



Figure 2. Jim Nelson, Science and Operations Officer (SOO) at the NWS Forecast Office in Anchorage, Alaska, examines the first image of the VIIRS Day/Night band as displayed in AWIPS. The data was captured using the DB antenna at GINA in Fairbanks, AK, automatically processed using CSPP software.

which can be a hazard for transportation including airlines and highway travellers.

The VIIRS sensor onboard Suomi NPP also offers a new capability to capture images of clouds and the land surface at visible wavelengths at night, using only the illumination from the moon, or from surface and atmosphere features that emit

light when there is no moon. This new feature of Suomi NPP will have an immediate impact in applications such as transportation safety by detecting low fog over highways at night, and also will provide new capabilities for detecting fires, smoke and snow cover at night.

SSEC operates its own X/L-band ground station on the UW-Madison campus, which captures DB data from Suomi NPP in real-time (Figure 3), as well as DB data from the Terra, Aqua, and NOAA POES satellites. Data processed with CSPP at SSEC/CIMSS are now distributed to users including the NWS, the US Naval Research Laboratory in Monterey CA, NASA Marshall Spaceflight Center, the US Forest Service, and the Canadian Ice Service. SSEC/CIMSS facilitates NWS users of polar-orbiting

“The first step was to install CSPP” Strabala says. “Then we remap, colorize, and convert the VIIRS Science Data Record (SDR) files into the format required for display in the National Weather Service’s AWIPS software. The next step is to introduce the NWS forecasters to the imagery and its applications. VIIRS data from the Suomi NPP offers new value to forecasters because of its new day/night band, its larger swath size, and its more consistent spatial resolution. Making these new data available in AWIPS will provide the NWS forecasters with better information to do their job.”

In the the lower 48 states, NWS forecasters will use real-time VIIRS imagery for detecting water temperature in the Great Lakes, which has a strong influence on the air temperature for cities including Chicago and Milwaukee, as well as providing information for recreational and commercial users of the lake and coastal regions. The NWS will also use real-time VIIRS data at night for detecting fog close to the surface,

satellite products supplying data to AWIPS in real-time. Starting with the NWS Forecast Office in 2006, SSEC/CIMSS now supplies real-time image products from Suomi NPP, Terra, and Aqua to 57 NWS forecast offices around the United States.

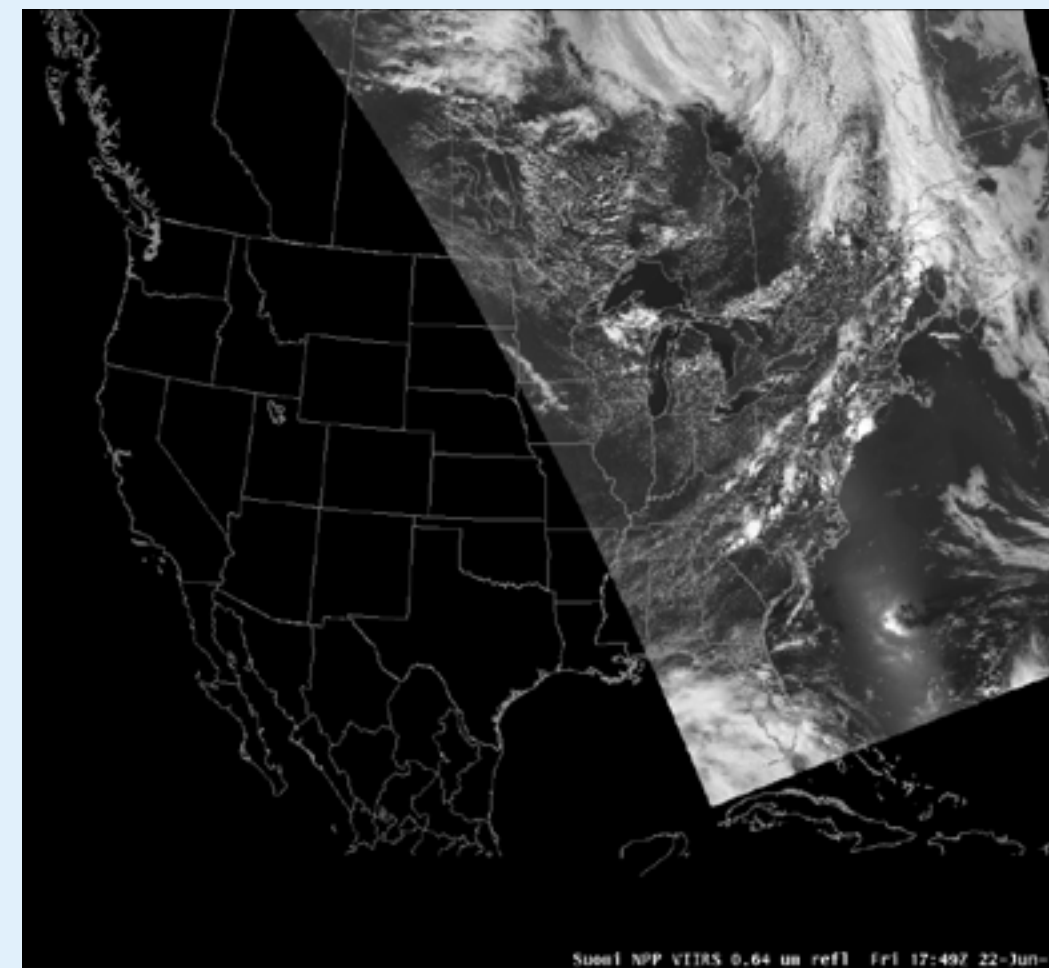
The Community Satellite Processing Package continues a 25-year tradition of supporting the US and international DB communities with free access to software for processing of data from polar-orbiting satellites. When combined with the relatively low cost of DB antenna systems, the opportunity to acquire data in their region of the world in real time, and the demonstrated value of polar-orbiter products, CSPP is promising a great future for those involved in weather forecasting and environmental monitoring.

Liam Gumley
Kathy Strabala
Tom Achtor

Important Disclaimer: CSPP is providing Suomi NPP processing functionality using preliminary algorithms and data to prepare users for real-time direct broadcast applications. Official algorithms are pending and the Suomi NPP calibration/validation checkout has not been completed.



Figure 3. Installation of the SSEC X/L-band Direct Broadcast antenna on the UW-Madison campus in September 2011.



A swath of VIIRS visible imagery from 17:49 UTC (12:49 PM CDT) on 22 June 2012, in AWIPS.

Since 2006, SSEC has maintained a relationship with the National Weather Service (NWS) to foster the distribution of satellite imagery and science products to the Advanced Weather Interactive Processing System (AWIPS) at field offices. This collaboration began with the Milwaukee NWS office receiving MODIS imagery collected using an antenna atop SSEC and has since expanded to over 50 NWS offices nationwide.

One significant advantage of the polar-orbiting imagery from MODIS over traditional geostationary imagery is the higher spatial resolution and greater number of spectral bands,

which allows for the production of more meaningful science products. For example, the sea surface temperature product provides water skin temperature for the Great Lakes and has been widely used to forecast coastal weather conditions.

VIIRS imagery continues the spatial and spectral legacy of instruments like MODIS in the polar-orbiting orbit with one significant addition, the day/night band. The day/night band is a high-gain visible band which is sensitive to reflected solar light from the moon cast upon clouds. The day/night band also is capable of sensing city lights, lightning, auroras, and fires. SSEC’s NWS partners are looking

forward to receiving this imagery to solve a myriad of forecast problems where forecasters are literally “in the dark” during the overnight hours.

SSEC introduced this imagery to NWS Anchorage in May 2012. NWS Honolulu is receiving assistance from SSEC in preparing their antenna for collecting VIIRS imagery over the Pacific Ocean beginning in August 2012.

These demonstrations are known as proving grounds, which have been widely useful for supporting NWS operations.

Jordan Gerth