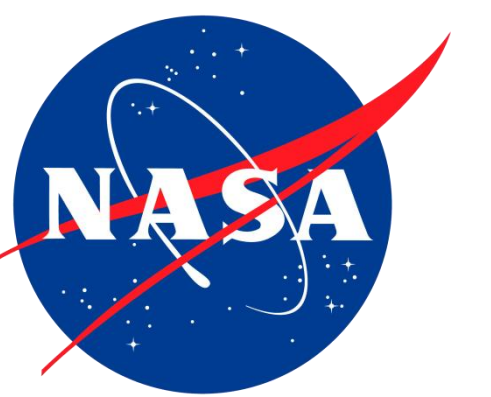




VIIRS in AWIPS: Supporting Operational Forecasters



Kathleen Strabala⁺, Ray Garcia⁺, William Straka III⁺, David Hoese⁺, Eva Schiffer⁺, Jordan Gerth⁺, Scott Bachmeier⁺, Liam Gumley⁺, Allen Huang⁺, Katja Hungershofer[§], Tom Heinrichs^{*}

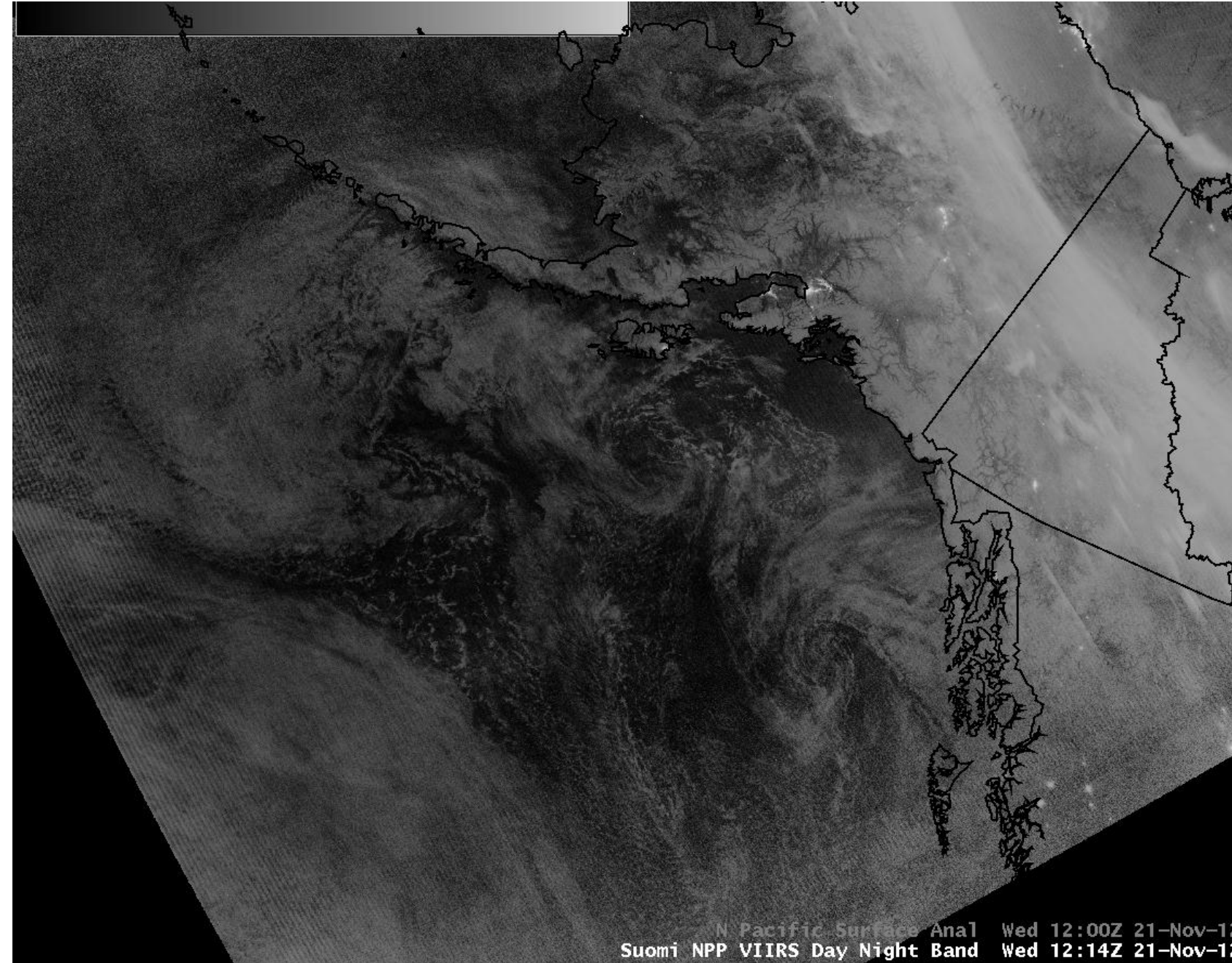
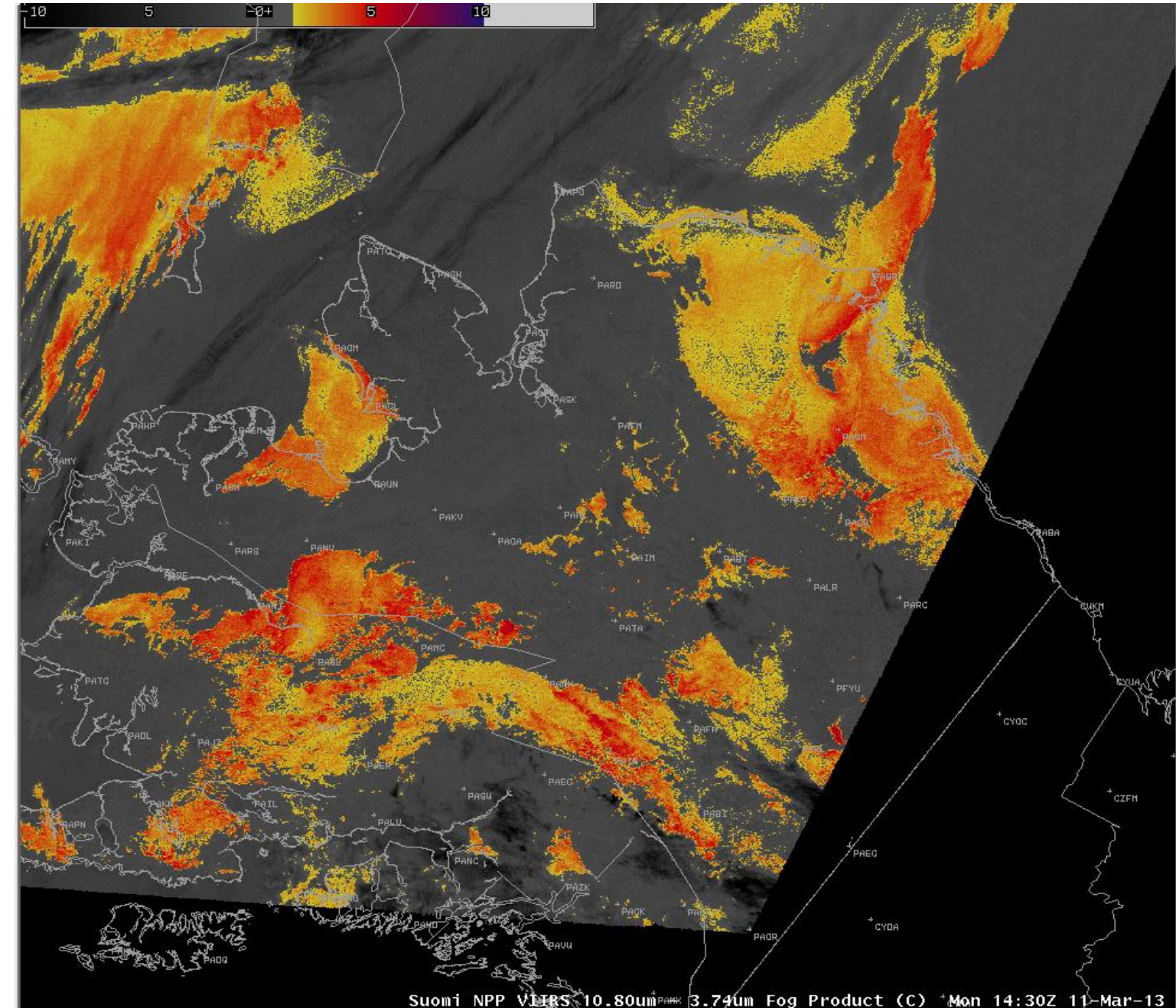
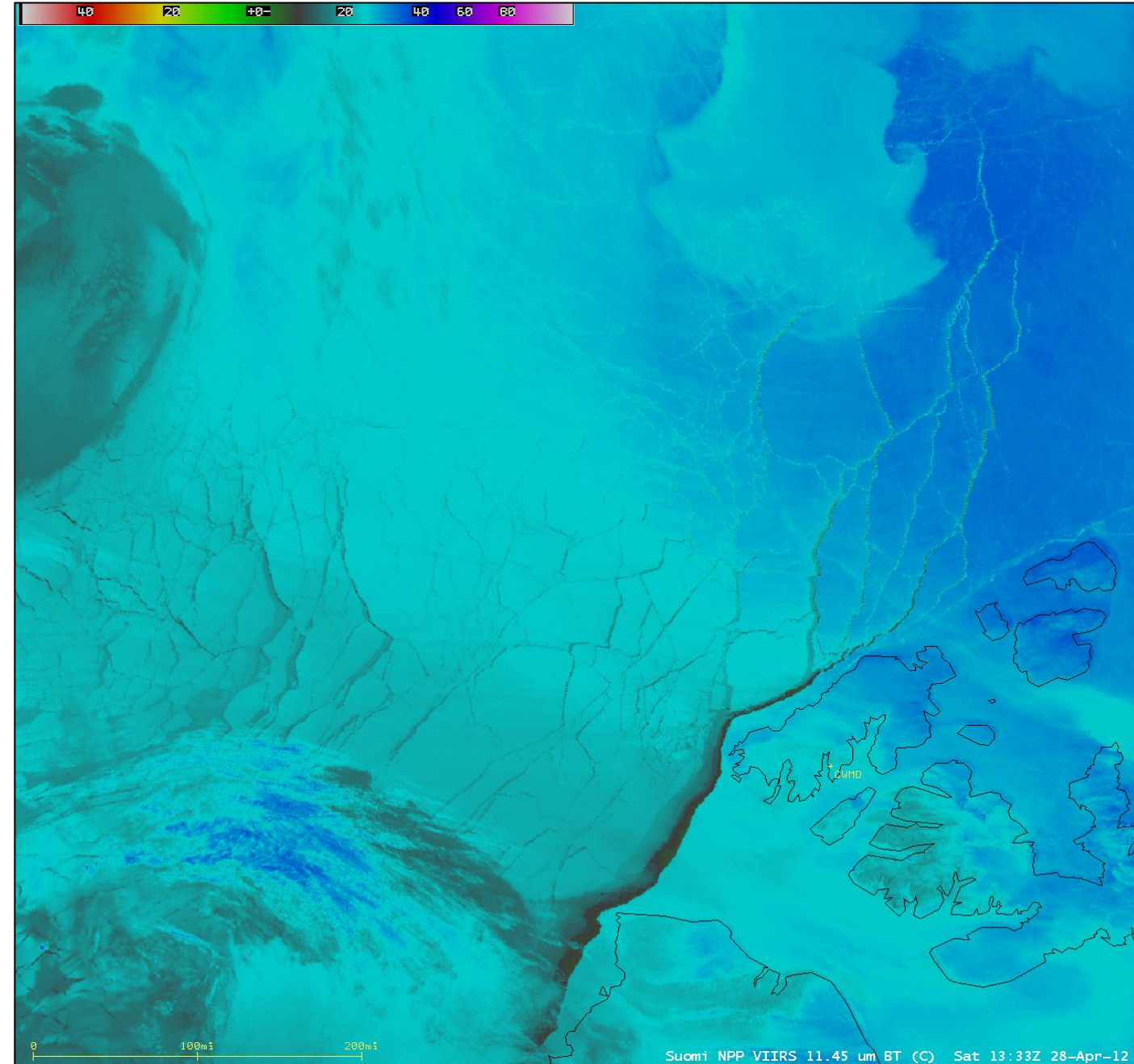
⁺University of Wisconsin-Madison, Space Science and Engineering Center

[§]Deutscher Wetterdienst, Offenbach, Germany ^{*}University of Alaska Fairbanks, GINA



Direct Broadcast Suomi NPP VIIRS Data used in AWIPS

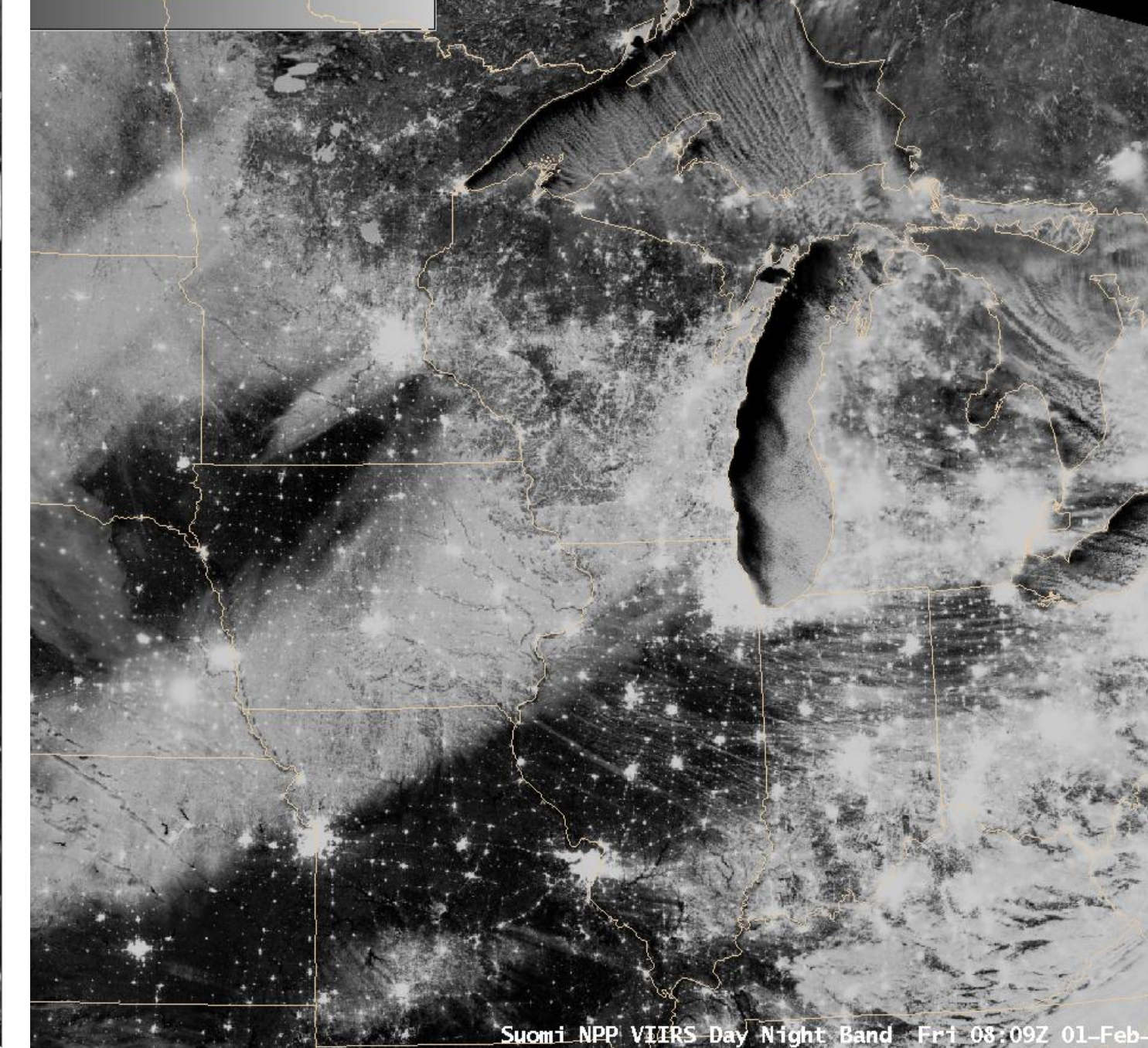
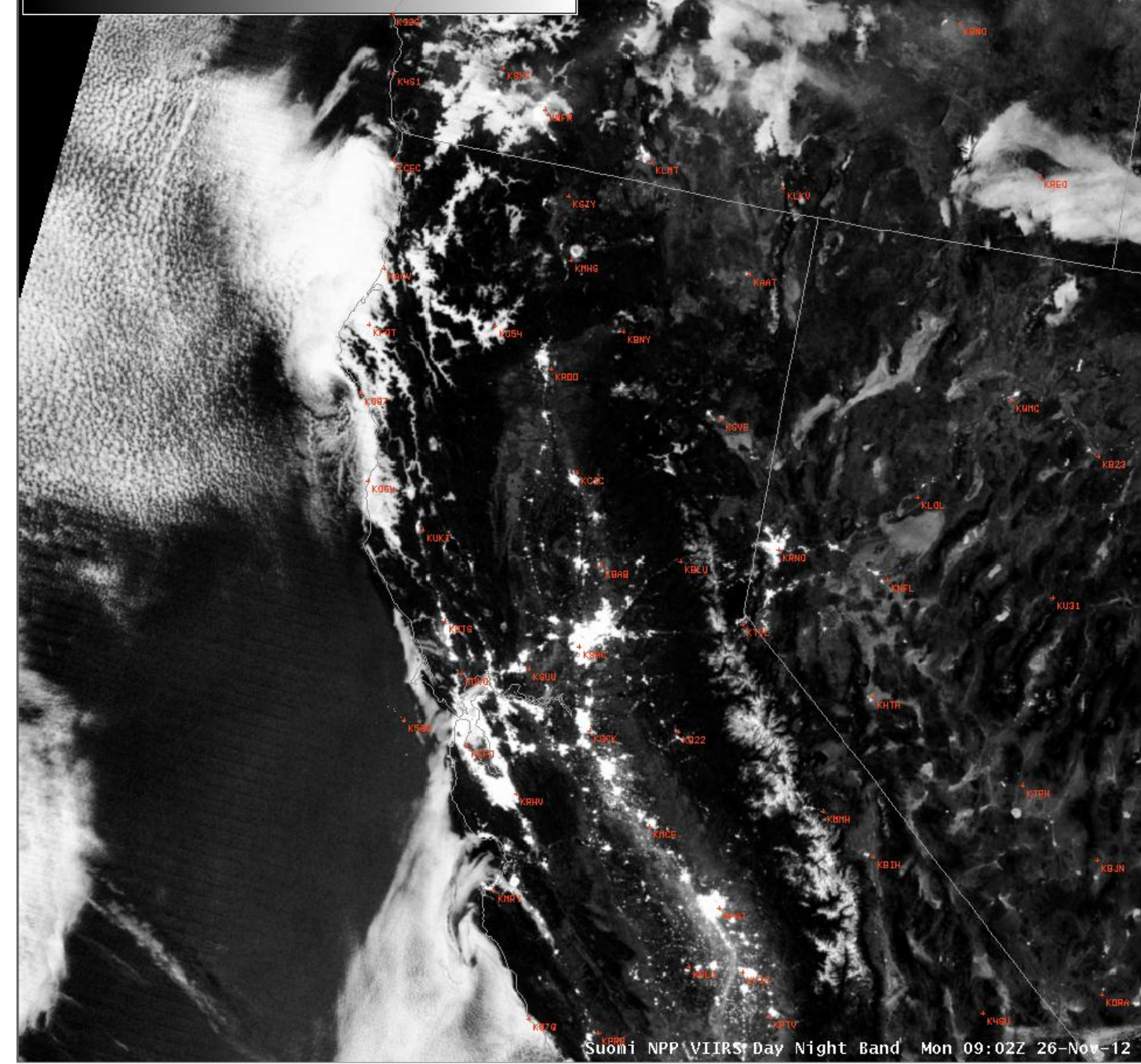
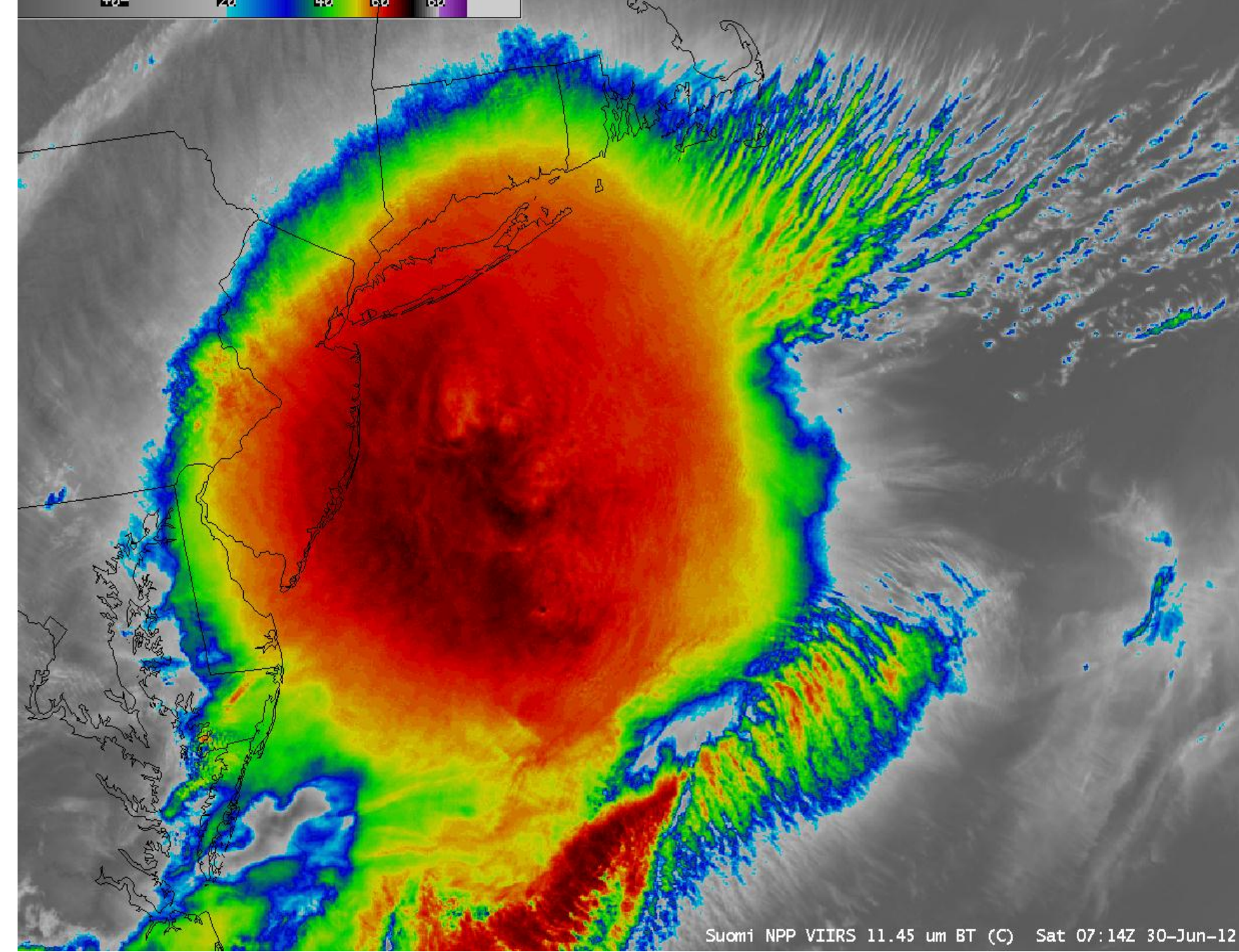
AWIPS Alaska Grid Projection Examples



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**. THE STRONGEST IS WEST OF DIXON ENTRANCE CURRENTLY AND IS SLOWLY WEAKENING AS IT REMAINS NEARLY STATIONARY. A SECOND LOW IS JUST SE OF KODIAK ISLAND, A THIRD IS AROUND 50N 140W, AND THE FOURTH IS A VERY WEAK ONE OVER HAIDA GWAIH. THEY ARE RESPONSIBLE FOR THE SHOWERS THAT ARE OVER THE SOUTHERN INNER CHANNELS AT THE MOMENT. KETCHIKAN AND ANNETTE HAVE BEEN REPORTING RAIN MOST OF THE MORNING AND THE RADAR SHOWS SOME SHOWERS AROUND SOUTHERN BARANOF ISLAND AS WELL. PRECIP AMOUNTS HAVE BEEN LIGHT FOR THE MOST PART. THESE FEATURES WILL CONTINUE TO WEAKEN OVER THE NEXT 12 TO 18 HOURS AS A DEVELOPING LOW IN THE NORTH CENTRAL GULF BEGINS TO SPREAD ITS INFLUENCE INTO THE GULF.

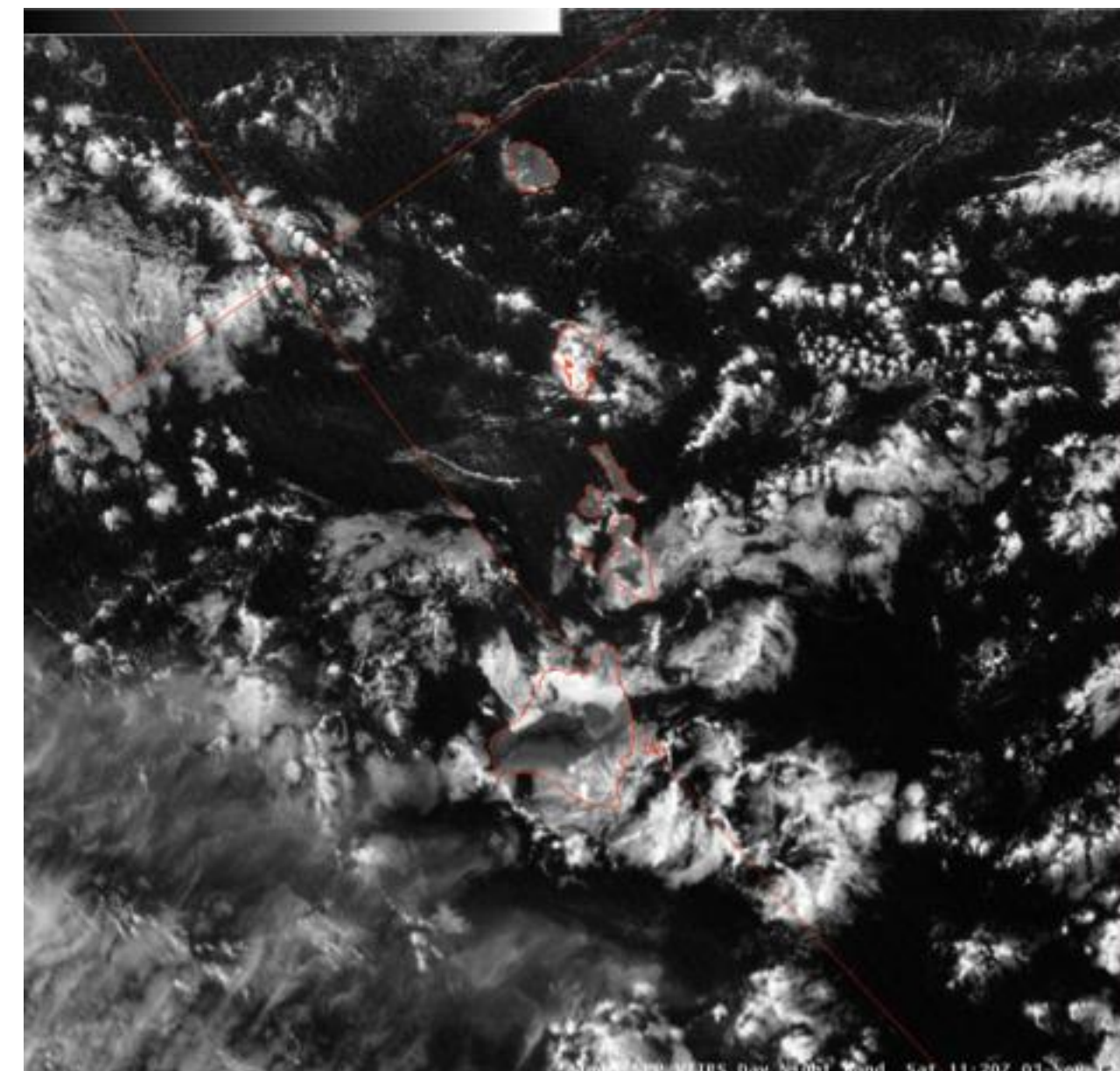
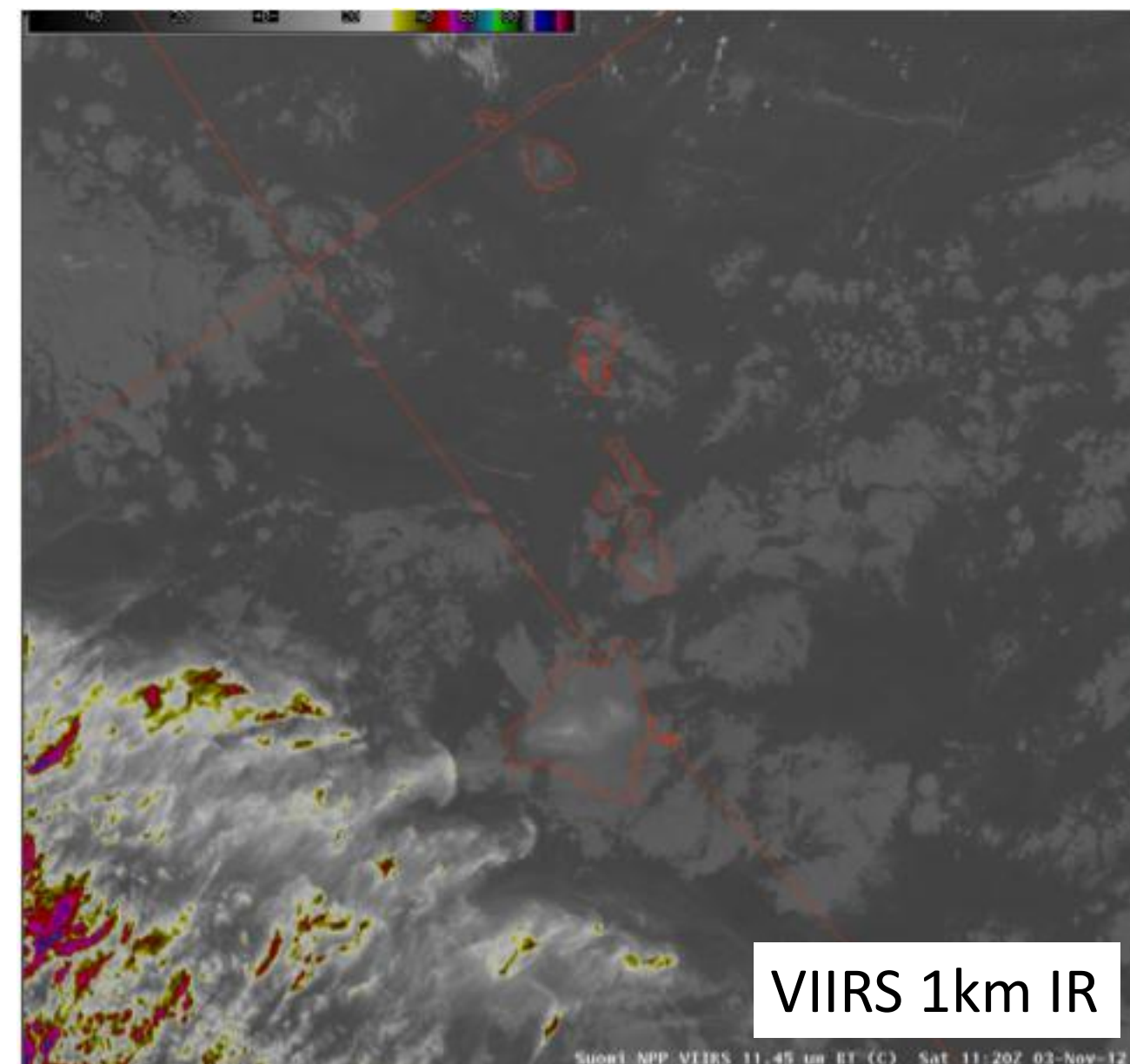
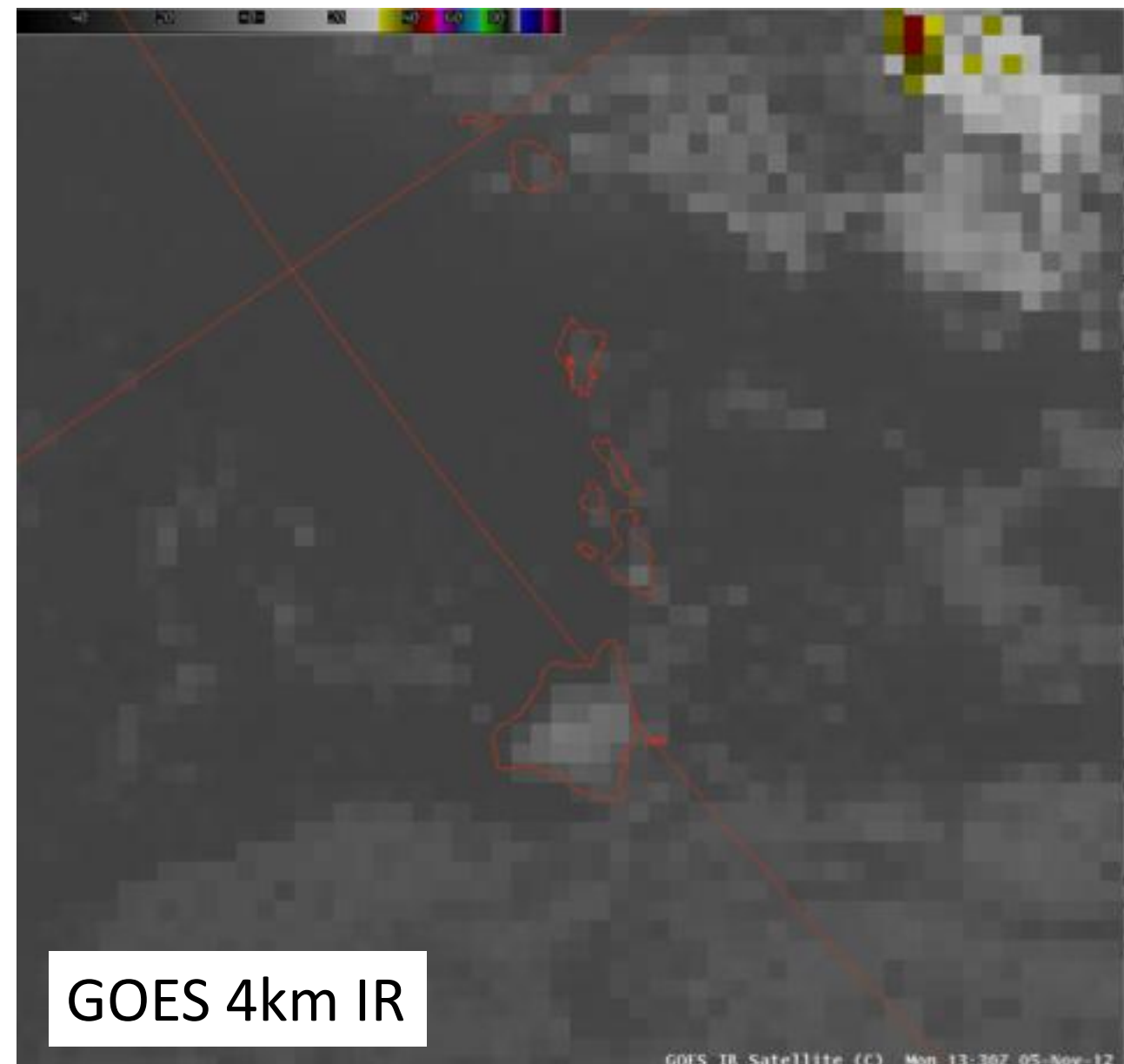
AWIPS CONUS Grid Examples



AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE MILWAUKEE/SULLIVAN WI
309 AM CST MON NOV 26 2012

.TODAY AND TONIGHT...FORECAST CONFIDENCE...MEDIUM TO HIGH WEAK LOW LEVEL COLD AIR ADVECTION EXPECTED TO CAUSE AREAS OF LOWER CLOUDS OVER SRN WI FOR A TIME THIS MRNG. **TIMELY VIIRS DAY/NIGHT BAND IMAGE FROM 0721Z** SHOWED THICKER CLOUDS OVER NORTHWEST CWA EXTENDING ACROSS CENTRAL INTO NRN WI. A FEW FLURRIES GETTING SHAKEN FROM THESE CLOUDS FARTHER NORTH IN VICINITY OF WEAK LOW LEVEL CONVERGENCE. AS UPPER JET FINALLY SLIDES OFF TO THE EAST...LOW CLOUDS WILL INCREASE FOR A TIME EARLY THIS MRNG ACROSS SRN WI. HOWEVER INCREASING SUBSIDENCE FROM LEFT ENTRANCE REGION AND DRYING SHOULD RESULT IN CLOUDS DECREASING LATER THIS MRNG AND AFTN. DAYTIME TEMPS NOT EXPCD TO RISE MUCH DUE TO NORTHWEST WINDS CARRYING EVEN COLDER AIR OVER THE REGION. ... TODAY/TONIGHT AND AVIATION/MARINE...MBK

AWIPS Pacific Grid Examples



HAWAIIAN ISLANDS SATELLITE INTERPRETATION MESSAGE
NWS CENTRAL PACIFIC HURRICANE CENTER HONOLULU HI
1230 UTC SAT NOV 03 2012

NIGHTTIME SATELLITE IMAGERY FROM THE VIIRS DAY-NIGHT BAND SHOWS MOSTLY CLOUDY SKIES OVER THE WINDWARD BIG ISLAND WITH RADAR CONFIRMING SOME LIGHT SHOWERS IN THE AREA. THE WINDWARD HANA COAST AND LOWER SLOPES ARE COVERED WITH LOW CLOUDS WHILE THE REST OF MAUI COUNTY IS CLEAR. ON OAHU...PARTLY CLOUDY SKIES PREVAIL. ON KAUAI...THE EARLIER CLOUDY SKIES HAVE CLEARED IN THE EARLY MORNING. \$\$ MORRISON

Conclusions

Suomi NPP VIIRS data is being used by operational NWS forecasters because:

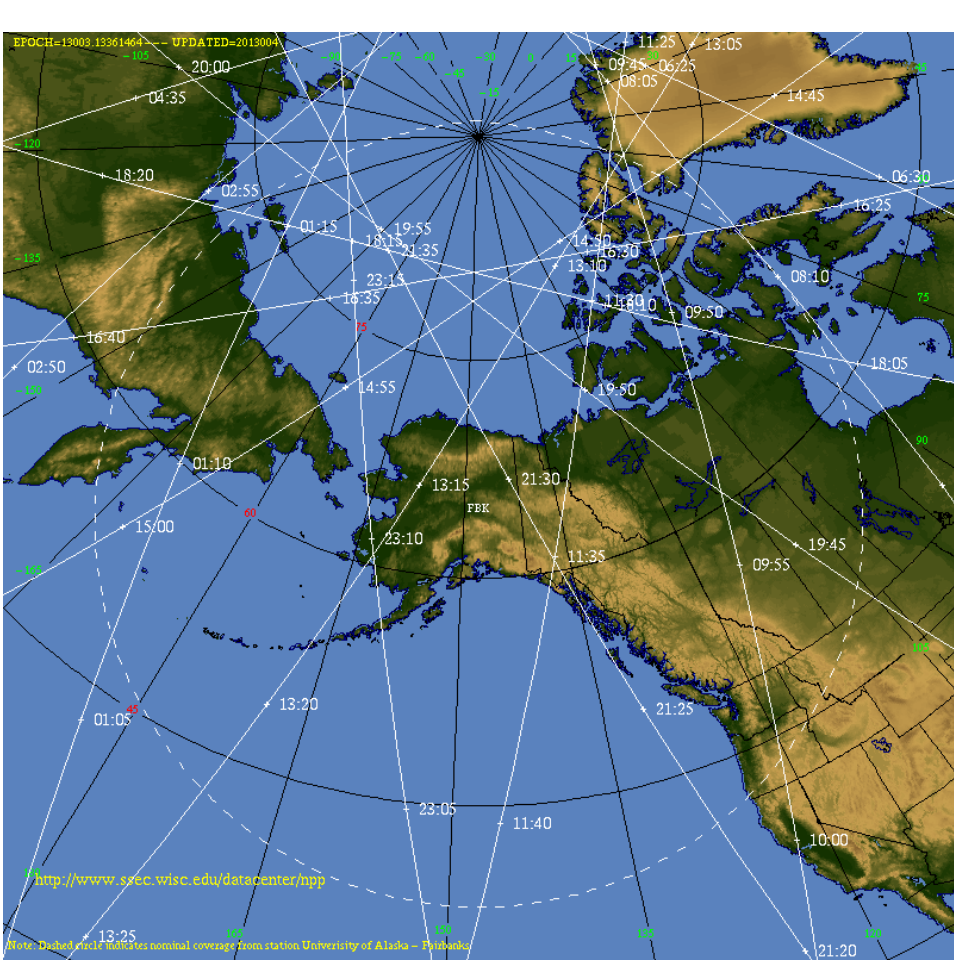
- High quality of data, well calibrated and geolocated
- Higher spatial resolution – consistent to the edge of scan
- New day/night band – visible data at night!
- DB allows timely delivery of products
- Polar2grid tool allows for quick accurate remapping onto AWIPS grids
- Complements the high temporal Geostationary satellite products

Introduction

The JPSS project has funded the inclusion of VIIRS data in AWIPS in support of operational National Weather Service Forecasters. The focus of this effort is to provide data to high latitude regions (Alaska), where there are more frequent polar overpasses, and where the geostationary data large view angles make it less effective in monitoring small scale events, as part of the JPSS proving ground.

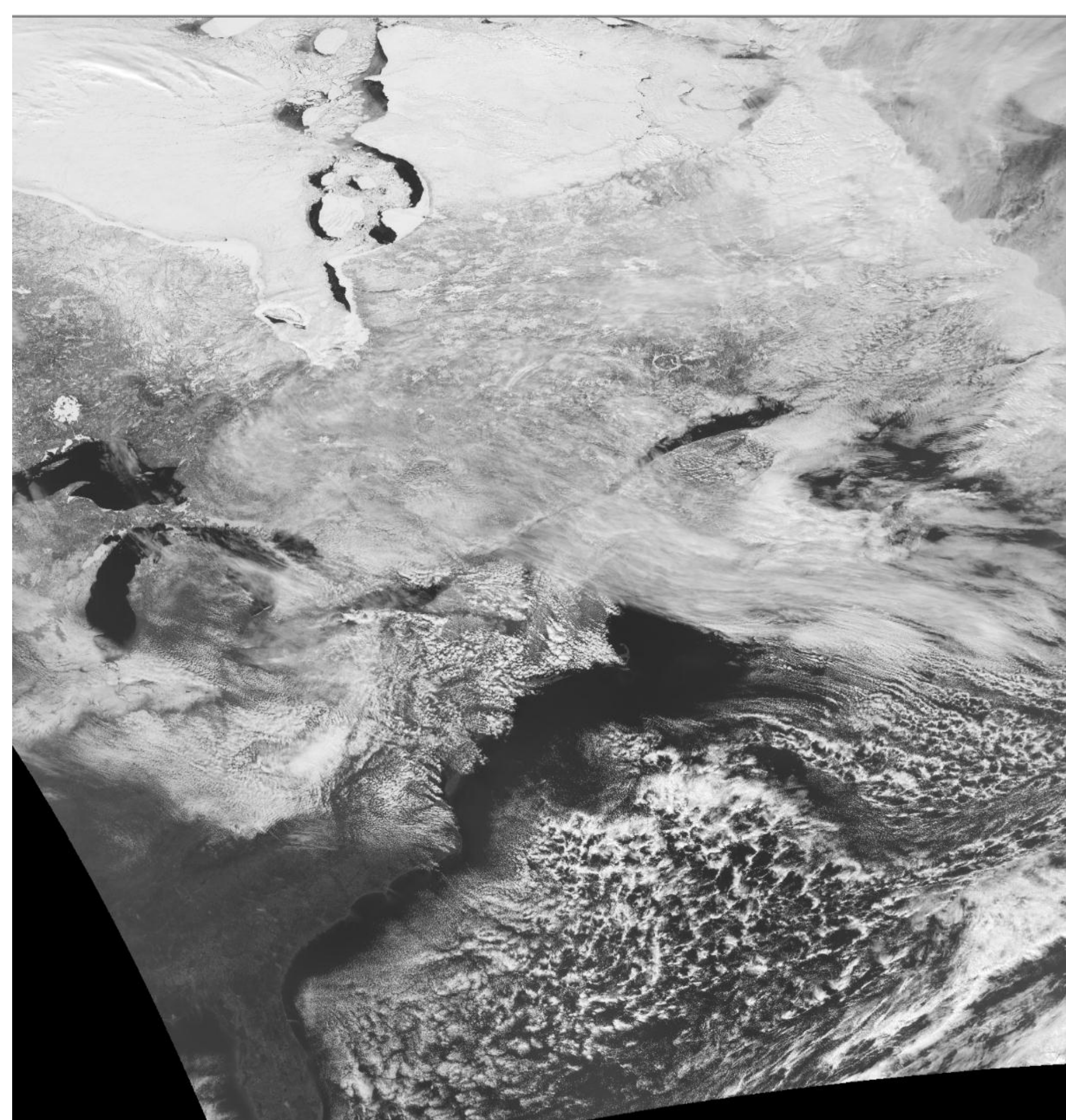
Because the Suomi NPP data is available via direct broadcast (DB), it can be acquired by X/L band antennas and processed in near-real time using the free Community Satellite Processing Package (CSPP), which transforms VIIRS raw data into SDRs identical in to the IDPS VIIRS SDRs.

The high quality of the VIIRS data, the improved spatial resolution and coverage as well as the new day/night band, point to operational use of the data over all AWIPS domains. Examples are provided from different domains using direct broadcast data from Alaska, CONUS (collected and processed at UW/Madison), and Hawaii.



Suomi NPP daily orbit track and antenna coverage using GINA site as an example. Direct broadcast acquisition and CSPP VIIRS product generation provides timely data delivery to National Weather Service WFOs.

Methodology



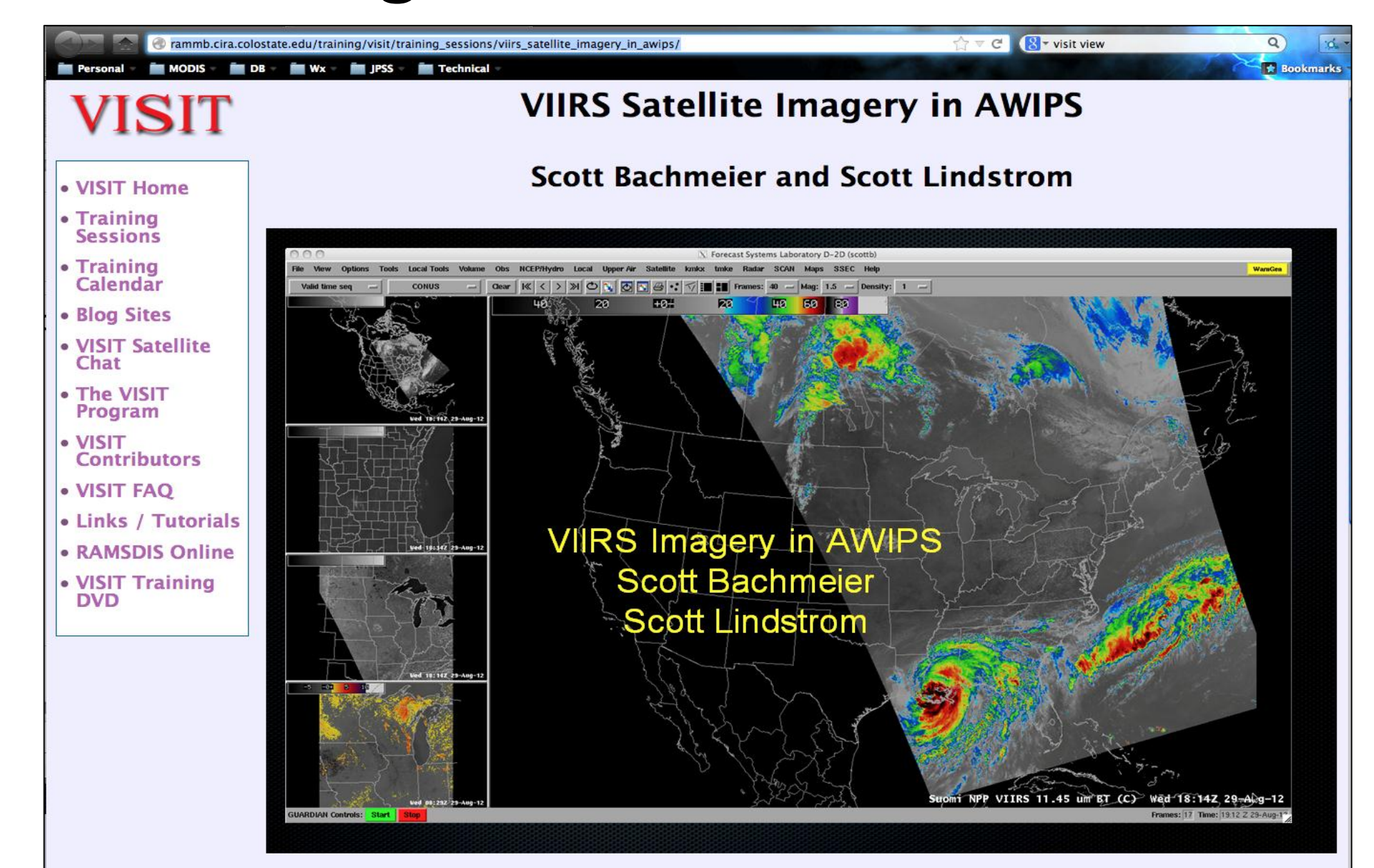
CSPP Polar2grid software package used to reproject and reformat native VIIRS SDRs into AWIPS NetCDF or GeoTIFF files.

Software is freely distributed:

<http://cimss.ssec.wisc.edu/cspp/>

Training

Training of forecasters through personal WFO office visits and through VISITview Teletraining Module.



Coming Soon

Polar Sounder Hyperspectral retrievals

