



GOES-R Proving Ground

Demonstration of Imagery Products at NOAA's Storm Prediction Center and Hazardous Weather Testbed

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1 - OU-CIMMS, 2 - NOAA/NSSL, 3 - UW-CIMSS, 4 - CIRA, 5 - HPC/OPC/SAB/TAFB, 6 - NASA SPoRT, 7 - NOAA/NWS/SPC



GOES-R Science Week
1 May 2012

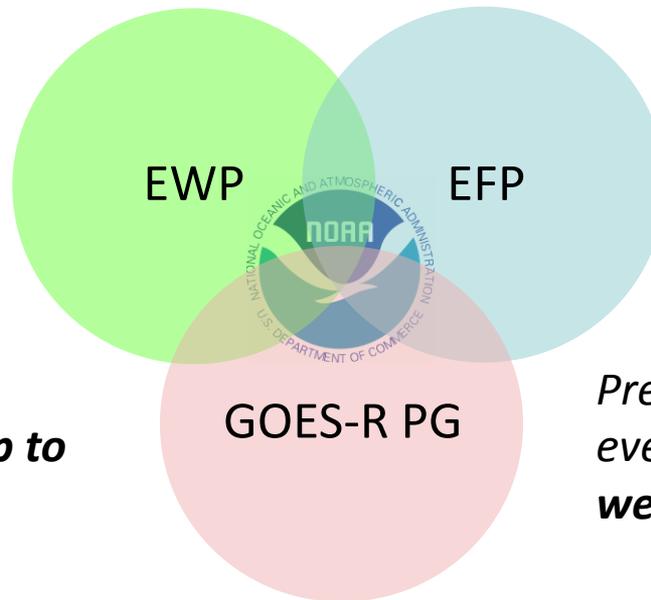


NOAA's Hazardous Weather Testbed



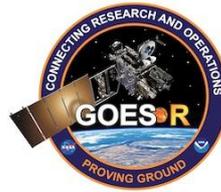
Experimental
Warning
Program

*Detection and prediction of hazardous weather events **up to several hours in advance***



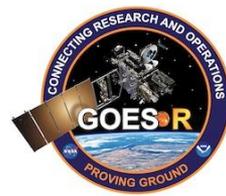
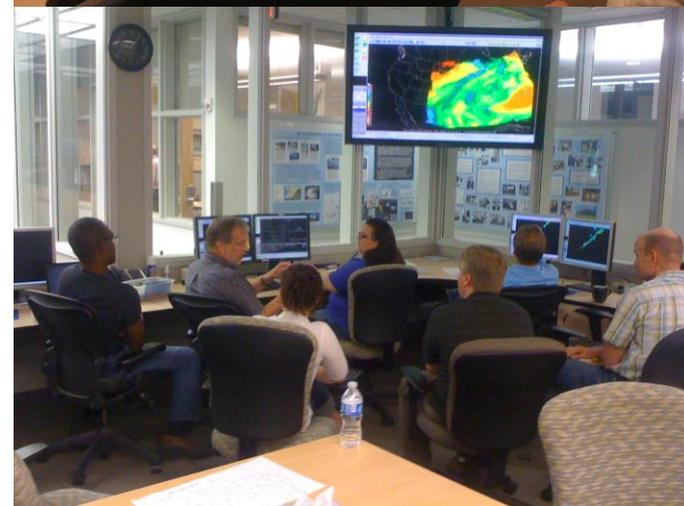
Experimental
Forecast
Program

*Prediction of hazardous weather events from **a few hours to a week in advance***



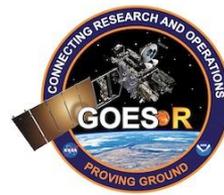
2011 Spring Experiment

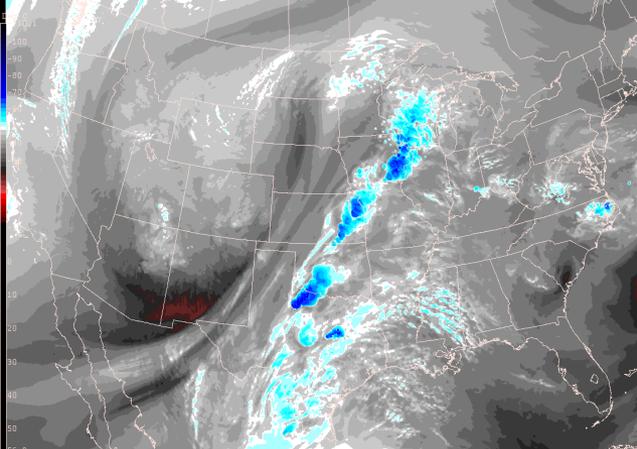
- 5-week period (9 May – 10 June)
 - During central plains peak severe weather season
 - Main focus on severe, QPF and CI
- 24 NWS forecasters and many visiting scientists participated
- 8 Proving Ground products demonstrated
- Real-time forecast and warning exercises using operational decision support tools
 - N-AWIPS and AWIPS
- Weather Event Simulator (WES) cases developed for training purposes



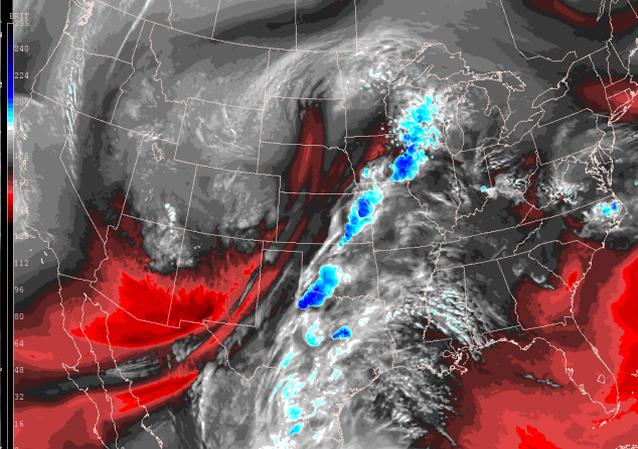
Simulated Satellite Imagery

- Produced from the OZ 4km NSSL-WRF
 - All 9 non-solar ABI IR bands
 - Visible band
 - Band differences
 - Hourly output available for 12-36 hr forecast periods
 - Most imagery available locally by 12Z
- Now being produced in CAPS ensemble (2012)
 - Simulated IR in 23 members (28 overall)
 - Ensemble probability of cloud shield < -52 C and < -32 C

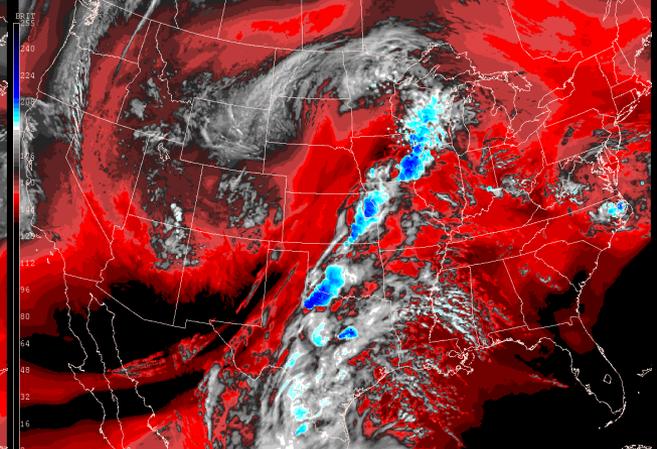




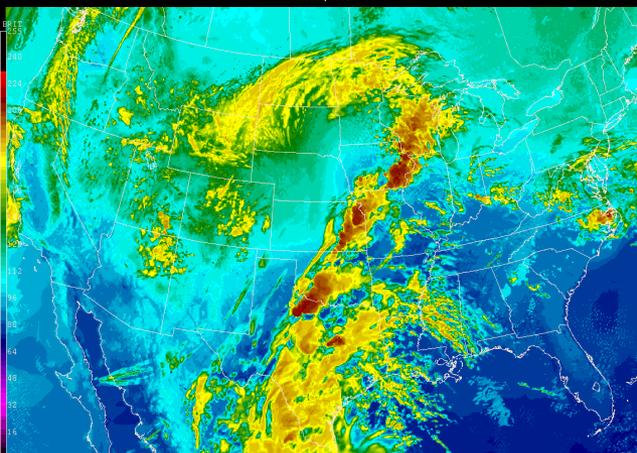
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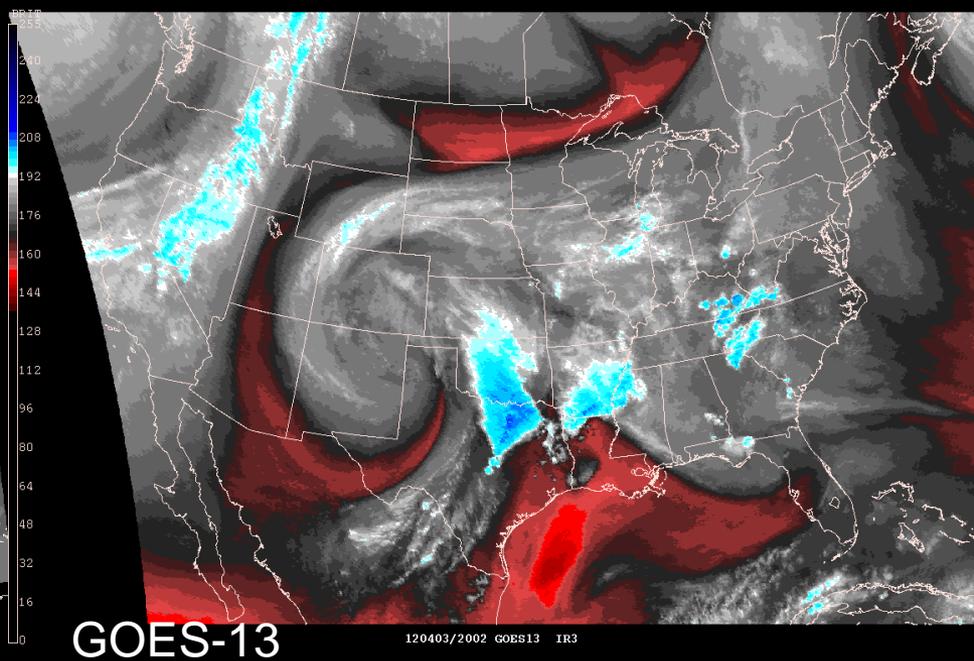
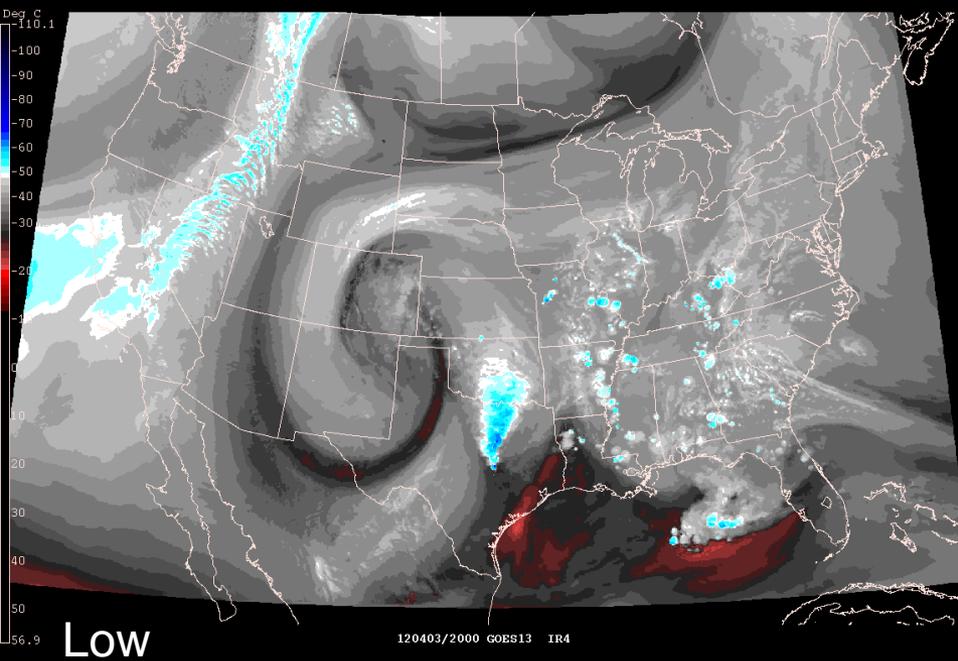
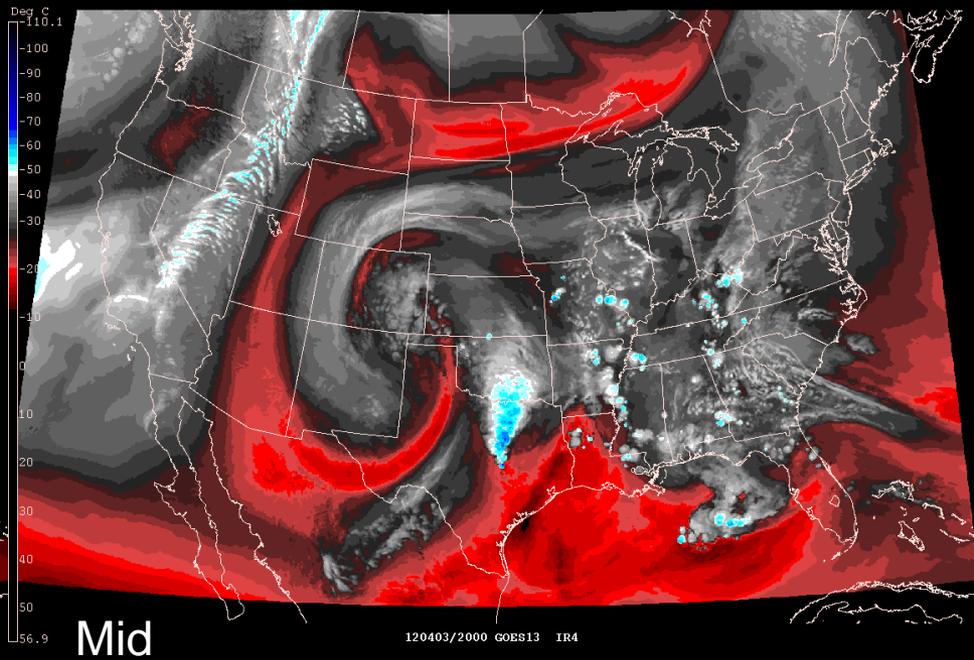
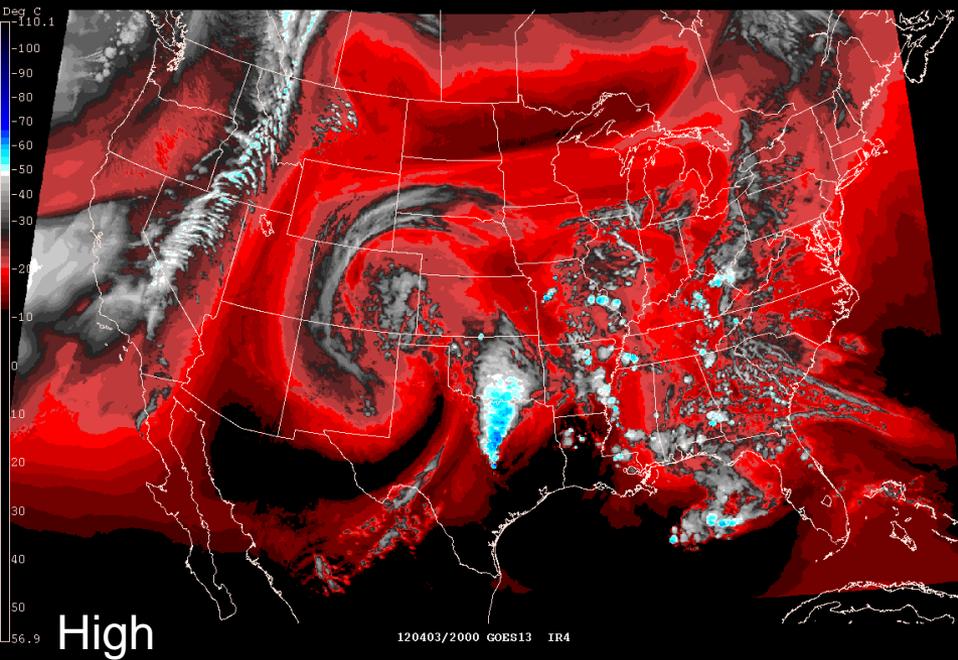
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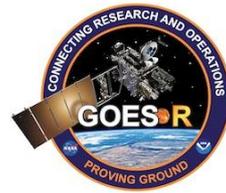


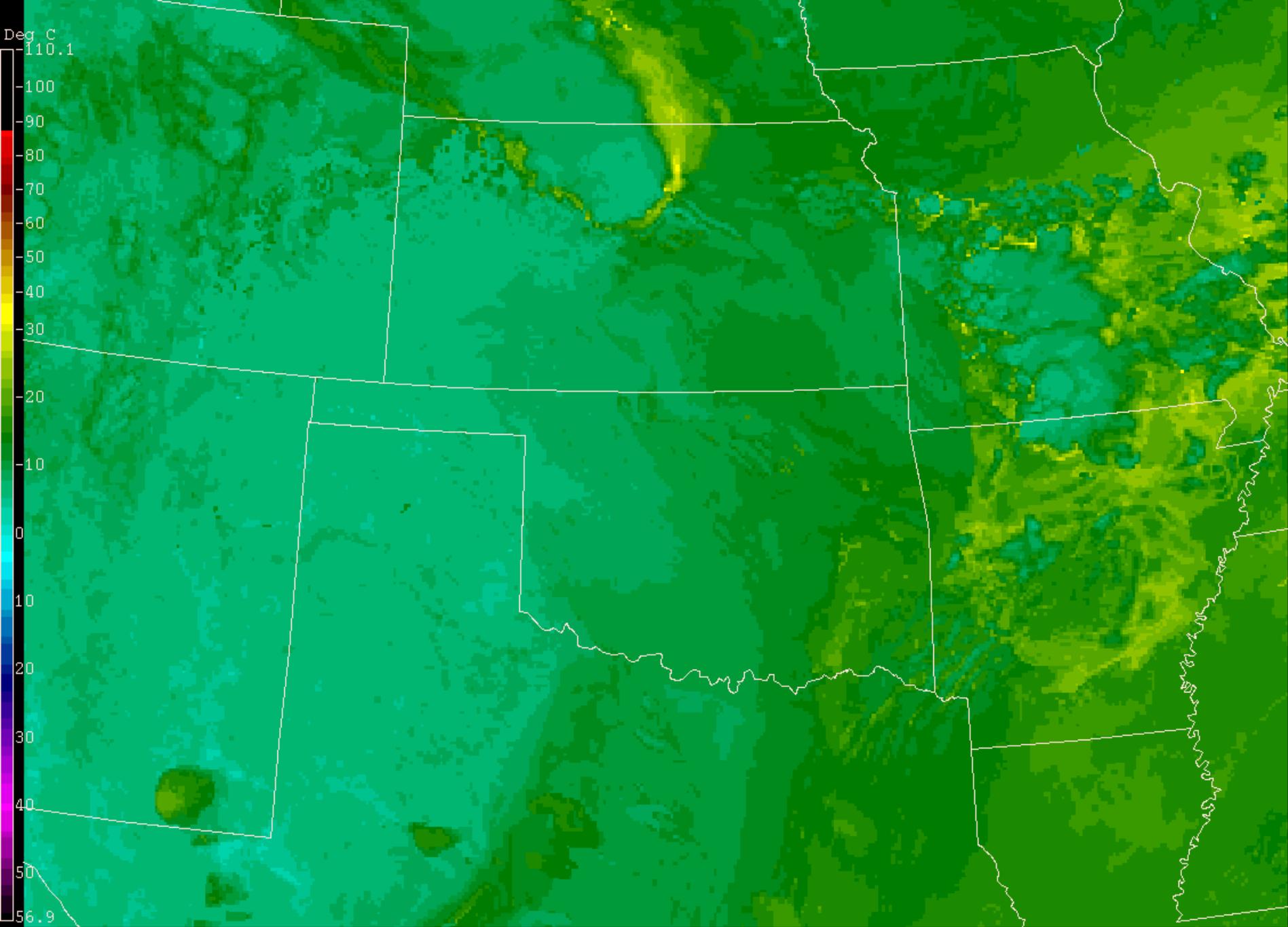
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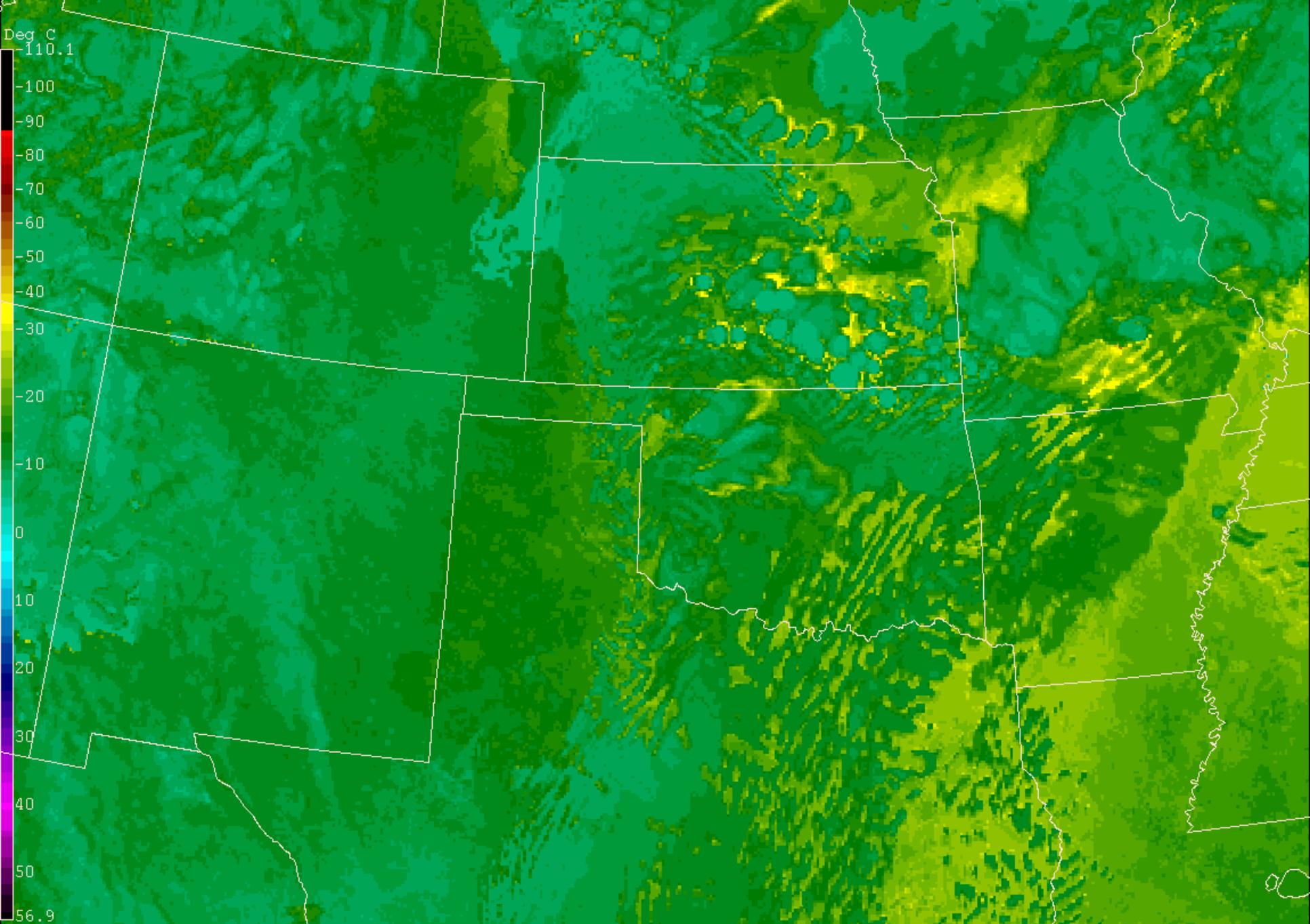
10-12 μm Channel Difference

- Bands currently not available on GOES
- 10.35 μm channel is a 'clean' window
 - Brightness temperature very sensitive to surface temperature
- 12.3 μm channel is sensitive to column WV
 - Brightness temperature cools as WV increases
- Difference becomes more positive as low- and mid-level WV increases





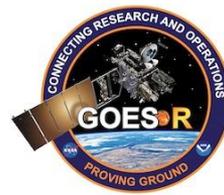
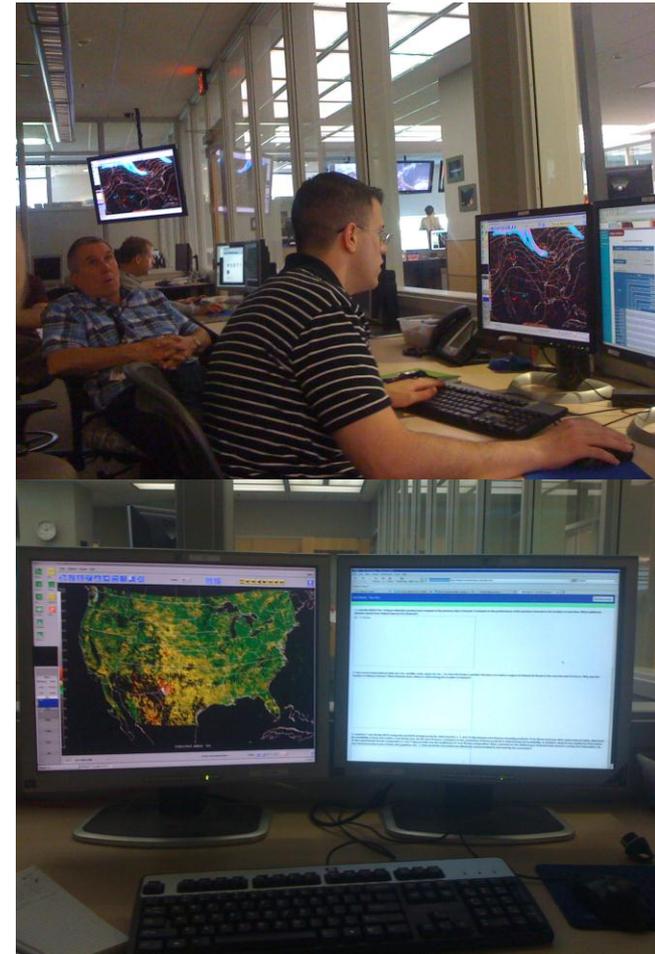
110524/1200 GOES13 IR4



120414/1500 GOES13 IR4

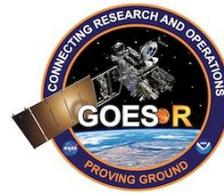
2011 Fire Weather Experiment

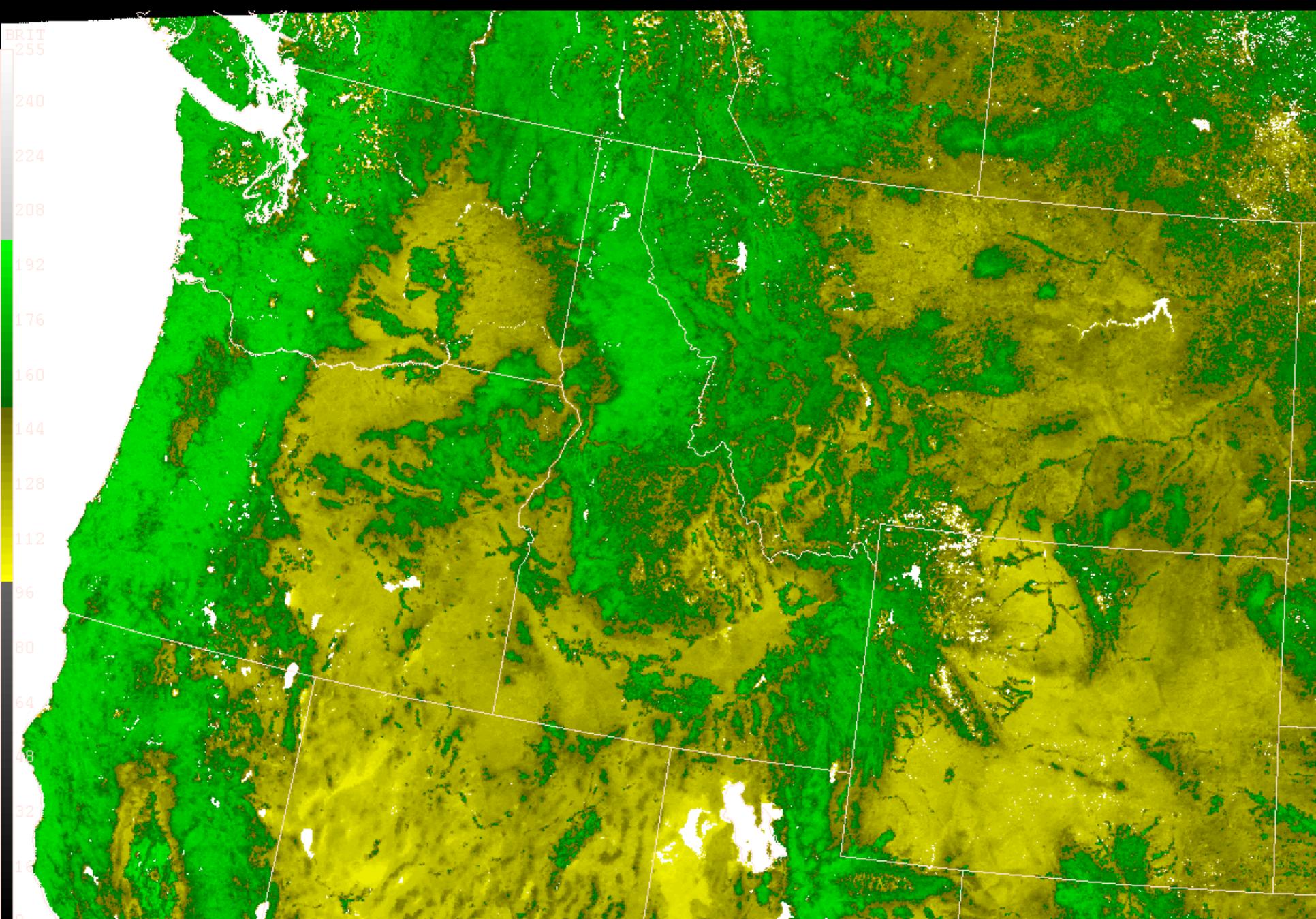
- 2-week period (22 Aug. – 2 Sept.)
 - During western US fire weather season
 - Main focus on burnable fuels and dry thunder forecasting
- 6 NWS forecasters and several internal guests participated
 - SPC and Norman WFO
- 6 Proving Ground products demonstrated
- Real-time fire weather forecasts using N-AWIPS
 - Forecast 24-hour burnable fuels and dry thunder threat

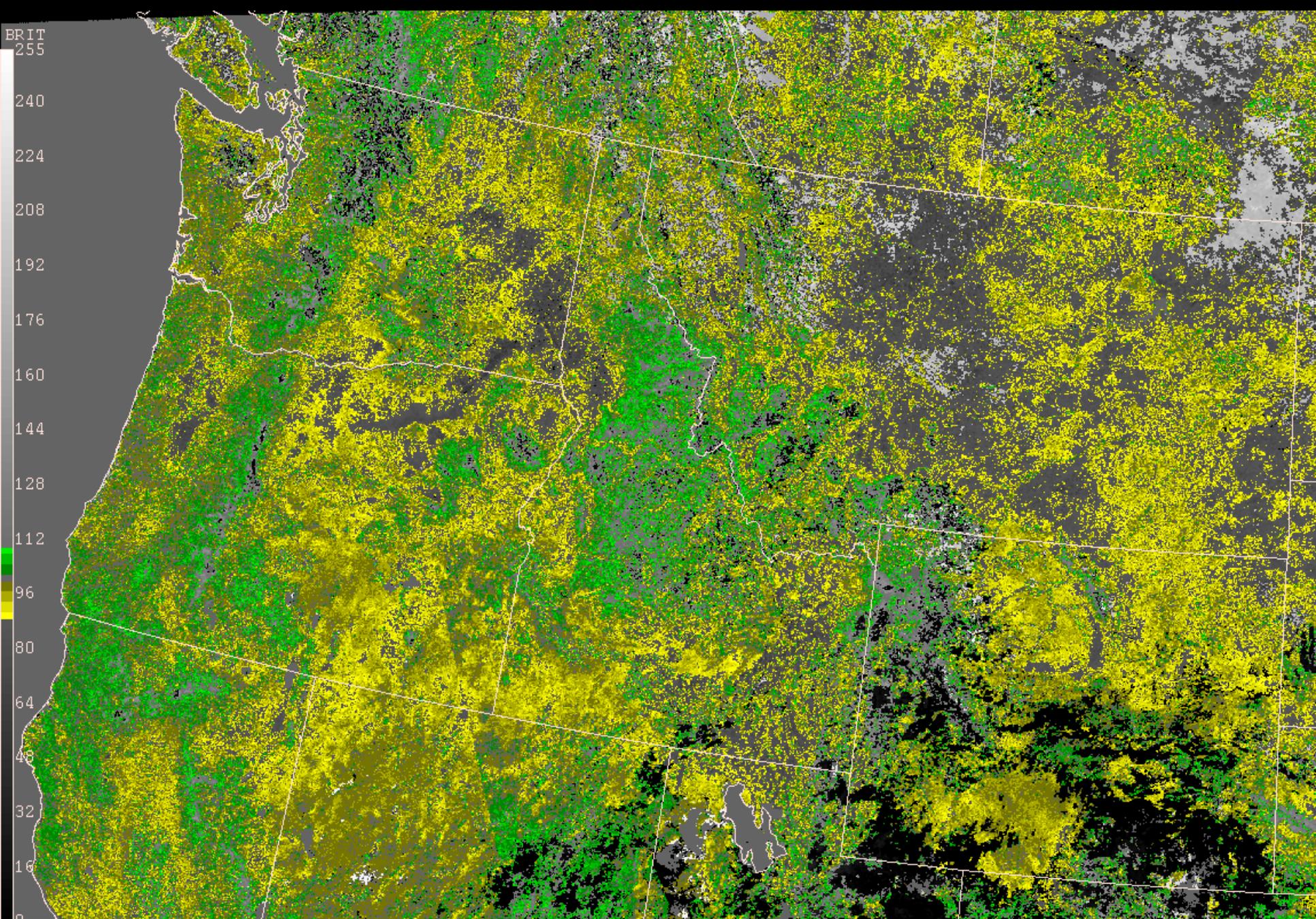


NDVI / NDVI Change

- $NDVI = (NIR - VIS) / (NIR + VIS)$
 - Relative index of green vegetation cover
 - Values range from 0-1
 - Clear sky only from MODIS imagery
 - Updates every 2 weeks
 - Can be compared to land use maps
- NDVI change calculated using last 2 NDVI composites
 - Identify regions of decreasing or increasing greenness
 - Updated monthly

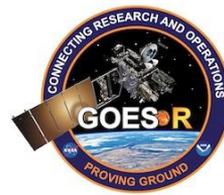
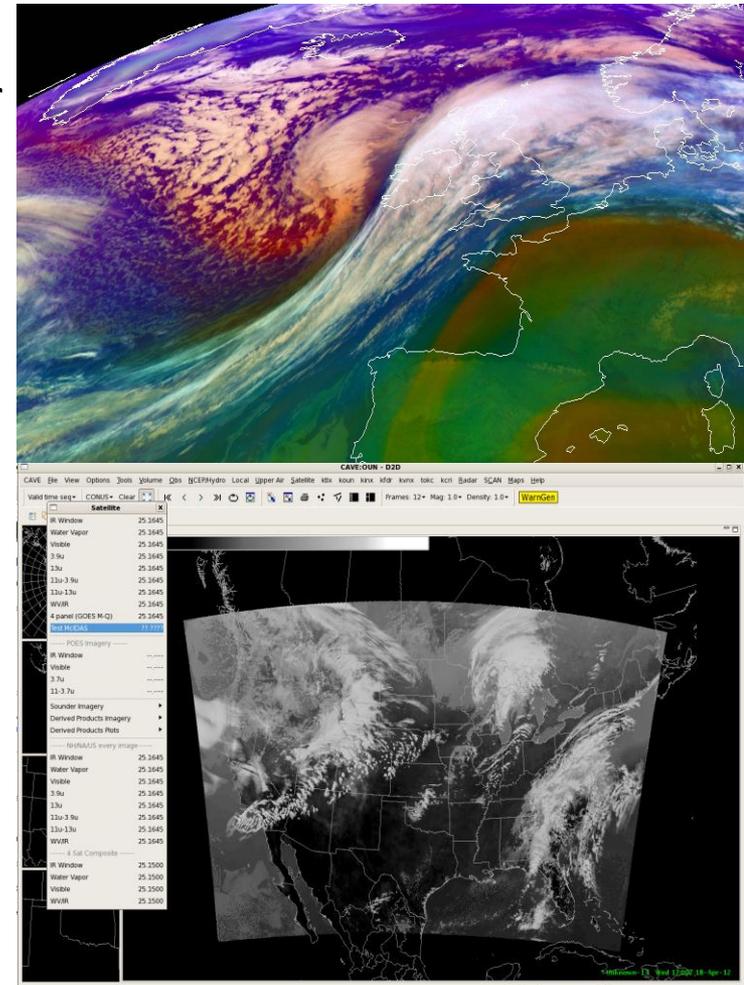




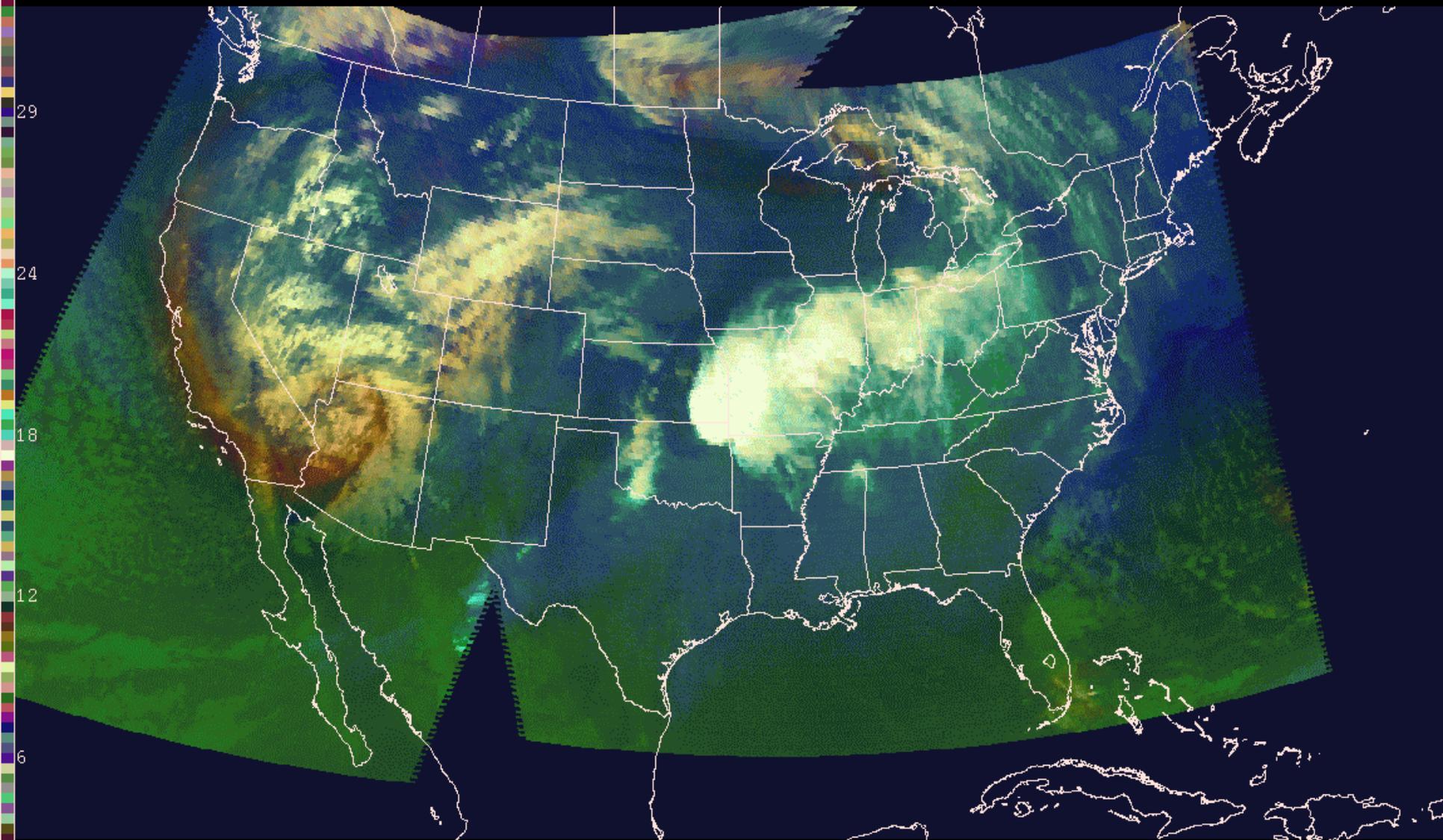


2012 Spring Experiment

- 6-week period (7 May – 15 June)
 - During central plains peak severe weather season
 - Main focus on severe and CI
- 24 NWS forecasters and 15 visiting scientists invited
- 2 new Proving Ground products
 - Sounder Airmass RGB and probabilistic SATCAST
- Real-time forecast and warning exercises using operational decision support tools
 - N-AWIPS and AWIPS II
- Weather Event Simulator (WES) cases and jobsheets sent to forecasters pre-arrival



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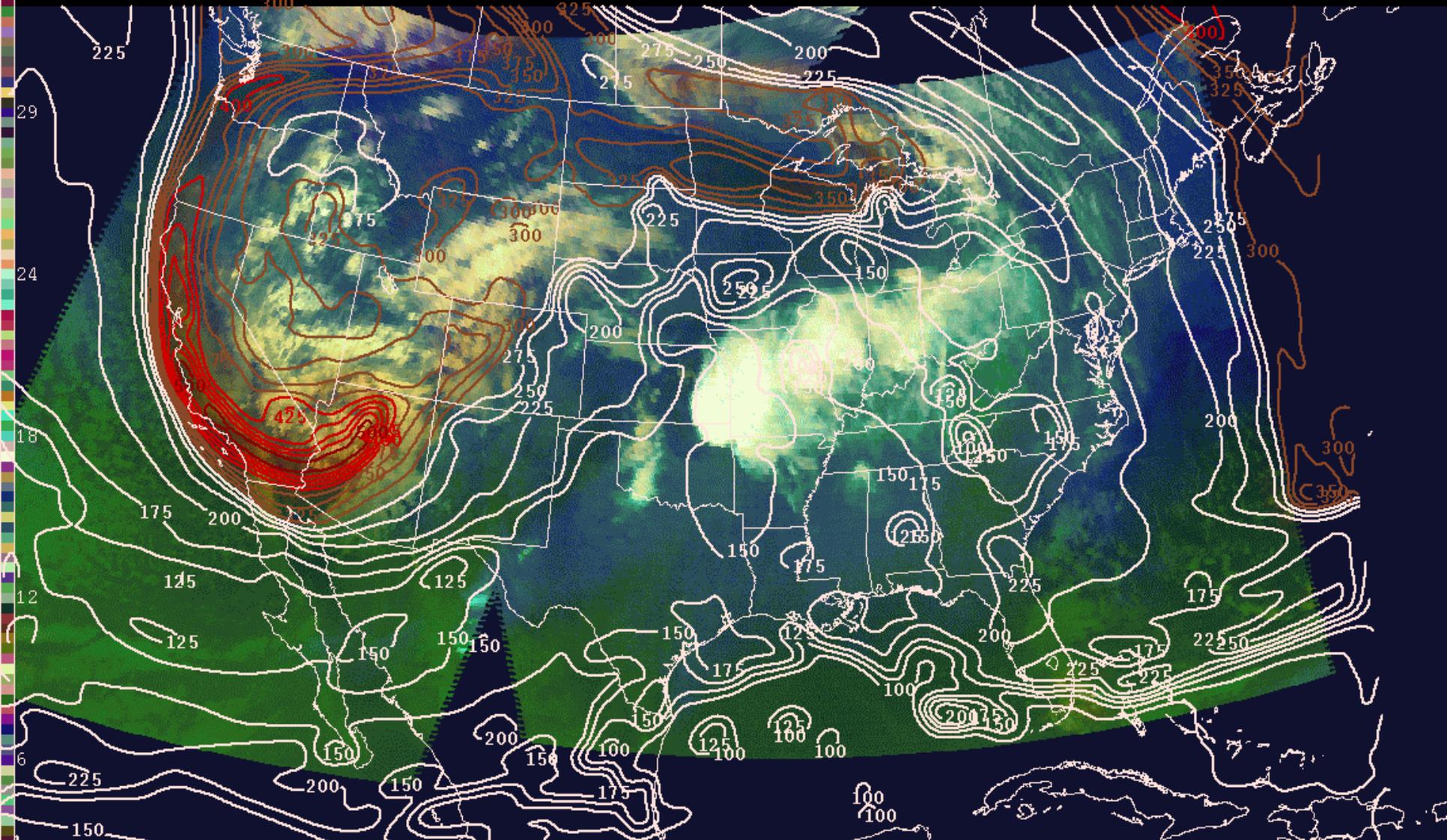
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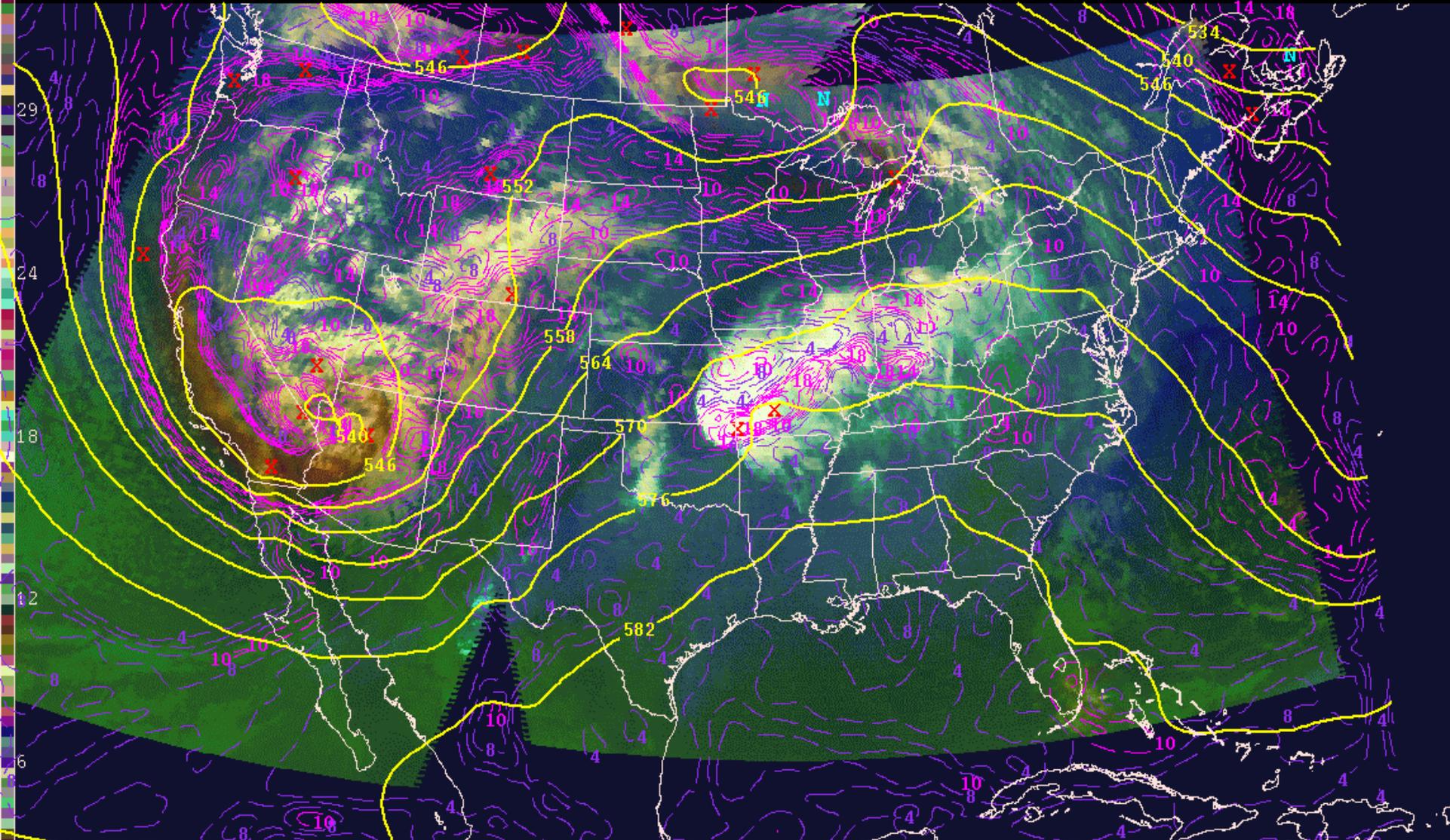
120414/1201 SOUNDER AIRMASS

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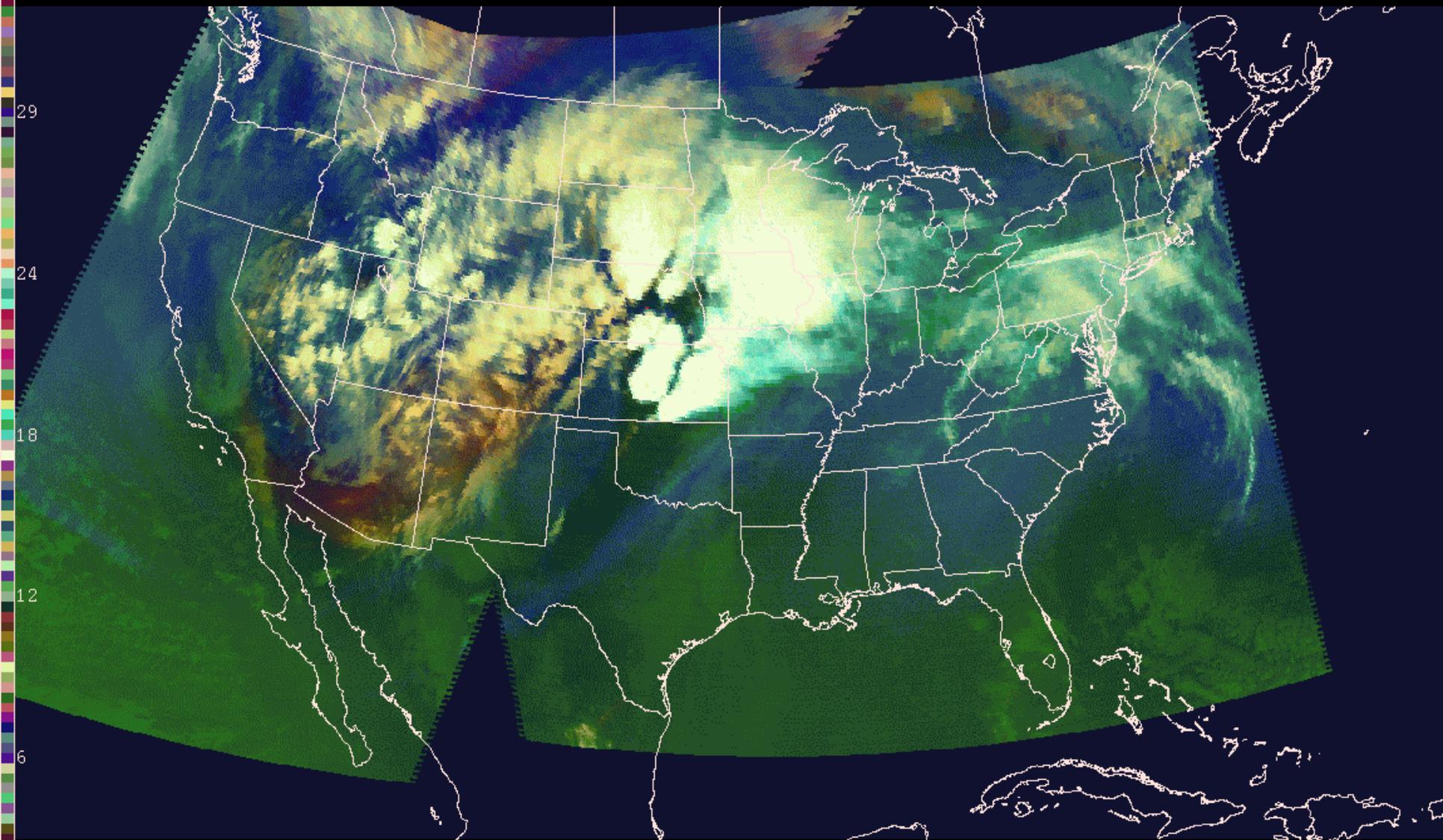
RUC2A 120414/1200 TROP PRESSURE (2 PV UNITS)
120414/1201 SOUNDER AIRMASS

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RUC2A 120414/1200 500 MB HEIGHTS AND ABS VORTICITY
120414/1201 SOUNDER AIRMASS

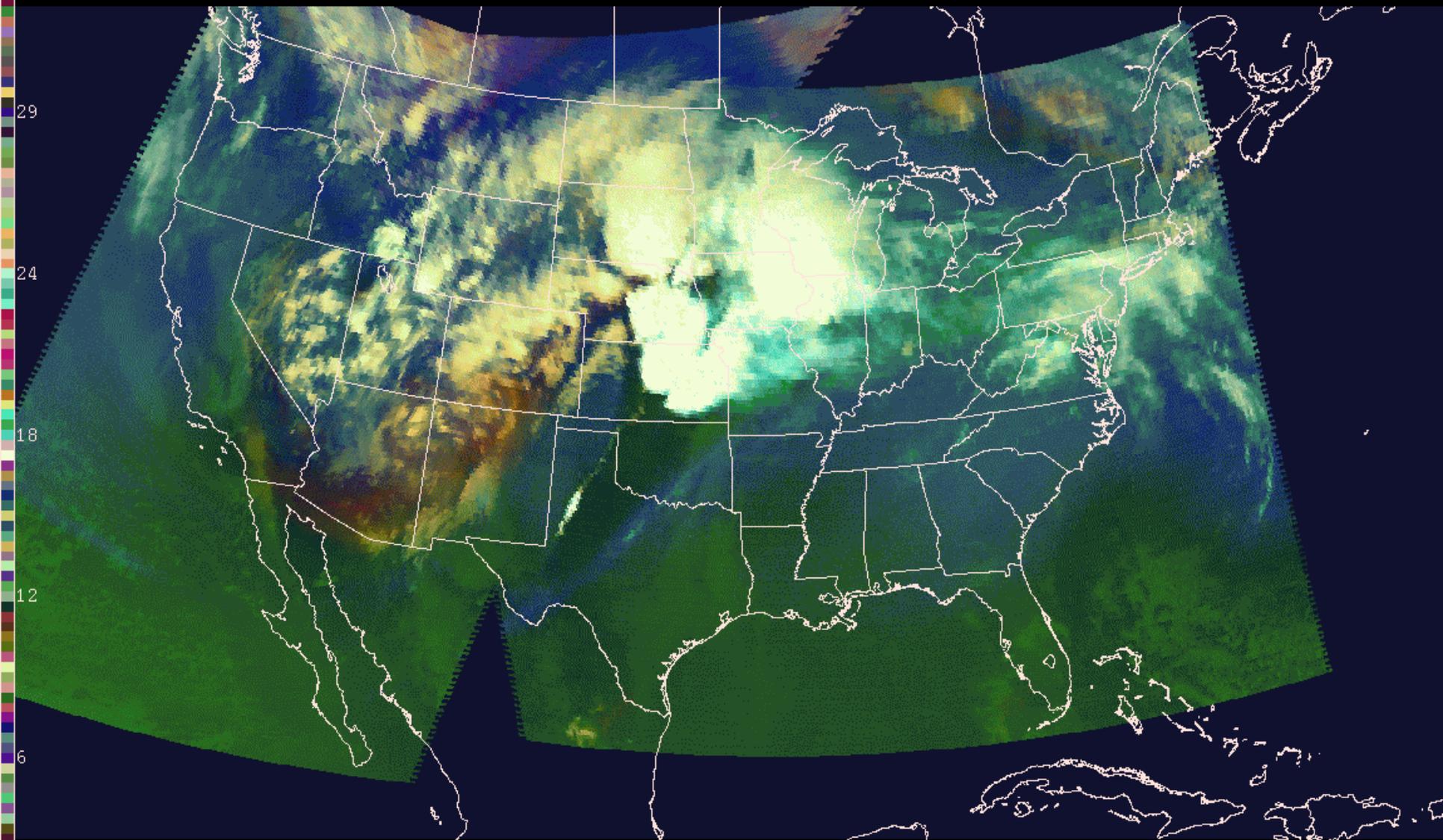
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120415/0201 SOUNDER AIRMASS

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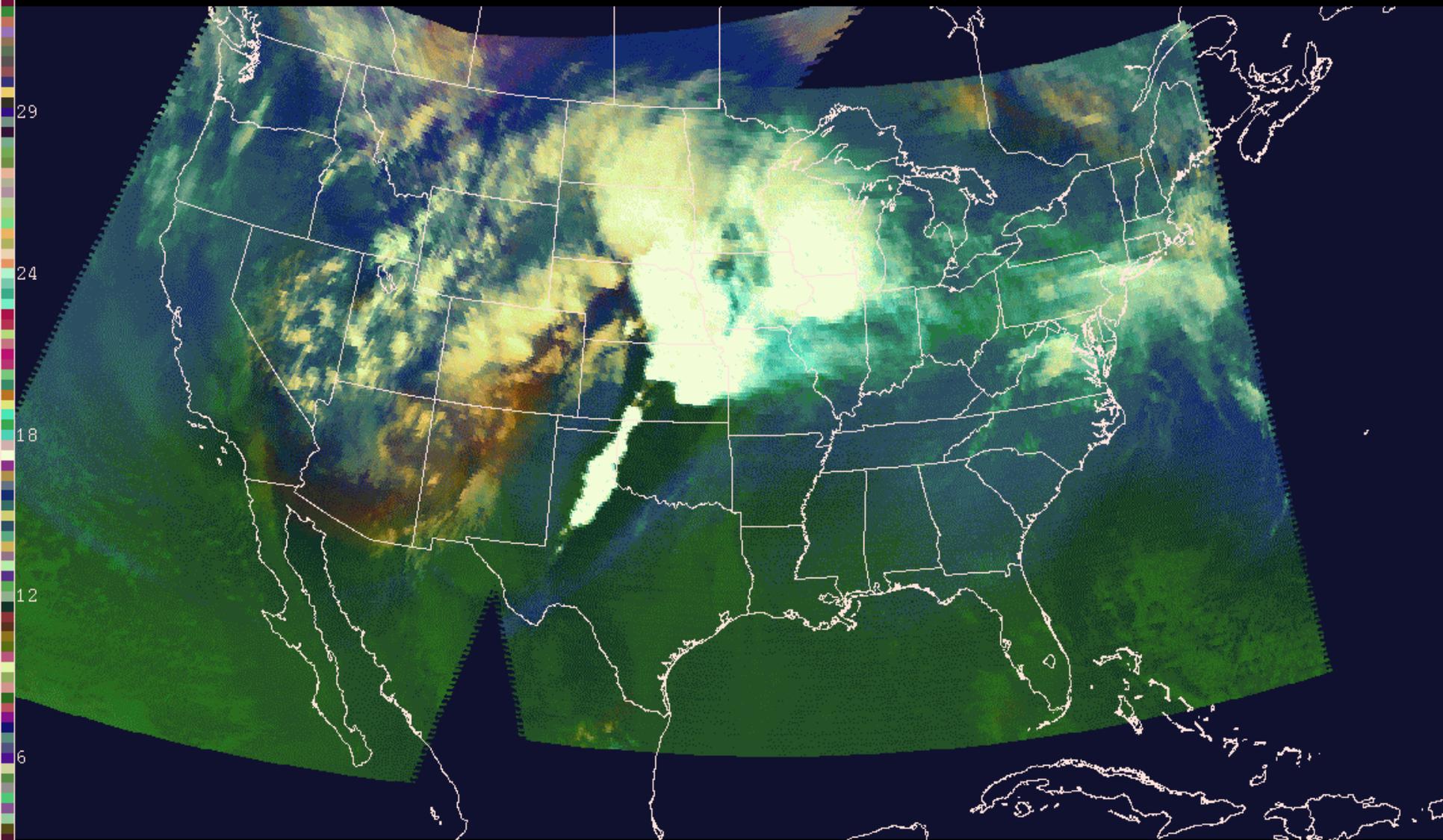
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120415/0301 SOUNDER AIRMASS

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120415/0401 SOUNDER AIRMASS

Capturing Feedback

- **Real-time blogging**
<http://goesrhwt.blogspot.com/>
 - During forecast/warning exercises
 - Participants are also encouraged to blog following forecast/warning exercises
- **Web-based surveys**
 - Immediately following forecast/warning operations
- **Daily post-mortem discussions**
 - Between visiting scientists and forecasters



Thank you for your attention!

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<http://goesrhwt.blogspot.com>

