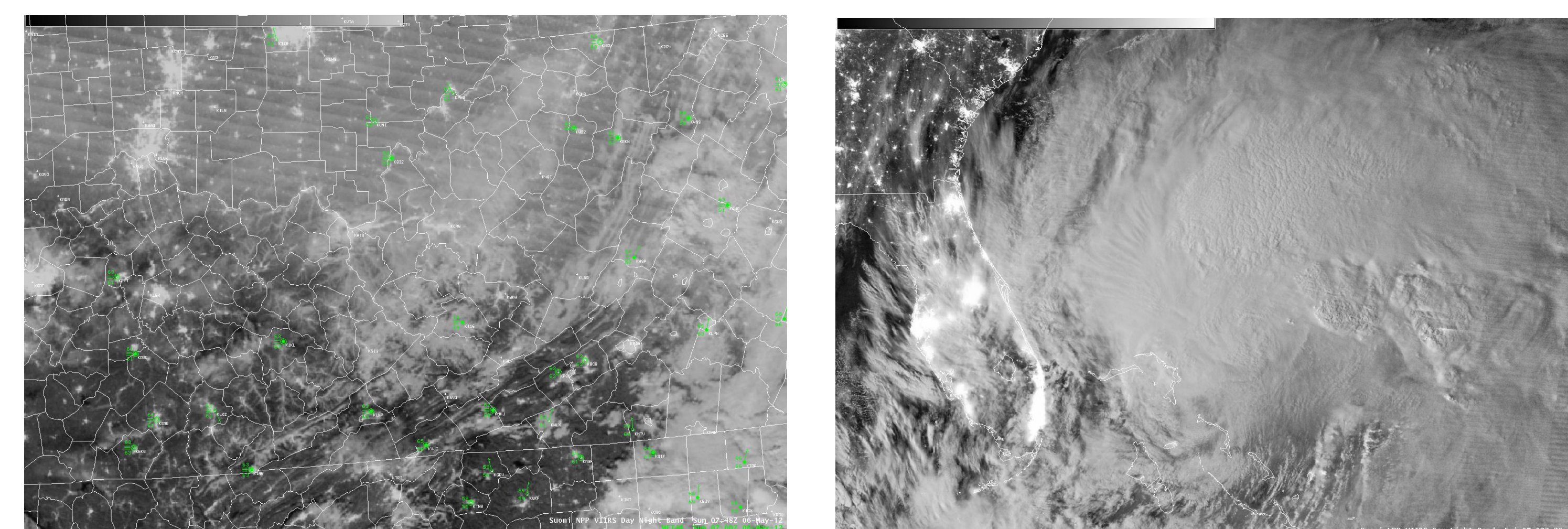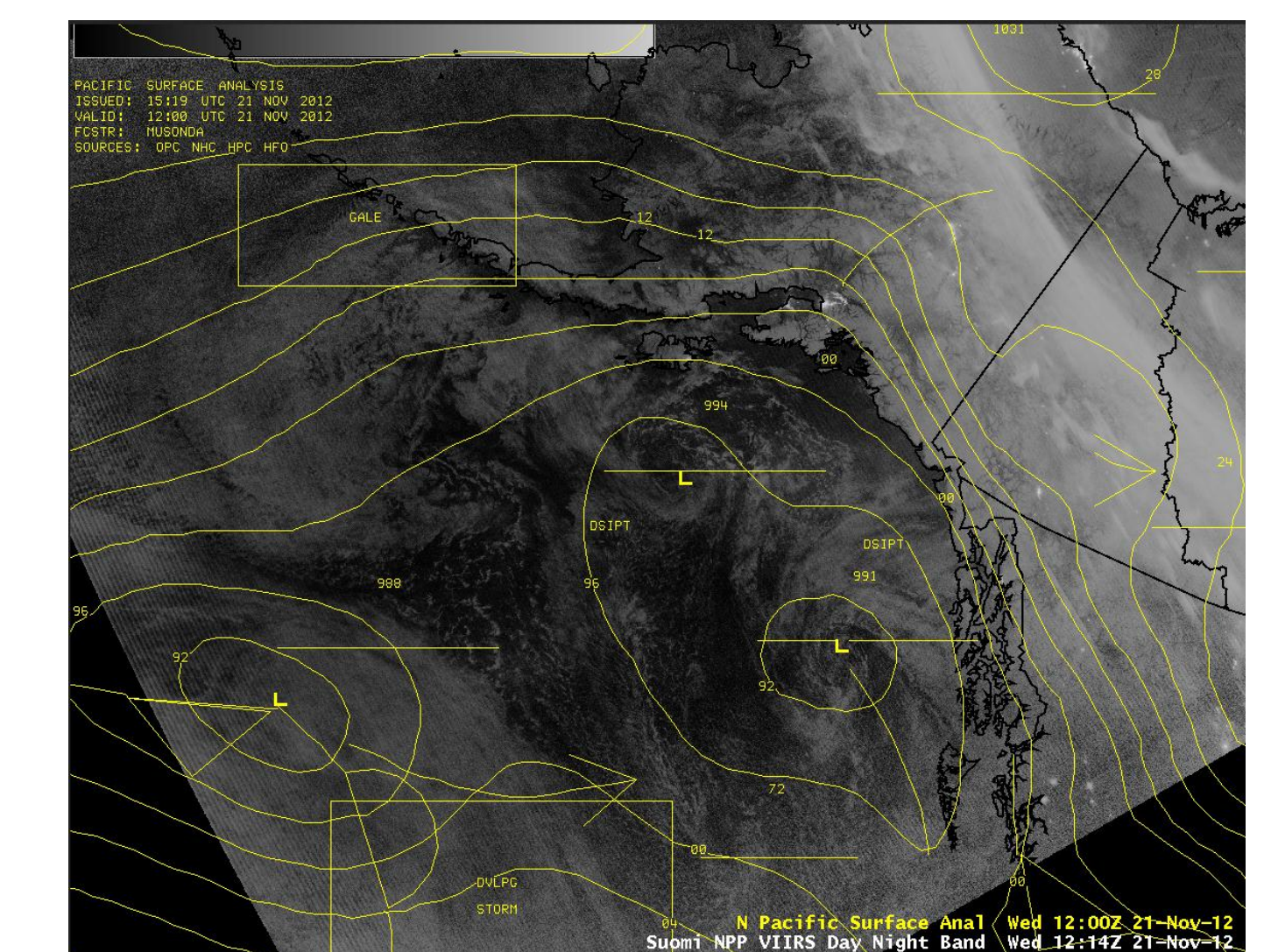

## Examples of Usage

Area Forecast Discussion

FXAK67 PAJK 211453
AFDAJK

SOUTHEAST ALASKA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE JUNEAU AK
553 AM AKST WED NOV 21 2012

.SHORT TERM...SOMEWHAT COMPLICATED PATTERN IN THE GULF AND NORTHEAST PACIFIC THIS MORNING. THERE ARE AROUND 4 SEPARATE CIRCULATION CENTERS VISIBLE ON IR AND VIIRS NIGHTTIME VISIBLE IMAGES.

Social Media
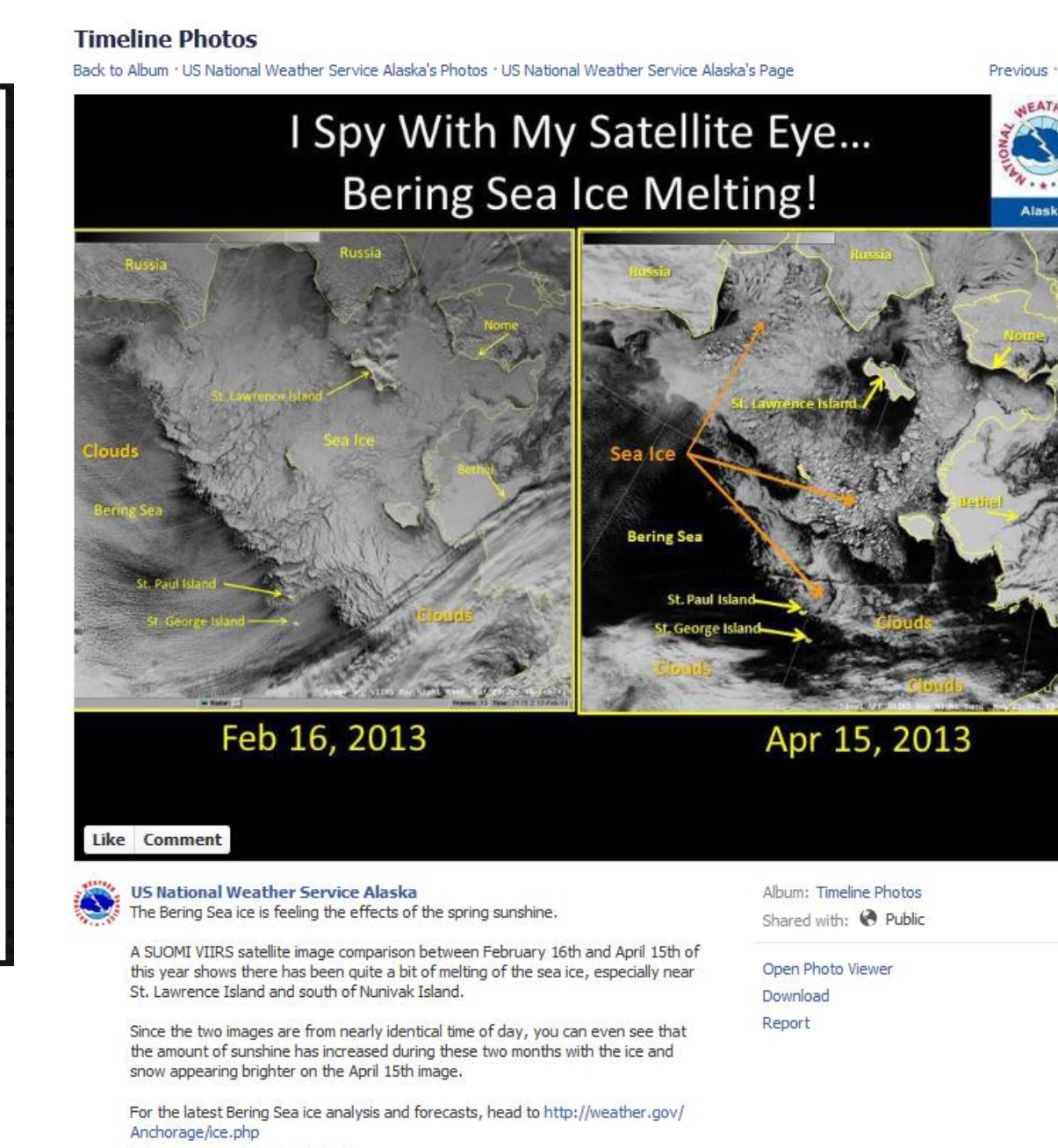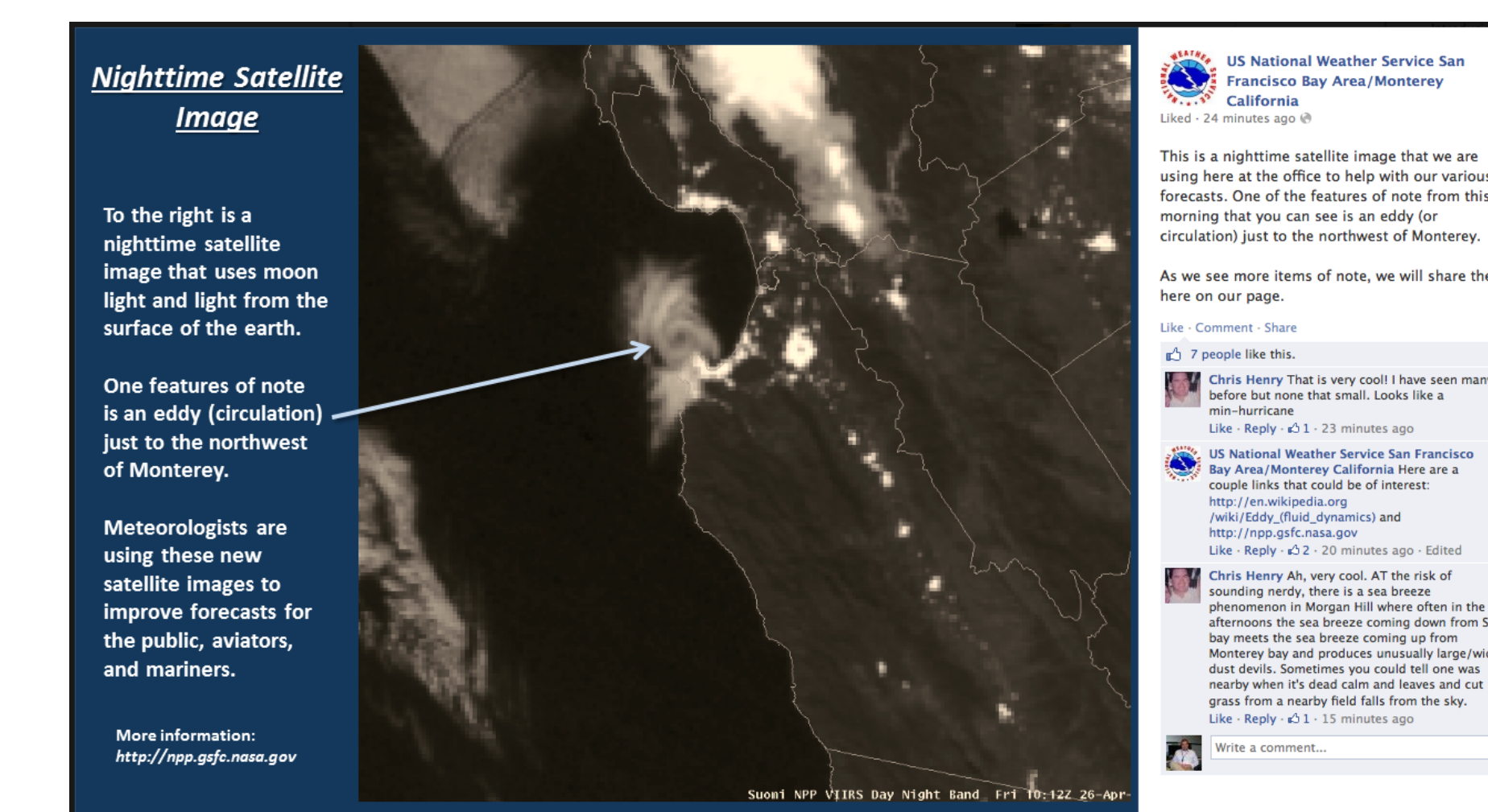
Future Products

Future AWIPS products from CSPP and IMAPP will include derived MODIS products, derived VIIRS EDR products, AWIPS2 compatible full resolution VIIRS EDR products, as well as products from CrIS and ATMS.