



VIIRS in AWIPS: Supporting Operational Forecasters

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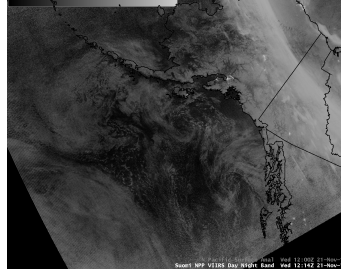
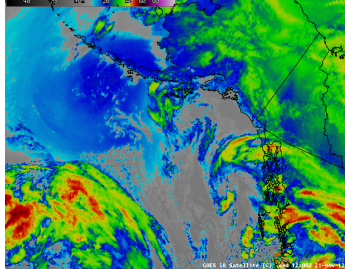
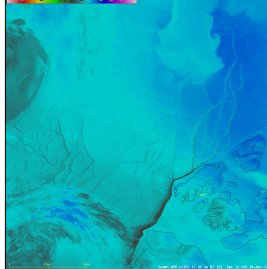
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Direct Broadcast Suomi NPP VIIRS Data used in AWIPS

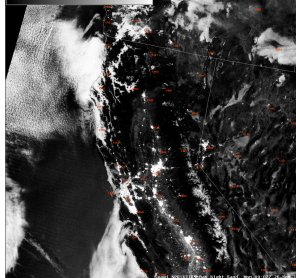
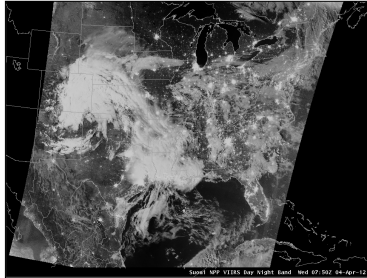
AWIPS Alaska Grid Projection Examples



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 GWAII. 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.

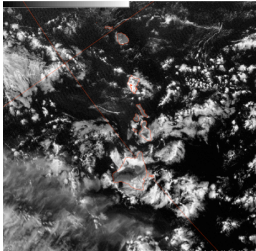
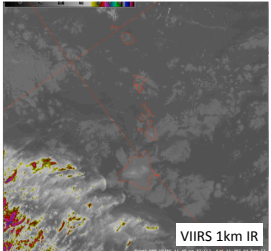
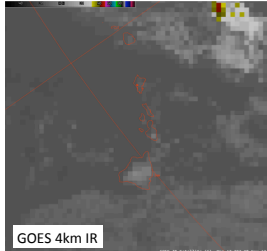
AWIPS East CONUS Grid Projection Examples



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 IOWA 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...MFK

AWIPS Pacific Grid Projection 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 HOURS. \$\$ 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
- Portable python tool allows for quick accurate remapping onto AWIPS grids
- Complementary to 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.

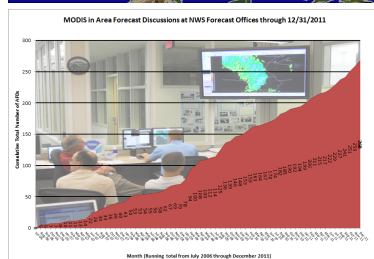
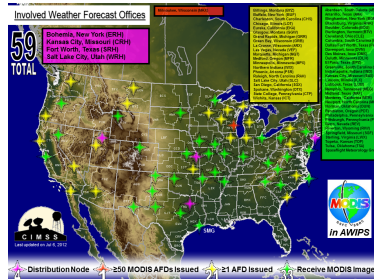
The high quality of the VIIRS data, the improved spatial resolution and coverage as well as the new day/night band, point to operational use of the data over all AWIPS domains. Examples are provided from different domains using direct broadcast data from Alaska, CONUS (collected and processed at UW/Madison),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



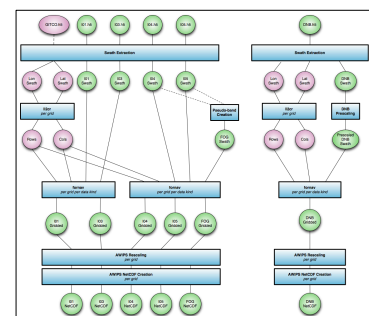
Suomi NPP daily orbit track and antenna coverage using SSEC site as an example. Direct broadcast acquisition and CSPP VIIRS product generation provides timely data delivery to National Weather Service Offices.

Methodology

- Builds on the success of Direct Broadcast MODIS products in AWIPS



- Use Community Satellite Processing Package (CSPP) stand alone software to process VIIRS RDR to SDR HDF5 files
- Create portable, python based tool for conversion of VIIRS SDRs to AWIPS NetCDF grid files (remap using MS2TG)



- Install for all domains
- GINA Alaska antenna – Alaska AWIPS grid
- SSEC antenna – East and West CONUS AWIPS grids
- Honolulu Antenna – Pacific AWIPS grid
- Provide forecaster training