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The GOES-R Convective Initiation Product...

Operational Examples and
Thoughts on Proper Viewing Strategies

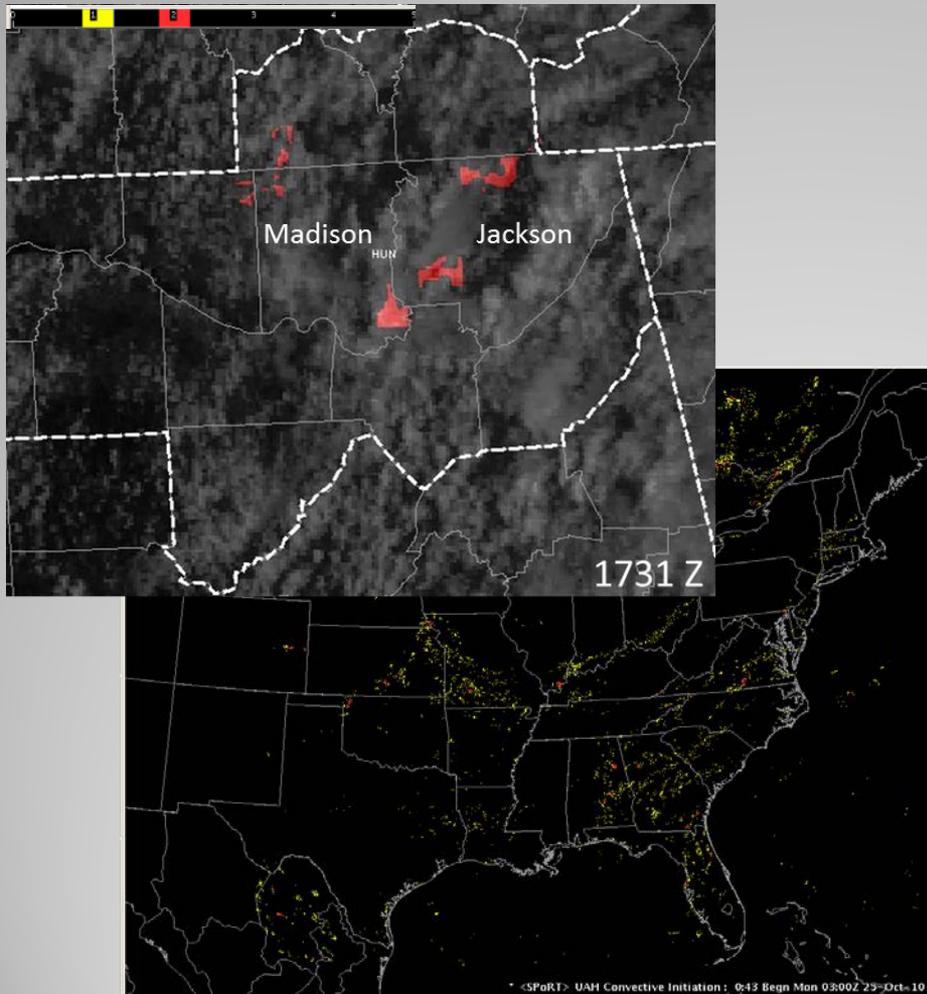
The "old" version of CI, circa 2011

The CI product then was deterministic

- Basic Yes/No output

NWS Huntsville

- Product usage in AWIPS I from 2007 to 2012
- CI product interruption due to AWIPS II (spring 2012)
- Product in AWIPS II July 2013
 - Allows for multiple image files (e.g. CI, sat imagery, radar, model data, etc)

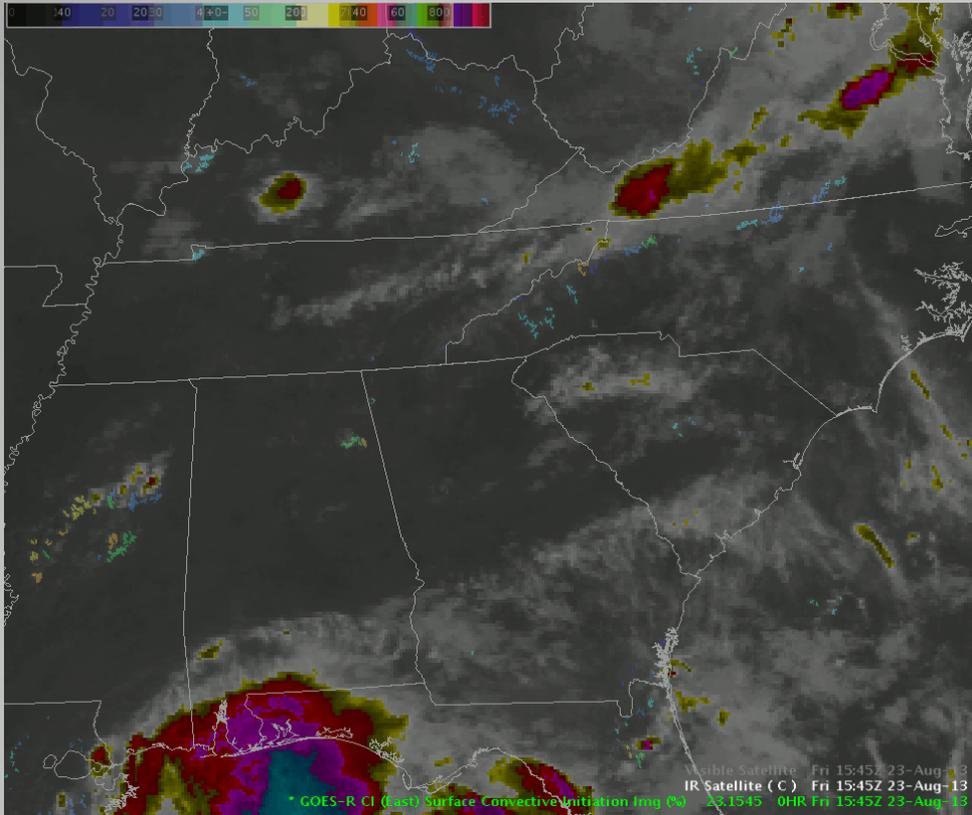


Viewing in AWIPS II

Multiple data sets and imagery can be loaded and viewed.

Notice in this image, the GOES-R CI is loaded, along with GOES visible and IR satellite imagery.

Other imagery can also be included, such as LMA, radar, theta-e analysis, to name a few.



GOES-R CI Evaluation

Evaluation Period

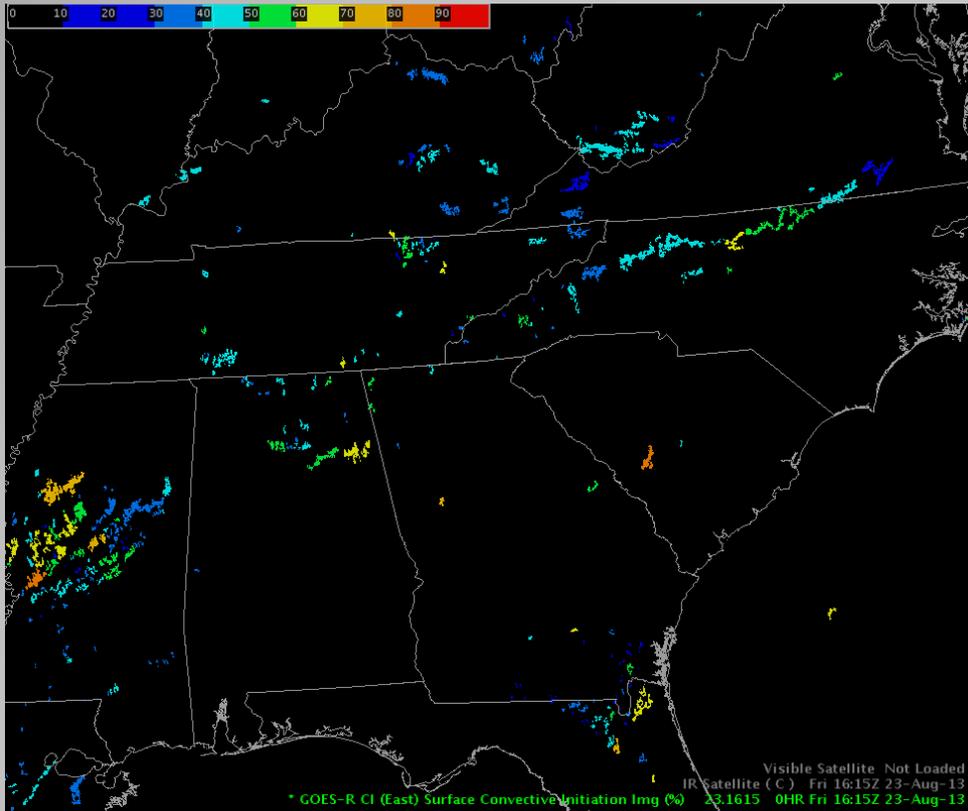
- August-September

Participating NWS Offices

- Huntsville (AWIPS II)
- Albuquerque
- Corpus Christi
- Melbourne
- Miami

GOES-R CI Product

- Probabilistic forecast of 0-2 hour convective initiation
- Utilizes visible and IR bands of GOES E/W
- Proxy for GOES-R capabilities

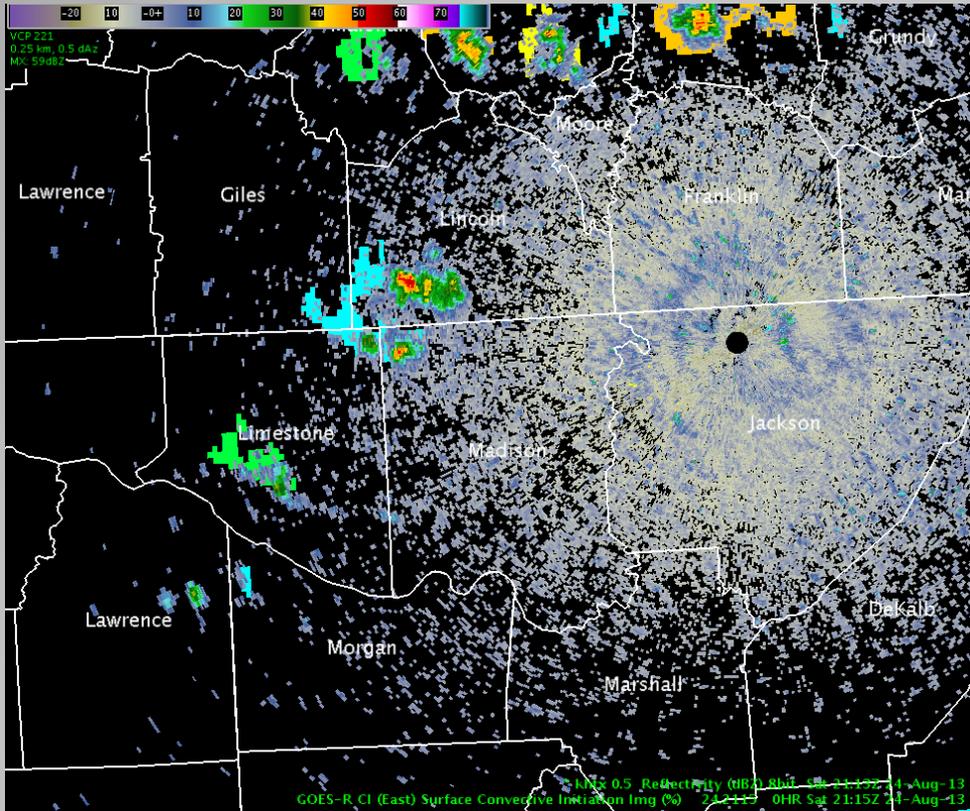


Case Example – August 24, 2013

At 2115 UTC, generally small convective cells developed during the afternoon

- SW Lincoln County, TN / NE Limestone County, AL
 - CI: 40-50%
- Central Limestone County, AL
 - CI: 50-60%

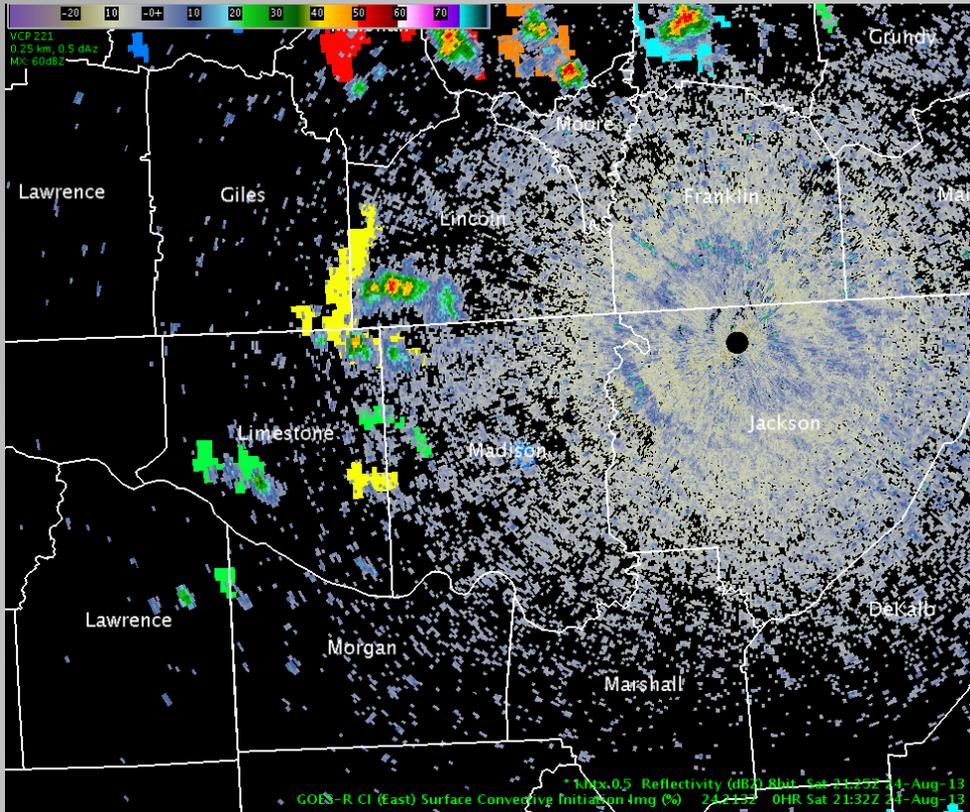
Unfortunately, a lot of radar clutter from KHTX radar was present during the event.



Case Example – August 24, 2013

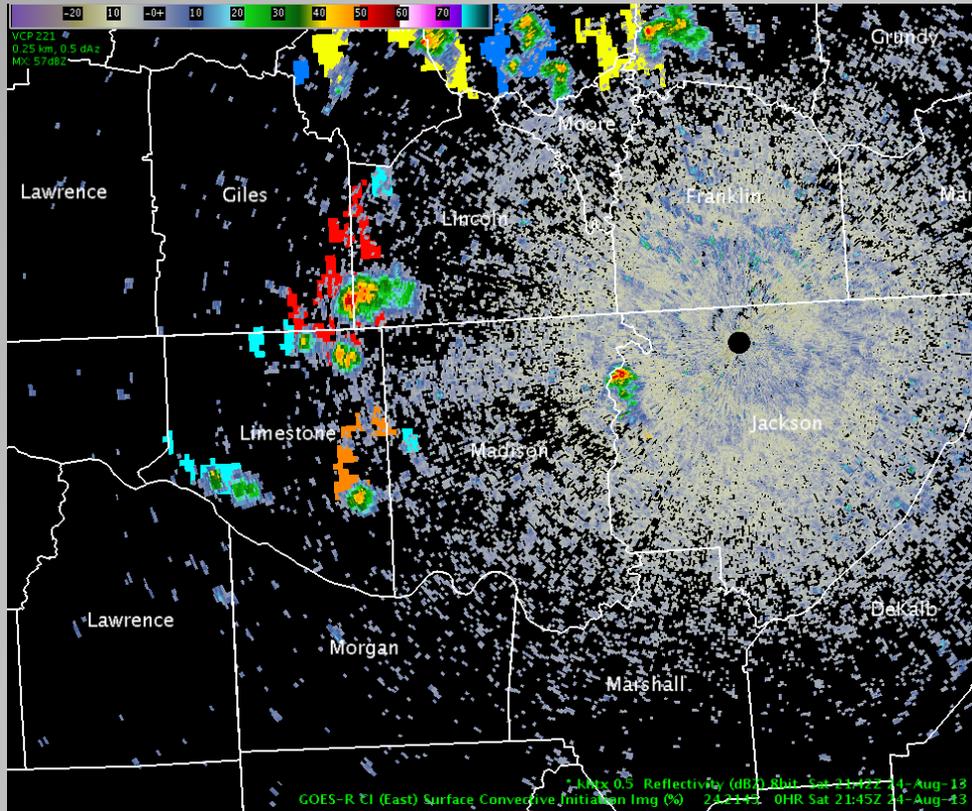
At 2132 UTC...cells now developing in areas where CI was $\geq 40\%$

- SW Lincoln County, TN / NE Limestone County, AL
 - Increased to 50-60%
- New areas of CI forecast for Madison/Limestone County border area
 - 40-50%, 50-60%
- Central Limestone County, AL
 - CI: 50-60%



Case Example – August 24, 2013

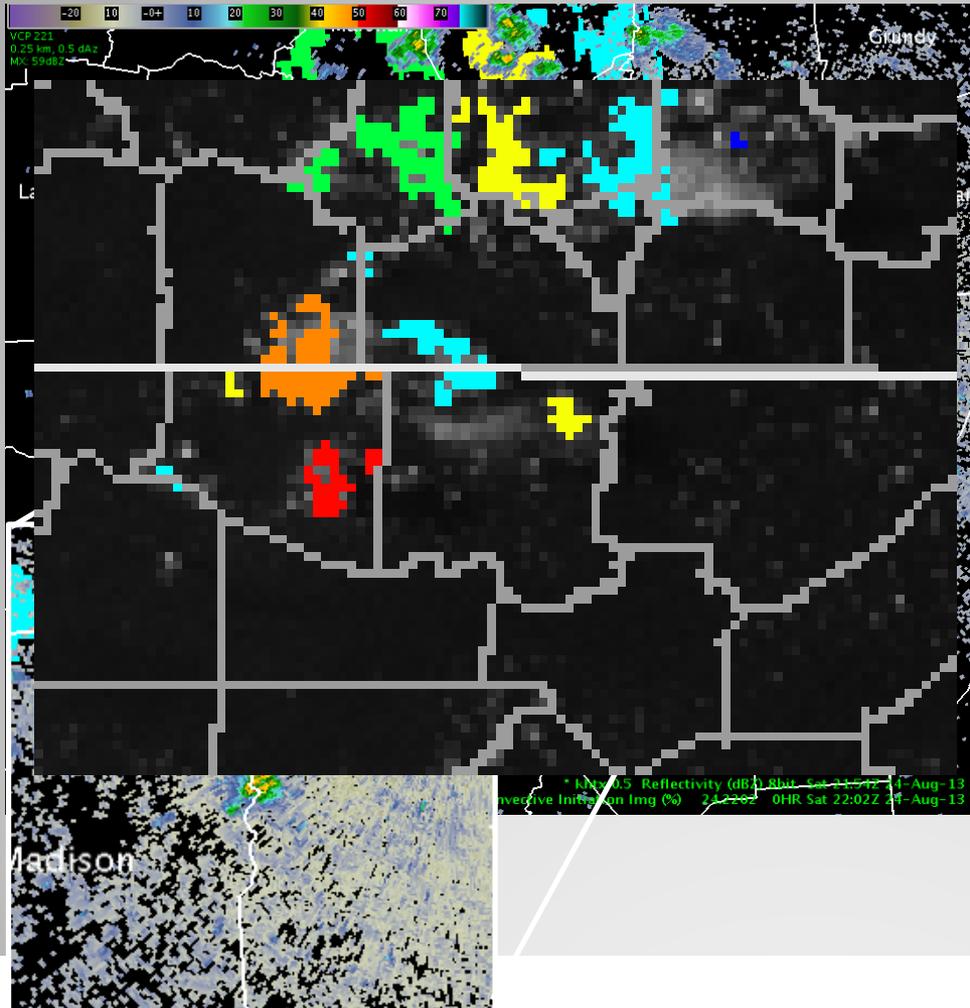
At 2145 UTC...cells continuing to develop further...



- SW Lincoln County, TN / NE Limestone County, AL
 - 50 dBZ now exceeded
 - CI: 90-100%
- Madison/Limestone County
 - New cell with >45 dBZ
 - CI: 80-90%
- SW Limestone County, AL
 - Small area with >40%
 - CI: 50-60%
- Far Western Jackson County, AL
 - Cell appeared with ≥ 50 dBZ
 - CI: None previously?

Case Example – August 24, 2013

At 2202 UTC...

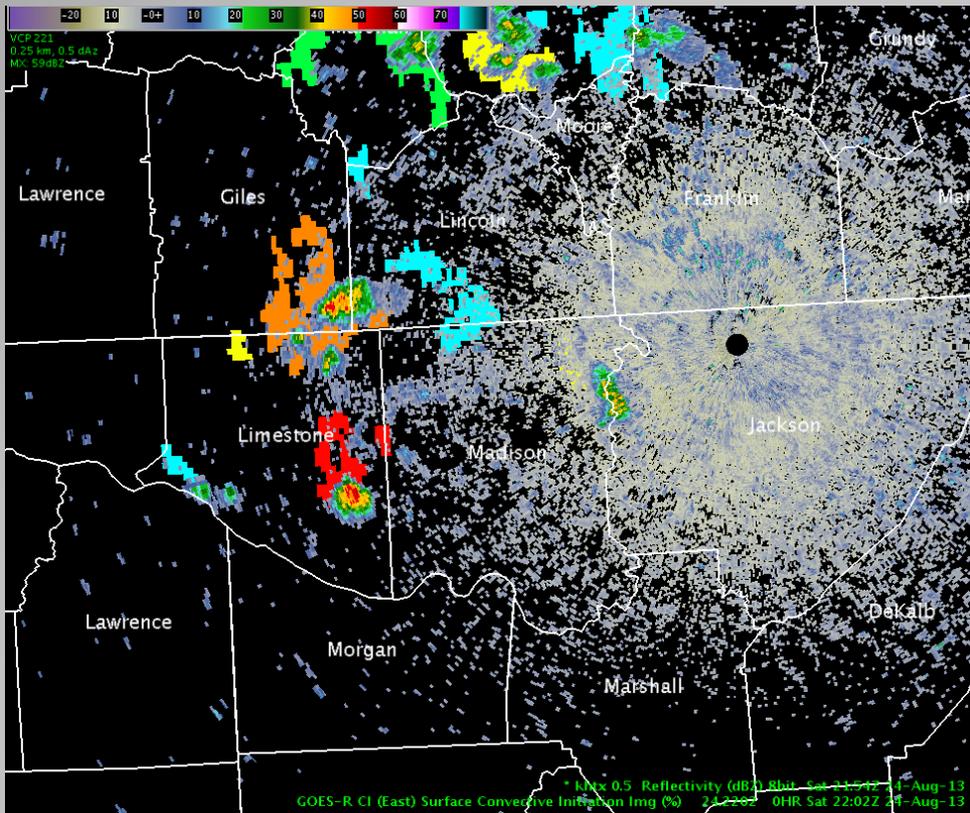


- SW Lincoln County, TN / NE Limestone County, AL
 - 50 dBZ now exceeded
 - CI: 80-90%
- Madison/Limestone County
 - Cell strengthens >50 dBZ
 - CI: 90-100%
- SW Limestone County, AL
 - Small area with >30%
 - CI: 40-50%
- Far Western Jackson / Eastern Madison, AL
 - Cell weakens slightly, but still present with ≥ 40 dBZ
 - CI: faint yellow now appears through the clutter

Case Example – August 24, 2013

In retrospect...

- Areas with CI $\geq 40\%$ verified in all convective cell cases
- Cell that developed in Jackson County...lesson learned
 - Assess viewing strategy in AWIPS II
 - Radar was loaded 2nd, so it overlaid the CI values
 - Another pane contained CI and VIS/IR imagery, but the radar imagery became my primary focus due to the development of relatively high dBZ convection

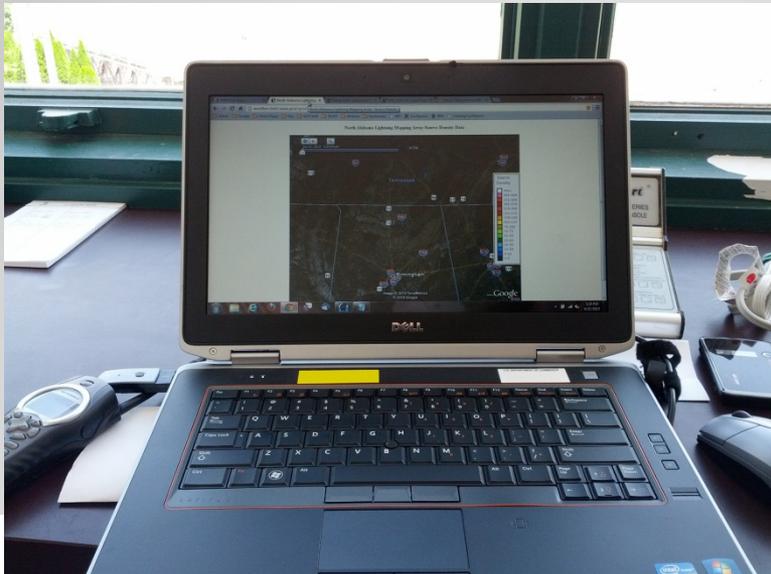




CI – Other Operational Uses

On-site support!

- Provide EMs or other local officials forecasts of developing convection upstream and probabilistic forecasts
- Available through UAH website (<http://nsstc.uah.edu/SATCAST/index.html>)
- ...or AWIPS II Thin Client

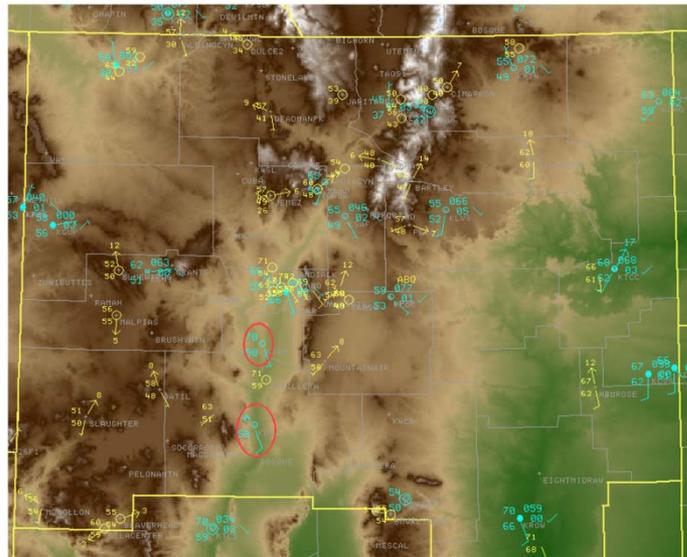
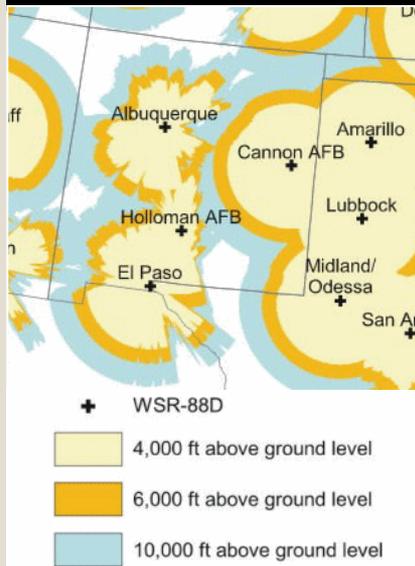


Operational Examples

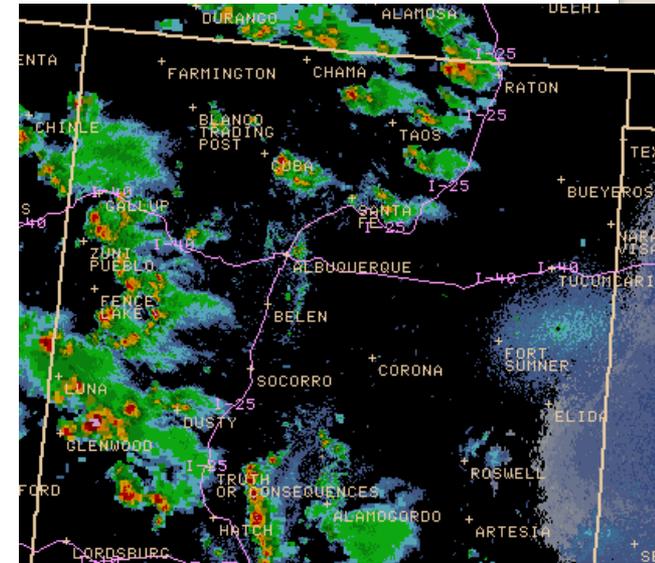
WFO Albuquerque
July 26, 2013

Forecast Challenges

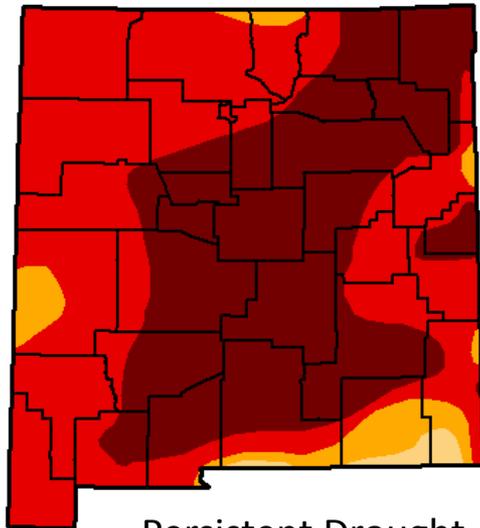
Poor Radar Coverage



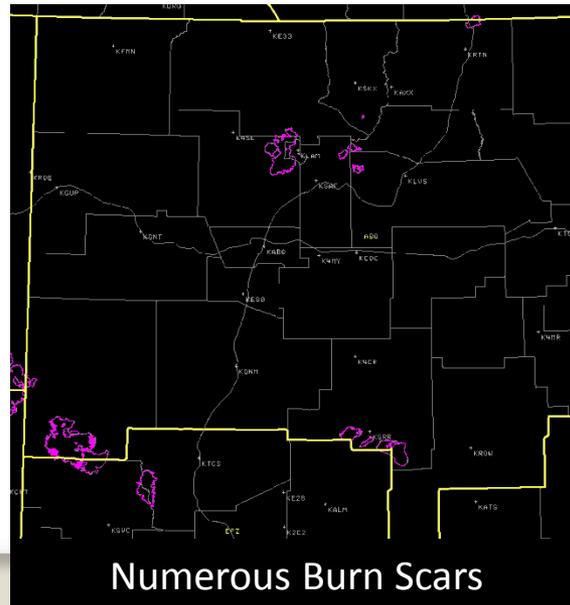
Sparse Obs & Diverse Terrain



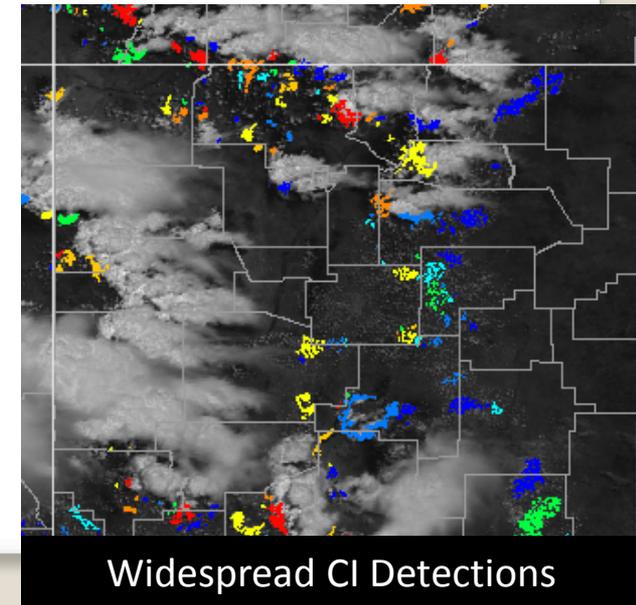
Widespread Convection



Persistent Drought



Numerous Burn Scars



Widespread CI Detections

Hazardous Weather Outlook

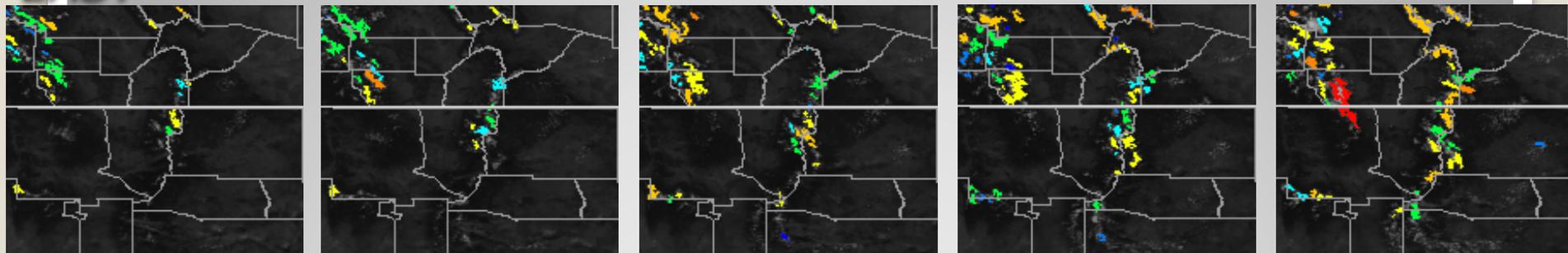
HAZARDOUS WEATHER OUTLOOK NATIONAL WEATHER SERVICE ALBUQUERQUE NM
547 AM MDT FRI JUL 26 2013

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF NORTH AND CENTRAL NEW MEXICO.

.DAY ONE...TODAY AND TONIGHT A FLASH FLOOD WATCH IS IN EFFECT FROM LATE THIS MORNING THROUGH LATE THIS EVENING FOR WEST CENTRAL...SOUTHWEST...AND SOUTH CENTRAL NEW MEXICO. THIS INCLUDES MUCH OF LINCOLN...SOCORRO...CATRON...CIBOLA...AND MCKINLEY COUNTIES. LOCALLY HEAVY RAINFALL FROM SLOW MOVING THUNDERSTORMS IS EXPECTED TO INCREASE THE FLASH FLOODING THREAT...ESPECIALLY OVER RECENTLY BURNED FORESTS. LOCALLY HEAVY RAINFALL IS ALSO POSSIBLE ACROSS THE NORTHERN HIGH TERRAIN THIS AFTERNOON. THIS HEAVY RAINFALL MAY MOVE SOUTH AGAIN INTO THE SANTA FE AND ALBUQUERQUE METRO AREAS TONIGHT.

GOES-West versus GOES-East

EAST



1645 UTC

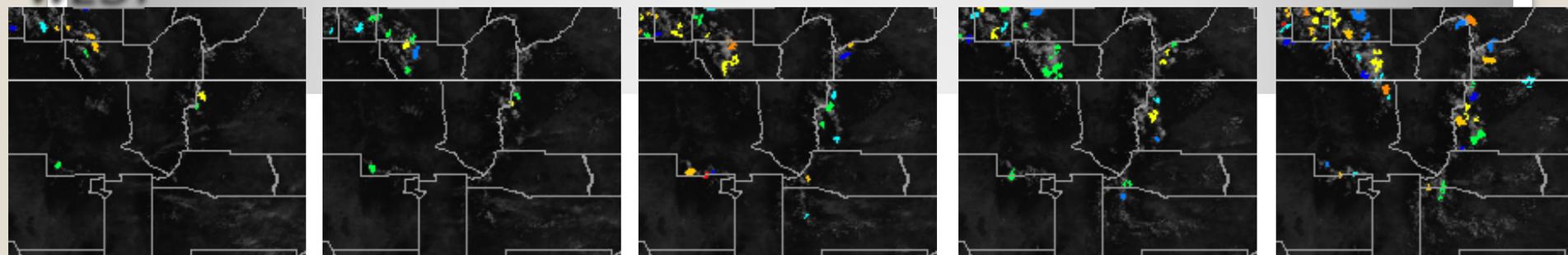
1702 UTC

1715 UTC

1732 UTC

1745 UTC

WEST



1645 UTC

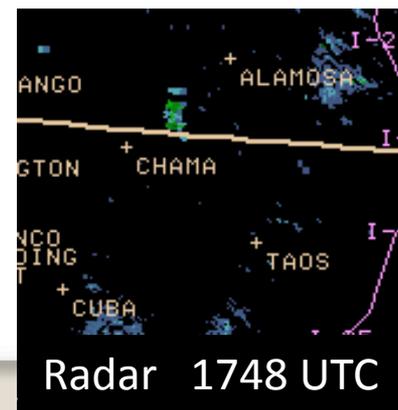
1700 UTC

1715 UTC

1730 UTC

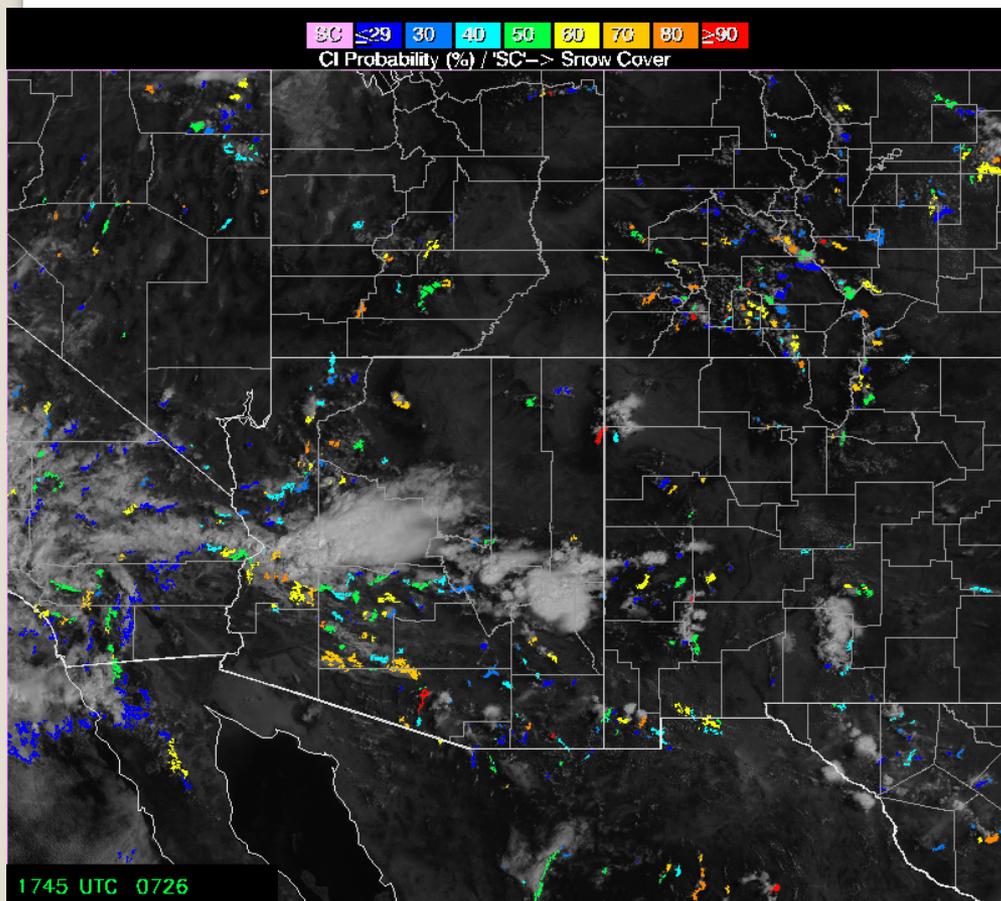
1745 UTC

- Lead time for higher CI strength of signal was greater with GOES-East
- Values of CI were more widespread over high terrain with GOES-East
- NOWCAST issued at 1717 UTC preceded radar echoes by ~ 30 min
- Composite picked up first reflectivity near 35dBZ at 1748 UTC
- 90% strength of signal at 1745 UTC preceded first strike by ~ 30 min

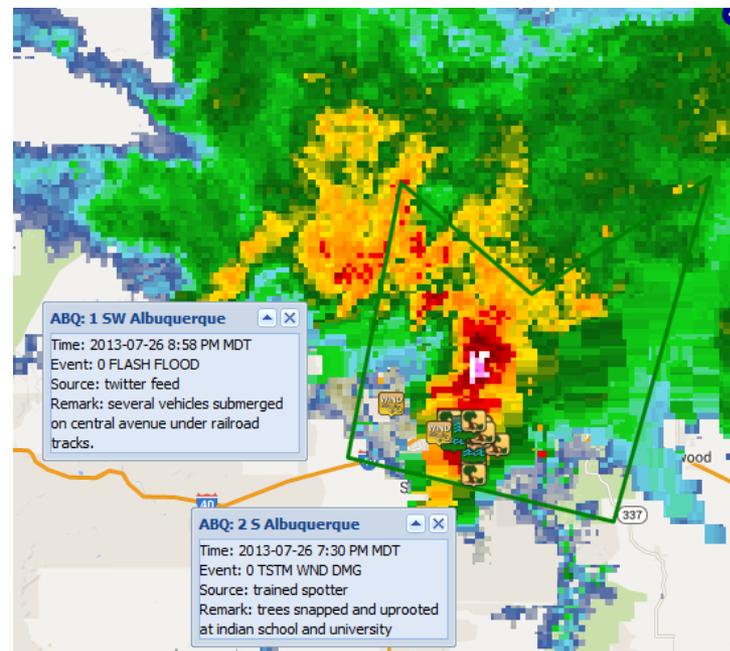


Radar 1748 UTC

Albuquerque Metro Area

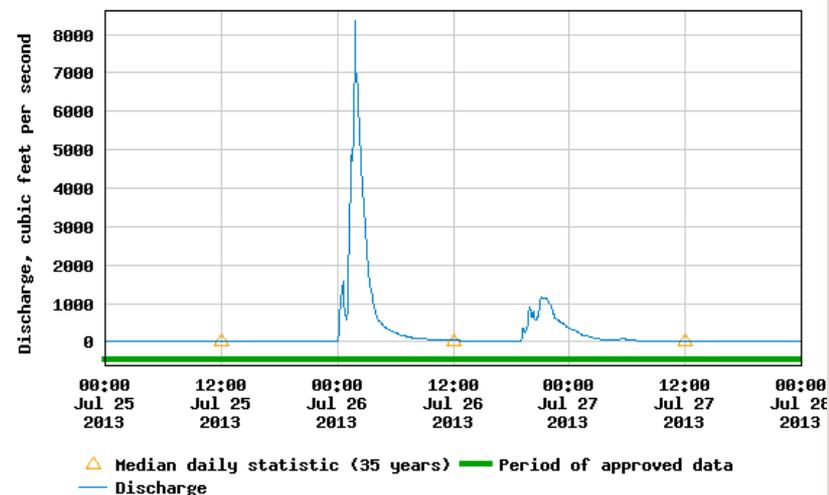


- Widespread CI detections over northern NM merge into a large cluster of storms
- High clouds from west obscure detections after about 2230 UTC, although weak values still present
- 89mph gust at ABQ produced extensive damage
- Top 10 hydrologic event for city drainage system

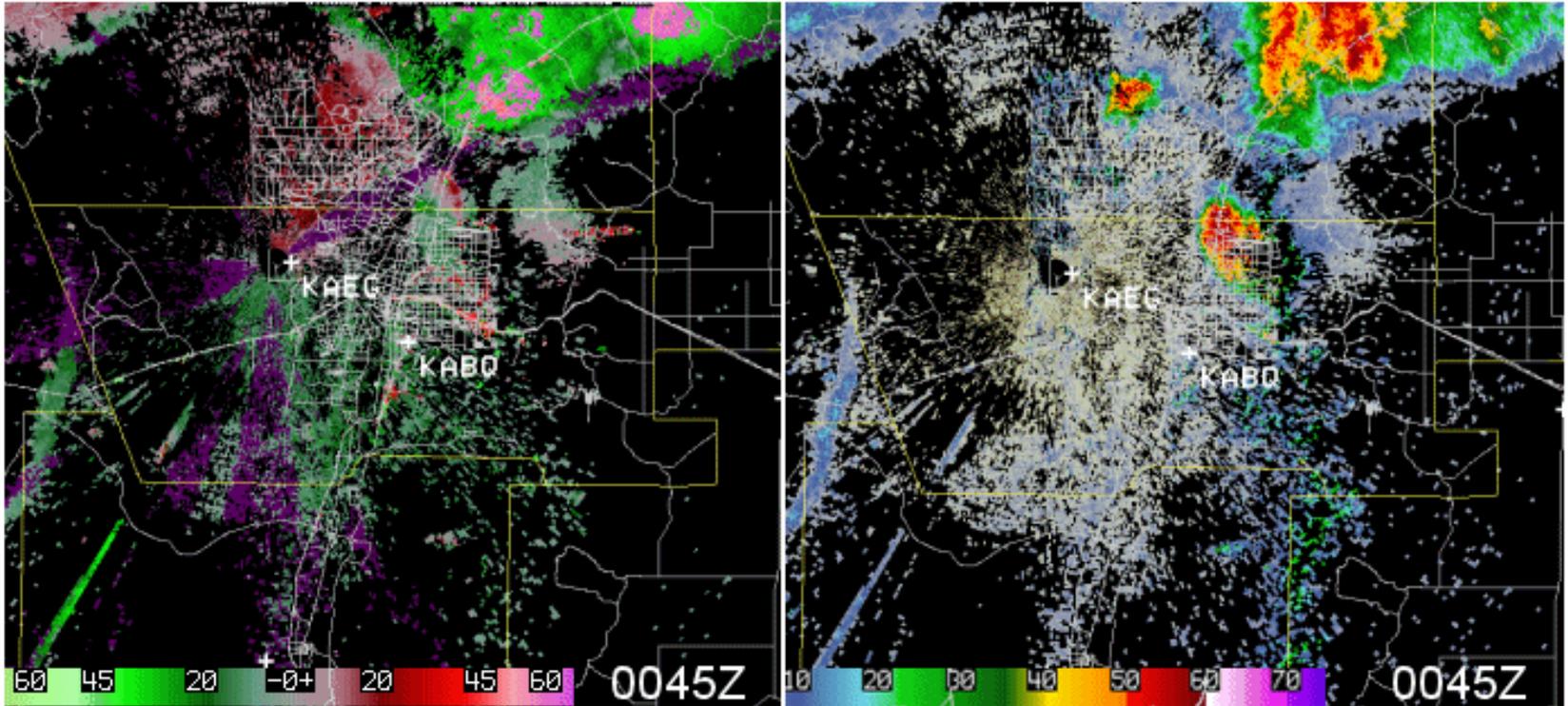


FFW issued 1947 UTC

USGS 08329900 NORTH FLOODWAY CHANNEL NEAR ALAMEDA, NM



Albuquerque Metro Area



<http://www.youtube.com/watch?v=tDOoT8IkU7s>

