



GOES-R Proving Ground

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Outline

- **Proving Ground Concept**
- **Activities underway**
- **Proxy and Simulated GOES-R Products**
- **Summary and Conclusions**



Proving Ground Mission

- **Engage the NWS in pre-operational demonstrations of GOES-R capabilities**
 - **Proving Ground objective...bridge gap between research and operations by:**
 - **Using current systems to emulate aspects of GOES-R**
 - **Infusing GOES-R products into NWS operational environment**
 - **Engaging in dialogue to provide feedback to developers**



Proving Ground Mission

- **Proving Ground Accomplishes its Mission Through:**
 - **Sustained interaction between developers and end users for training, product evaluation, and solicitation of user feedback**
 - **Close coordination with the AWG and Risk Reduction Programs to enhance operational transition of demo products**
 - **Follow successful model of NEXRAD program**



What is a Proving Ground?

- **Place where technologies and ideas are tested and proven before being fielded in operations**
- **Evaluates how infusion of technology or process in Forecast & Warning Environment impacts operations**
- **How does technology or process integrate with other available tools?**
- **Key component: operational testing by staff that is independent of the development process**
- **Key Benefit: Users accept new technology/products**
 - **Have had a say in design/evaluation**
 - **Design better fits identified needs**



Recommendations from GUC-4

- **Use proxy and simulated data sets to test and validate data processing and distribution systems;**
 - MODIS
 - AIRS
 - IASI
 - SEVIRI
 - NAST-I
 - NPP/ VIIRS/ CrIS
 - Computer Simulated atmospheres
 - Lightning networks
 - Lightning Imaging Sensor (LIS)



Proving Ground Approach for GOES-R

- Leverage expertise at Cooperative Institutes and existing Testbeds
- Funding from FY 08 to 16
- Locations:
 - Ft. Collins (CIRA)/BOU and CYS
 - Madison (CIMSS)/Sullivan WFO
 - Huntsville (SPoRT/WFO)
 - Leverage existing Testbeds – Norman and Boulder
 - Sterling WFO
 - Fairbanks/ Anchorage



Proving Ground Progress in 2008

- **Kickoff Meeting held May 2008 in Boulder**
 - Over 30 participants from GPO, AWG, CIMSS, CIRA, NWS HQ, FSL, OSD, OSDPD, SPoRT, and STAR
 - Key messages: there will not be stovepipe Proving Grounds for CIMSS, CIRA or SPoRT...rather an integrated Proving Ground structure
 - Web site for Proving Ground is at:
(cimss.ssec.wisc.edu/goes_r/proving-ground.html)
 - NWS HQ & field engaged in plans & implementation
- **Organization Meeting held June 16**
 - Key message...for every product, tool or technique developed there must be a clear path to operational implementation.
- **Alaska Region Meeting – July 2008**



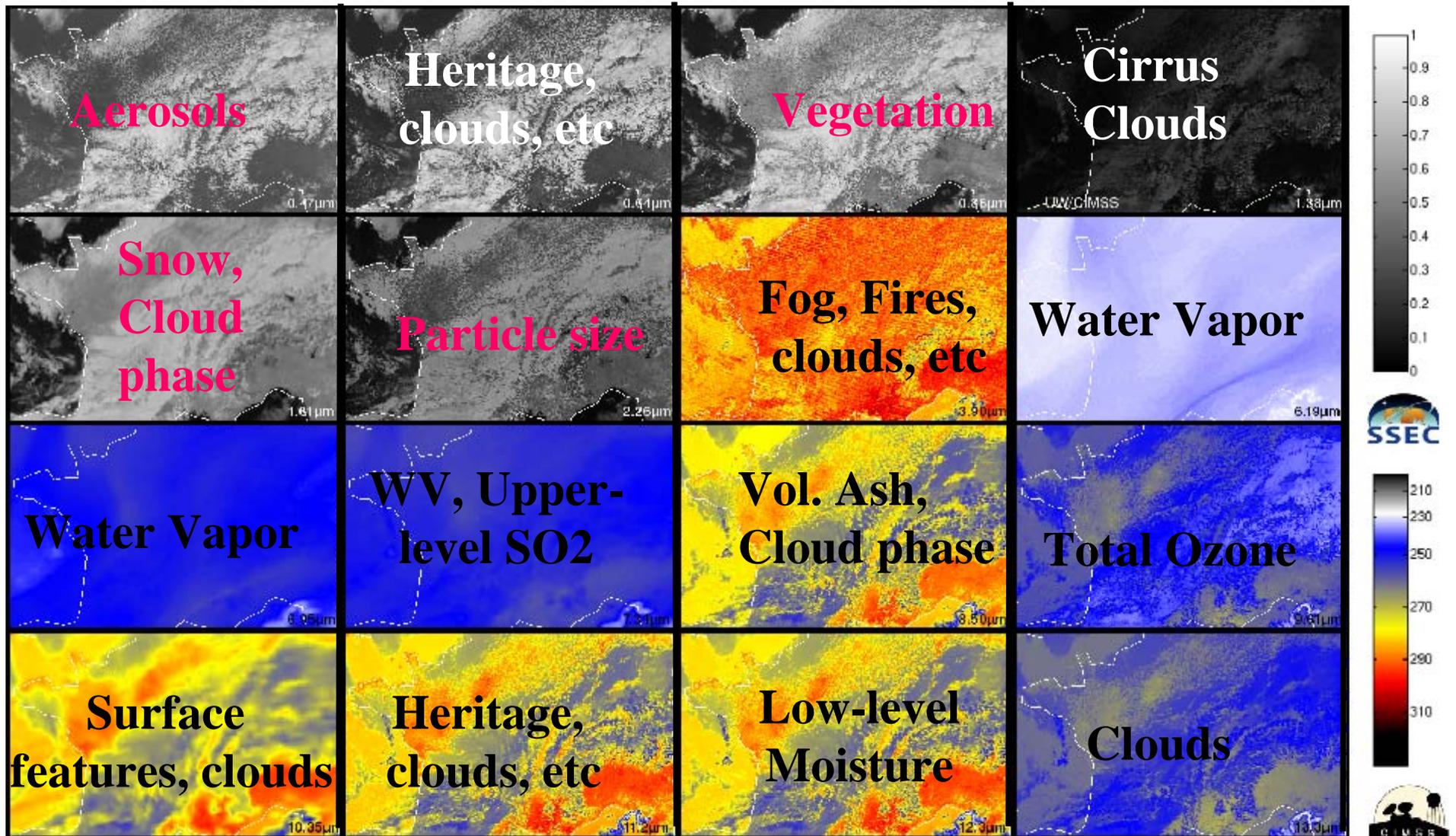
Proving Ground Progress

– Progress on proxy & simulated GOES-R data sets

- Algorithm Working Group (AWG) has team dedicated to developing proxy GOES-R data
- CIMSS & CIRA developing proxy GOES-R datasets from MODIS/ SEVIRI
- CIMSS & SPoRT providing MODIS to WFOs
- CIMSS & CIRA developing computer simulated atmospheres/ imagery with ABI data attributes
- CIMSS demonstrating synergy between high spectral resolution AIRS and high temporal resolution ABI
- SPoRT provides GLM lightning proxy data to WFOs

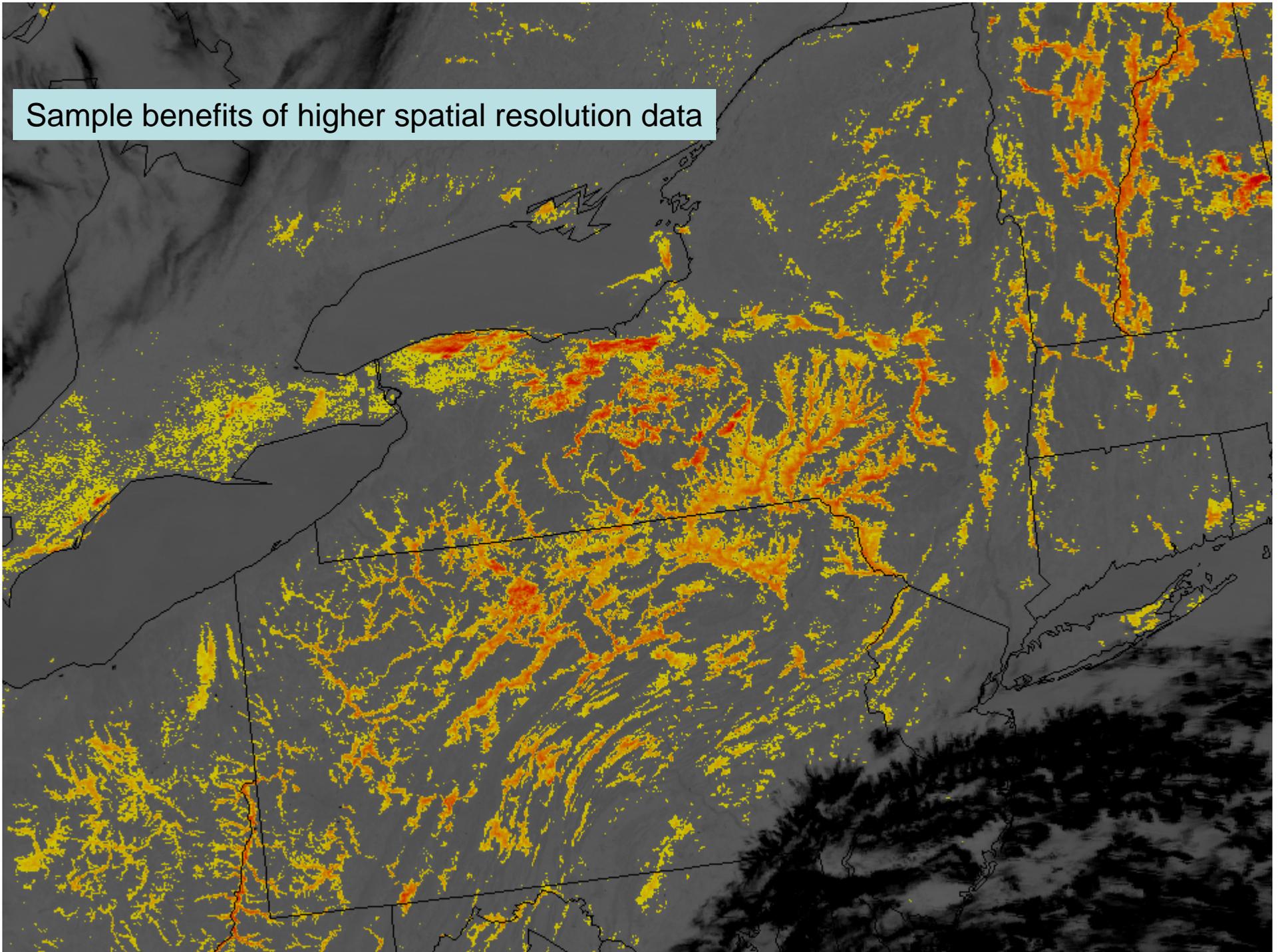


“ABI” Proxy Data from current satellites

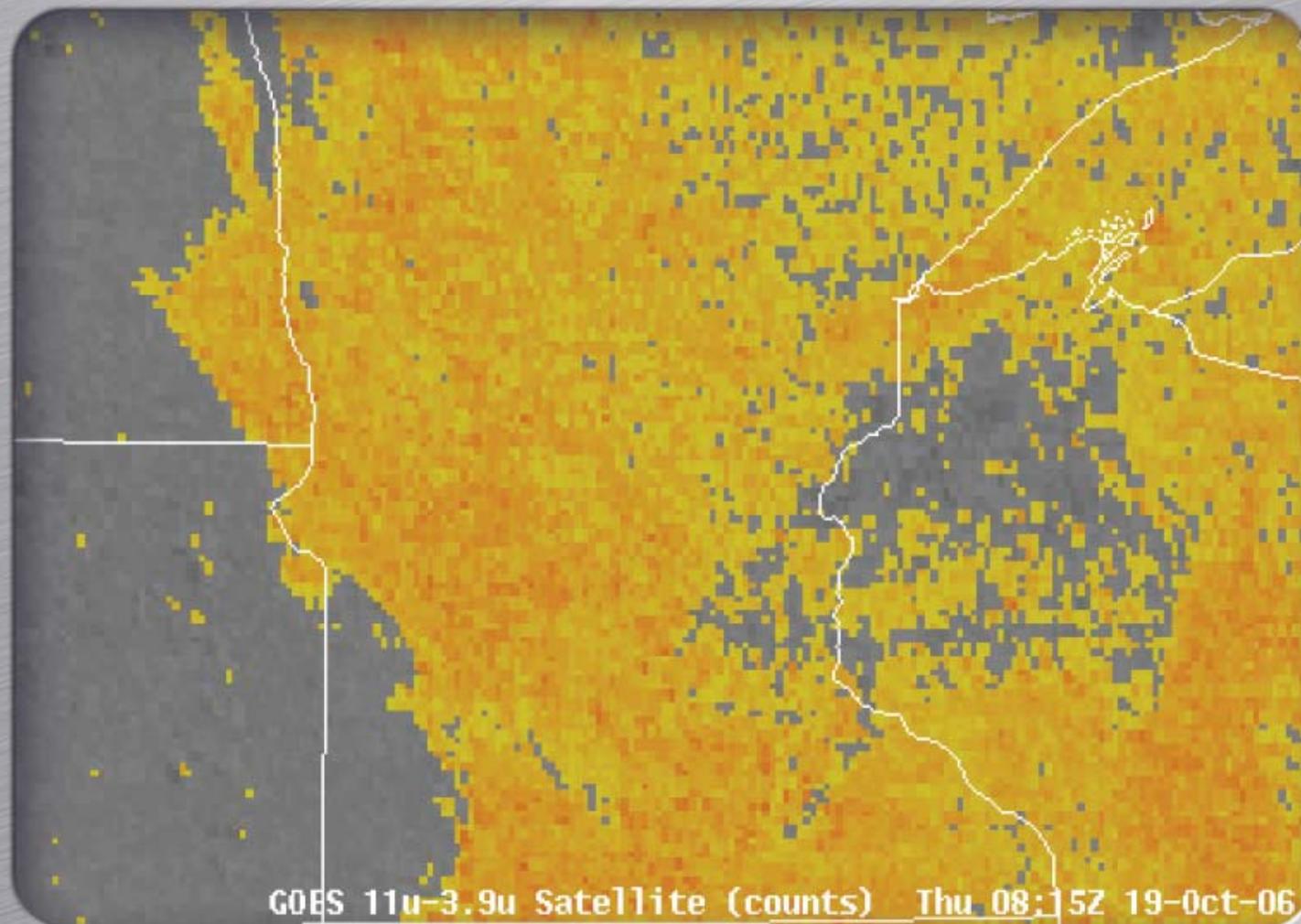


ABI Proxy from MODIS, MSG, and AIRS on 2004 April 11

Sample benefits of higher spatial resolution data

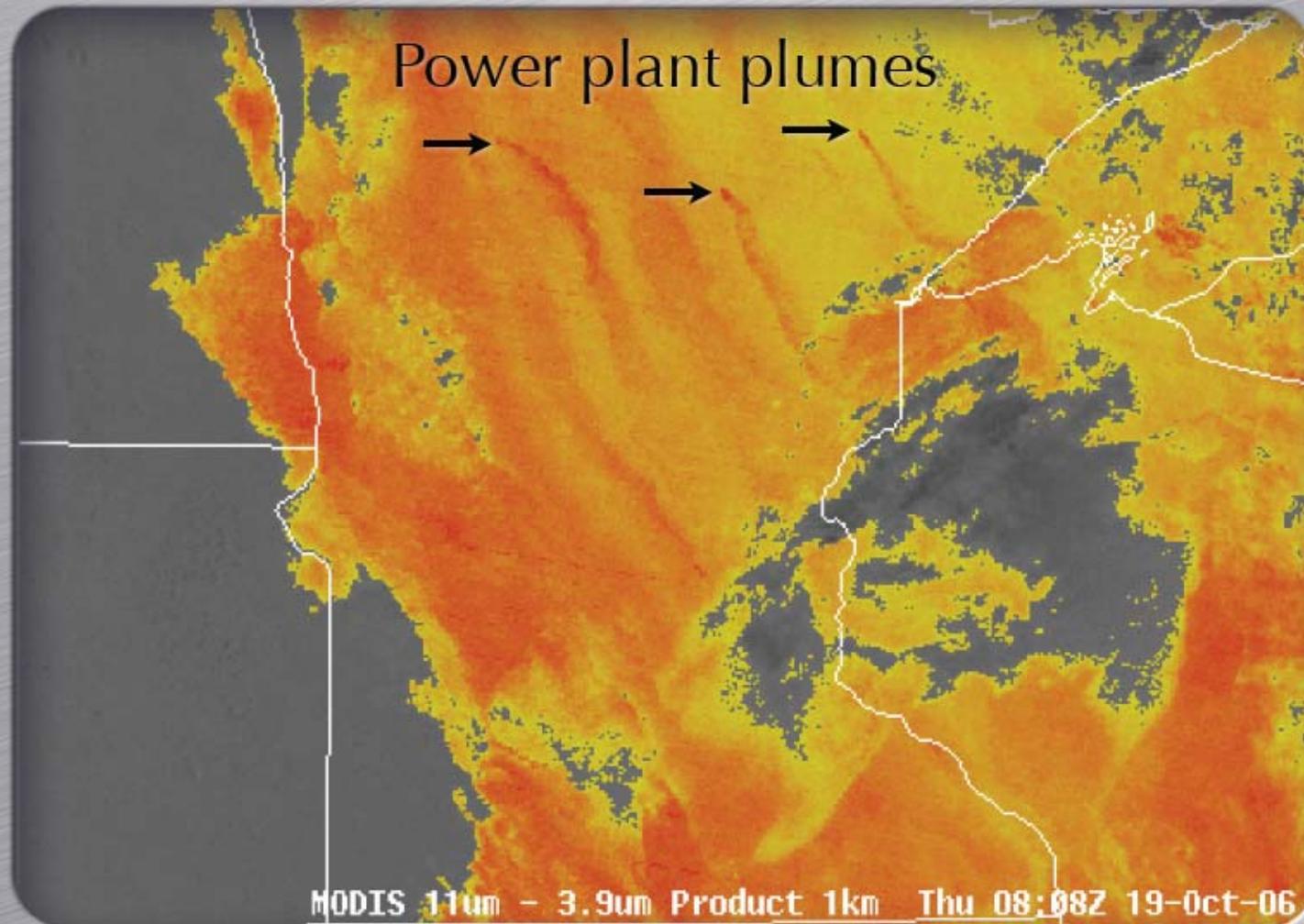


MODIS Imagery in AWIPS



Fog/stratus product: Improved stratus edge detection

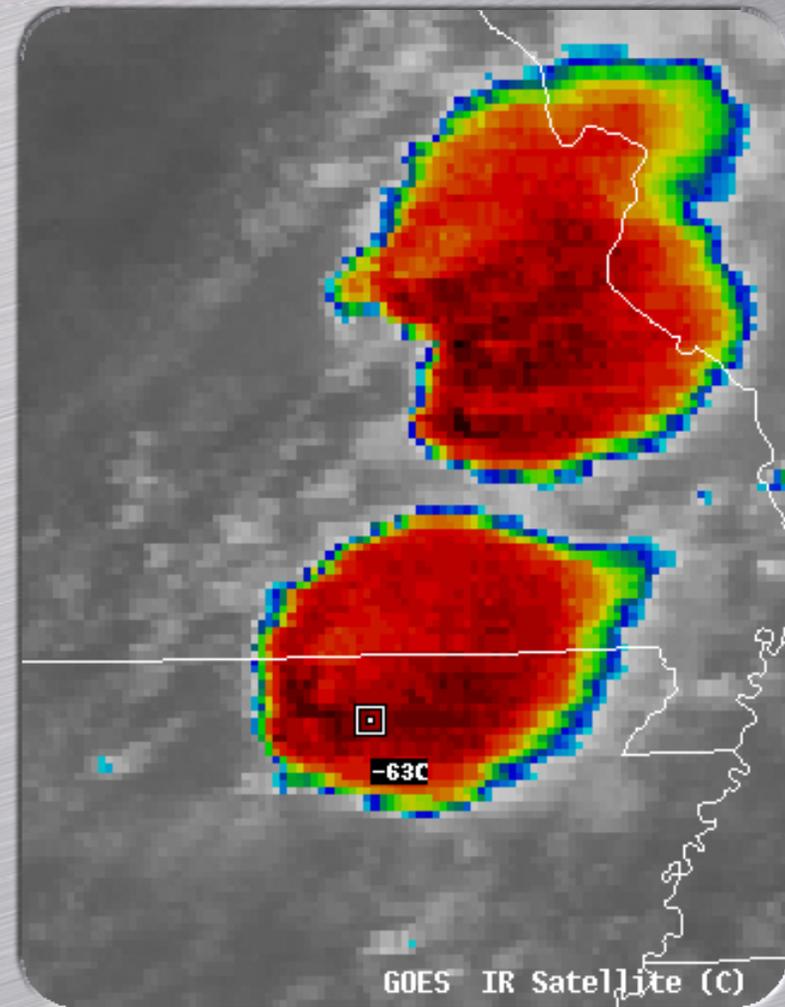
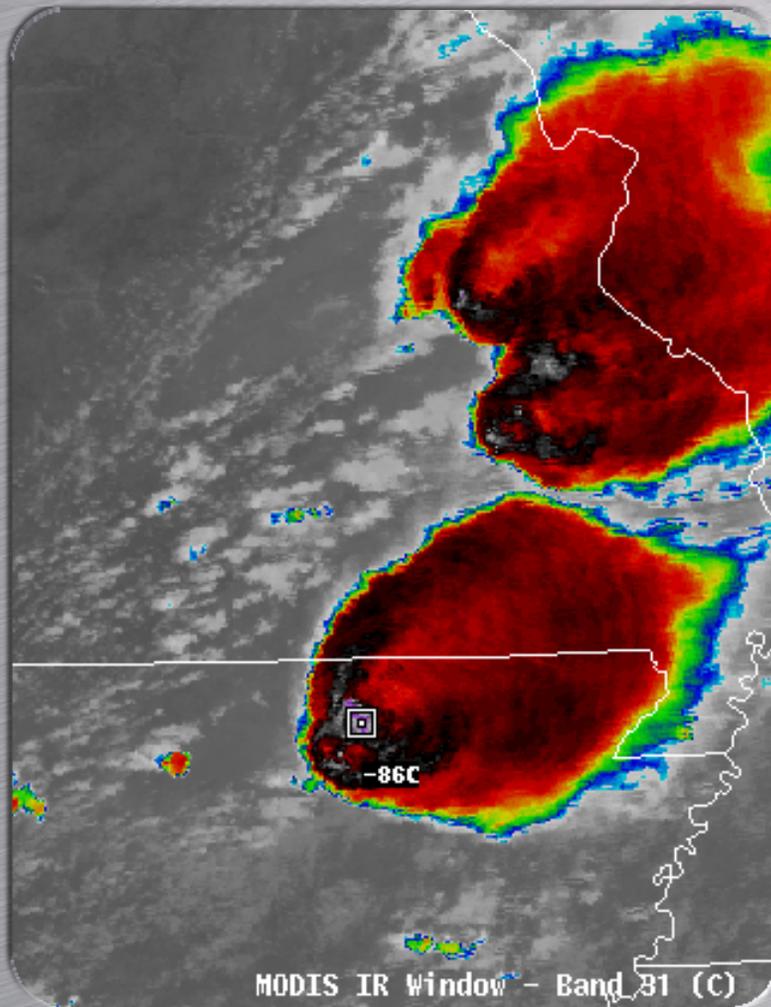
MODIS Imagery in AWIPS



Fog/stratus product: Improved stratus edge detection

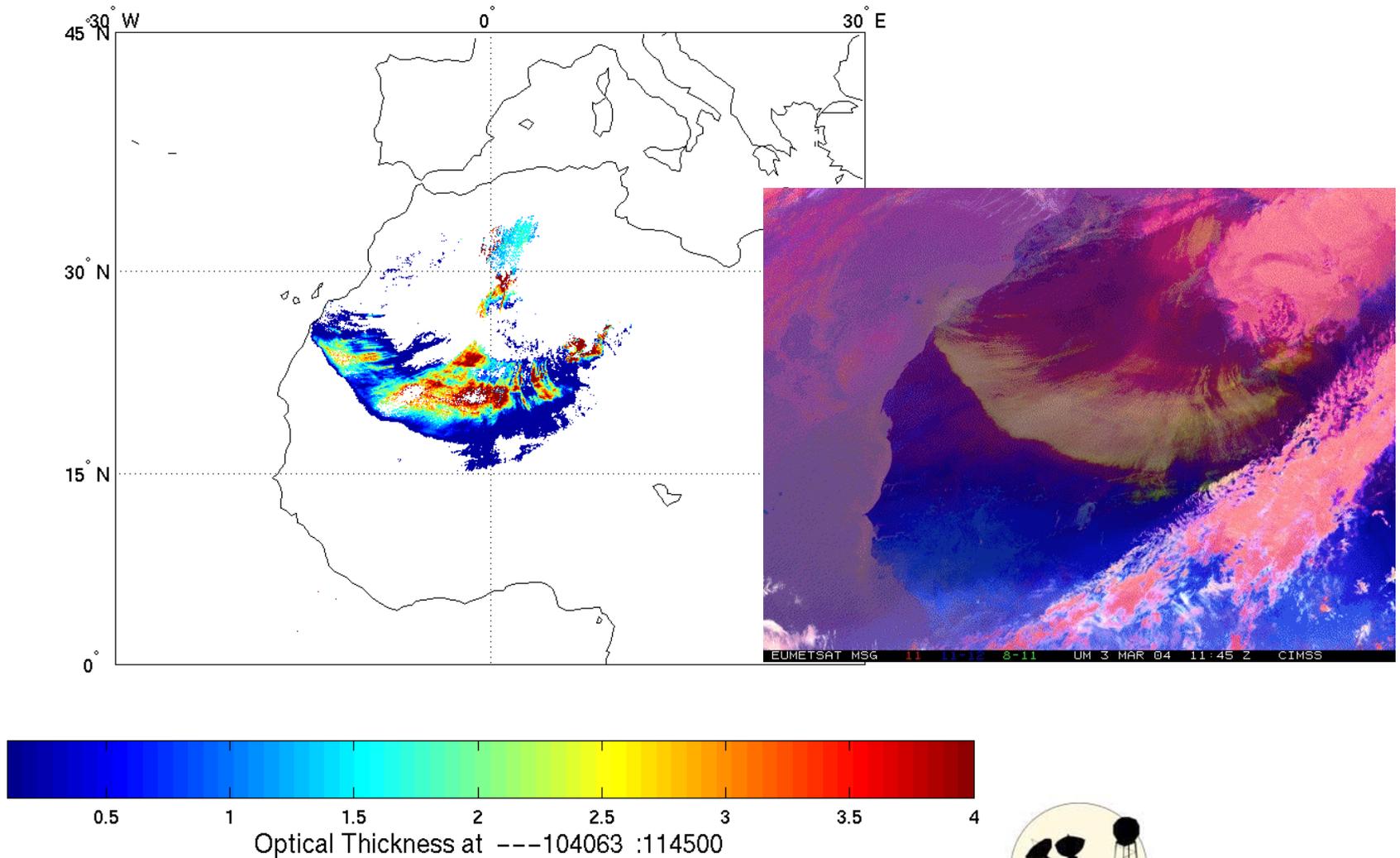
MODIS Imagery in AWIPS

MODIS vs GOES IR Window Channel

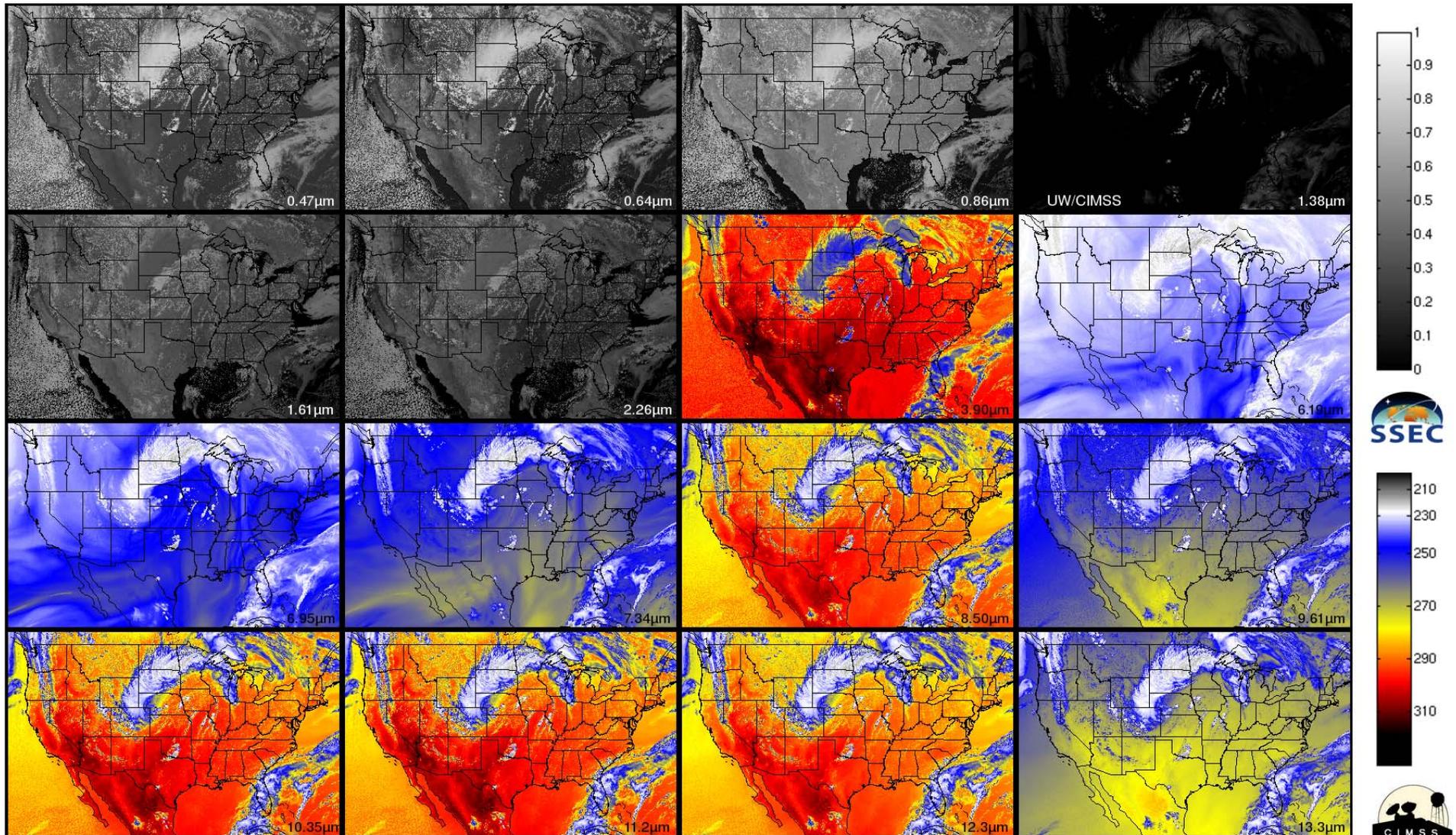


Improved enhanced-v signature detection

Aerosol/Dust Optical Thickness Retrieval Results from SEVIRI@EUMETSAT



ABI 16-panel from NWP simulation (from CIMSS AWG Proxy Data Team)



ABI band data for 2005 June 04 22:00 UTC



Simulated ABI data in AWIPS

Kaba Bah, CIMSS

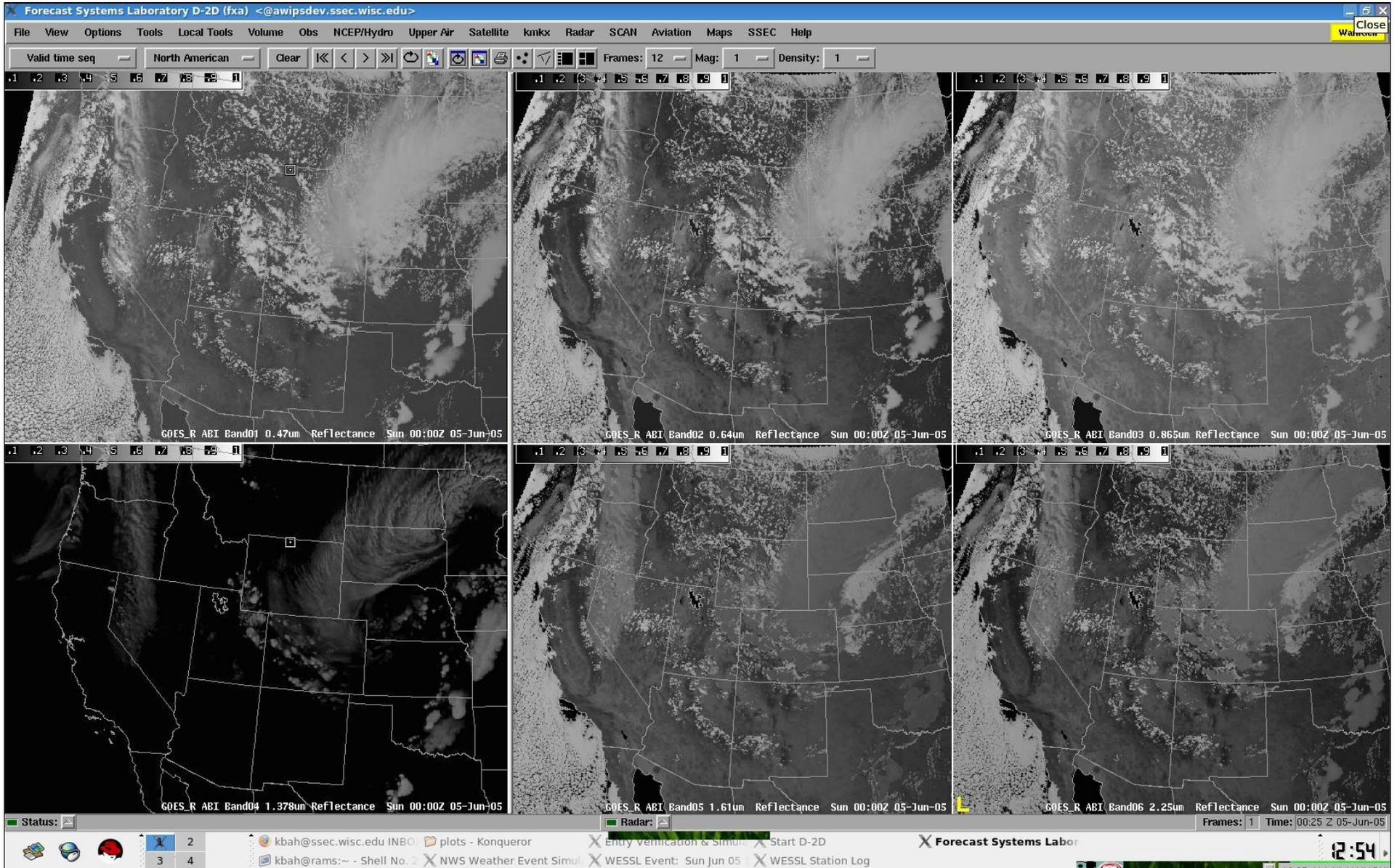
Jordan Gerth, CIMSS

Justin Sieglaff, CIMSS

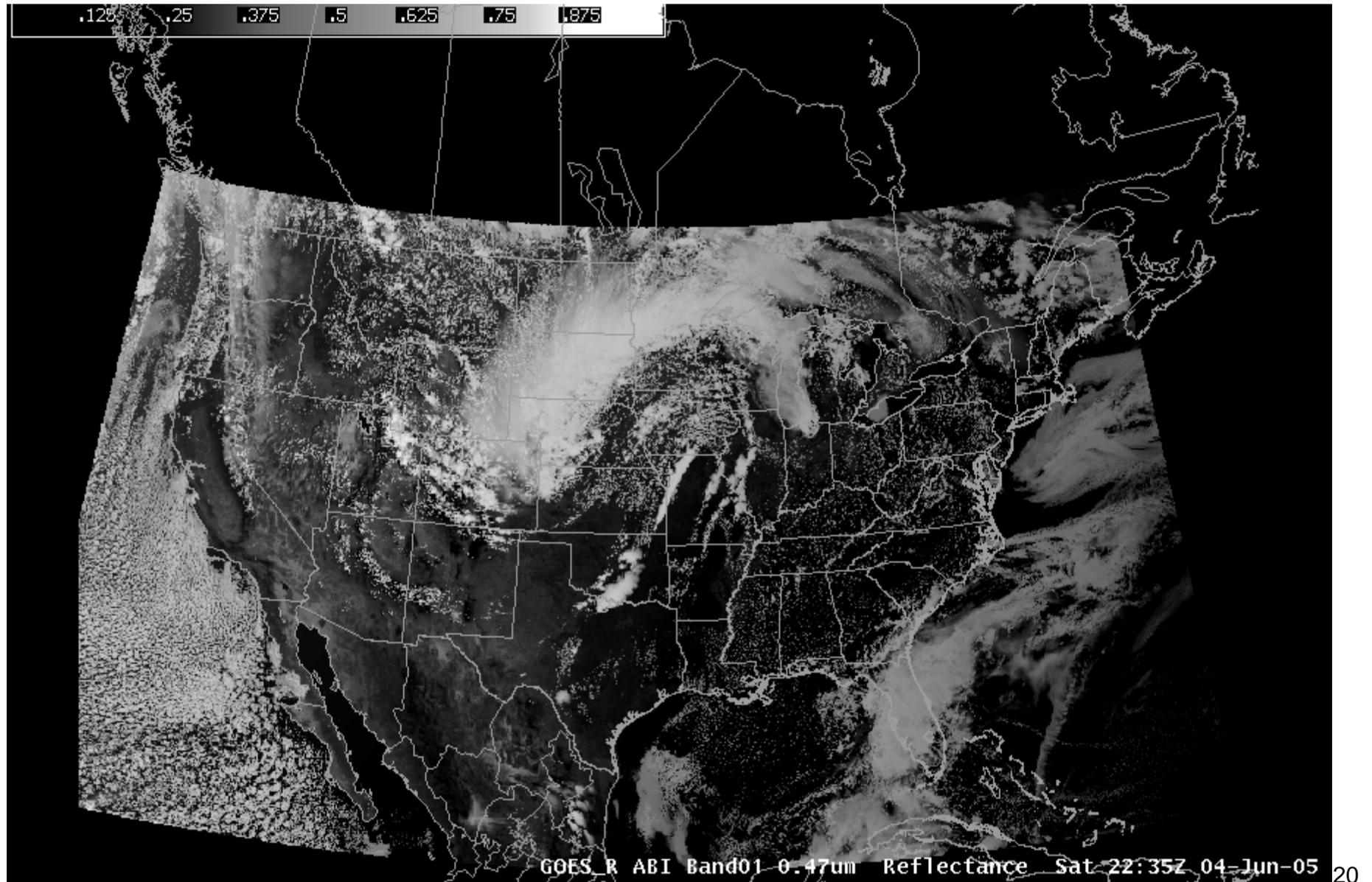
Tim Schmit, NOAA NESDIS

Simulated Images from the AWG CIMSS Proxy Team

Sample visible and near-IR bands of the ABI in AWIPS

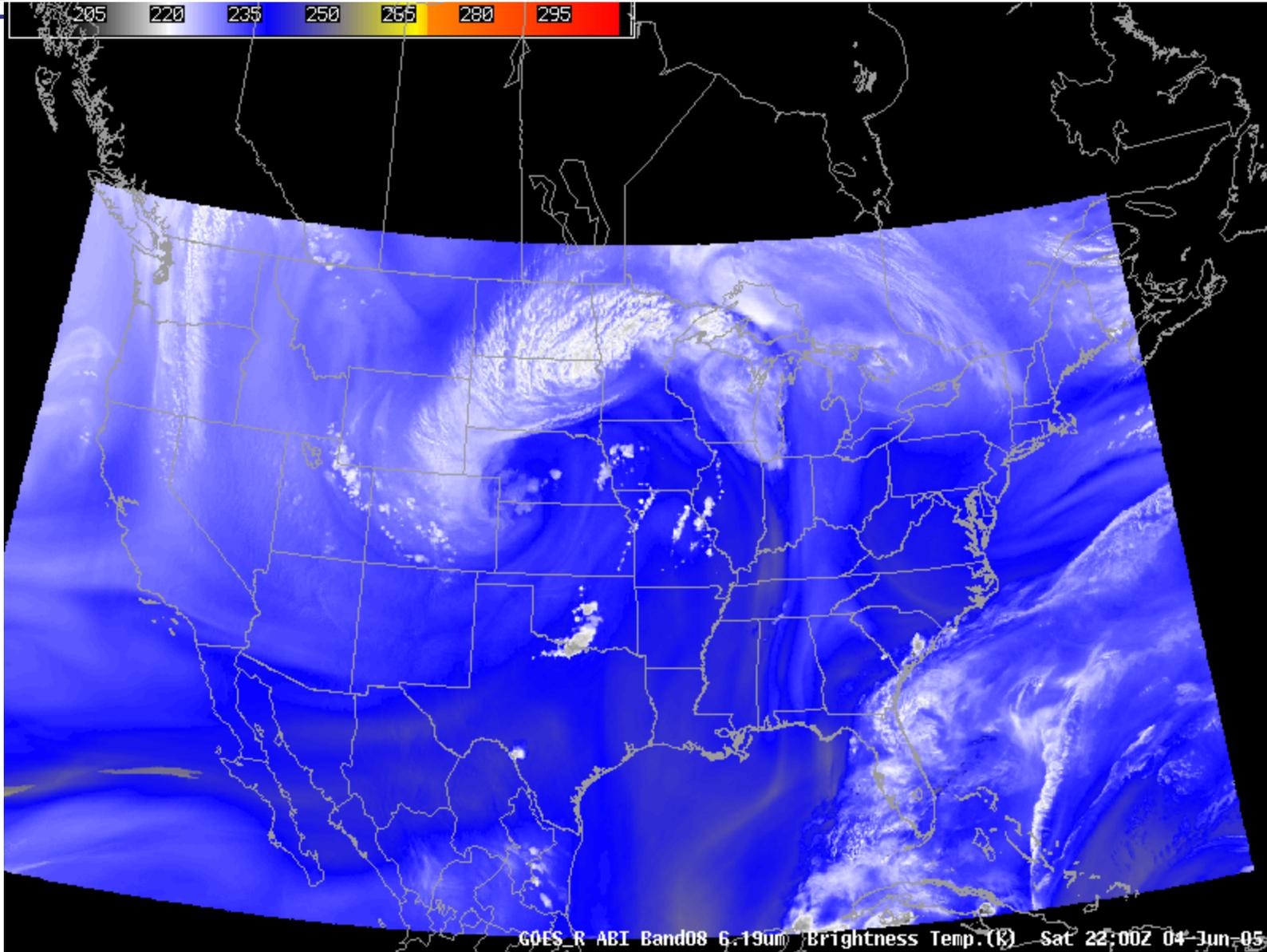


2 km Simulated ABI data in AWIPS



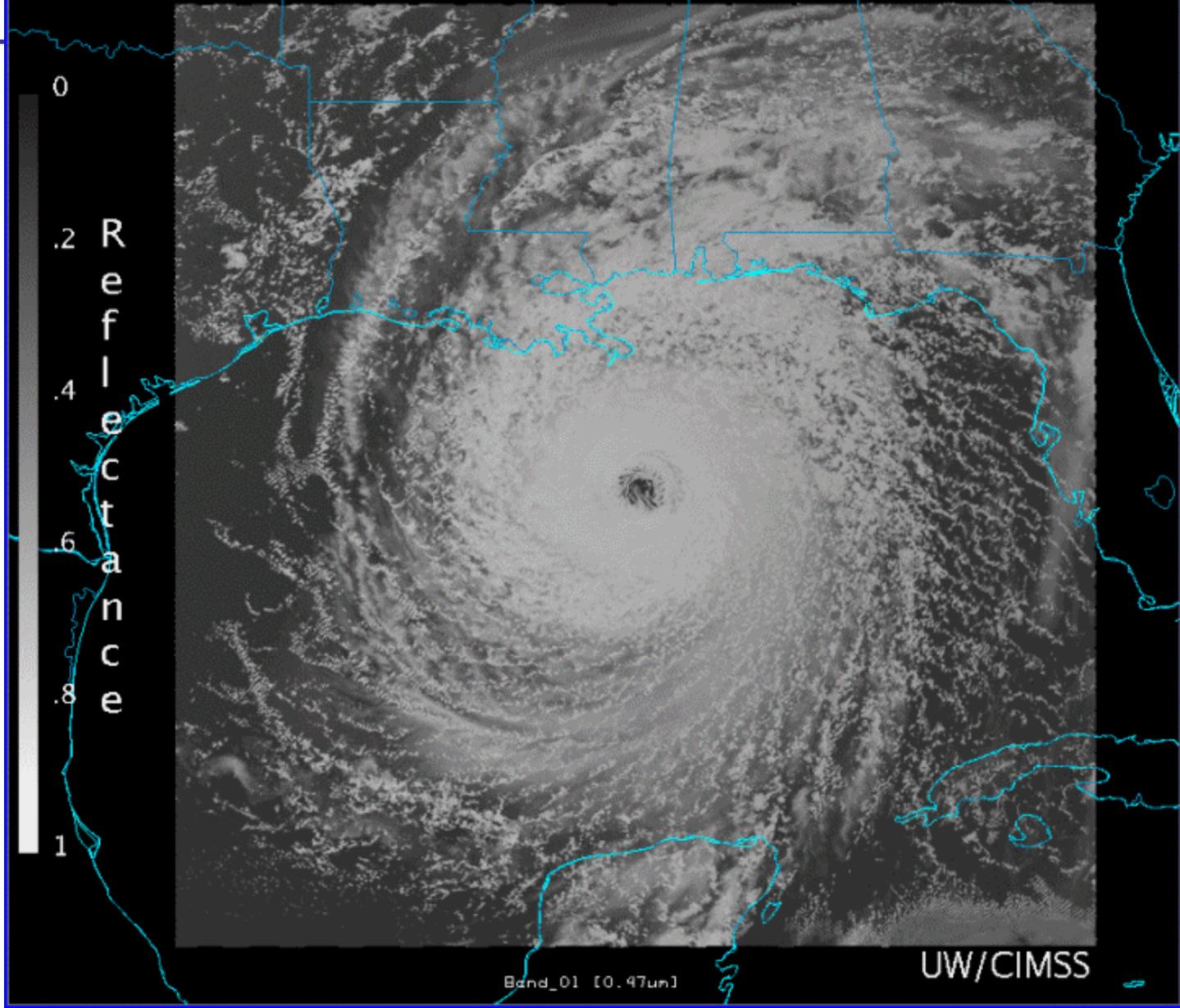


2 km Simulated ABI data in AWIPS

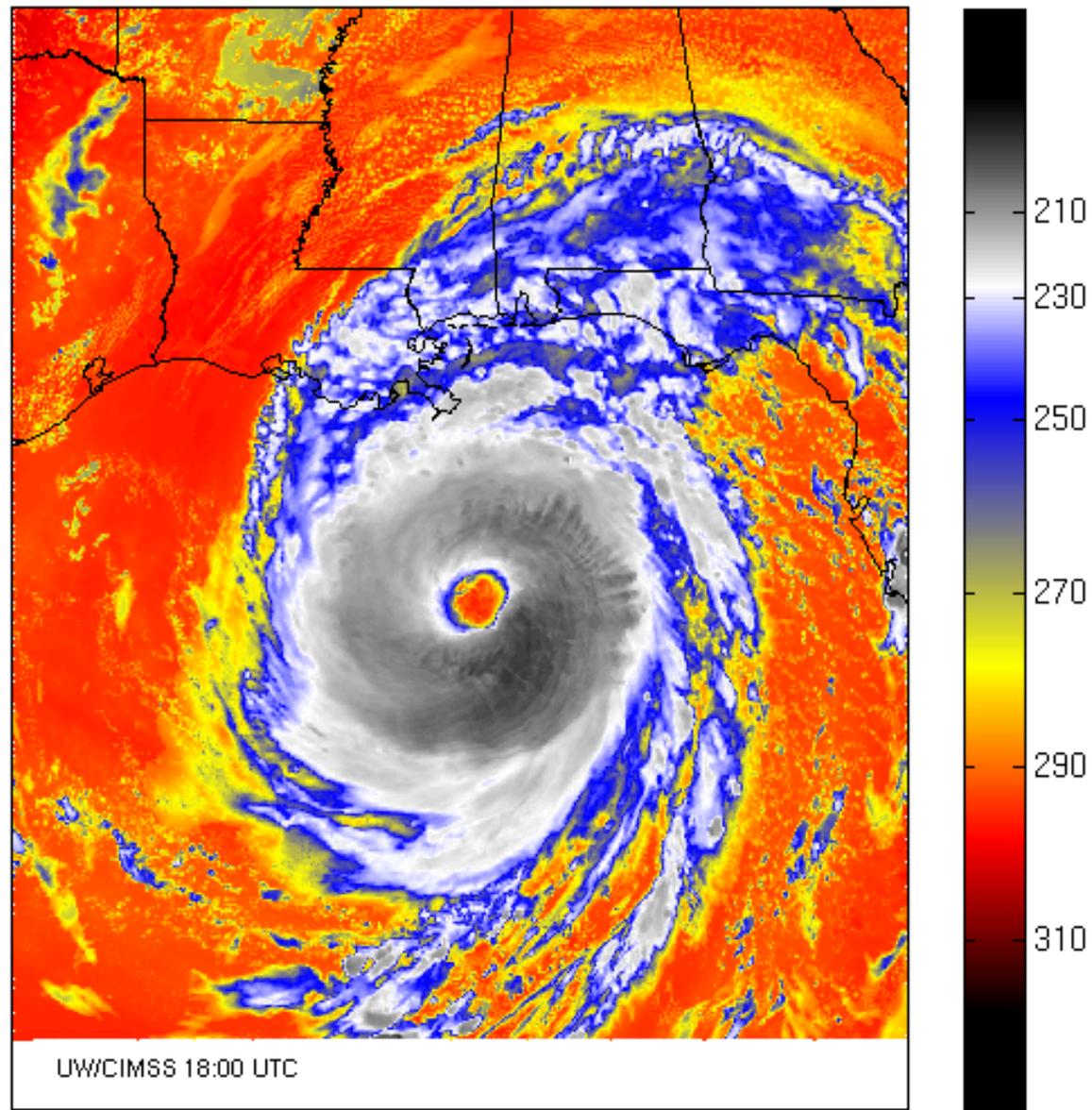


animation

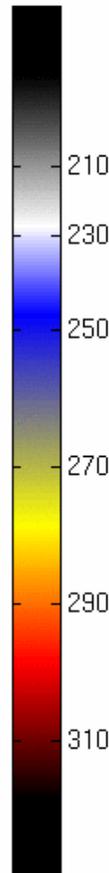
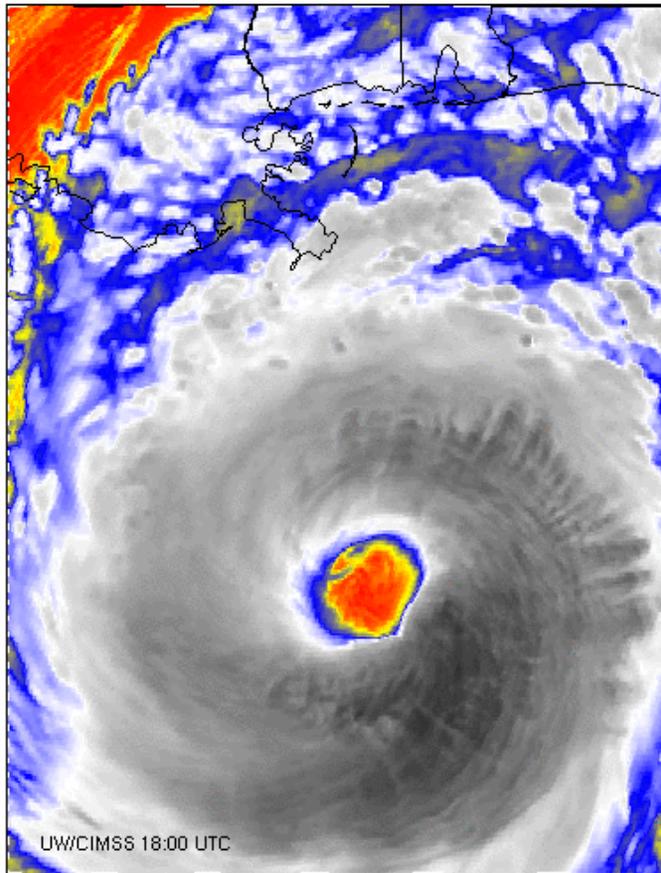
GOES-R Simulated ABI 2005-08-28, 2200UTC



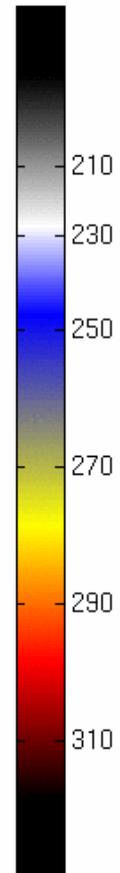
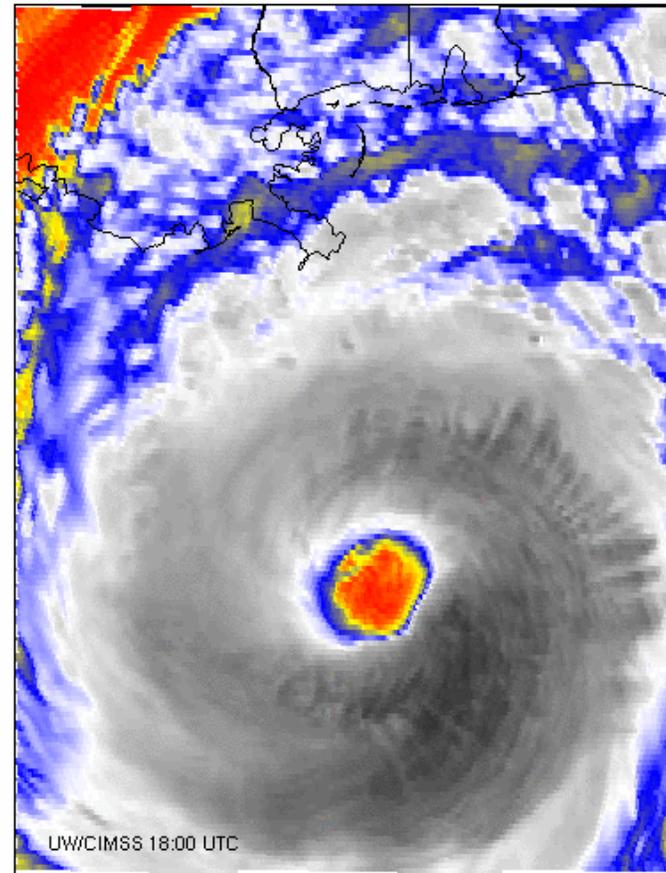
ABI band 14 (11.2 μm) BT (K) 2005-08-28



ABI band 14 (11.2 μm) BT (K) 2005-08-28

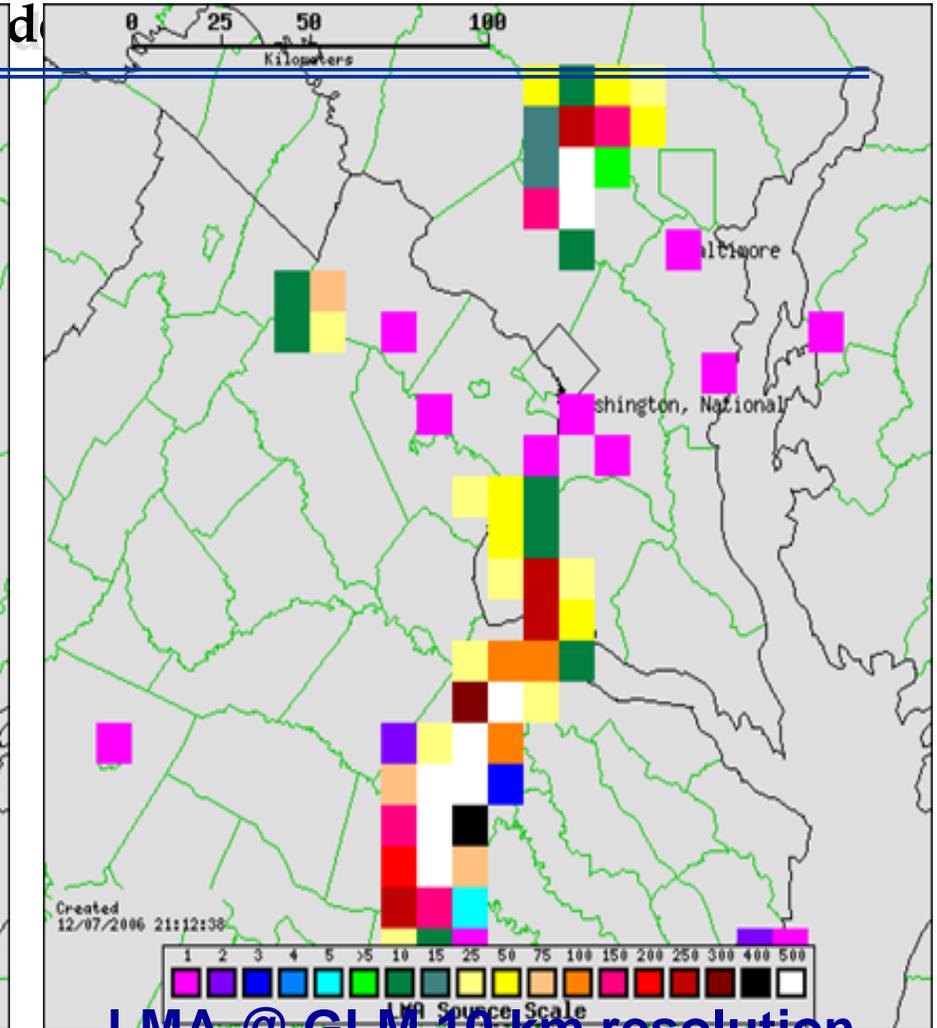
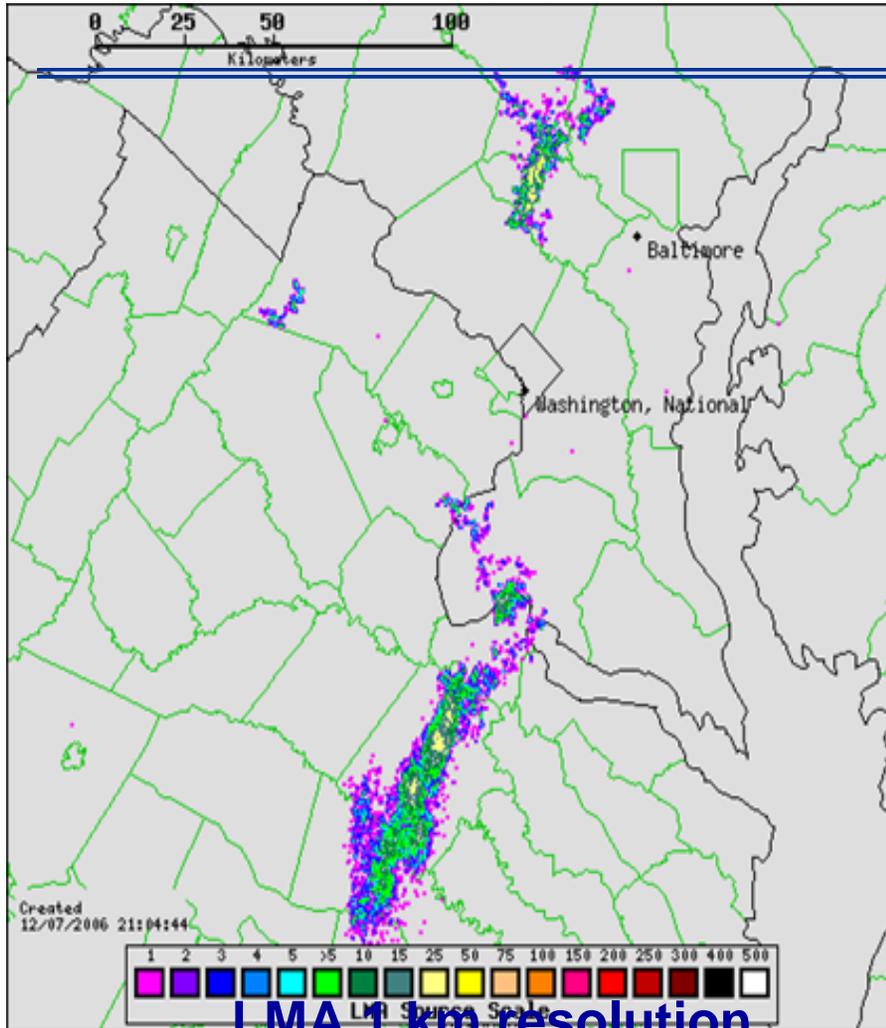


GOES-12 band 4 (10.7 μm) BT (K) 2005-08-28

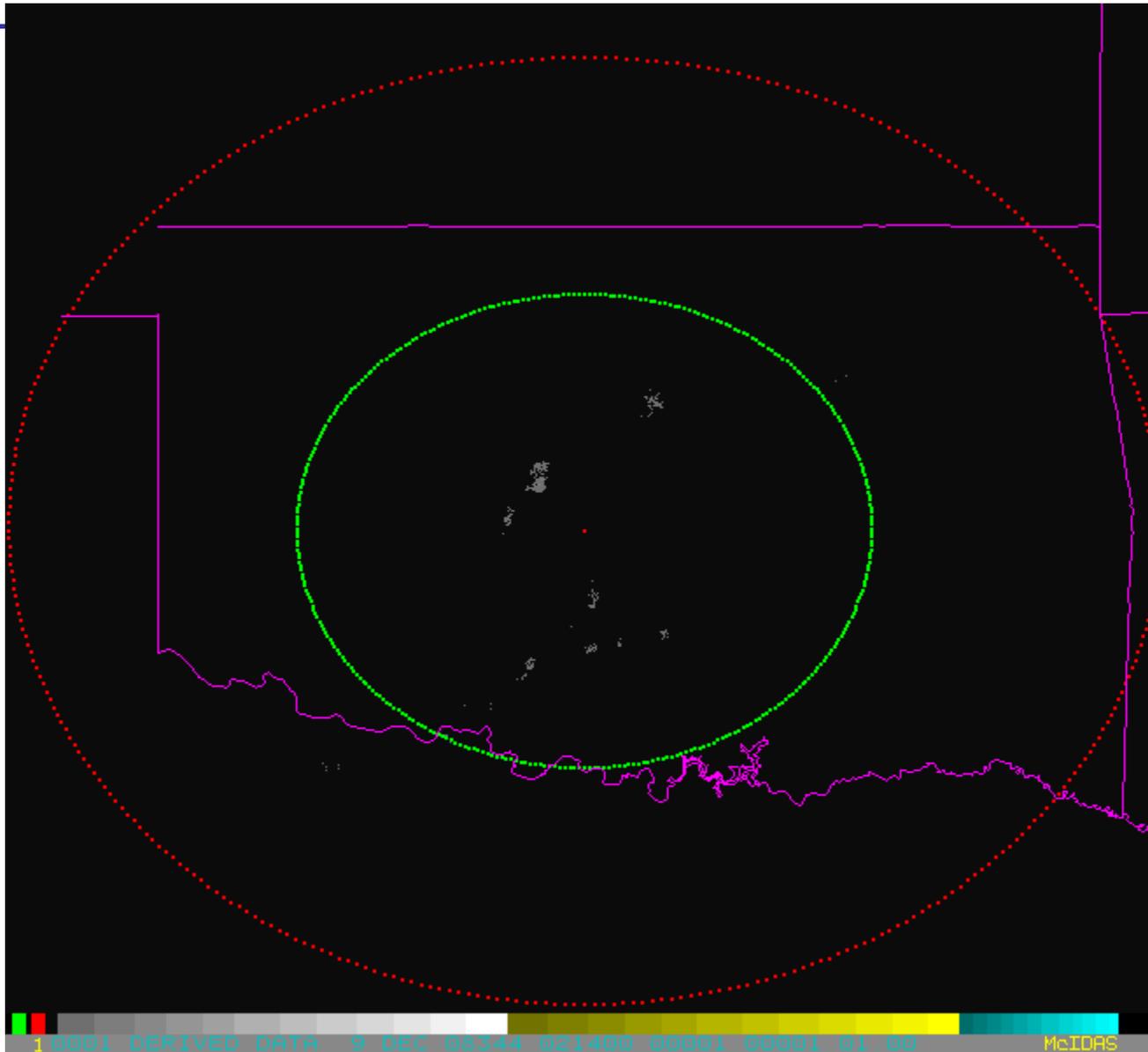


GLM Proxy Data

DC Regional Storms November 16, 2006



GLM Proxy Data from OKLMA



Recommendations from GOES Users' Conferences

Need for Decision Aids

- Volume of data & products require use of decision aids to focus user attention
- NEXRAD provides good model: alerts for critical values of VIL, Gate-to-Gate Shear, TVS;
- Satellite candidates: Enhanced V; Fog formation; Rapid changes in stability; Mismatch between model forecasts/analyses & satellite observation (clouds, water vapor, winds, precipitation, surface features, lightning, fog formation or dissipation, etc.)
- For all GUC presentations see:

<http://www.goes-r.gov/GUC%20V.html>



Conclusions

- Proving Ground: recurring recommendation from past GOES User Conferences
- Activities underway at CIMSS, CIRA, SPoRT, Alaska, and SPC
- Simulated GOES-R products to be used in a WES
- Use of Decision Aids to be tested in operational environment
- Proven successful model from NEXRAD
- PG is the ultimate tool for user interaction

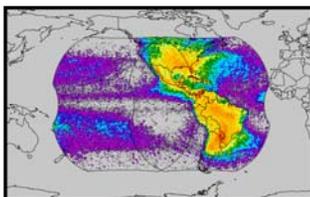
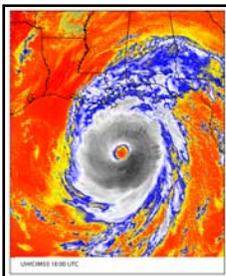




6TH GOES USERS' CONFERENCE



http://cimss.ssec.wisc.edu/goes_r/meetings/guc2009/



Geostationary Operational Environmental Satellites: <http://www.goes-r.gov>

Special Event on 2 November: 50th Anniversary of the 1st Meteorological Satellite Experiment