AWIPS II at CIMSS:
A Discussion of Current Efforts

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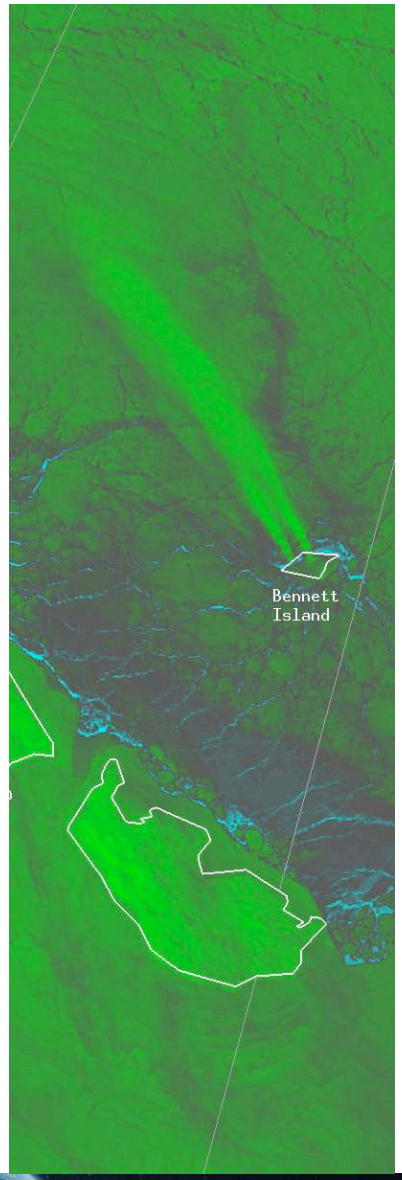
Presentation Outline

- Comparison of AWIPS I and II
- AWIPS II Successes, Progress, Challenges
- AWIPS II Efforts at CIMSS, and Future Work
- AWIPS II RGB Capabilities
- CIMSS Products Demonstrated in AWIPS II
- Audience Participation Question
- Summary



Credit: Scott Bachmeier

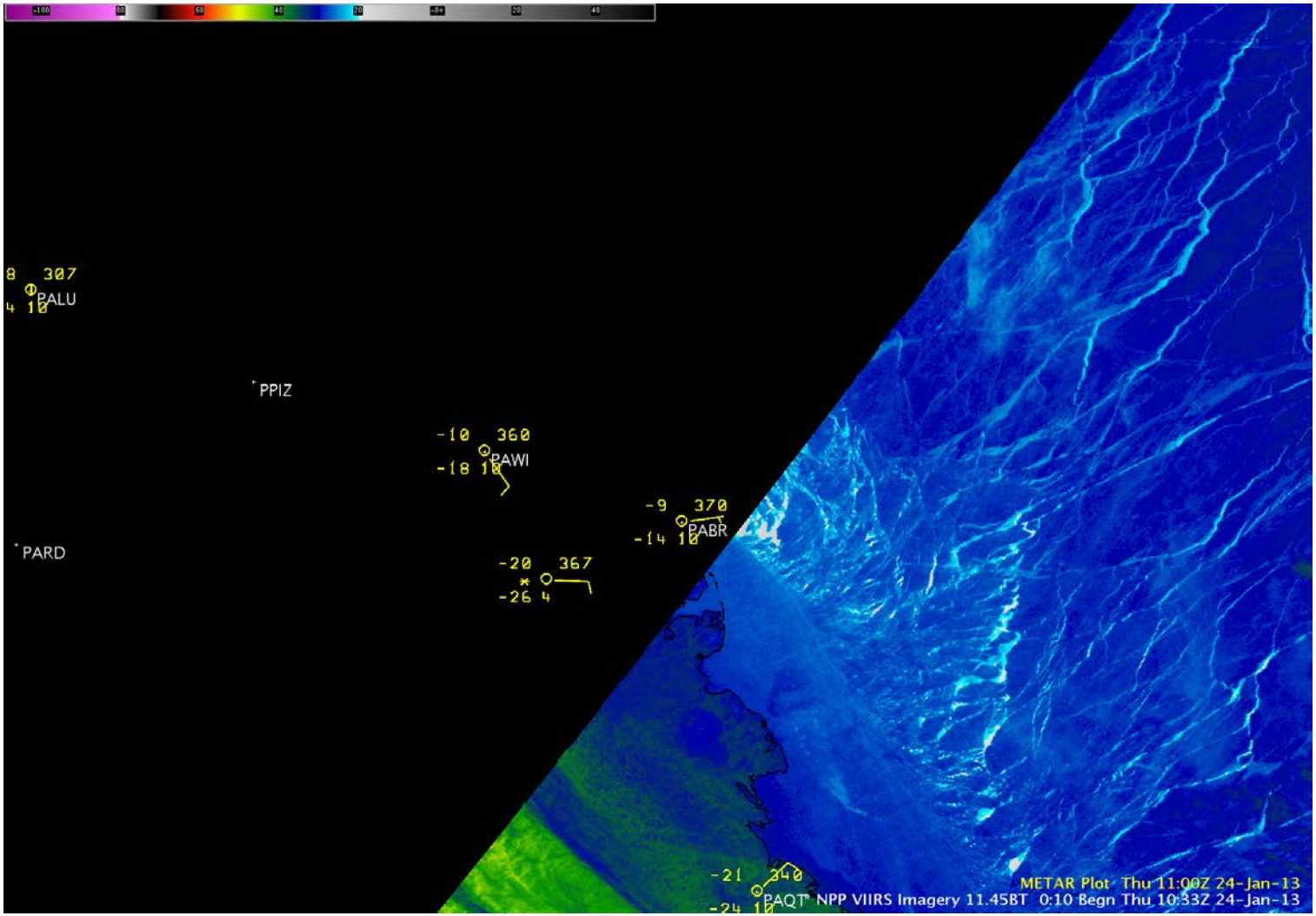
Comparison of AWIPS I and II

	AWIPS I	AWIPS II
Geolocation	Pre-defined, ingested data required to be remapped	Unconfined, specific to dataset; native projections supported
Visualization	Up to two layers of imagery	Unlimited layers of imagery, directly interfaced with advanced graphics 24-bit RGB
Observation Systems Supported	GOES (EOS/MODIS not supported operationally)	NPP, GOES, POES, EOS; JPSS and GOES-R in the future
Source Code	Limited access and distribution	Open to community, including non-government

AWIPS II: Successes

- New satellite plug-ins
  - "Regionalsat" plug-in supports netCDF3 files that were compatible with AWIPS I, decreasing time for providers to make imagery/products AWIPS II compatible
  - VIIRS plug-in supports Ground Track Mercator projection and full 375 m resolution of "I" bands
    - Three bands currently distributed over "POLARSAT" channel on Satellite Broadcast Network for Alaska domain only
- Software generally stable, with new code and installation packages regularly available
  - Installation issues
  - Still some issues related to upgrading the development environment (errors and warnings during build, etc.)

Example of VIIRS Imagery in AWIPS II



Motion of sea ice near Barrow, Alaska (using 11.45 µm VIIRS IR images)

Credit: Scott Bachmeier via CIMSS Satellite Blog (cimss.ssec.wisc.edu/goes/blog)

AWIPS II: Progress

- Formal AWIPS II coordinator for the Proving Ground efforts, Joe Zajic, hired to:
  - Submit and track software bugs discovered during PG development activities
  - Help bring resolution to programmatic issues facing the PG community
- New governance and development management:
  - Minimized front-end documentation requirements
  - Decreased development-to-baseline time
  - Does not address on-site testing on operational and non-operational NWS AWIPS II servers, and access to testing platforms from remote, non-NOAA network locations

AWIPS II: Challenges

- Access to AWIPS II training is very limited
  - Providers need to establish core internal development group for writing plug-ins
  - Satellite liaisons require at least basic training on how to configure software and install plug-ins
- Lengthy deployment schedule necessitates multi-year support for two different software systems
- AWIPS II software performance still precluding capabilities that existed in legacy AWIPS
  - Large high-resolution grids
  - Custom definition of numeric data mapping

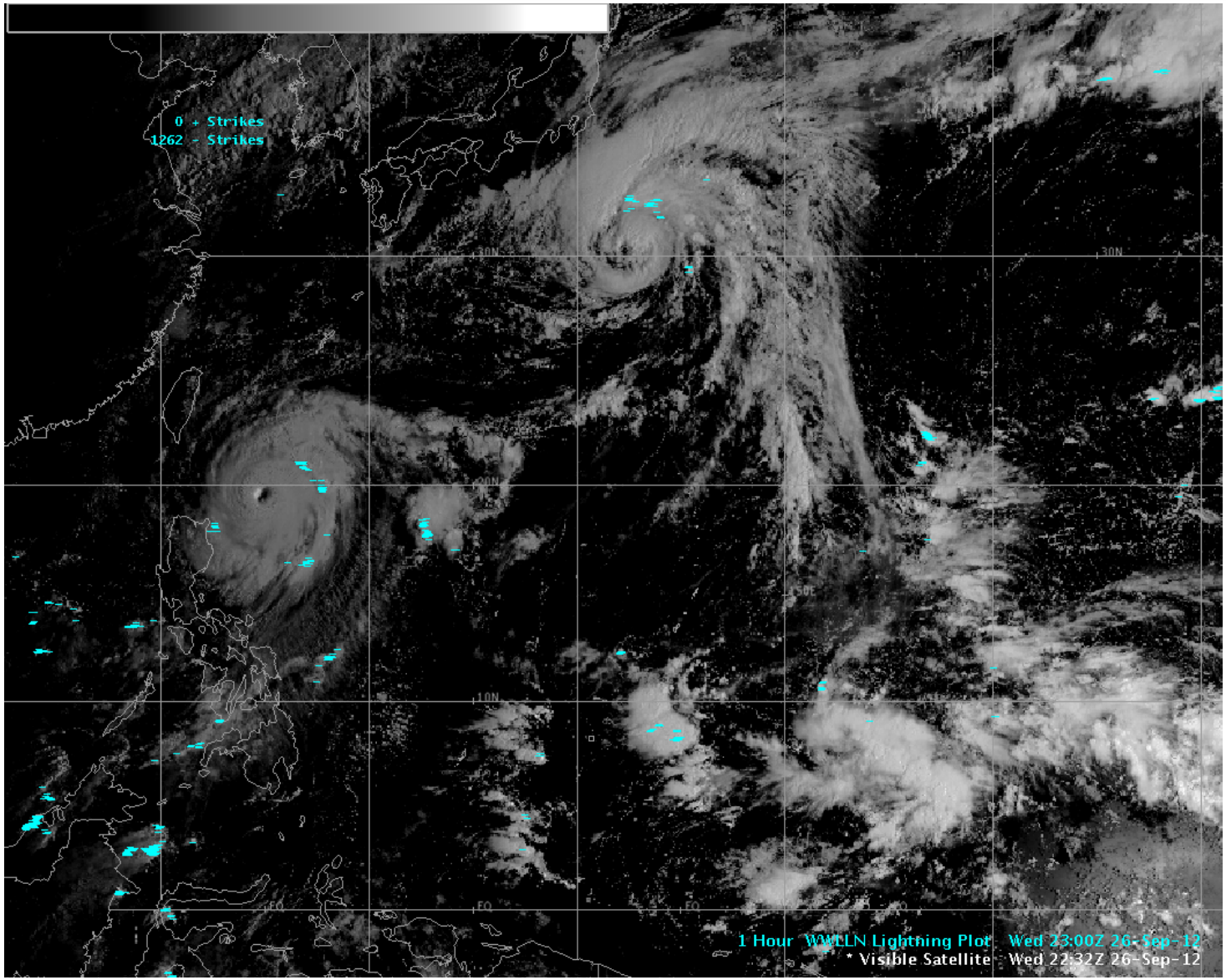
CIMSS' Recent AWIPS II Work

- **Efforts have focused on:**
  - Attending AWIPS II developers' forum conference calls, discussions pertaining to the GOES-R Proving Ground, and meetings of the EPDT
  - Passing design review of updated lightning ingest and visualization plug-ins for Pacific Region Headquarters
    - Currently in beta stage
    - Expected to be part of OB13.3 baseline
  - Receiving access to Dimensions, the AWIPS II code repository
  - Determining potential issues with NLDN ingest into AWIPS II
  - Investigating performance of regionalsat plug-in for large and high-resolution domains
  - Writing an enhancement for scaling byte arrays to real numbers
  - Visiting NWS Milwaukee to work with their ITO on configuring their AWIPS II for GOES-R Proving Ground products

Pacific Ocean Lightning Coverage

The World Wide Lightning Location Network (WWLLN) provides lightning information across the entire Pacific Basin. CIMSS wrote the plug-in to display this data in AWIPS II.

Image credit: Eric Lau



Future AWIPS II Work at CIMSS

- **Evolving Priorities:**
  - Work with the new AWIPS II coordinator for the Proving Ground to write discrepancy reports for AWIPS II related to satellite functionality
  - Begin to deliver additional VIIRS imagery at full resolution to AWIPS II using the operational netCDF4
  - Examine AWIPS II RGB capabilities for composites involving non-VIIRS sources (other satellites, gridded data, etc.)
  - Document Cloud Top Cooling Rate (CTCR) ingest and display for WFO sites using AWIPS II
    - Draft Fog and Low Stratus (FLS) instructions for AWIPS II are now posted online
  - Continue to work on resolving AWIPS II issues with NWS Sullivan (MKX)
- **Ongoing Priorities:**
  - Confirm all CIMSS AWIPS I imagery/products are AWIPS II compliant
  - Complete transition from AWIPS I to AWIPS II on all workstations at CIMSS

Custom RGB Composites in AWIPS II

"Icing" RGB uses:

1.61 µm Reflectance

0.865 µm Reflectance

0.64 µm Reflectance

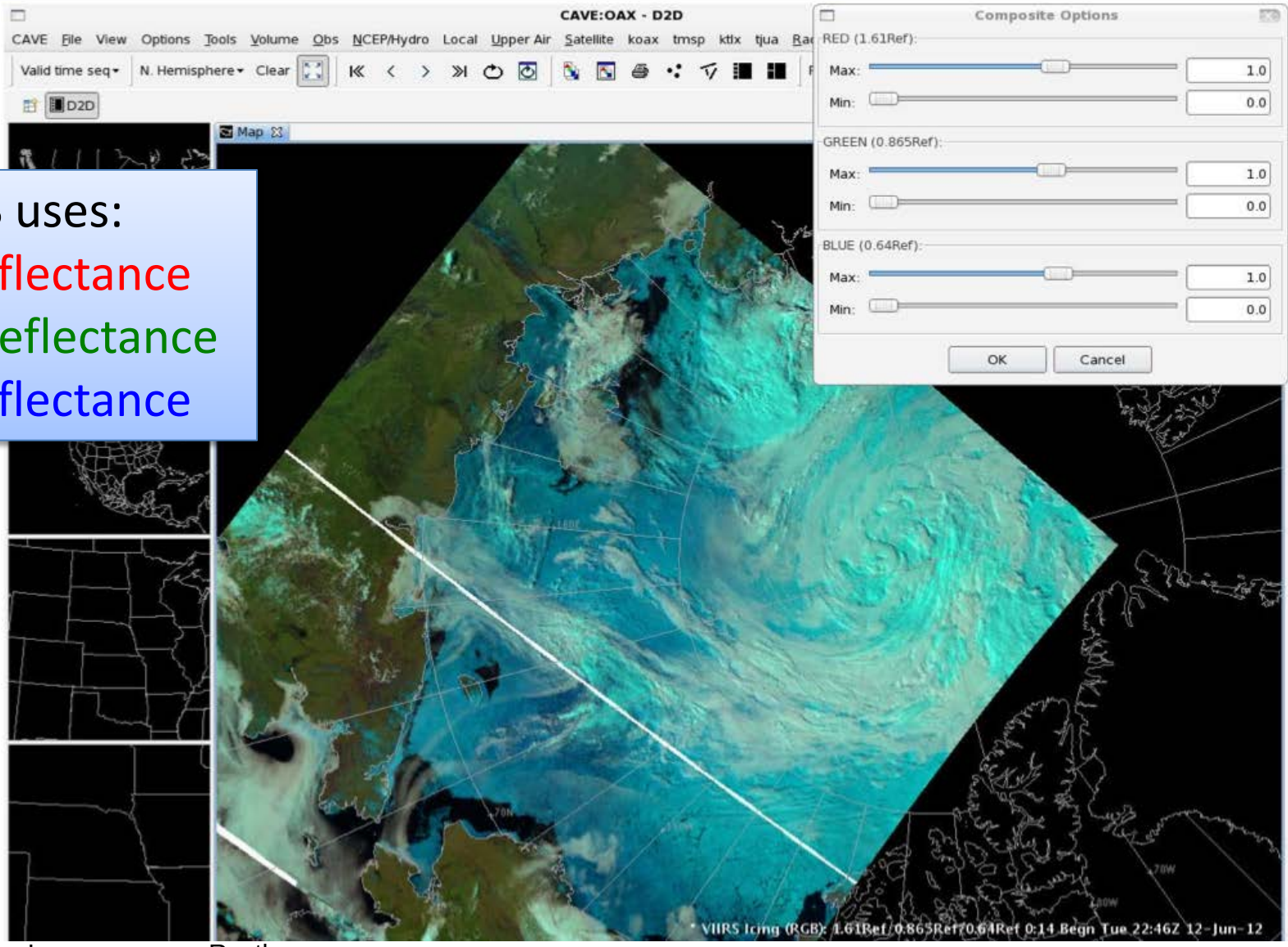


Image source: Raytheon

Other Default VIIRS RGBs in AWIPS II

- Daytime Composite #1
  - 0.64 µm Reflectance
  - 1.61 µm Reflectance
  - 11.45 µm Brightness Temperature
- Daytime Composite #2
  - 1.378 µm Reflectance
  - 1.61 µm Reflectance
  - 11.45 µm Brightness Temperature
- Daytime Composite #5
  - 0.64 µm Reflectance
  - 0.865 µm Reflectance
  - 0.64 µm Reflectance
- Nighttime Composite #9
  - 3.74 µm Brightness Temperature
  - 10.763 µm Brightness Temperature
  - 11.45 µm Brightness Temperature

VIIRS Day/Night Band in AWIPS II

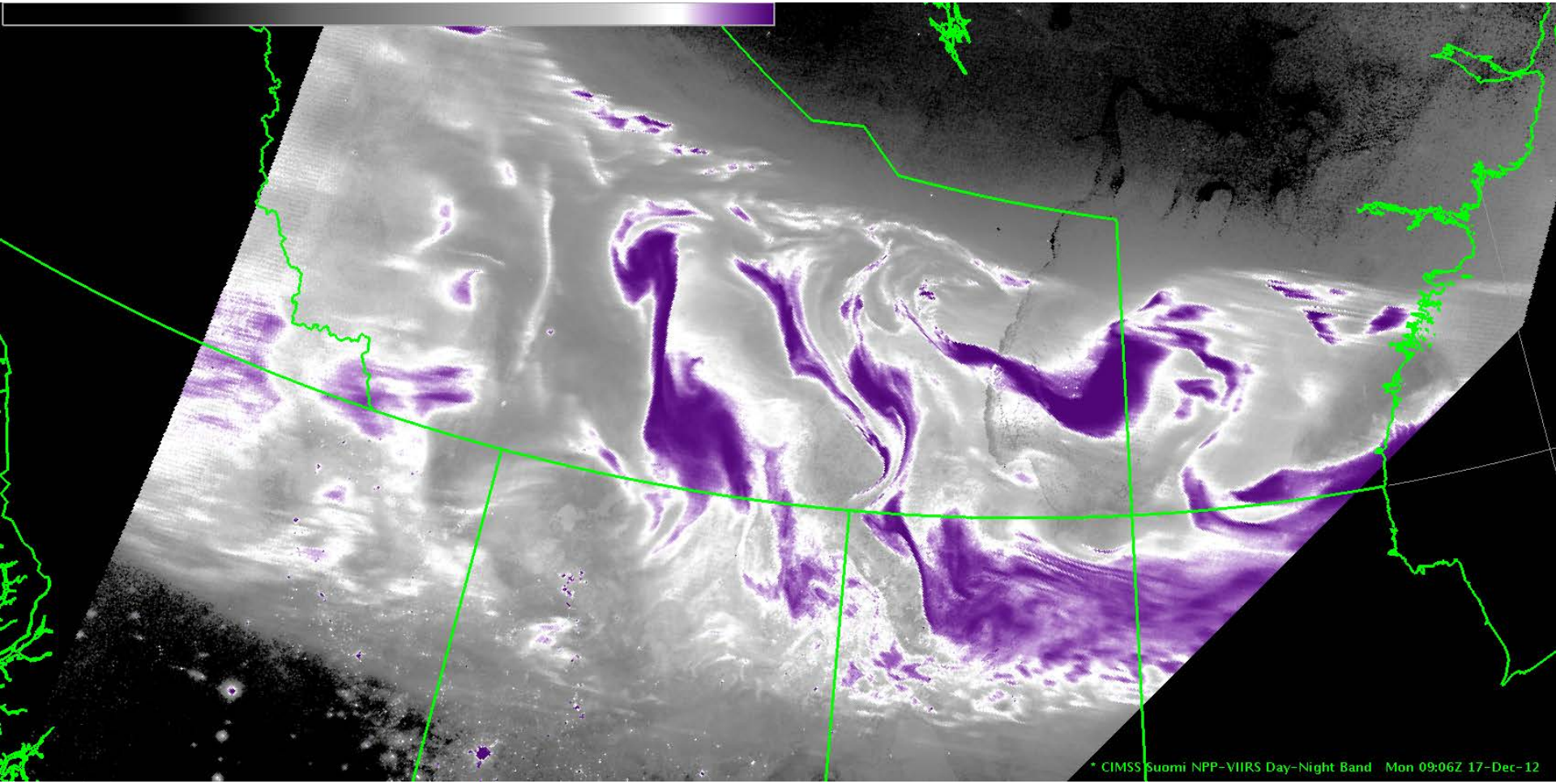
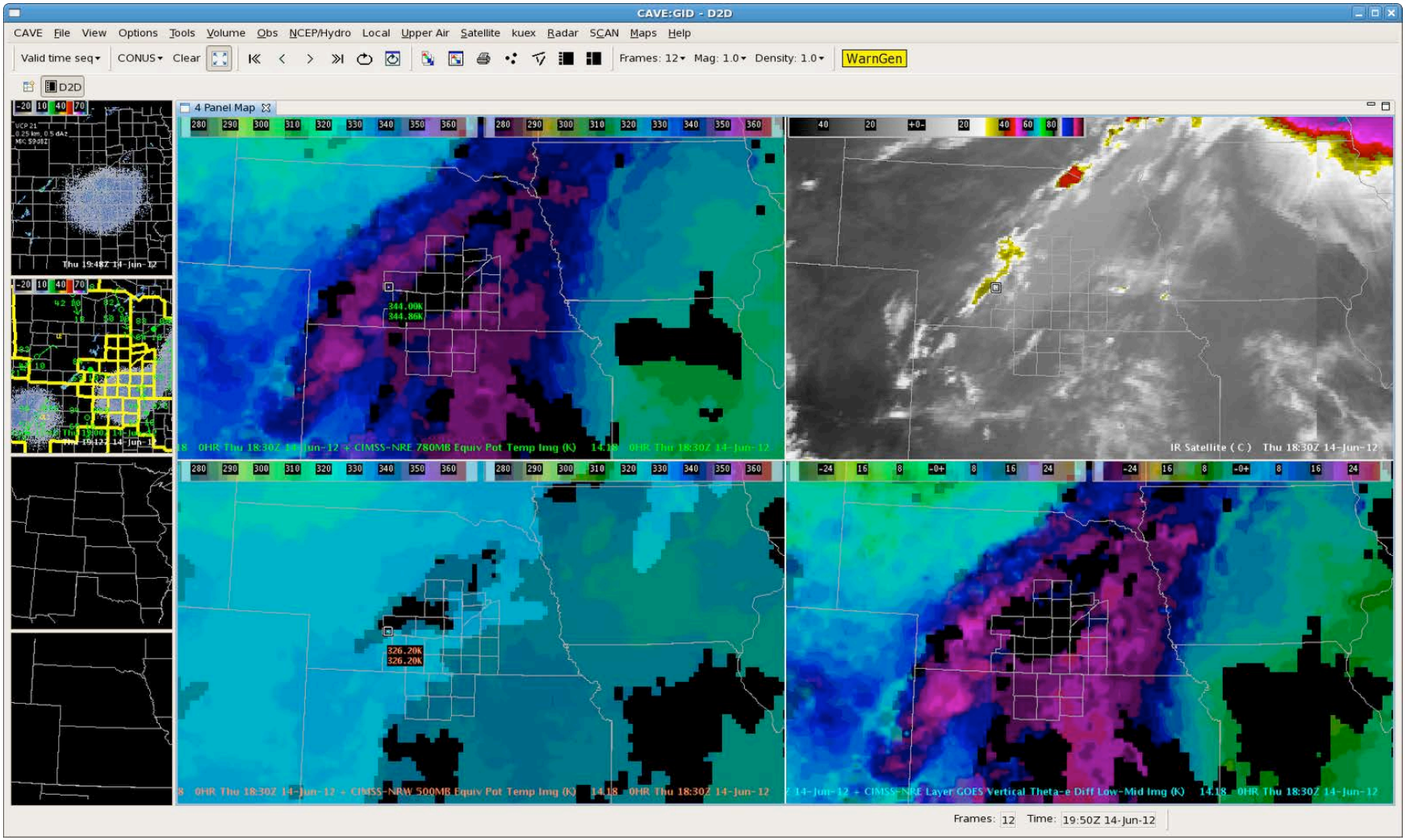


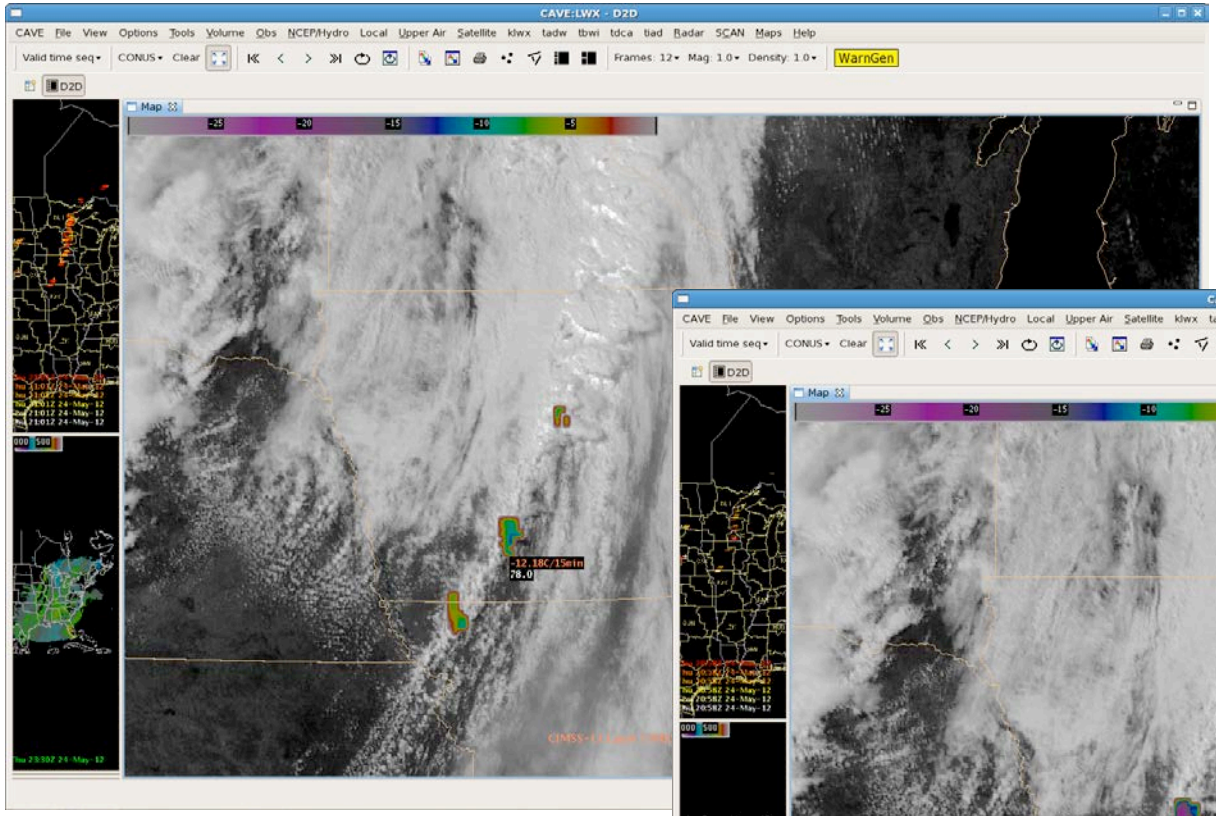
Image enhanced to depict aurora borealis in purple

GOES Nearcasting in AWIPS II (HWT)



Source: GOES-R Hazardous Weather Testbed Blog (goesrhwt.blogspot.com)

Cloud Top Cooling in AWIPS II (HWT)



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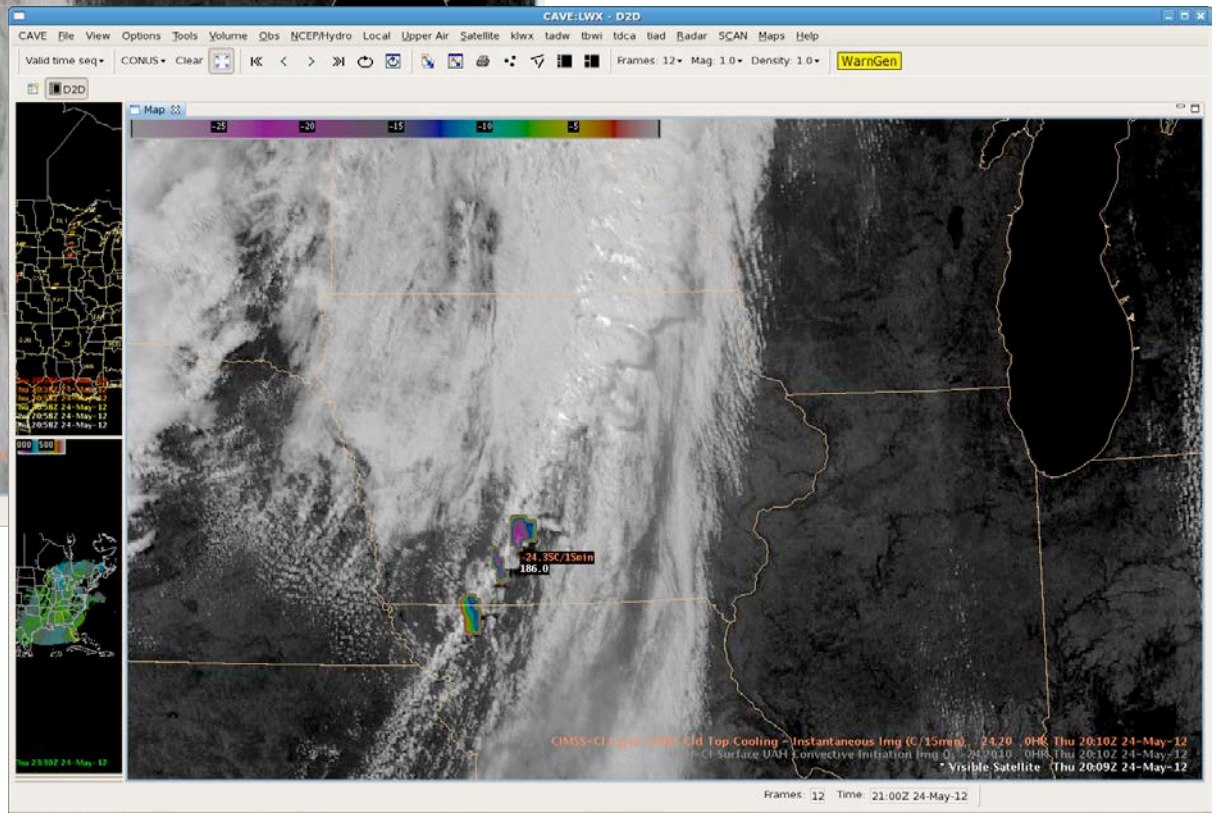

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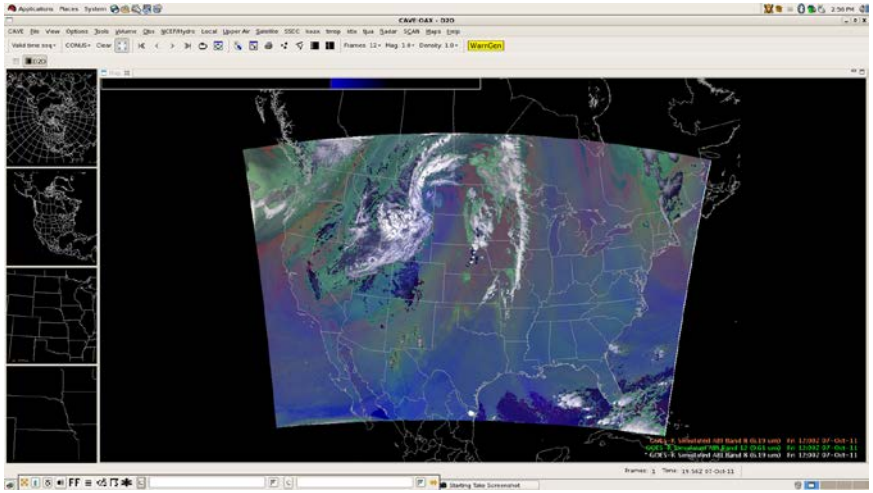
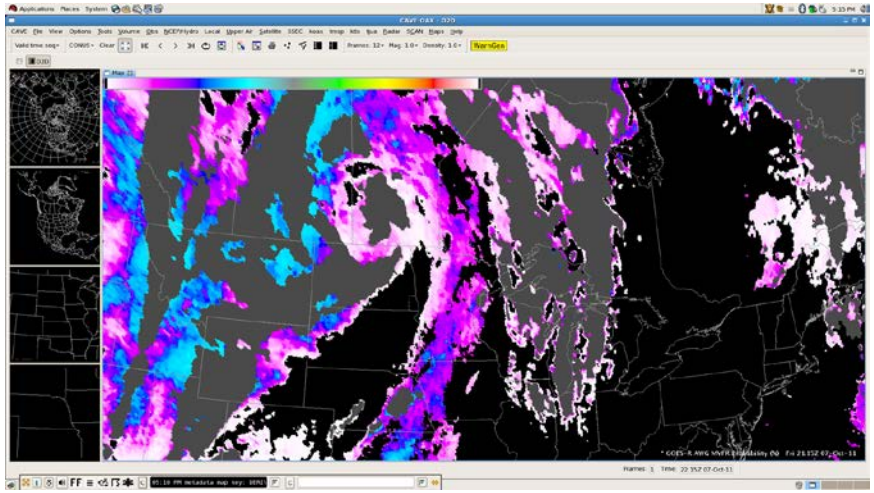
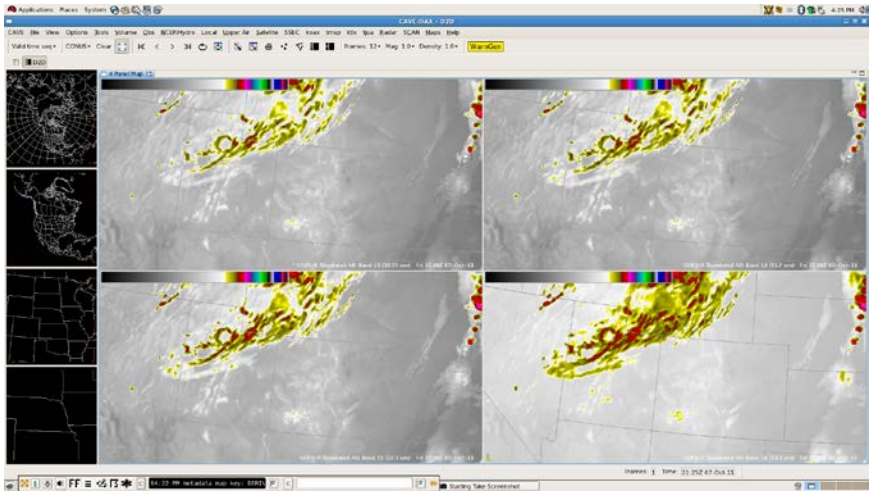
24 May 2012

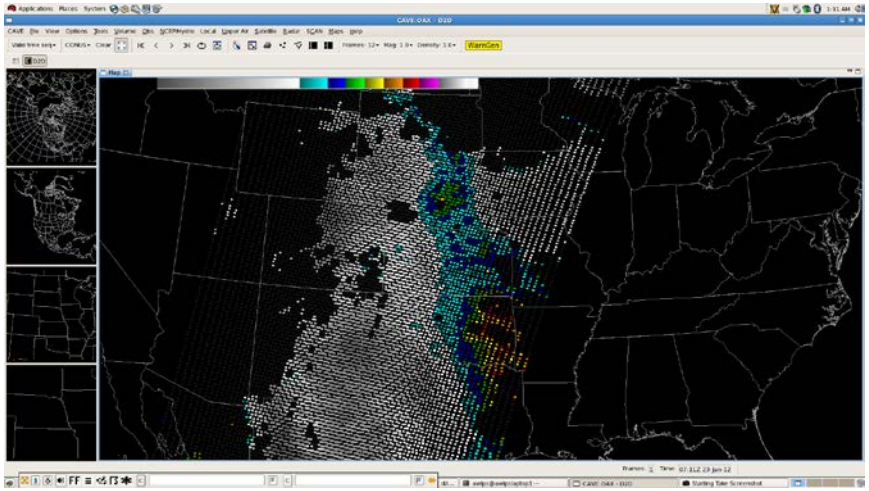
Source: GOES-R Hazardous Weather Testbed Blog (goesrhwt.blogspot.com)

Previous AWIPS II Work









RGB from Layered Proxy Imagery | MVFR Probability (Fog/Low Stratus)

NSSL-WRF Simulated Radiances | AIRS Total Precipitable Water (TPW)

Audience Participation Question

Which product should CIMSS give most priority when transitioning to AWIPS II?

A. VIIRS Day/Night Band
B. NSSL-WRF Simulated ABI Radiances
C. Fog, Low Cloud, and Stratus Flight Rule Probabilities
D. Cloud Top Cooling
E. AVHRR Imagery and Cloud Products

Presentation Summary

- CIMSS is actively embracing AWIPS II to further demonstrate the impact of GOES-R and JPSS imagery on operational meteorology. AWIPS II offers several advantages over AWIPS I.
- The satellite and RGB-compositing capabilities of the software are increasing but need to be refined.
- There is still a lot of work to be done.
  - Adequate training and testing platforms are a necessity but availability is very low.
- We must begin to consider the data delivery strategy to maximize utility of imagery and products on the first day of operations.

Questions? Comments?