GOES-R Program

CIMSS/ASPB Participation
GOES-R Proving Ground Status

Wayne Feltz, Mike Pavolonis, Tim Schmit, Andy Heidinger, Jordan Gerth, Scott Bachmeier, Scott Lindstrom, Justin Sieglaff, Lee Cronce, Robert Aune, Gary Wade, Brad Pierce, Kaba Bah, Will Straka, Jason Otkin, Sarah Monette, Chris Velden, Ralph Petersen, Russ Dengel

July 9, 2012

- Demonstration of GOES-R PG applications at National Center Testbeds and NWS WFOs

- Suomi NPP VIIRS demonstrated in AWIPS

- AWIPS-2 status

- Upcoming meetings/conferences

C I M S S

• Wayne Feltz, Justin Sieglaff, Jason Otkin, Lee Cronce, Jordan Gerth, and Bob Aune participated 2012 Hazardous Weather Testbed (HWT) demonstrating WRF Simulated ABI, Nearcasting, and UW-CTC decision support products within AWIPS-2

http://goesrhwt.blogspot.com/
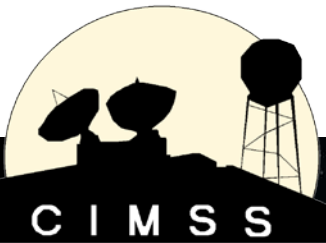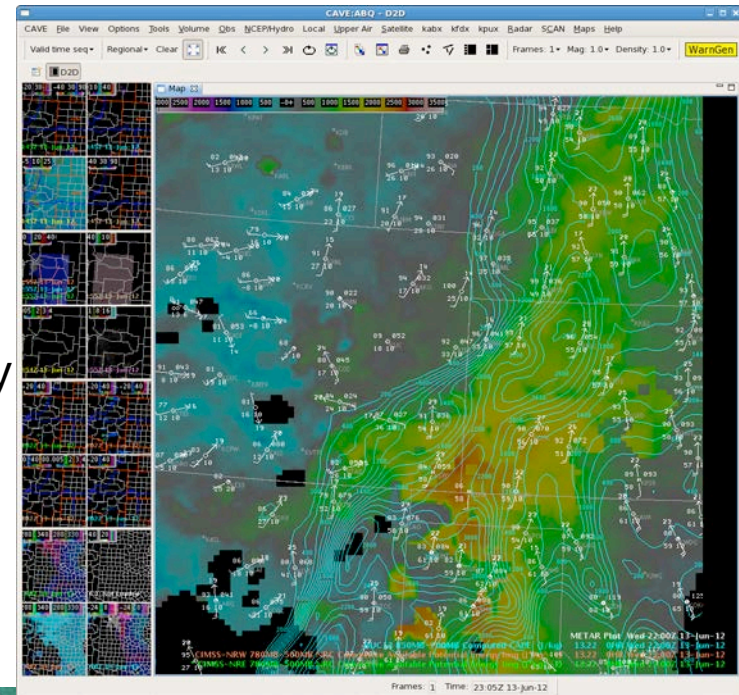
Chris Siewert has already provided HWT 2012 debrief

• Continue distribution of GOES-R Fire Hotspot and Intensity proxy products (GOES imager based) to SPC for Fire Weather Testbed (now AWIPS/N-AWIPS), scheduled?
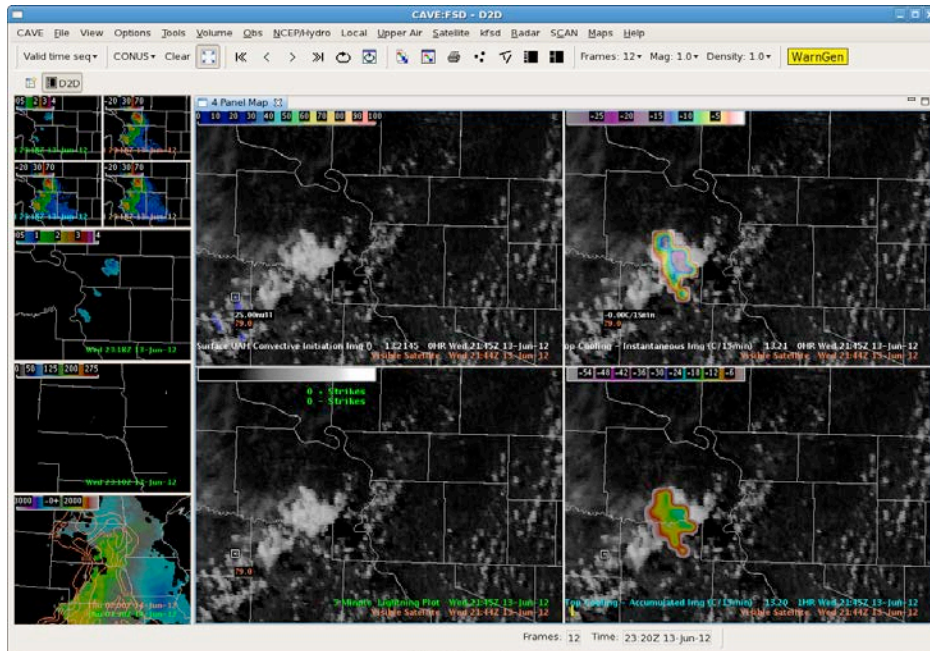
UW-CTC AWIPS II display

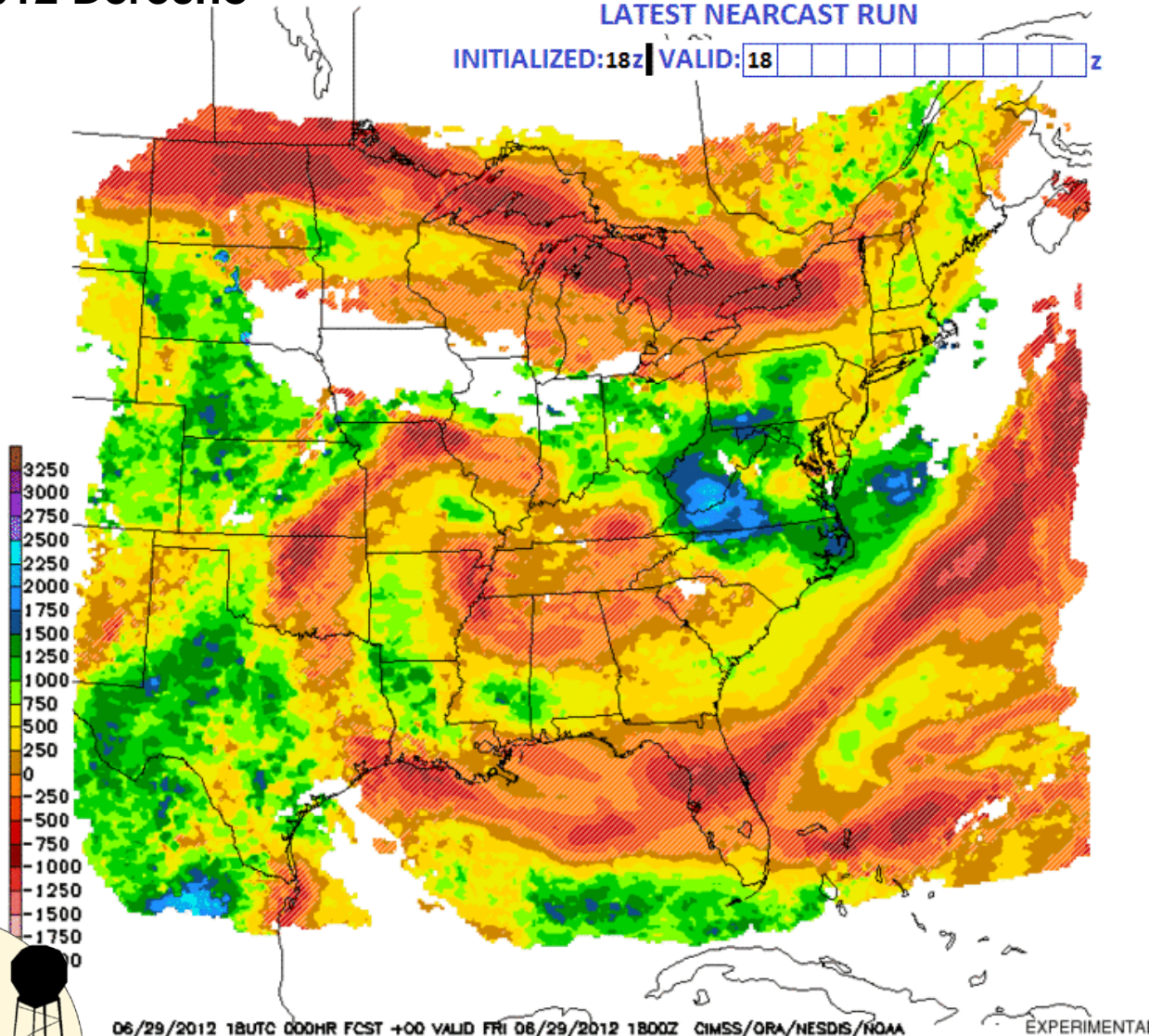GOES Sounder Nearcast AWIPS-2 display

29 June 2012 Derecho

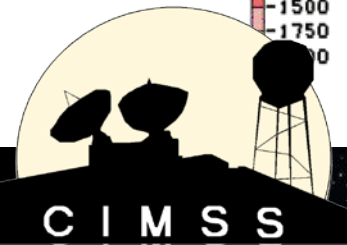*"This CAPE product holds a lot of promise... I don't know about accuracy, but qualitatively it was highlighting the areas of interest."*

- **Amanda Terborg was hired as AWC GOES-R Liaison (Bright/Feltz)**

- **NWSTC position: Chad Gravelle continues to develop into NWS Operations Proving Ground role and also will provide individual CR WFO feedback while testing Fog – Low Cloud and CTCR decision support AWT conducted over a two week period with Jordan Gerth attending first week**

- **UW-CTC, Overshooting-tops, Fog/low cloud, cloud phase, cloud height, and WRF simulated ABI radiance products are available via LDM and can be viewed in N-AWIPS, these products were evaluated:**
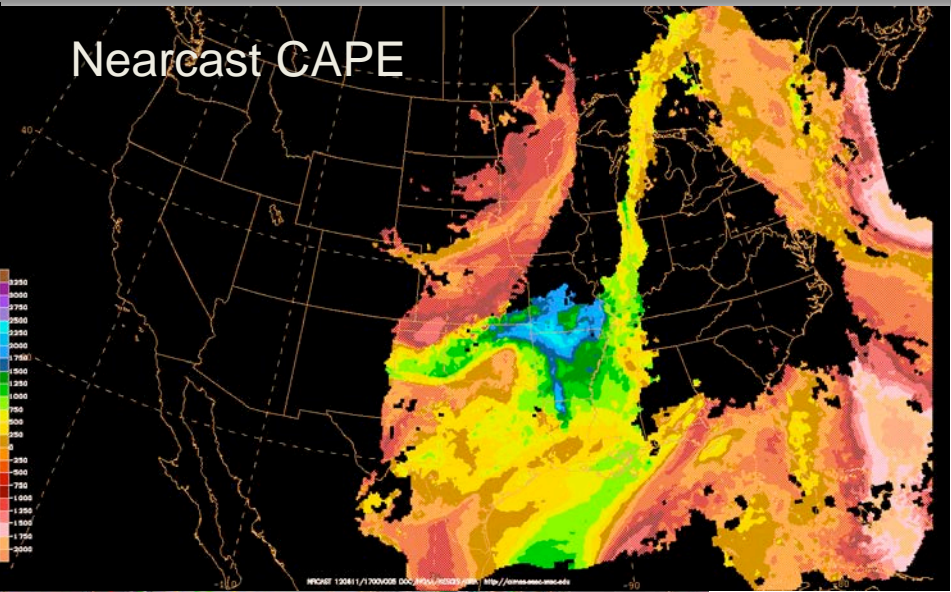
http://goesrawt.blogspot.com/

- **MODIS-Alaska domain volcanic ash and SO_2 are available in AWIPS**

- **Collaborating with Bill Smith Jr regarding availability of icing product to AWC**

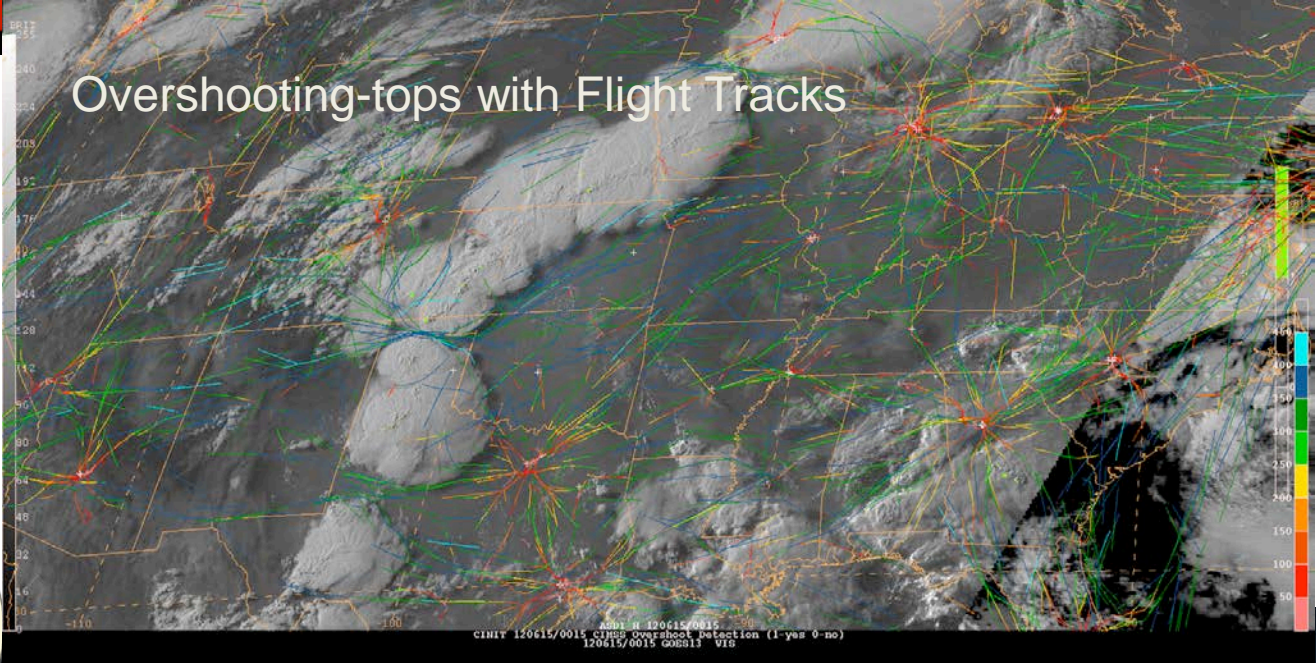- **UW-CIMSS satellite applications "Boot Camp" delayed until August 2013**
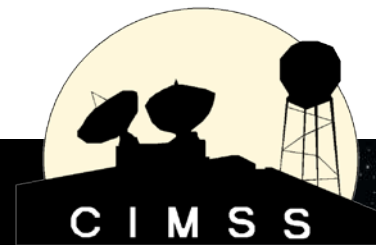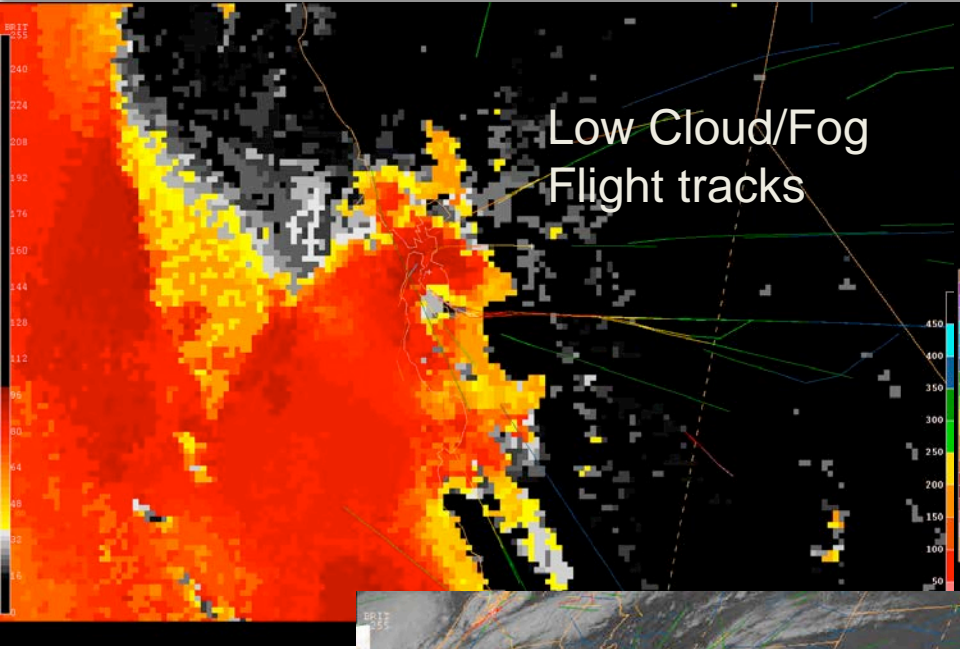
Low Cloud/Fog
Flight tracks

Nearcast CAPE

Overshooting-tops with Flight Tracks

- **Volcanic ash, SO_2, Fog/low cloud, Cloud top phase, Cloud type products have been available in AWIPS at all WFO's in AK and at the AAWU since January 2011**

- **Recent visit by J. Gerth and K. Strabala has ensured NWS Anchorage and AAWU AWIPS displays are up to date with recent algorithm improvements**

- **Automated ash cloud alerts from AVHRR and MODIS will be provided to the VAAC and CWSU later this summer.**

- **GOES-R Volcanic Ash product feedback continues as events warrant—including brief 19-20 June 2012 Cleveland eruption.**

- CIMSS group traveled to Alaska June 2012
- Working with GINA group, CIMSS installed CSPP software for processing DB NPP data
- VIIRS data converted to NetCDF files using polar2grid tool for AWIPS display
- Forecasters in Anchorage and Fairbanks now receiving VIIRS imagery in near-real time
- Forecasters briefed on utility of products in operations
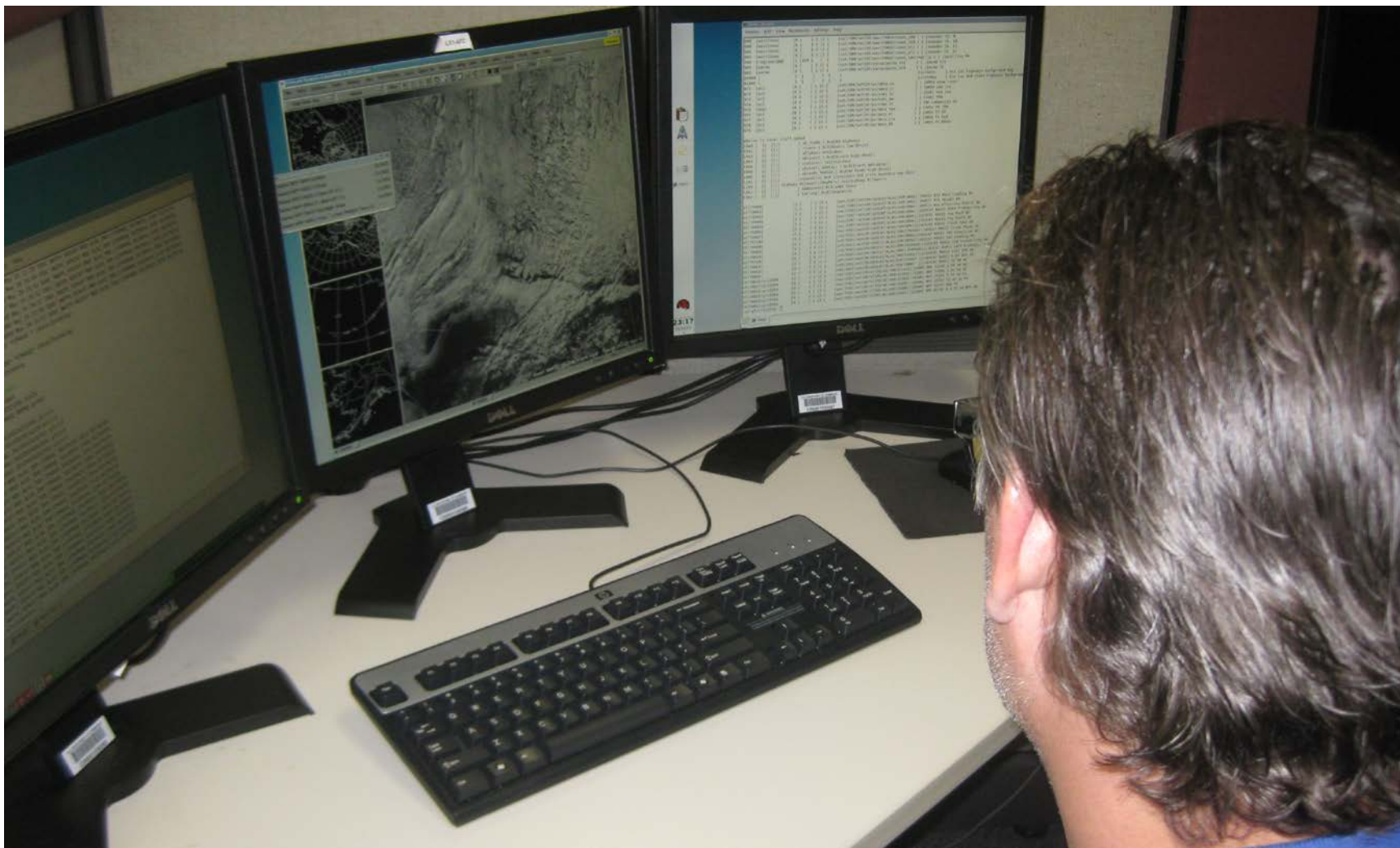
Jim Nelson, Science and Operations Officer (SOO) at the NWS Forecast Office in Anchorage, Alaska, examines and image of the VIIRS Day/Night band as displayed in AWIPS. The data was captured using the DB antenna at GINA in Fairbanks, AK, automatically processed using CSPP software, converted using a portable remapping tool for display in AWIPS, and sent to Anchorage using the LDM in real-time.

- Coordinating with Roy Huff, Mark DeMaria, and Steve Businger

- UW-CTC, Morphed Total Precipitable Water, and Overshooting-top decision support products are now available at NWS Honolulu AWIPS platforms

- Jordan Gerth will be visiting U of Hawaii, Honolulu NWS, and Pacific Region offices from July 23 – August 3 to integrate Roy's ADAM computer and ready infrastructure for new DB Antenna installation

- DB antenna is scheduled to be installed on July 31st

- Wayne Feltz will visit in early December 2012, once DB AWIPS data flow and other PG decision support products flowing

- Volcanic ash and SO_2 (from MODIS) preliminary transition assessment also occurred, will be made available after DB antenna installed
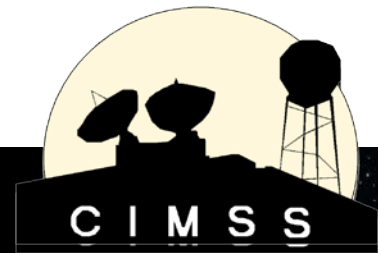
- Mike Folmer visit to SSEC/CIMSS before NWA?

- Request for Nearcasting product for evaluation

- Simulated ABI Imagery (bands 8-16) over the CONUS, follow HPC/SPC methodology for delivery (N-AWIPS preferred); SAB wanted McIDAS format - sent ADDE server info to Jamie K.

- UW-CIMSS providing Overshooting-Top/Enhanced-V products (same methods as SPC delivery), N-AWIPS displayed at OPC

- Cloud top height, phase, and temperature from GOES imager are in progress for display within N-AWIPS and AWIPS

- Volcanic Ash due for integration

- Most of the tasks above are driven by NCEP move to new building according the Mike Folmer
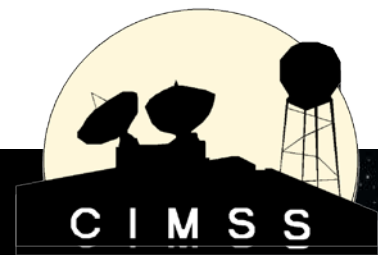
- **Overarching Goal**: Demonstrate selected GOES-R surrogate tropical products in real-time to identified users/forecasters and receive feedback

- **Who**: -- National Hurricane Center (NHC)
  -- Tropical Analysis and Forecast Branch (TAFB) --
  Ocean Prediction Center/Hydrometeorological
  Prediction Center/Satellite Analysis Branch
  (OPC/HPC/SAB)

- **When**: -- August 1 - November 30, 2012
  -- On-site (NHC) training to be provided July 31

- **What**: 3 sat products provided by CIMSS (Atlantic basin)

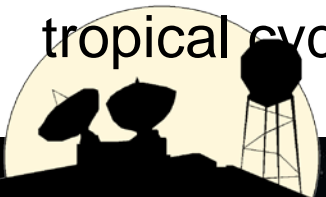- ***Hurricane Intensity Estimate (HIE) Algorithm***
  Calculates tropical cyclone intensity (MSLP and max surface wind) objectively from proxy ABI IR-window channel imagery.

- ***Tropical Overshooting Tops (TOTs)***
  Employs IR-window channel imagery to identify convective protrusions above cumulonimbus anvils associated with very strong tropical convection updrafts, which can be related to tropical cyclone formation and intensification. Could also be important for marine and aviation applications.
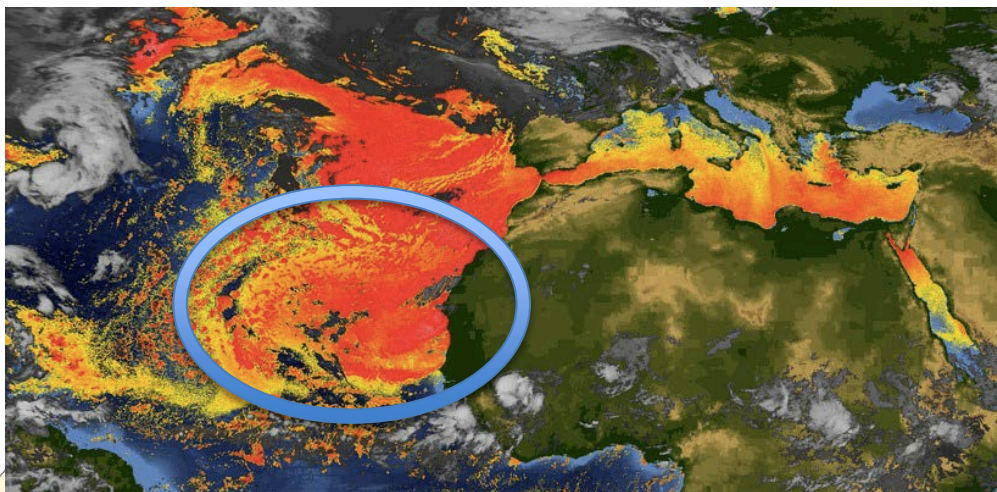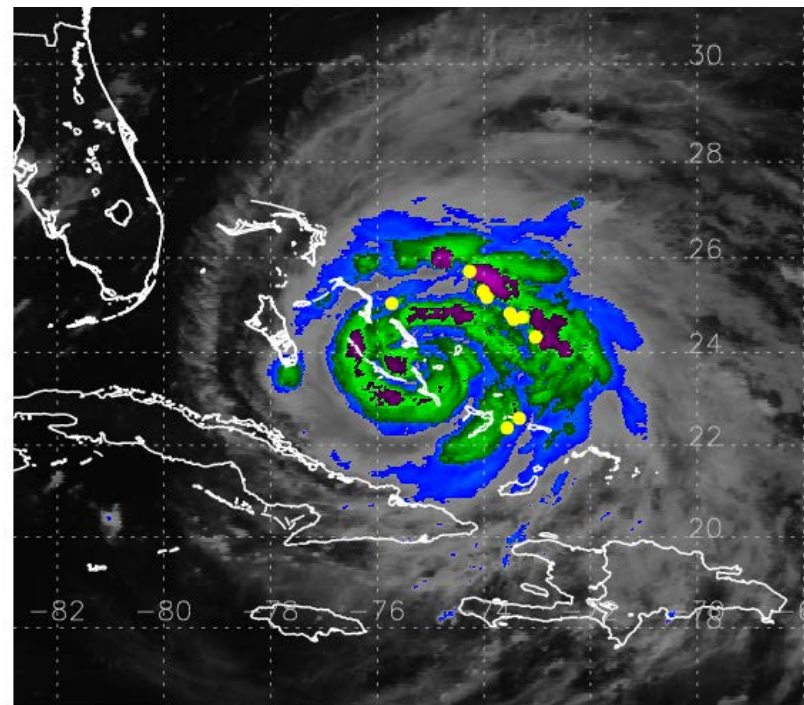
- ***Saharan Air Layer (SAL) Product***
  Uses a split window (10.8 and 12.0 μm) algorithm to identify and track dusty dry air masses (SAL), which can negatively impact tropical cyclone activity.

CIMSS

Hurricane Intensity Estimate (**HIE**) for Katrina (2005)
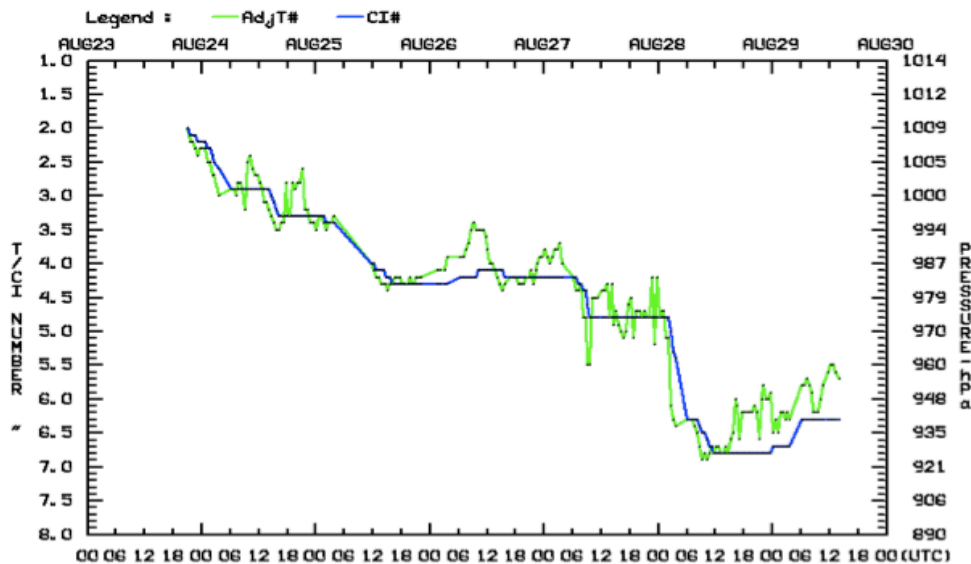
IR image and **TOTs** (yellow) for Irene on 20110825 at 0132 UTC


Saharan Air Layer (**SAL**) Product

- Third year!
- CIMSS GOES-R Local Area Demonstration with MKX in progress (began mid June and will continue through mid November)
- CIMSS staff are participating approximately every other Tuesday
- VIIRS Night-Day band has been made available for evaluation
- Forecasters are evaluating: UW-CTCR improvements, Nearcasting, Low Cloud/Fog, VIIRS imagery, and WRF Synthetic ABI bands
- Evaluation is recorded through posts on GOES-R HWT blog site
- Some examples follow:

CIMSS
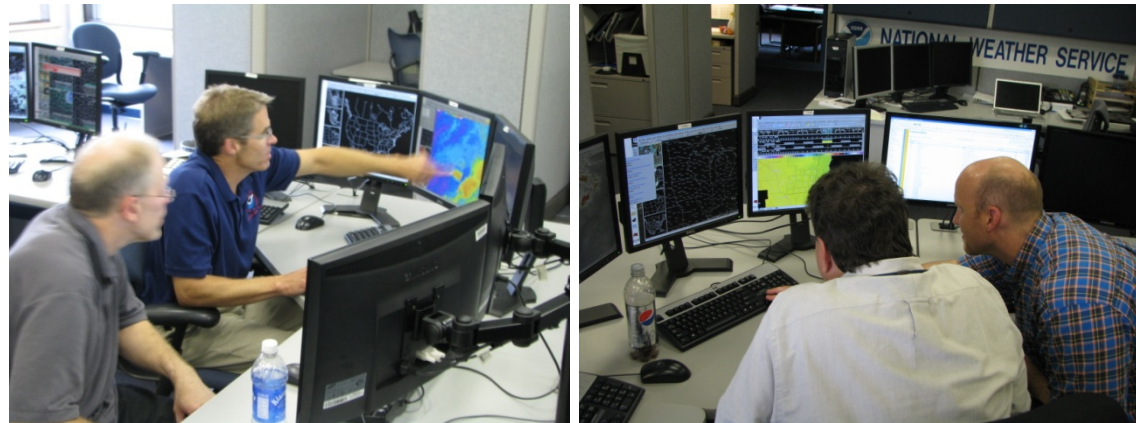
**UW Cloud Top Cooling product and Lightning**
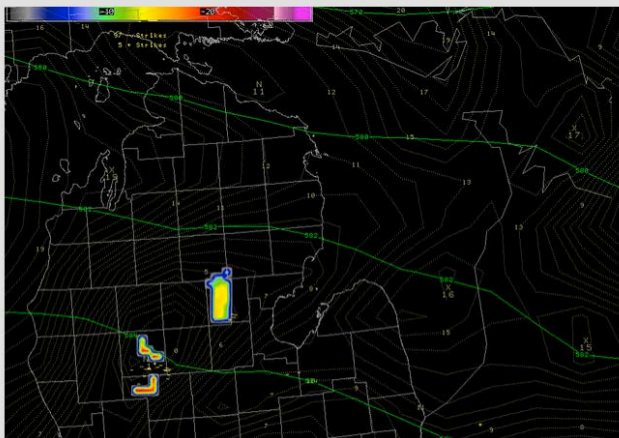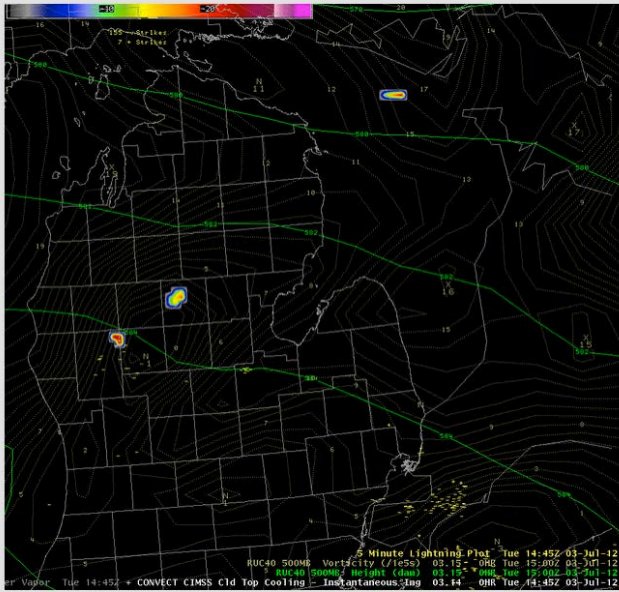
GOES-R Fog/Low Cloud product over Lake Superior

The GOES-R Fog/Low Cloud product IFR Probability (that is, the probability of visibilities at or below 3 miles), below, shows a pocket of higher values near the coast of Lake Superior in northwest Ontario. Visible imagery (bottom) confirms the presence of stratiform clouds in this region. Southwest winds move relatively warm and moist air over the cooler lake surface (Lake SSTs are at or below 50), chilling the air to its dewpoint. The GOES-R Fog/Low Cloud product fuses Rapid Refresh data and satellite data.
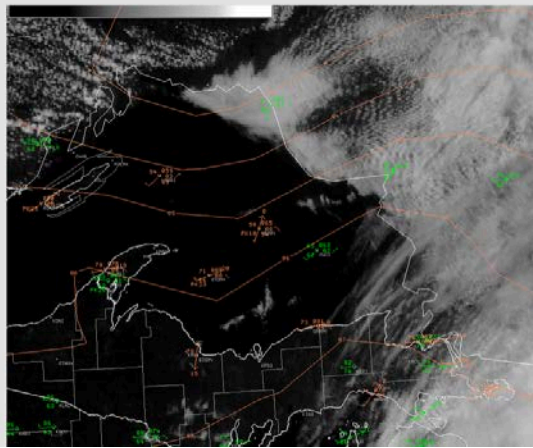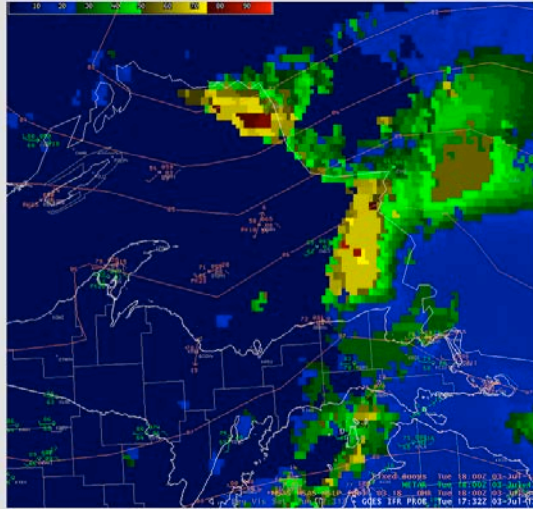

Moonlit Overshooting Tops in NPP VIIRS Day/Night Band

A strong cluster of thunderstorms developed over Central Michigan overnight on 3 July 2012. These thunderstorms were captured by the Suomi NPP satellite overpass at 07:42 UTC by the Direct Broadcast antenna located at the University of Wisconsin-Madison Cooperative Institute for Meteorological Satellite Studies (CIMSS). The data was processed and sent in real-time to the NWS office at Sullivan (MKX) where it was displayed in AWIPS. The VIIRS Day/Night band provides forecasters with visible imagery at night at high spatial resolution (1km) from lunar illumination. The first image below shows the features of the cloud tops, including overshooting tops as well as gravity waves. Also visible are the lights emanating from the underlying cities including Detroit (large bright lights in the Southeast Corner). The infrared 11 micron window brightness temperature image (second image) provides a thermal view of the same scene. The coldest tops are -70C.
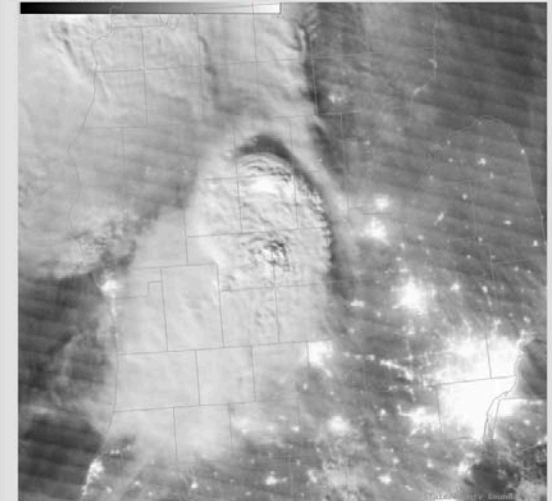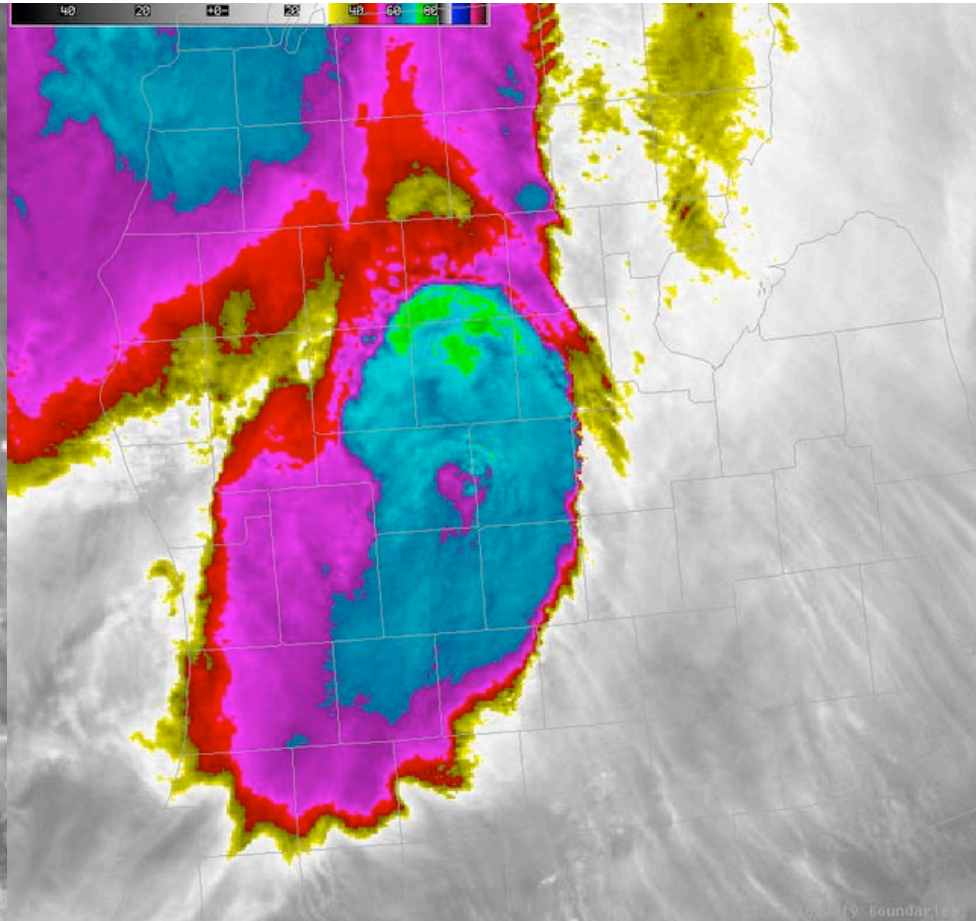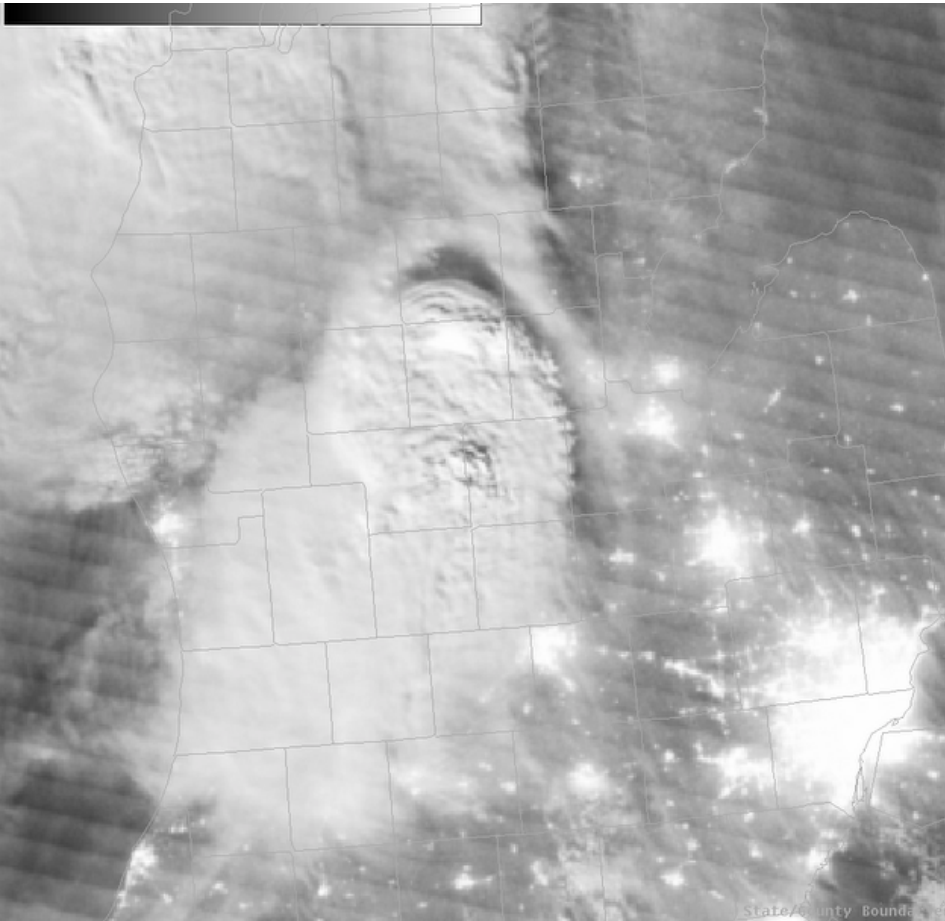

Suomi NPP VIIRS Day/Night Band image of a strong thunderstorm over Central Michigan illuminated by moonlight with overshooting tops and gravity waves evident. The Day/Night band supplies forecasters with a visible band capability at night when the moon is out. The VIIRS data is acquired from the direct broadcast antenna at the University of Wisconsin-Madison CIMSS, processed via CSPP software and supplied to the NWS MKE office in real-time for display in AWIPS. The image is from 3 July 2012, 07:42 UTC.

http://goesrhwt.blogspot.com/

CIMSS
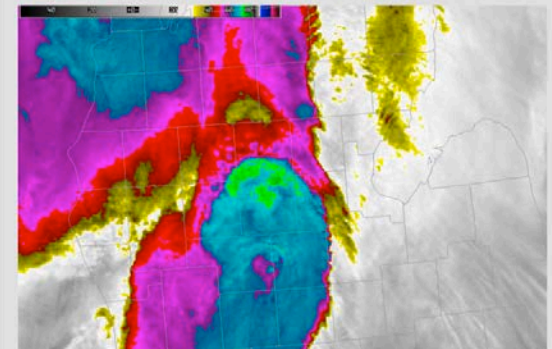
NPP VIIRS Day/Night Band   NPP 11 micron IR Band

Suomi NPP VIIRS in AWIPS

http://cimss.ssec.wisc.edu/goes/blog/archives/category/viirs

June 29 – June 30 VIIRS Day-Night Band (Pre-Post Derecho)

VIIRS DNB REF Sat 07:14Z 30-Jun-12 + VIIRS DNB REF Fri 07:33Z 29-Jun-12

July 4th VIIRS Day-Night Band and 3.74 micron band
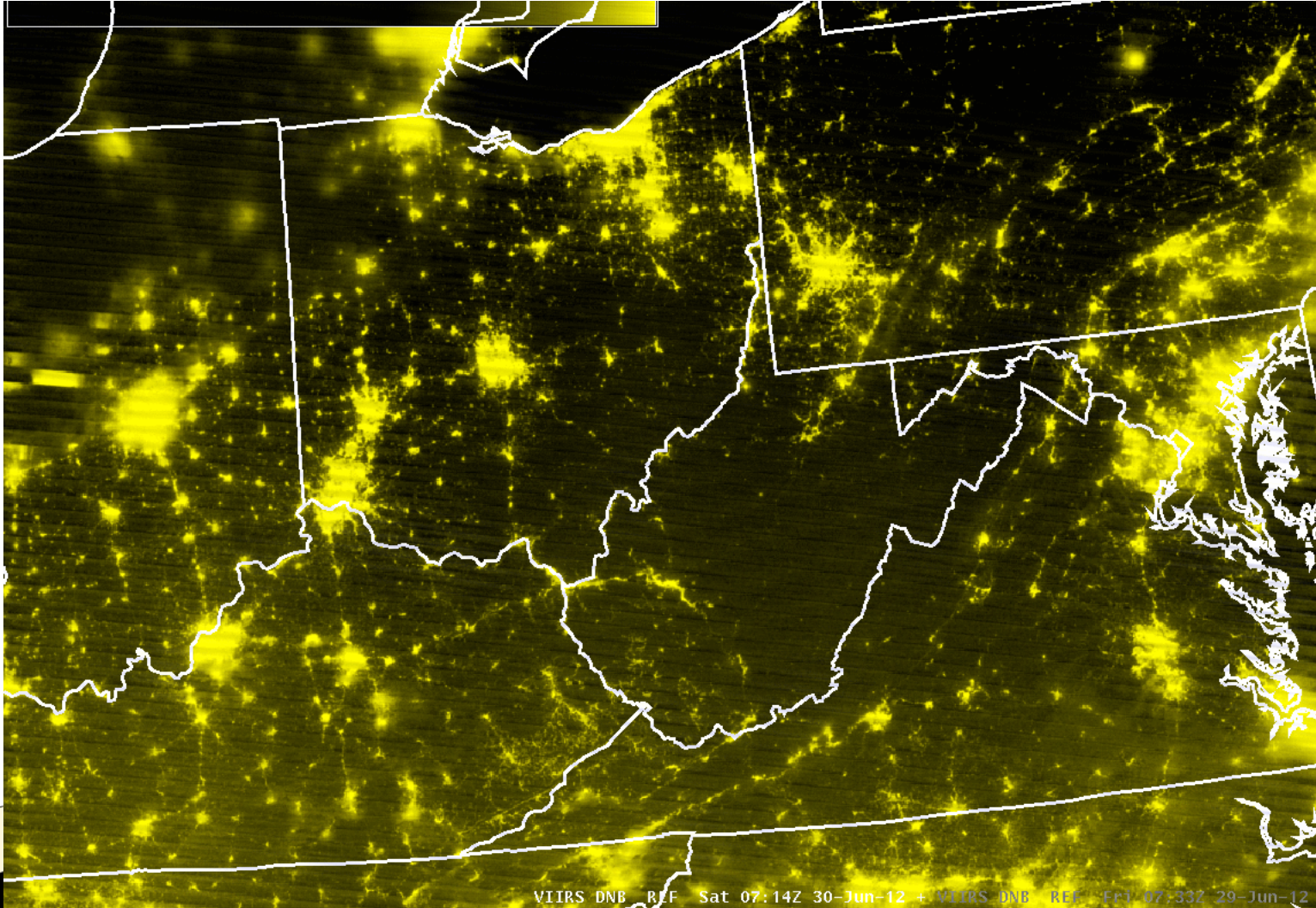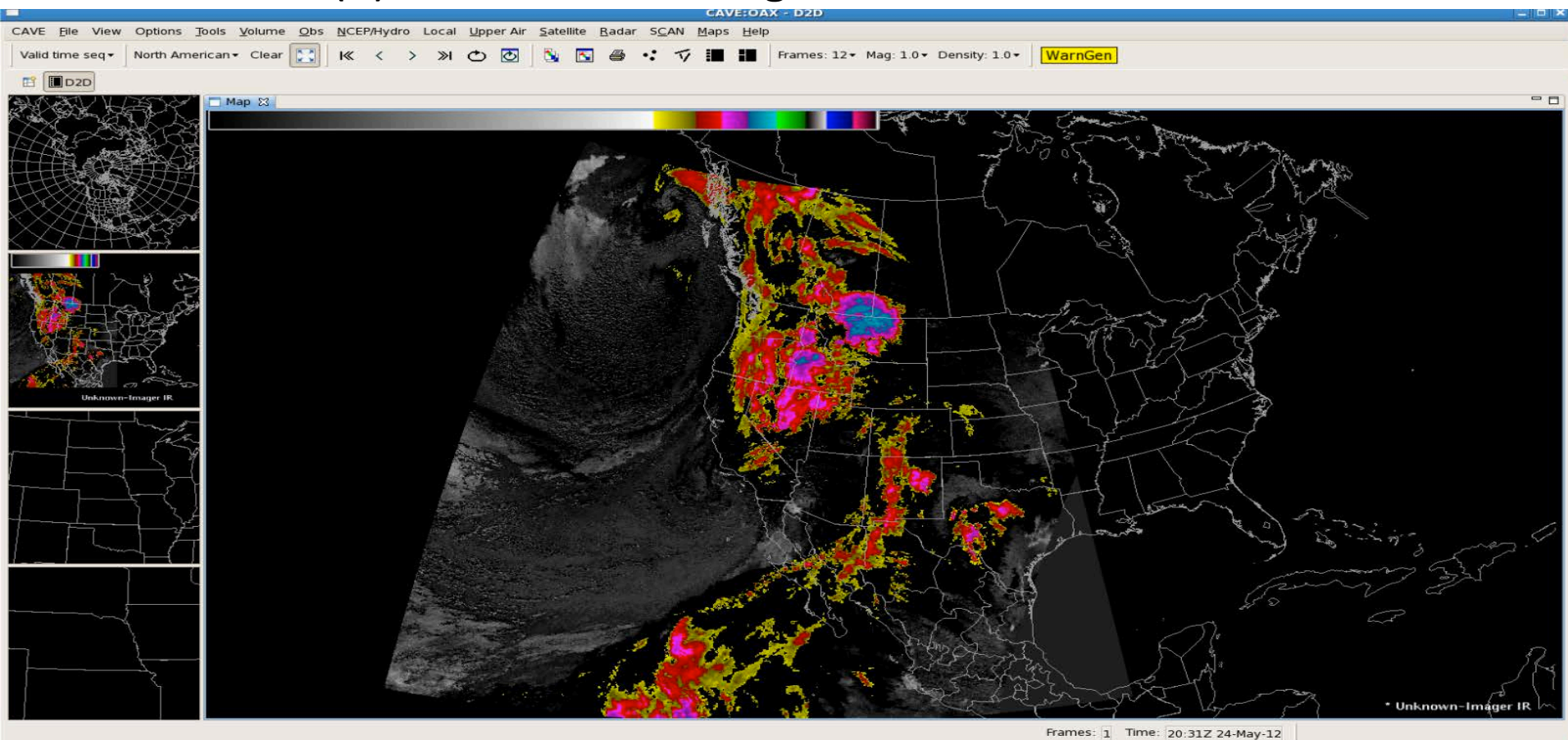
June 6th Fog VIIRS Day-Night Band and 10.8-3.74 micron band difference
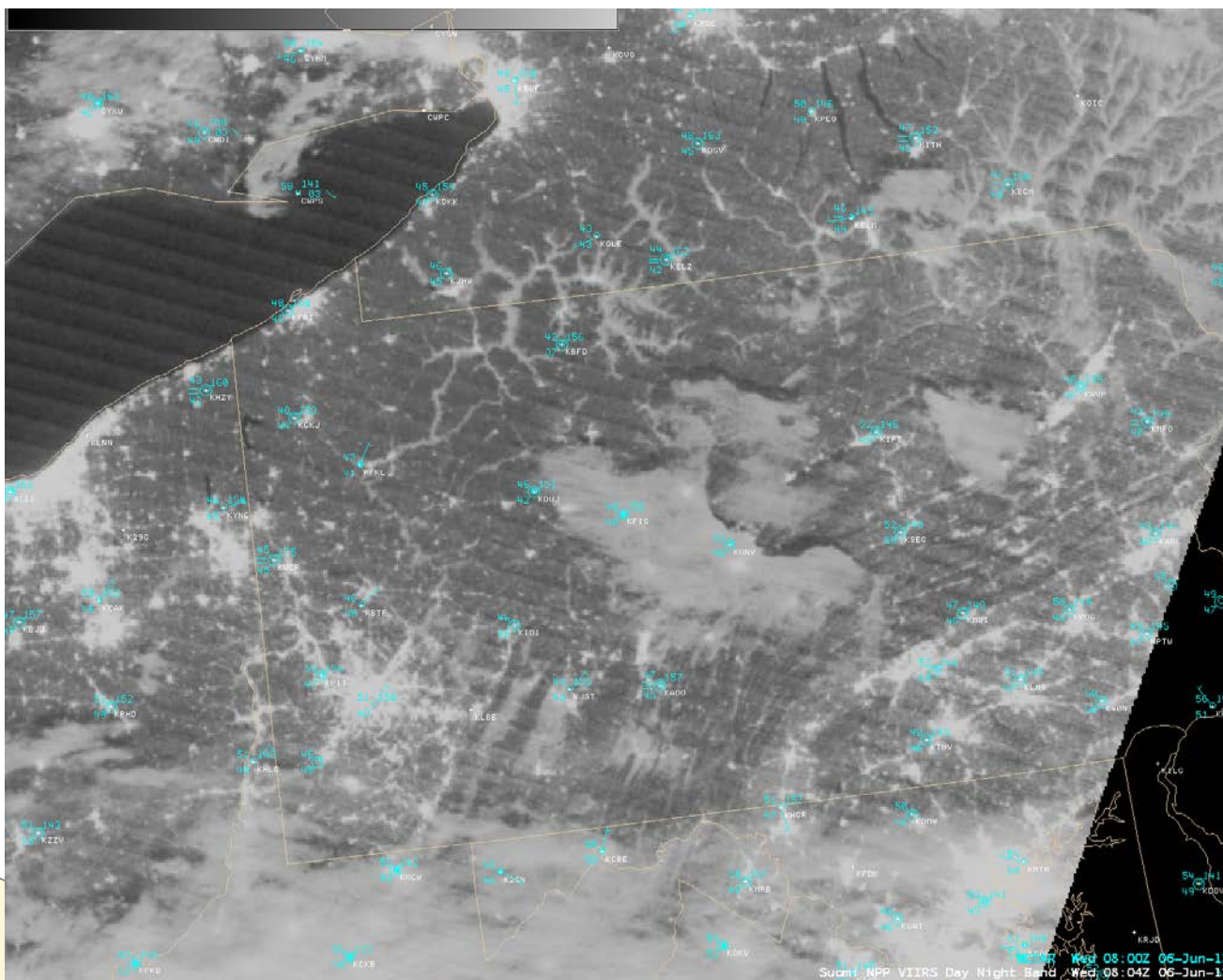
- **Began customizing the Regional Satellite netCDF3 plugin.**
  - **For migrating AWIPSI WES cases into AWIPSII.**
    Follows the design of the GINI satellite plugin consisting of :

    (I) EDEX data plug in for ingesting and storing data.

    (II) CAVE menu configuration files.

CIMSS AWIPS II Update

- **Recent work**
  - Began using git repository for troubleshooting code issues
  - Worked with OUN ITO to submit ticket related to default satellite display behavior on CONUS scale (large gaps during full disk scans)
  - Ticket related to memory error involving Hawaii National Mercator sector polar imagery on 1 km grid has been resolved by Raytheon
  - Reported other bugs and recommendations from Hazardous Weather Testbed to Brian Motta and Bonnie Reed for tracking and resolution
  - Installed AWIPS II at GINA in Fairbanks
  - Successfully demonstrated VIIRS imagery ingest and display at GINA

- **Short-term priorities**
  - Document FLS and CTCR ingest and display for WFO sites
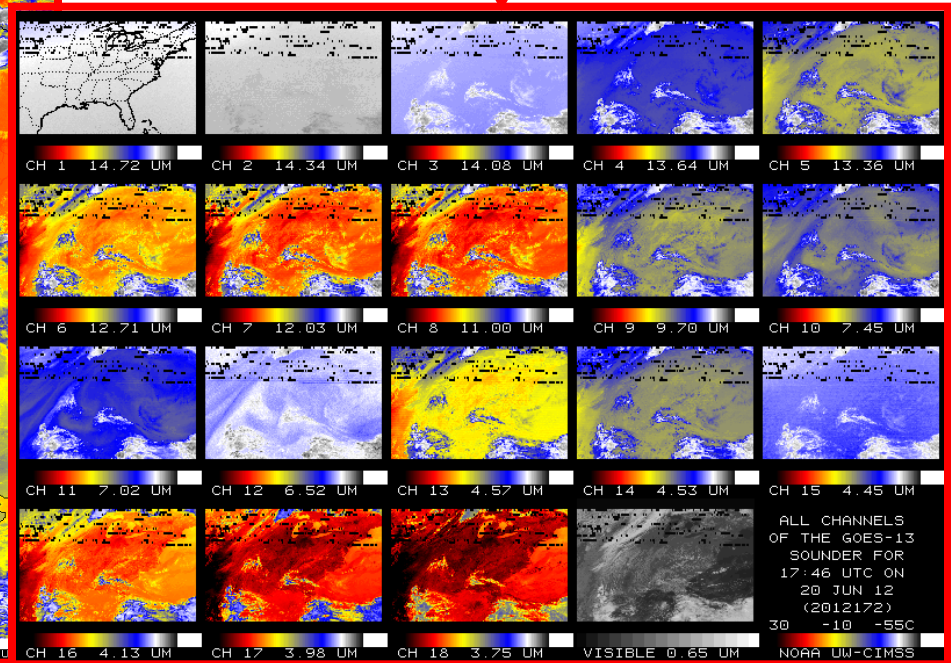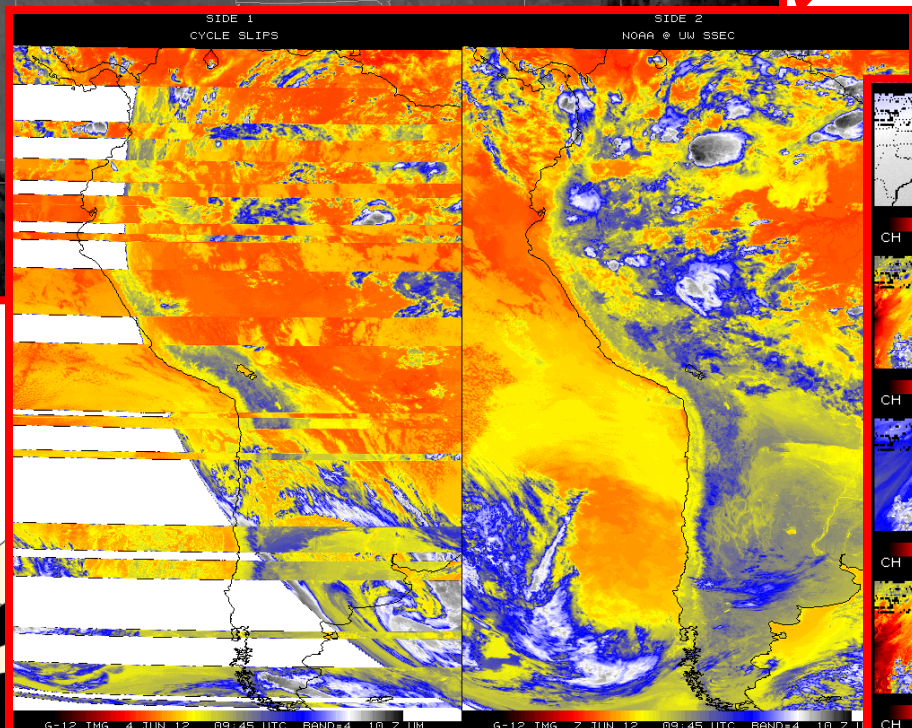 - Work with Roy to install software on his ADAM
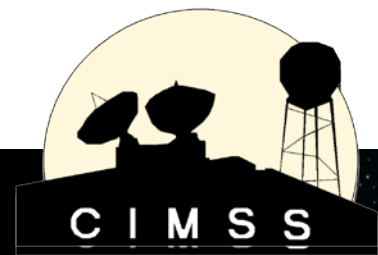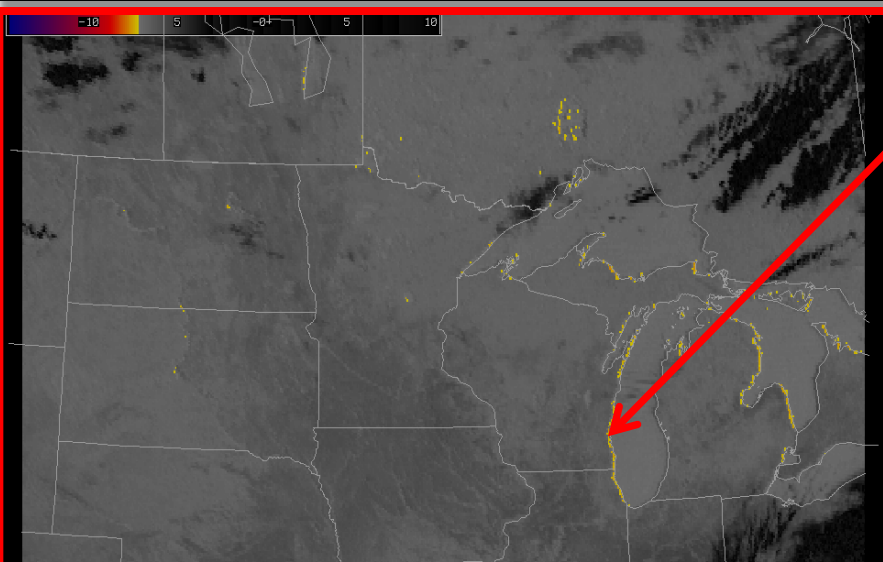
Poor coregistration between Channels 2 and 4 on GOES-13 Imager...GIR open

GOES-South America Imager Cycle Slips fixed with Electronic Side Swap at 1645 UTC on June 6th (affected GOES-12 May/June)

GOES-13 Sounder Filter Wheel Anomaly, 12-17 UTC on 20 June 2012. Instrument Recovery at 1656 UTC.

- GOES-13 Filter Wheel Anomalies

  - http://cimss.ssec.wisc.edu/goes/blog/archives/10662

- GOES-12 Cycle Slips

  - http://cimss.ssec.wisc.edu/goes/blog/archives/10307

  - http://cimss.ssec.wisc.edu/goes/blog/archives/10528

- GOES-13 Imager Co-registration

  - http://cimss.ssec.wisc.edu/goes/blog/archives/10341

- There is a Calibration/Anomalies category

Other Conferences/Meetings

- **2012**
- WMO Nowcasting   06-10 Aug   Rio, Brazil
- EUMETSAT   03-07 Sept.   Sopot, Poland
- NWA   6-12 October   Madison, WI
- AGU (Geo Satellite)   3-7 December   San Francisco, CA

- **2013**
- AMS Annual Meeting   6–10 January   Austin, TX
- Virtual Science Satellite   17-23 March   Telcon
- DRC/GUC   8-12 April   Miami, FL
- O-CONUS   (near Solstice)   Alaska
- PG/AWG   (between Solstice and Equinox)? Madison, WI
- EUMETSAT/AMS   Sept   Vienna, Austria