

Displaying Imagery and CIMSS Science Products in McIDAS-V

Joleen Feltz, Will Straka, Kaba Bah

In cooperation with CIMSS Scientist
and McIDAS Programmers

Tuesday, 8 May 2012: McIDAS Users' Group Meeting

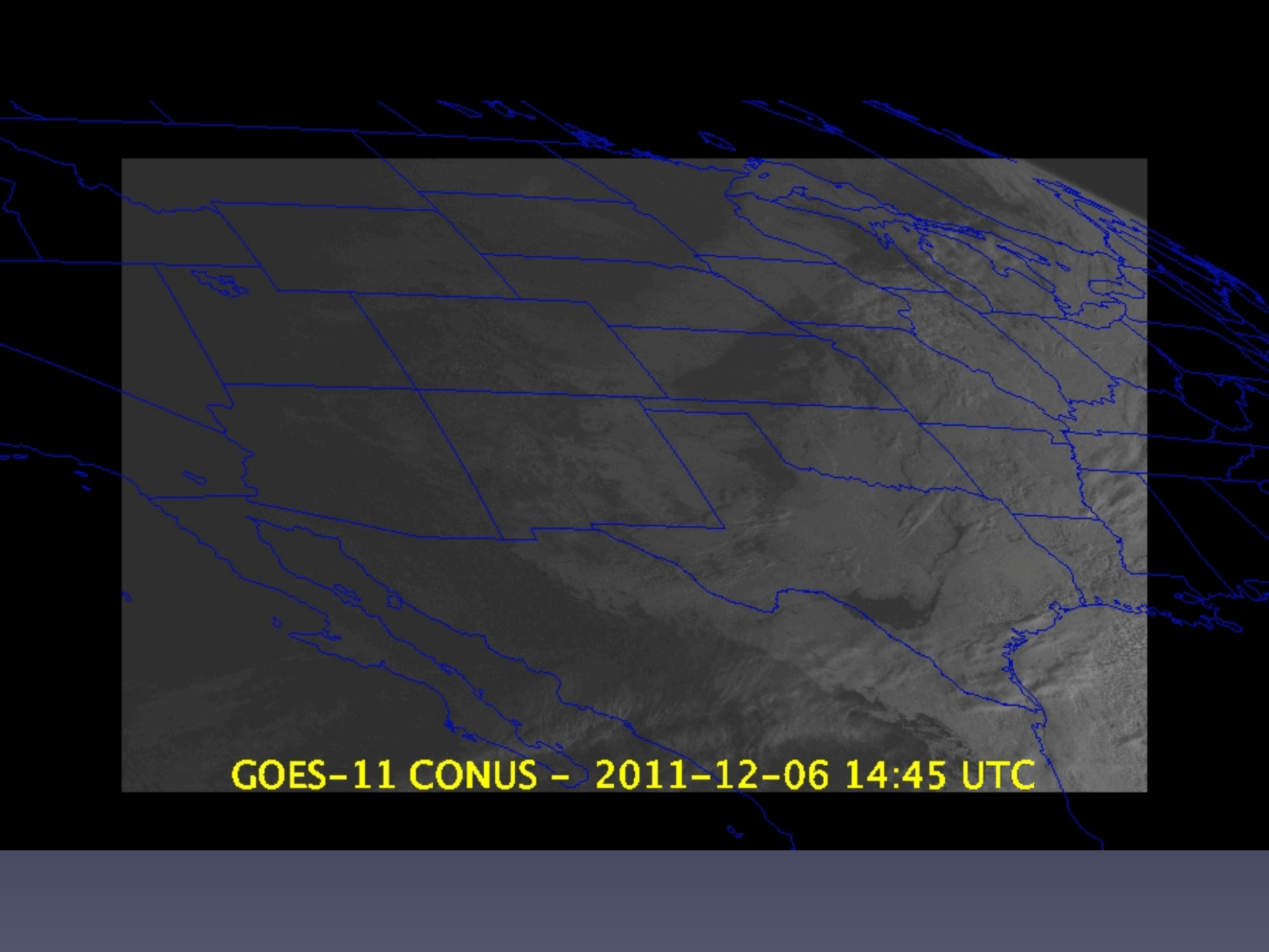


Acknowledgements

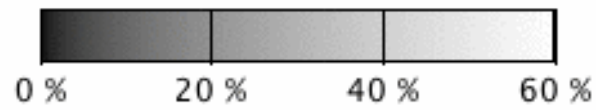
- McIDAS Imagery and Visualization: Tom Whittaker, Tom Rink and Tommy Jasmin
- CIMSS Scientist: Anthony Wimmers, Justin Sieglaff, William Straka, Jason Otkin, Tony Schreiner, Kaba Bah, Elizabeth Weisz, Wayne Feltz, Tom Ahtor, Robert Knuteson
- NOAA/NESDIS Satellite Applications Branch: Tim Schmit, Ralph Peterson, Gary Wade

Bundles: Reckless but useful bundle tricks

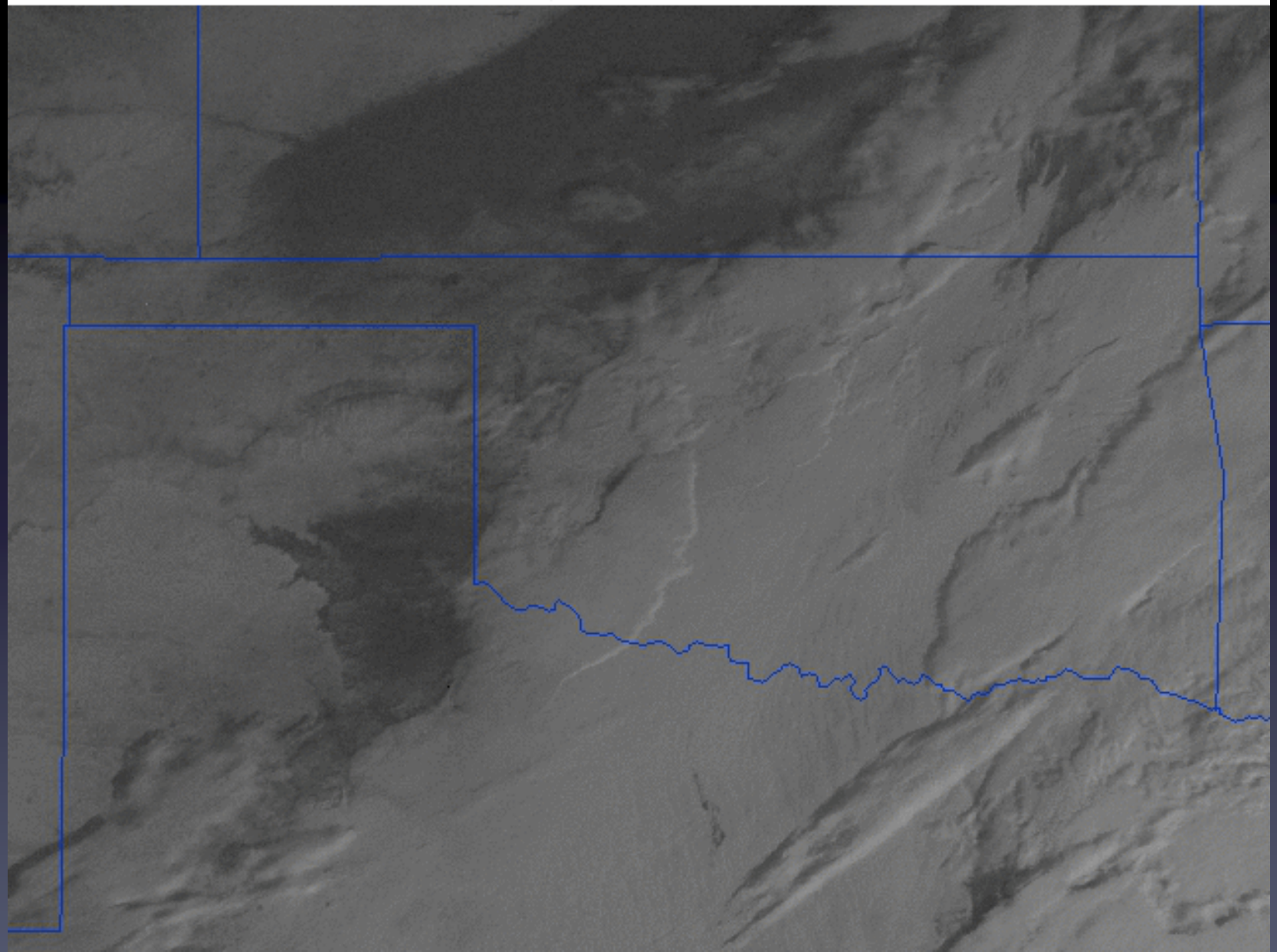
- When an ID is used:
 - Change or turn off layer labels
 - Access multiple panels in a bundle
- Zoom, change projection/change centering
- Change color scale (enhancement) and range
- Step through an animation, get timestamp information
- Replace data within the bundle



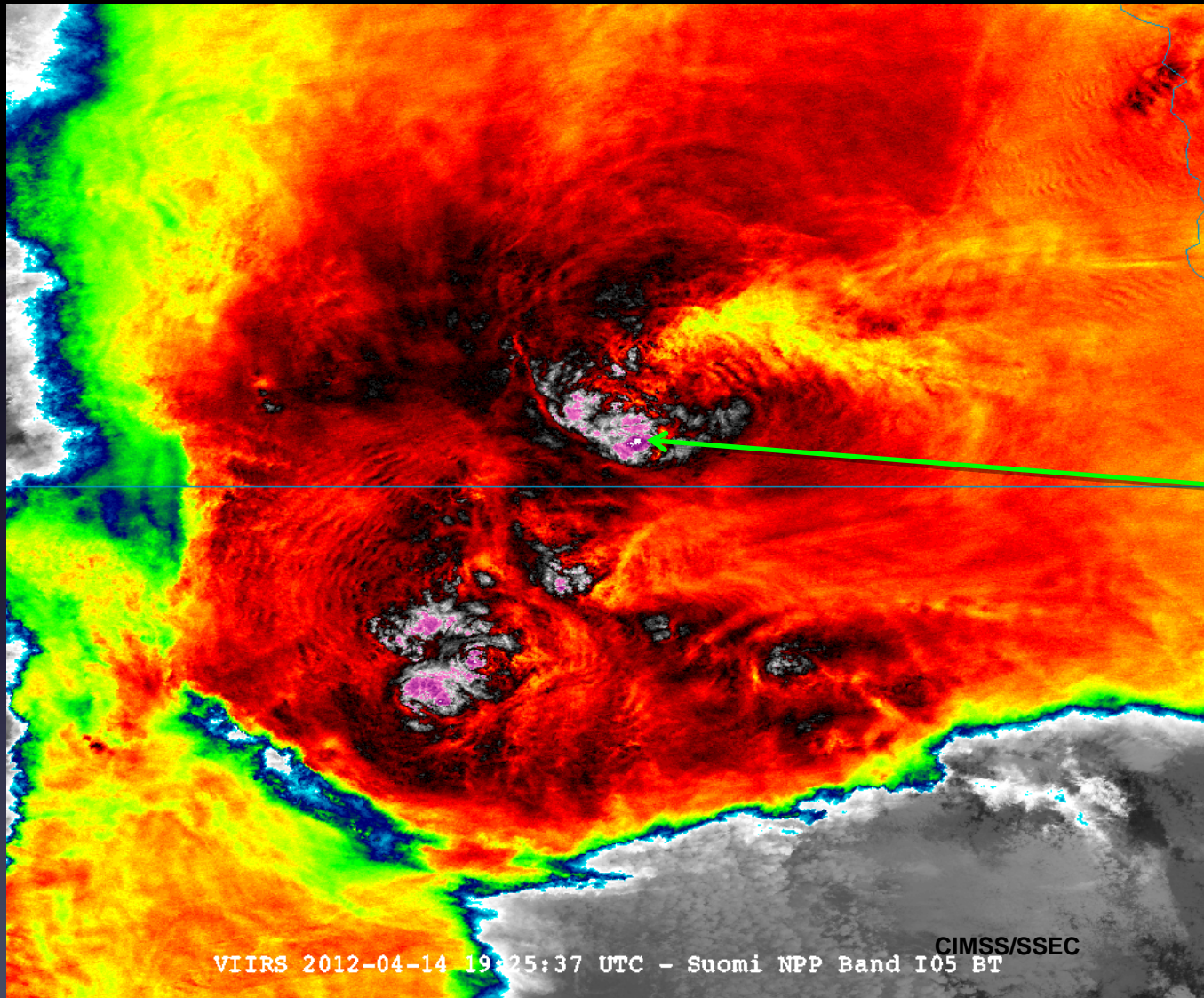
GOES-11 CONUS - 2011-12-06 14:45 UTC



GOES-11 Albedo: 2011-12-06 14:45 UTC



VIIRS Band I05 (11 um), 4/14/2012, 1925Z



BT = 188.8K

Norman, OK Storm Case Study

The Aviation Herald

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Accident: Austrian B772 near New York on Sep 12th 2011, turbulence injures 4

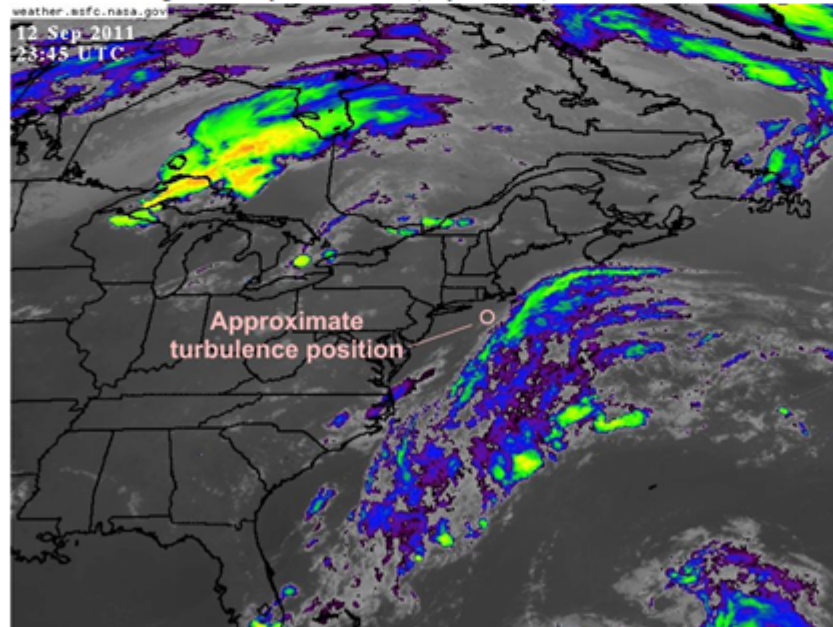
By Simon Hradecky, created Tuesday, Sep 13th 2011 11:17Z, last updated Tuesday, Sep 13th 2011 15:32Z

An Austrian Airlines Boeing 777-200, registration OE-LPB performing flight OS-88 from New York JFK,NY (USA) to Vienna (Austria) with 276 passengers, was climbing through FL290 out of New York about 20 minutes into the flight around 18:30L (22:30Z) when the aircraft experienced turbulence causing minor injuries to a passenger and three flight attendants. A doctor on board took care of the injured. The aircraft continued to Vienna for a safe landing about 7 hours later.

The airline reported, that the aircraft experienced brief, weather related turbulences which caused injuries to a passenger and three flight attendants. Two of the flight attendants were able to continue their duties a short time later. A female doctor on board took care of all injured and monitored them throughout the flight. All injured were able to disembark normally, the passenger was taken to a hospital as a precaution.

A passenger on board reported quite some turbulence, a number of people on board not wearing their seat belts hit the cabin ceiling with their heads and sustained minor injuries like concussions and lacerations.

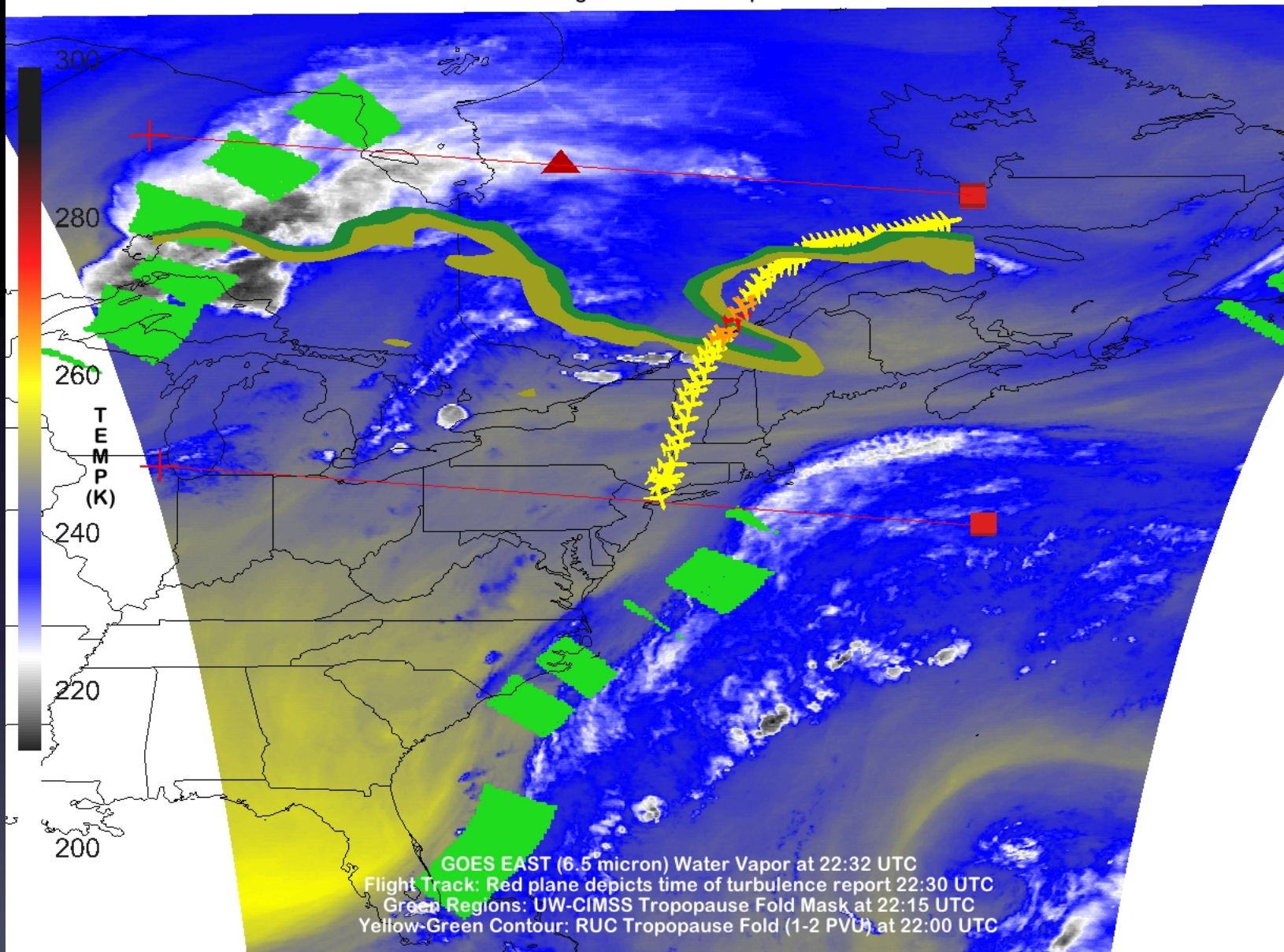
Infrared Satellite Image GOES-E Sep 12th 2011 23:45Z (Graphics: NASA):



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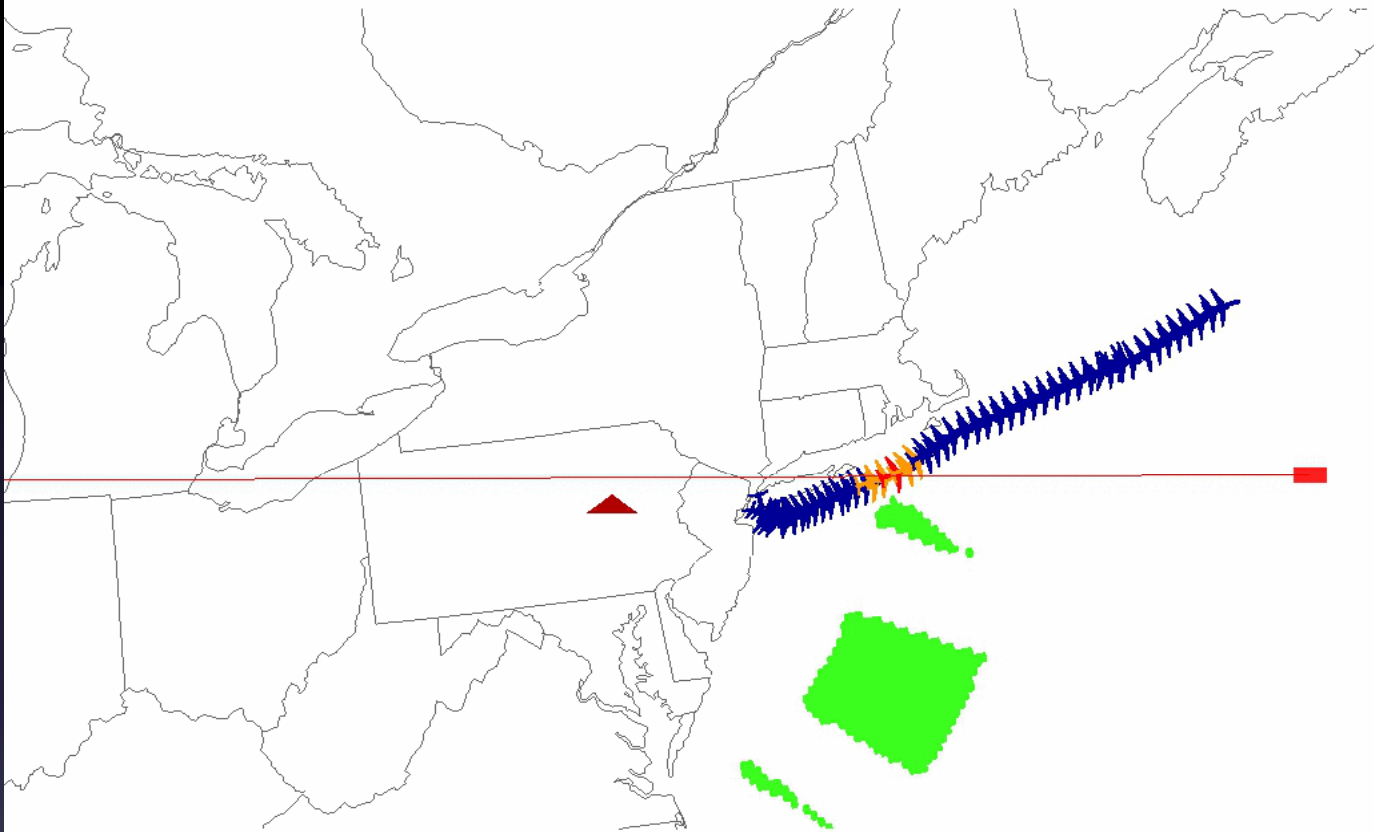
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Tropopause Fold Turbulence Product: Anthony Wimmers (CIMSS)

AUA 88 Flight Track on 12 September 2011



Flight Track: Red plane depicts time of turbulence report 22:30 UTC
Green Regions: UW-CIMSS Tropopause Fold Mask at 22:15 UTC
Yellow-Green Contour: RUC Tropopause Fold (1-2 PVU) at 22:00 UTC

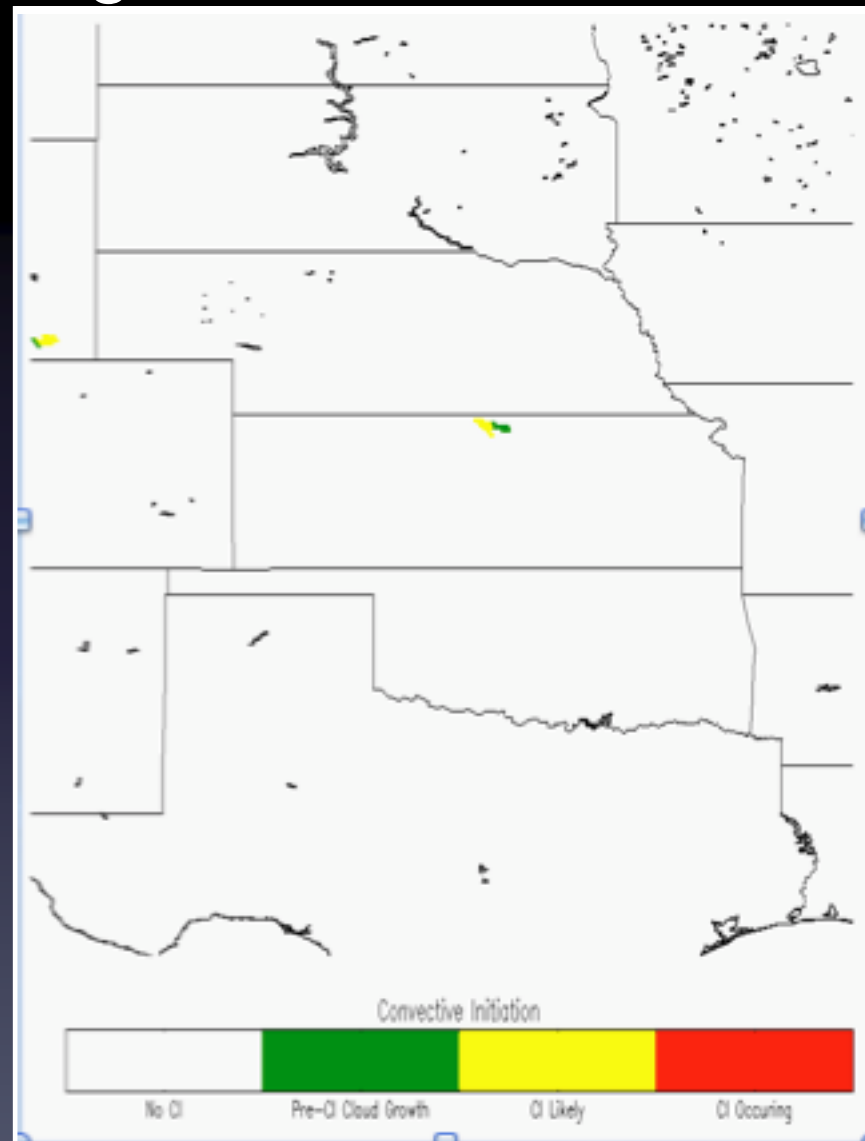
Tropopause Fold Turbulence Product: Anthony Wimmers
(CIMSS)

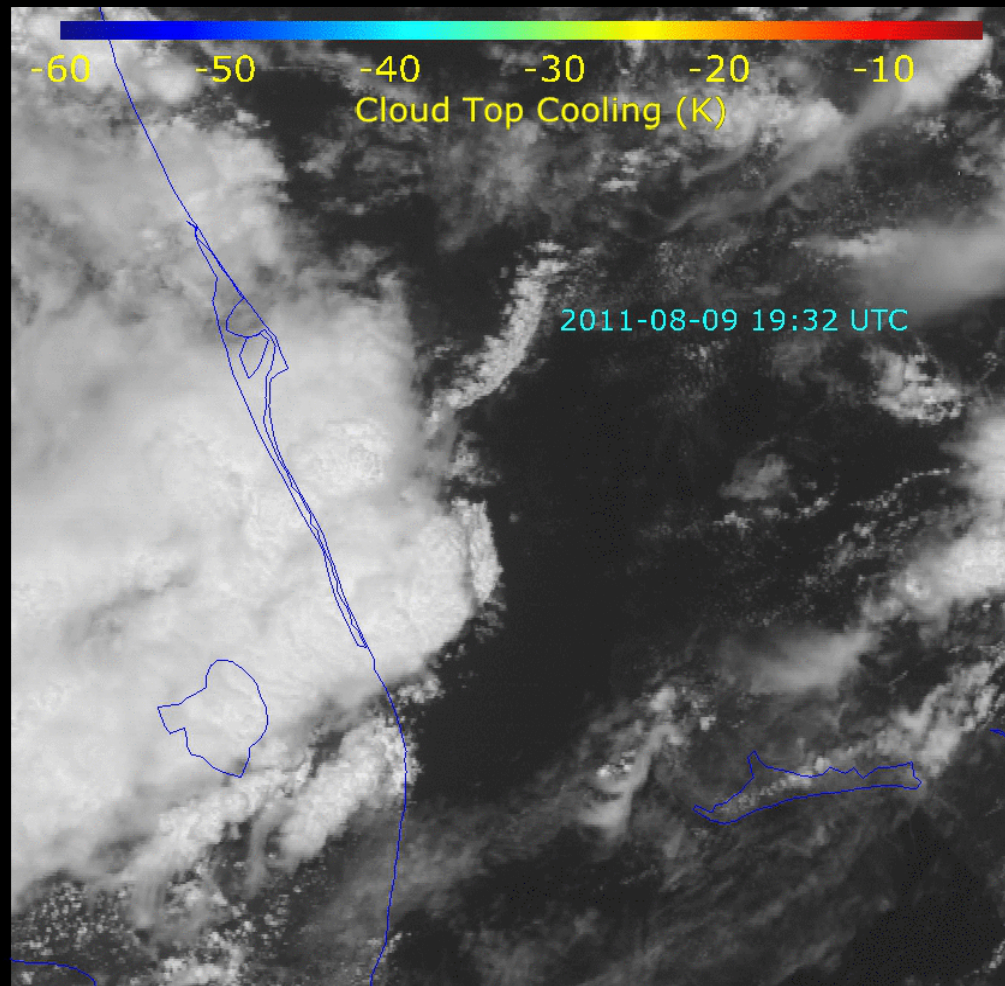
UW Convective Initiation / Cloud Top Cooling (UWCI/CTC) Algorithm

High-level algorithm overview

- Compute box-averaged 11 micron brightness temperature (**BT**) for current time and previous time, using specific categories from GOES Cloud Typing product
- Unfiltered Cloud Top Cooling (**CTC**) Rate is calculated by differencing box average 11 micron BT for current time from previous time
- Large/small box approach eliminates most of false CTC due to cloud motion (and additional checks reduce false cooling further)
- Combine cloud-top cooling information with cloud-top microphysical (phase/cloud type) transitions for convective initiation nowcasts

Reference: Sieglaff et al., 2011



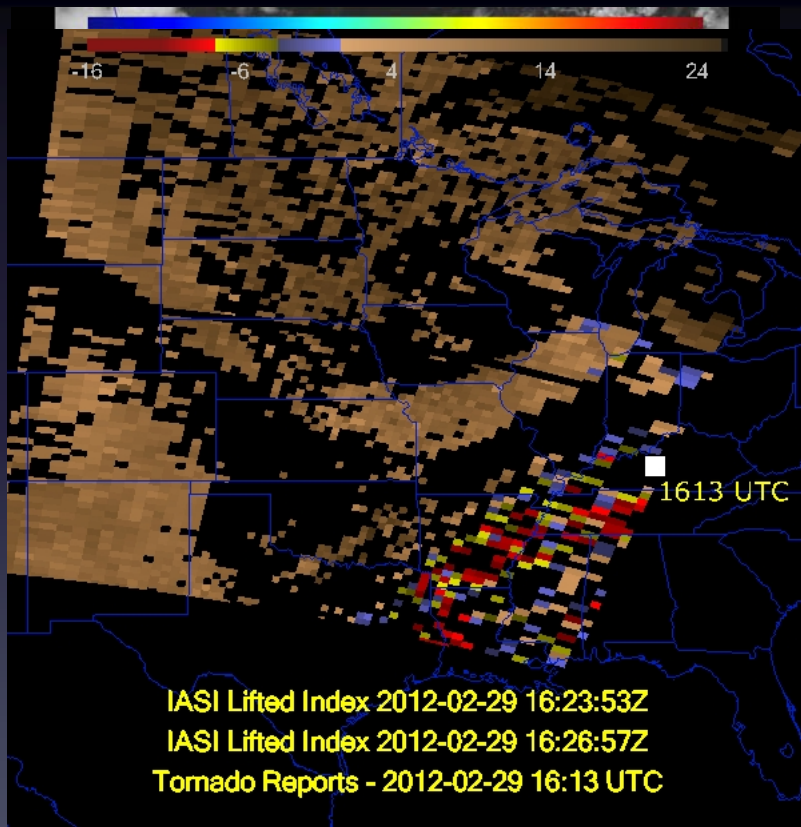


GOES-13 Visible Imagery: 2011-08-09 17:32 UTC
Scaled Cloud Top Cooling: 2011-08-09 17:32 UTC

Justin Sieglaff , Lee Cronce, Dan Hartung, Wayne Feltz
(CIMSS)

Files without time as a dimension

- Time information in metadata and filename.
- NCML allows the user to assign time information to the grids.
- Grids must share same dimensions and navigation.

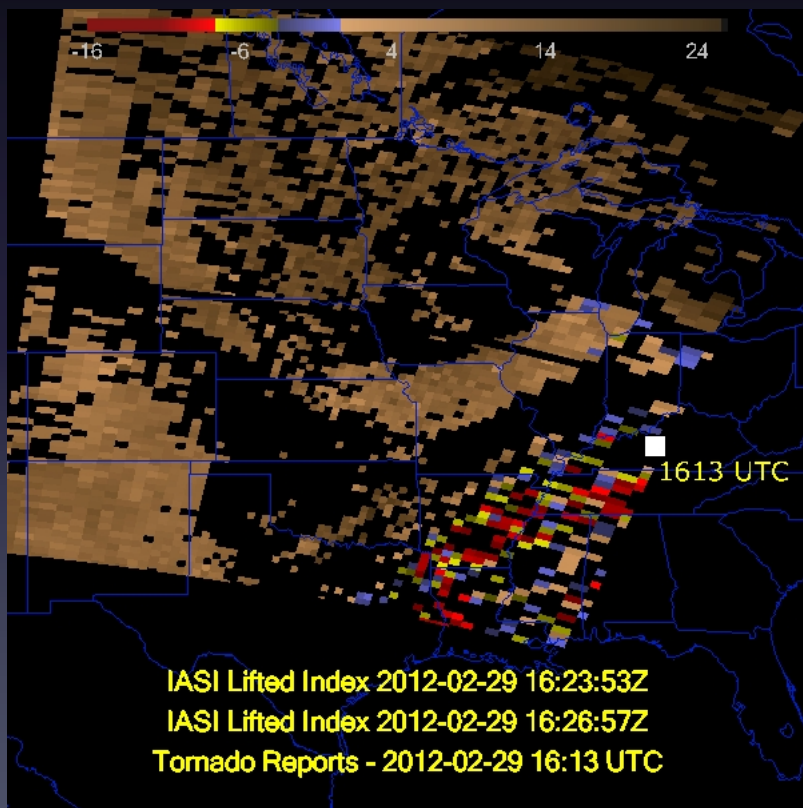


Data without a time dimension can be useful:

- Show multiple polar orbiting granules in one frame
- When comparing with data that does not share a timestamp (e.g. comparison of geostationary to polar orbiting imagery)

It is possible to create a time series of polar orbiting data

- Tom Rink wrote a formula which allows the user to supply a list of flat fields and a list of times from which an image sequence is created
- Have only used it in the jython shell because an array of grids and times is used.

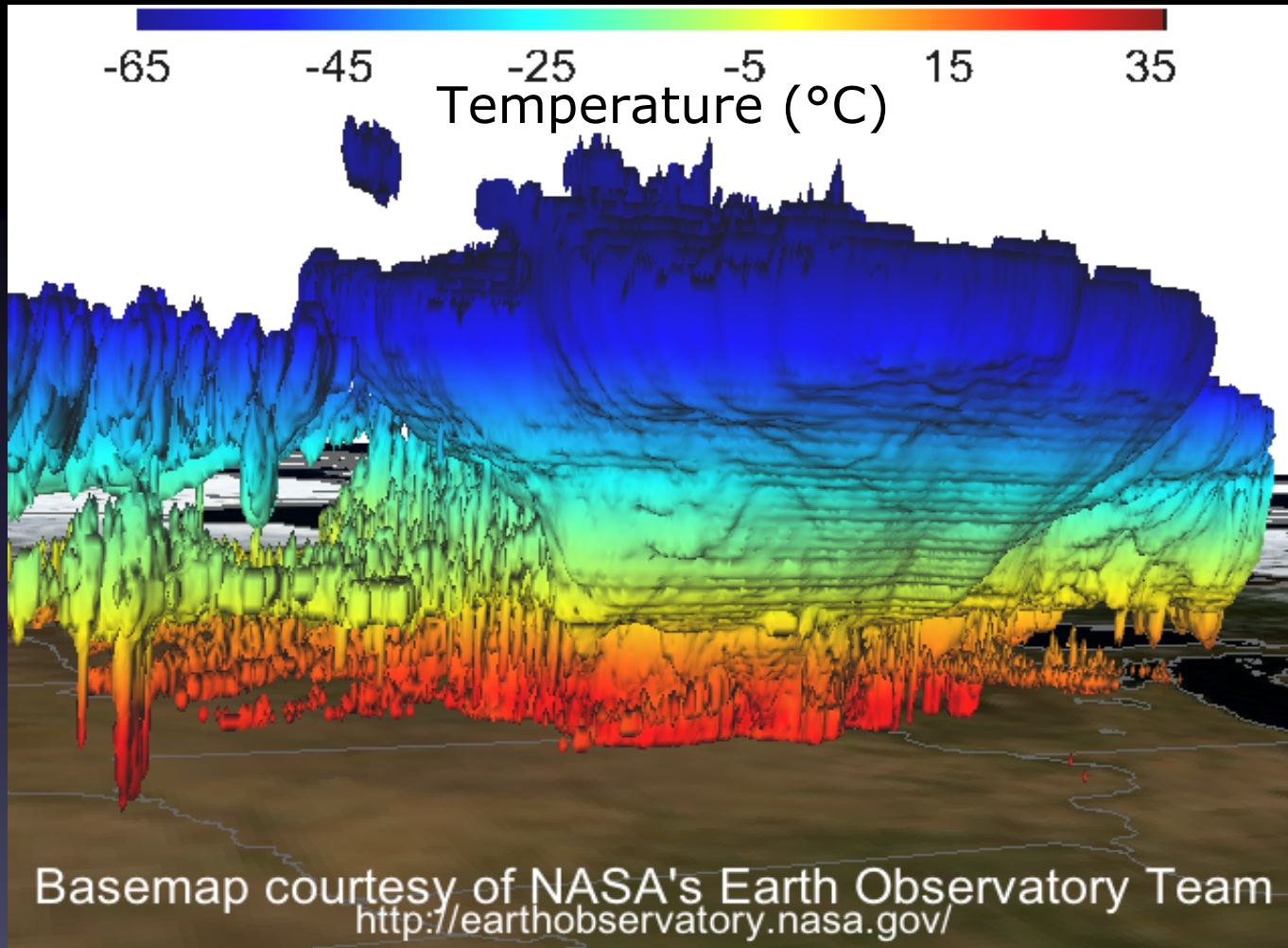


Could this easier?

- Allow the user to assign a time either manually, automatically from the metadata, or filename pattern matching
- Allow user to assign a time to a single image/grid
- Make this available from the field selector

Should it be easier?

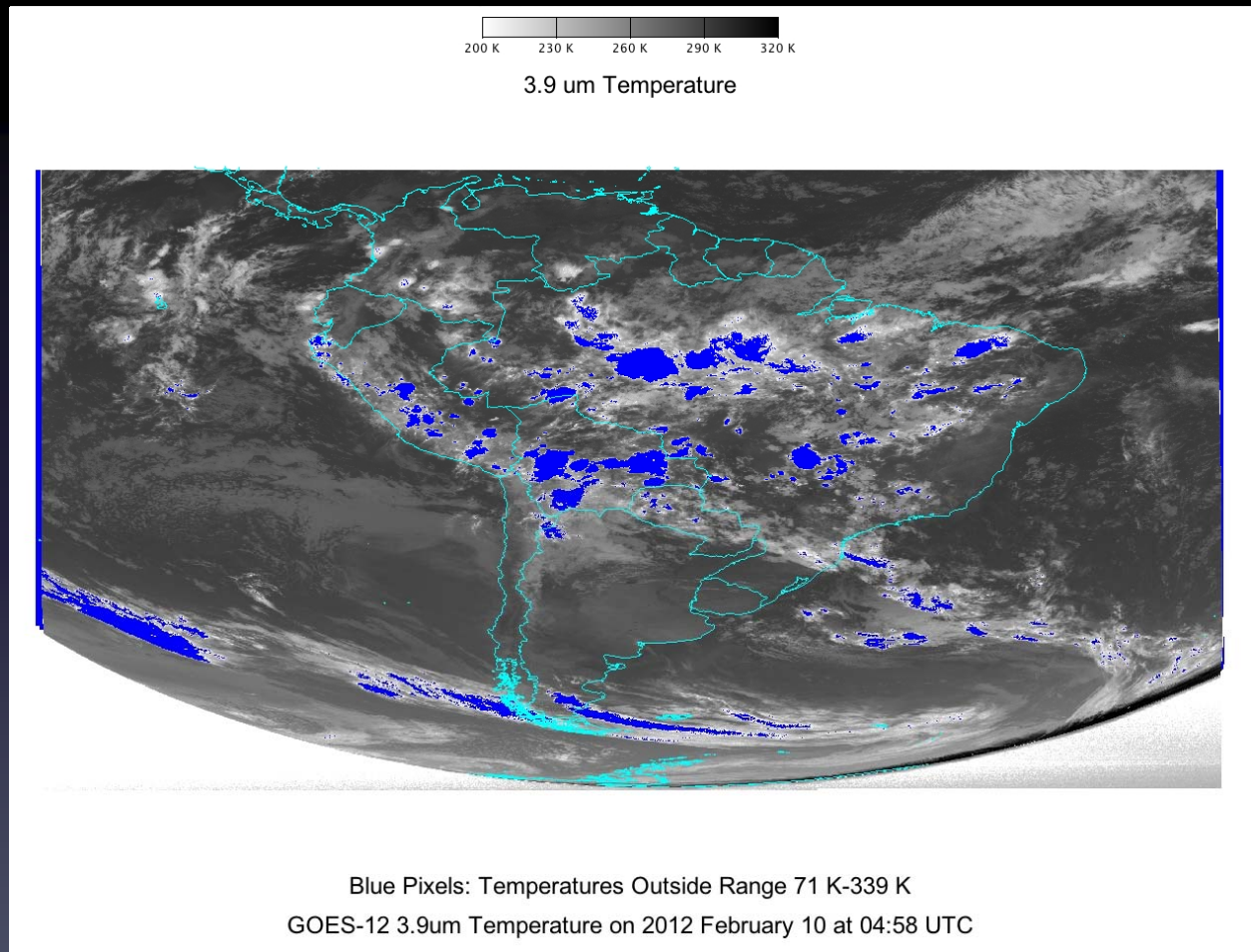
Public Outreach



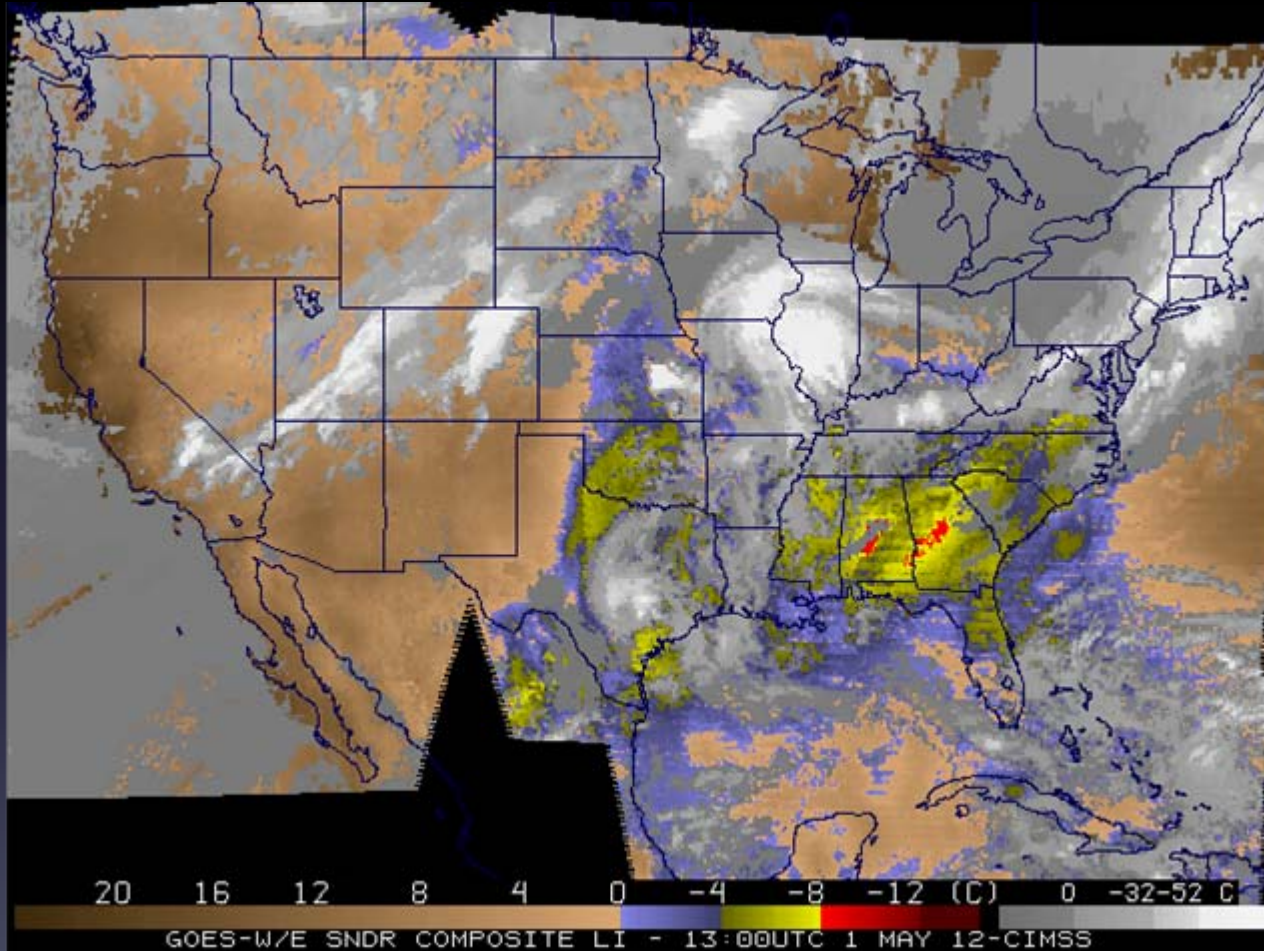
NSSL WRF Simulation of Thunderstorm Complex: Jason Otkin (CIMSS)

Calibration/Validation

- findWithinRange
- createAreaField
- computeSum
- maskWithinRange

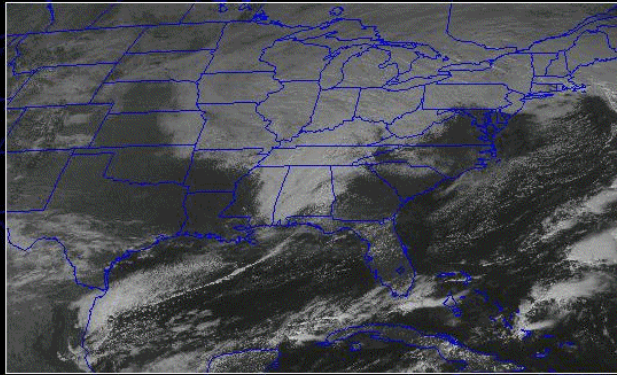


McIDAS-X Products in McIDAS-V



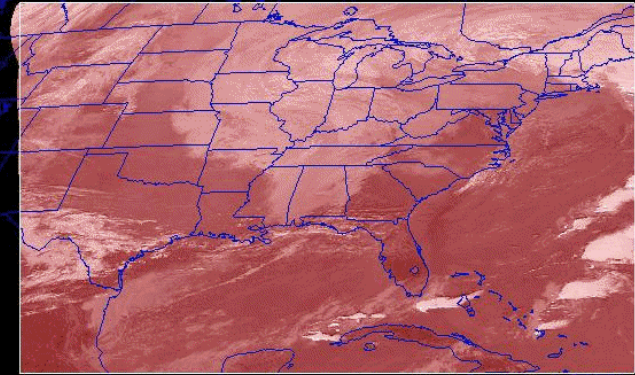
GOES Sounder DPI: Lifted Index/ Cloud Top Temperature

0 10 20 30 40 50 60 70 80 90
Albedo (%)



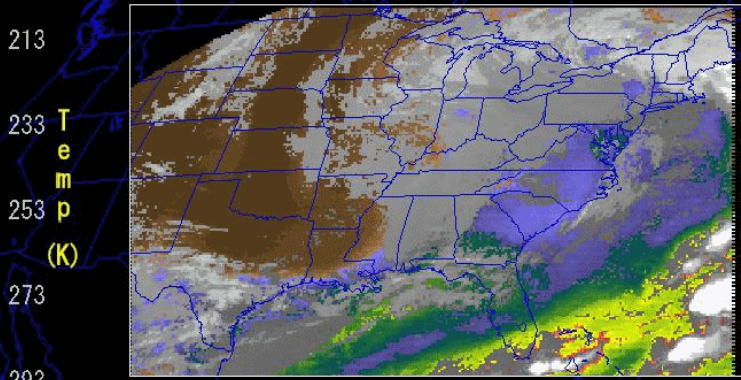
GOES-13 Visible Albedo
2012-01-12 17:45 UTC

-40 -30 -20 -10 0 10 20 30 40
Temperature Difference (K)



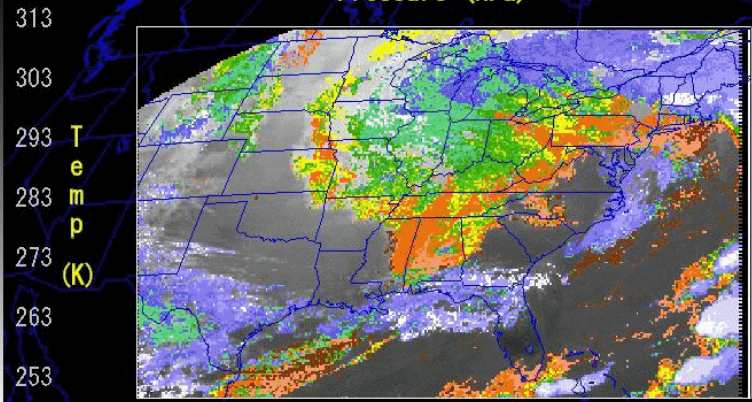
GOES-13 (10.7-13.3 micron) Temperature Difference
2012-01-12 17:45 UTC

193 0 10 20 30 40 50 60 70
TPW (mm)



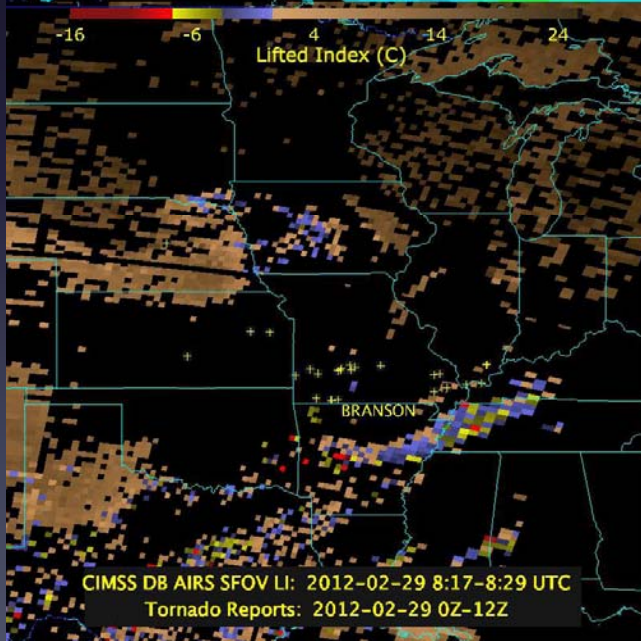
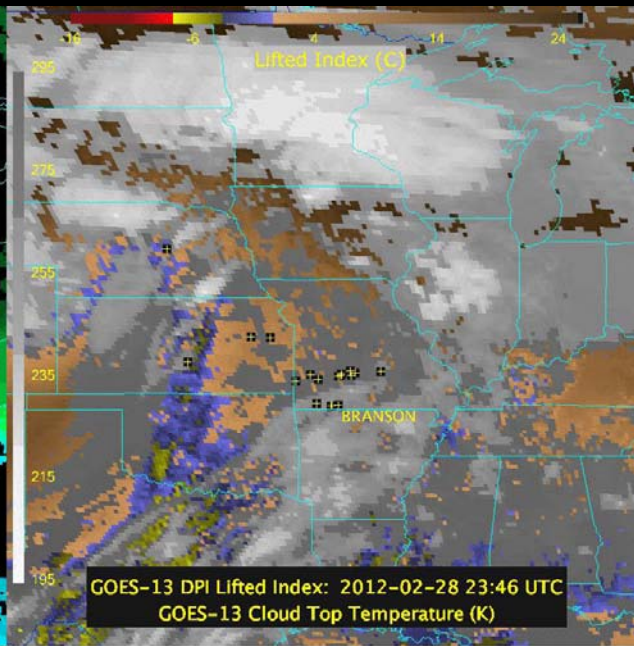
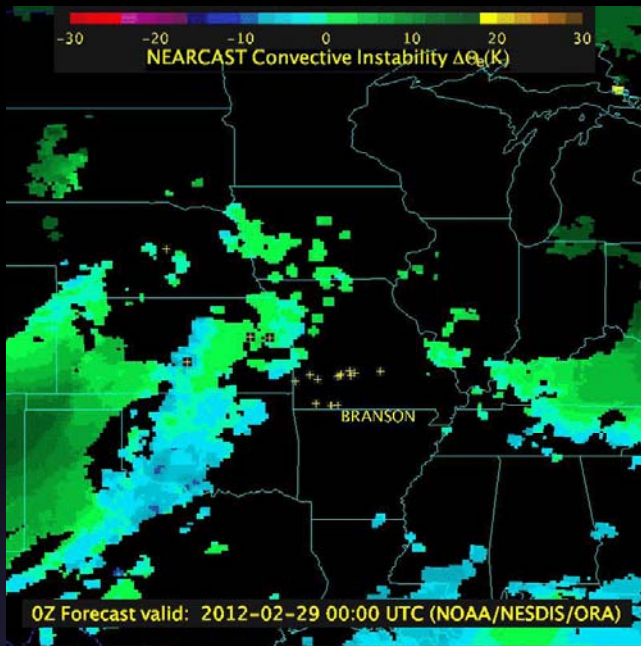
GOES-13 Total Precipitable Water/Cloud Temperature
2012-01-12 17:46 UTC

950 850 750 650 550 450 350 250 150
Pressure (hPa)



GOES-13 Cloud Top Pressure/Clear Sky Temperature
2012-01-12 17:46 UTC

GOES Sounder DPI: Gary Wade, Tim Schmit, Tony Schreiner



NEARCAST Convective
Instability: Ralph
Peterson

UWAIRES Dual
Regression Algorithm:
Elizabeth Weisz

McIDAS-V Forums

<http://dcdbbs.ssec.wisc.edu/mcidasv/forums/>

CIMSS Proving Ground Website

http://cimss.ssec.wisc.edu/goes_r/proving-ground.html

GOES Sounder DPI

<http://cimss.ssec.wisc.edu/goes/rt/sounder-dpi.php>

International MODIS/AIRS Processing Package

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

