Coming to a Radar Near You

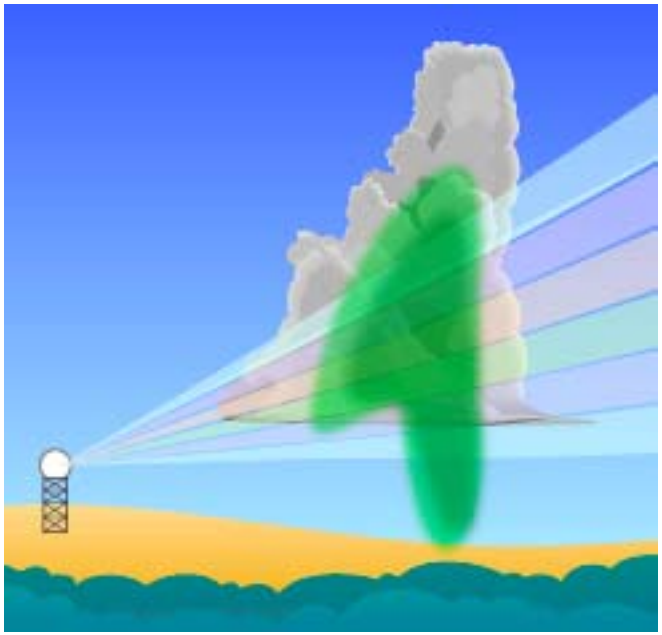
Part 1

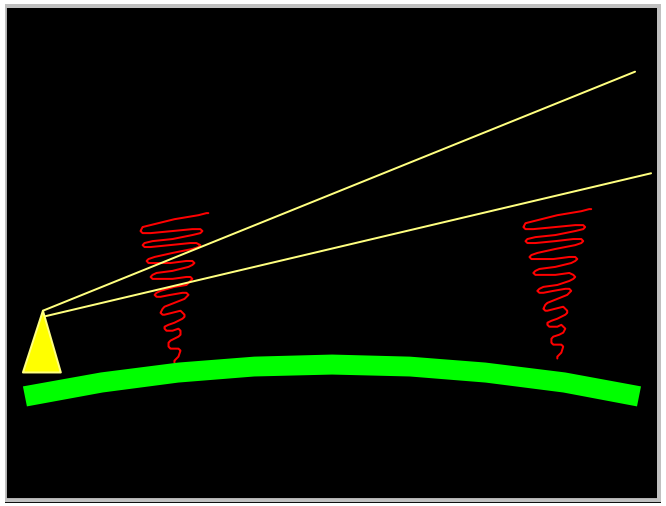
CASA

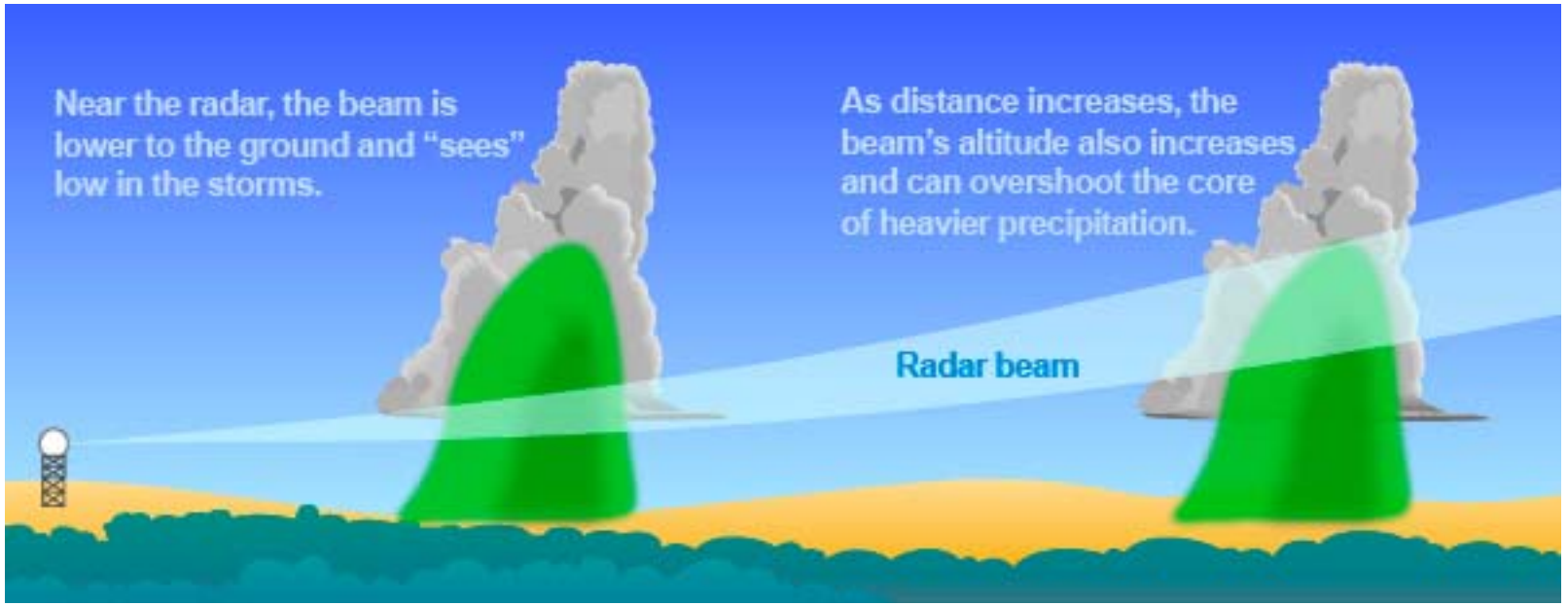
Kevin Kloesel

CASA

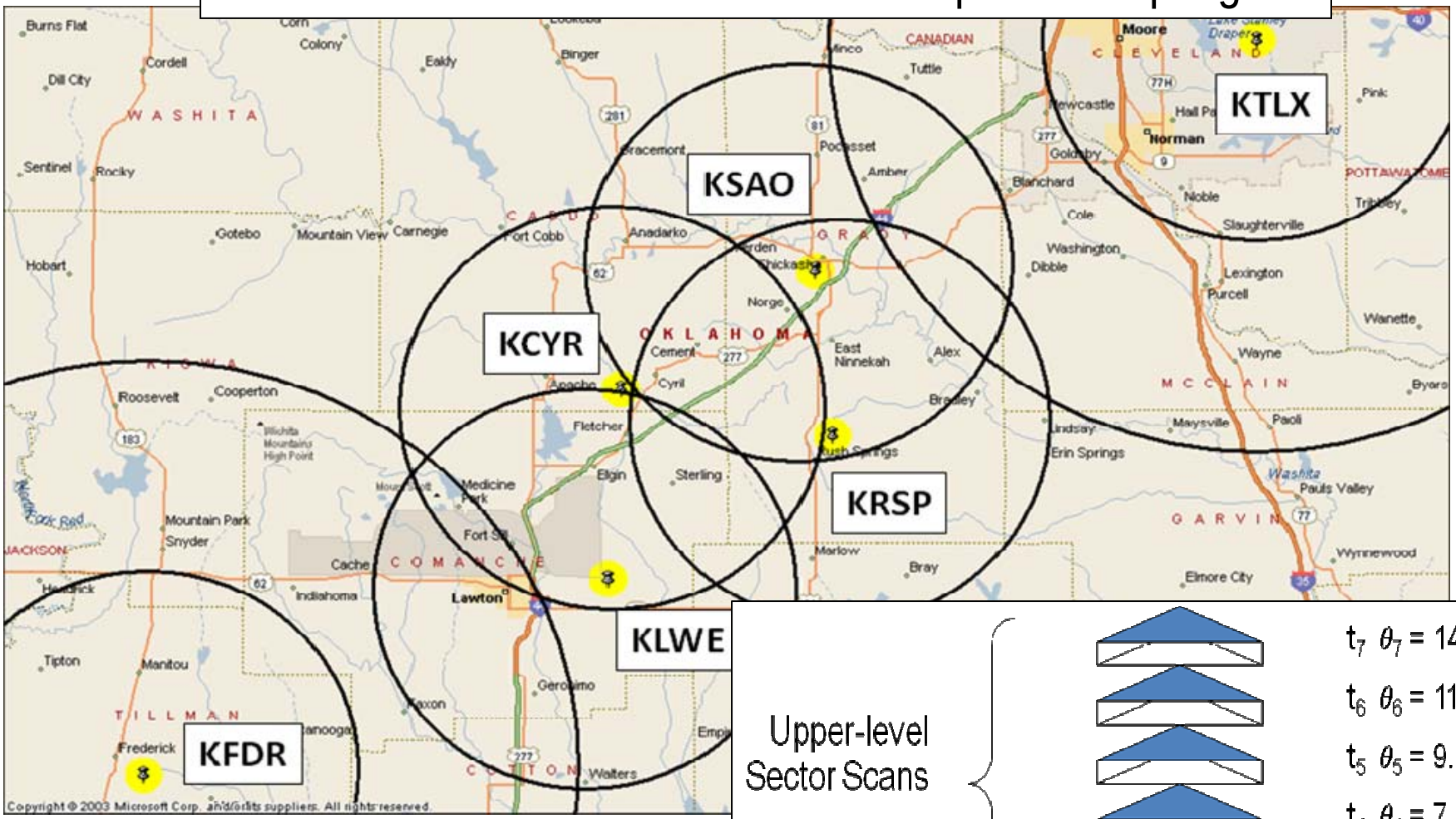
The center for **Collaborative Adaptive Sensing of the Atmosphere**, A National Science Foundation Engineering Center dedicated to engineering revolutionary weather-sensing networks.





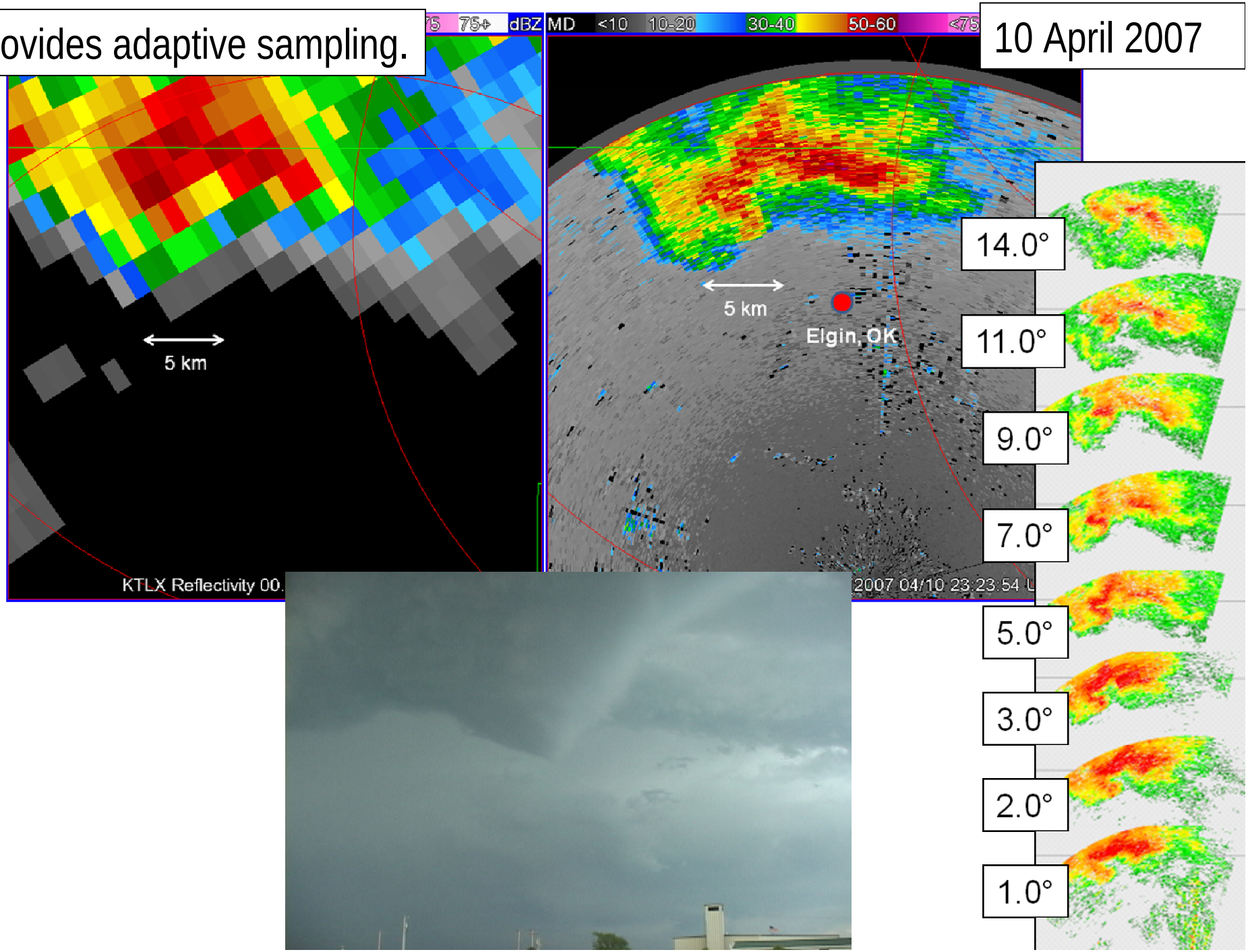

Near the radar, the beam is lower to the ground and "sees" low in the storms.
As distance increases, the beam's altitude also increases and can overshoot the core of heavier precipitation.
Radar beam

DCAS – Distributed Collaborative Adaptive Sampling.



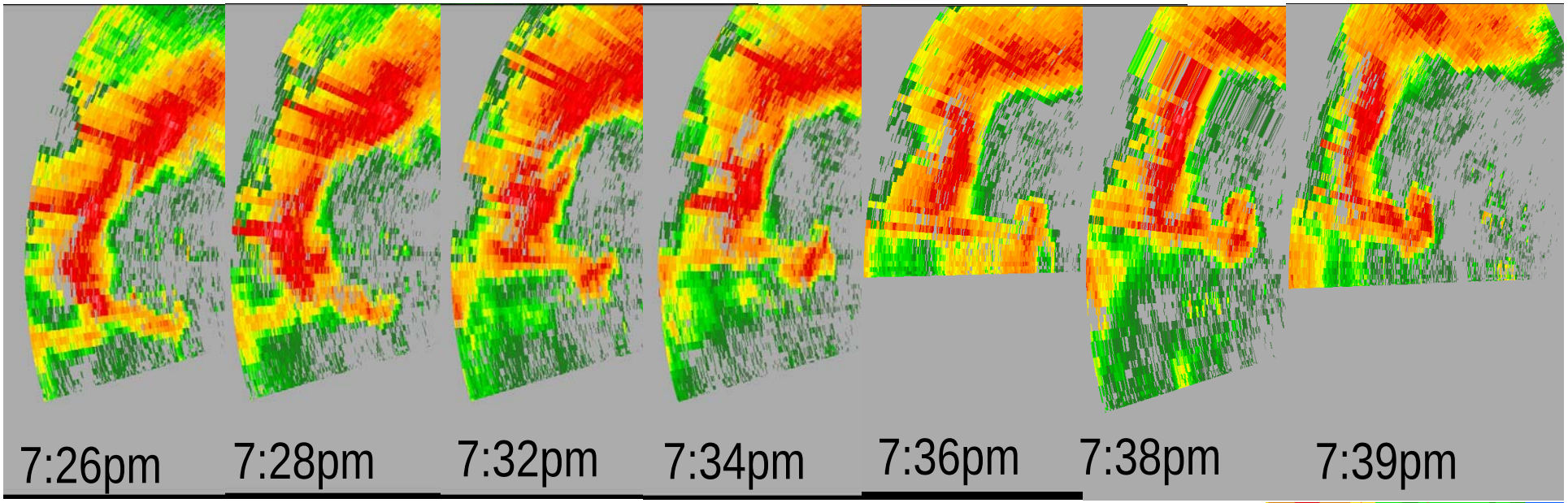
Provides adaptive sampling.

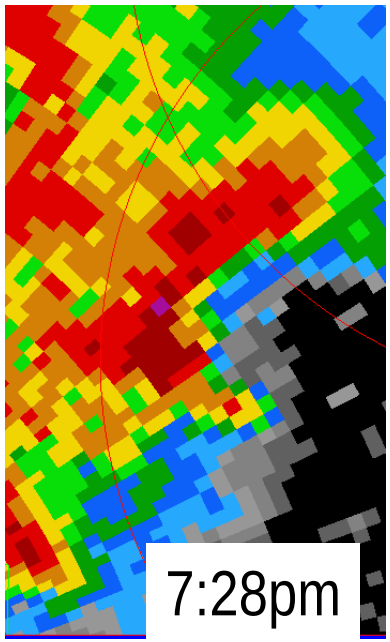
10 April 2007

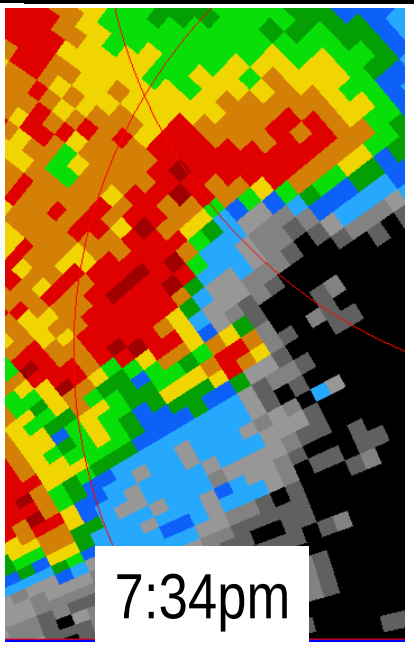


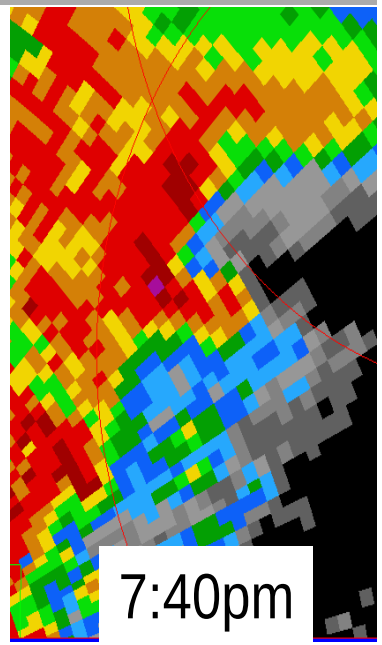
Ability to scan low-levels rapidly.

8 May 2007



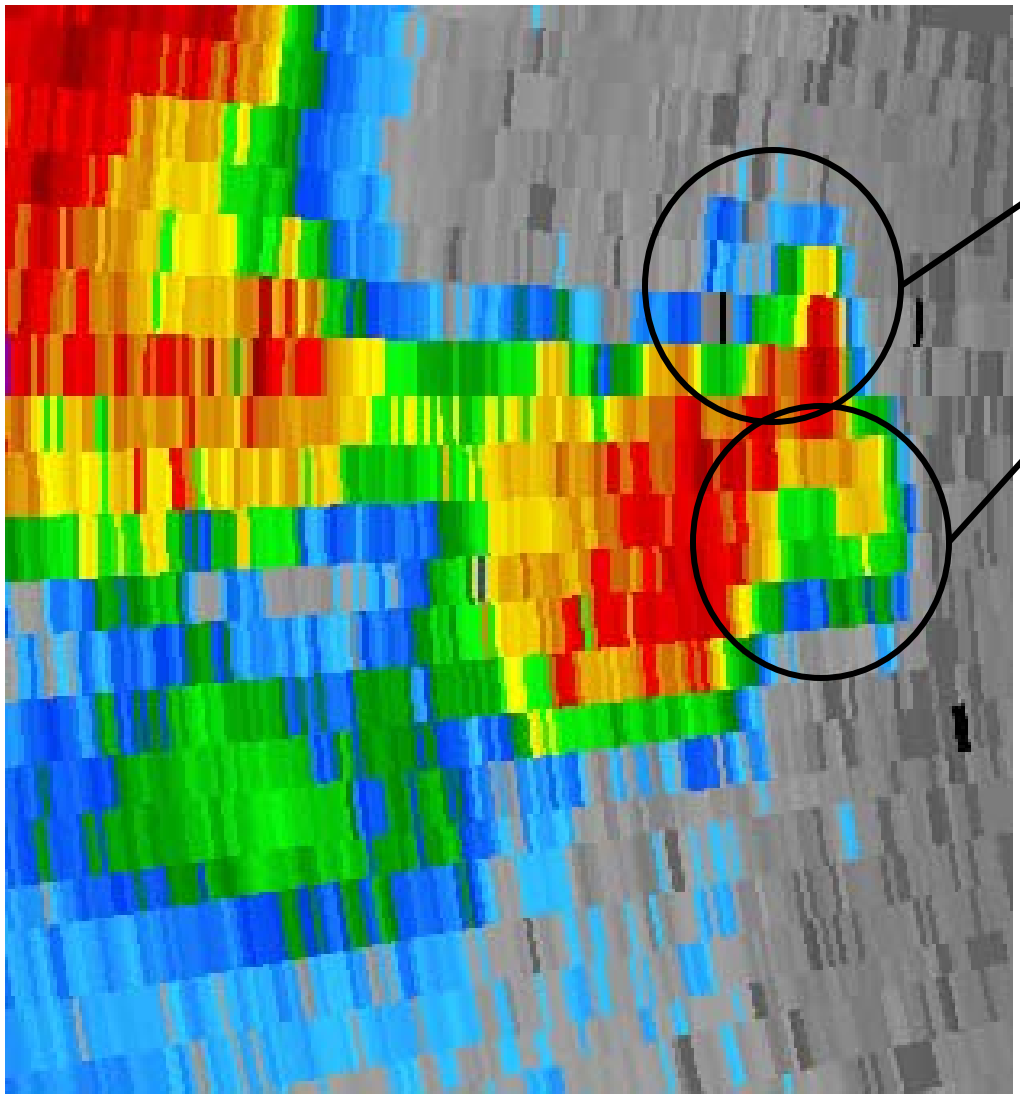




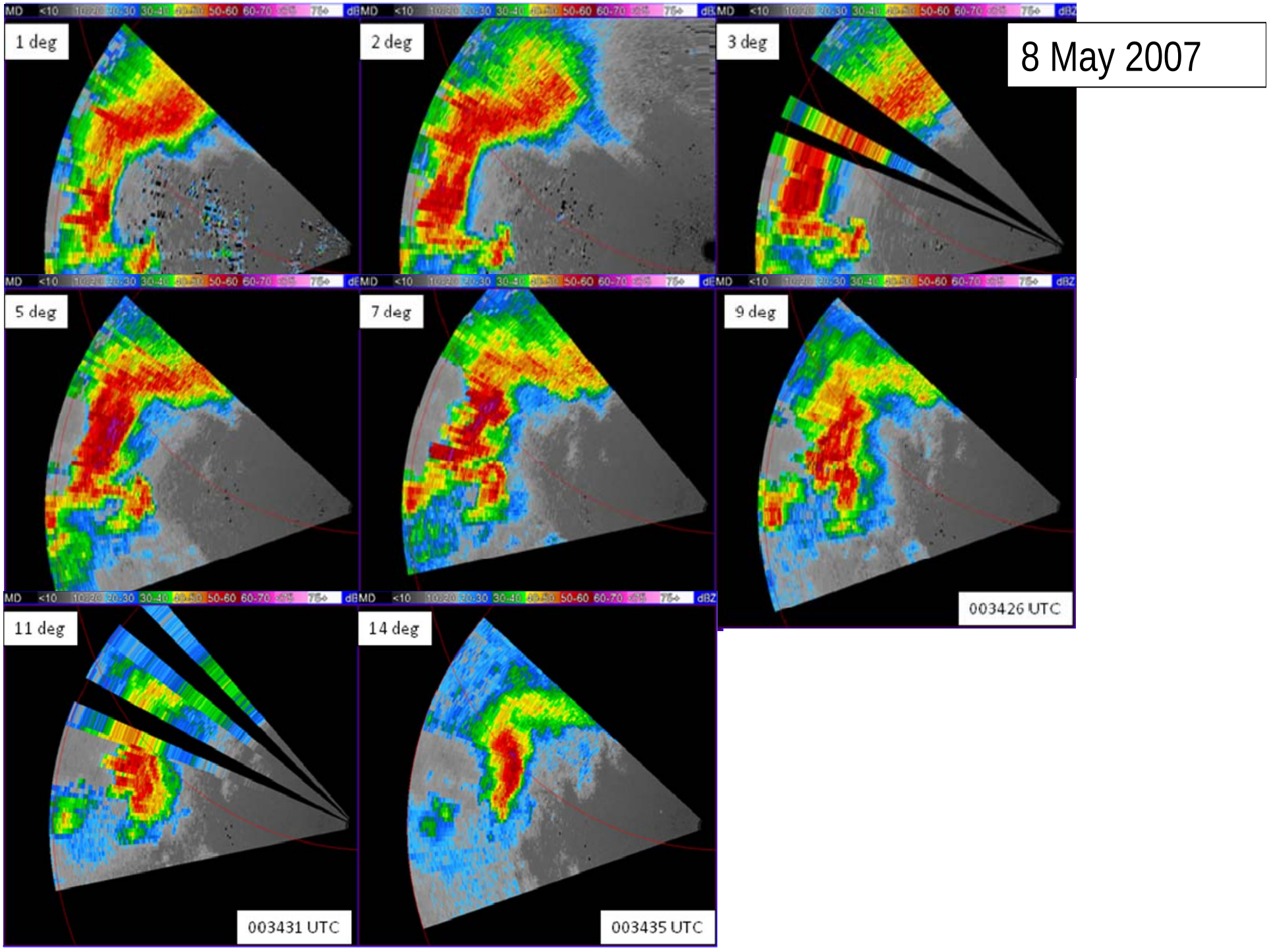


Ability to observe fine-scale detail.

8 May 2007

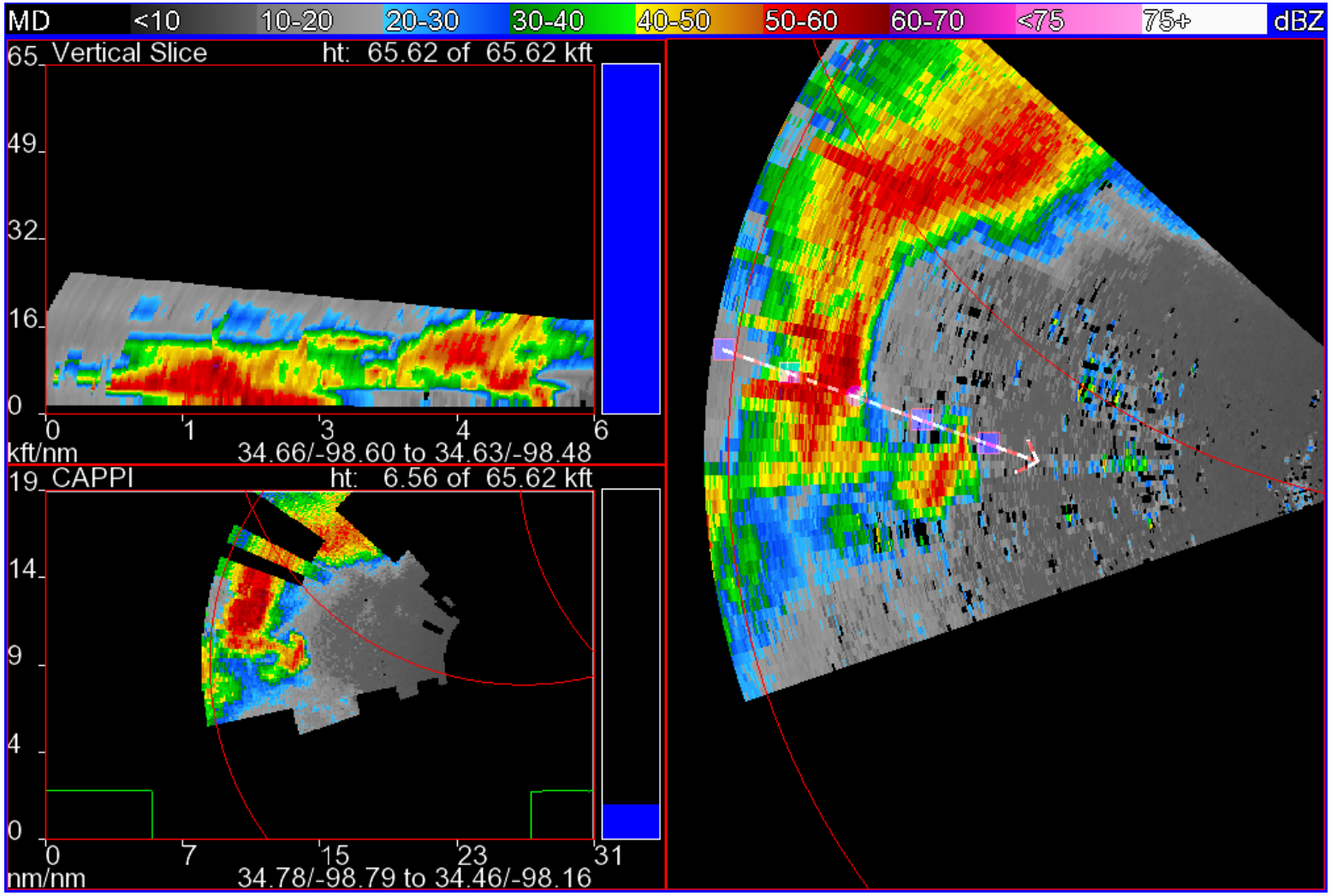


- Cyclonic vorticity in hook echo.
- Anti-cyclonic vorticity couplet.


1 deg
2 deg
3 deg
8 May 2007
5 deg
7 deg
9 deg
003426 UTC
11 deg
14 deg
003431 UTC
003435 UTC

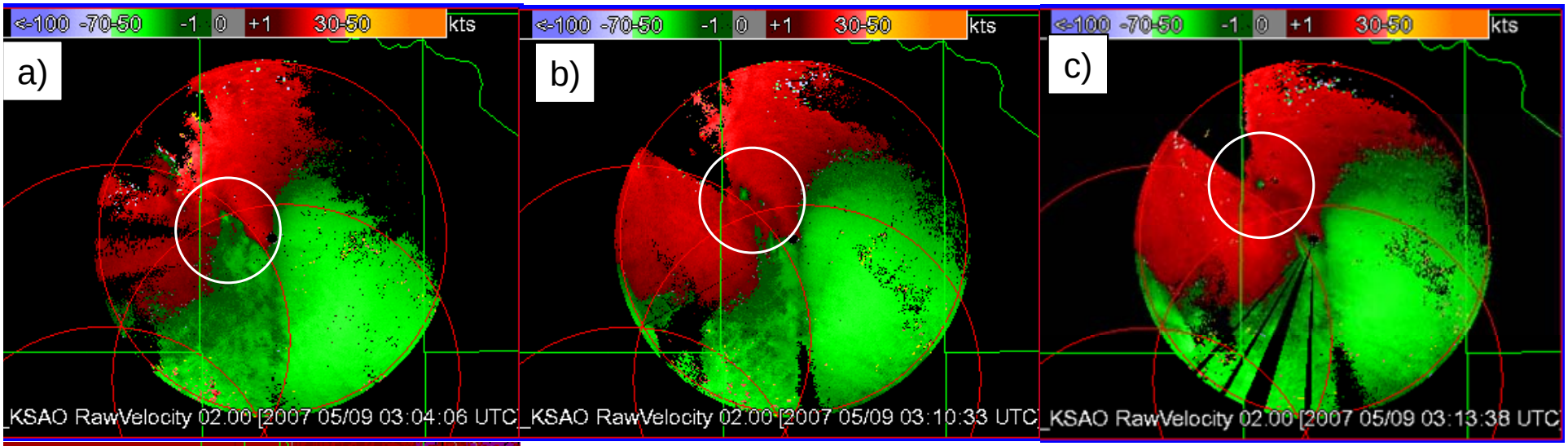
Ability to observe routine 3D volume rendering, with updates once per minute.

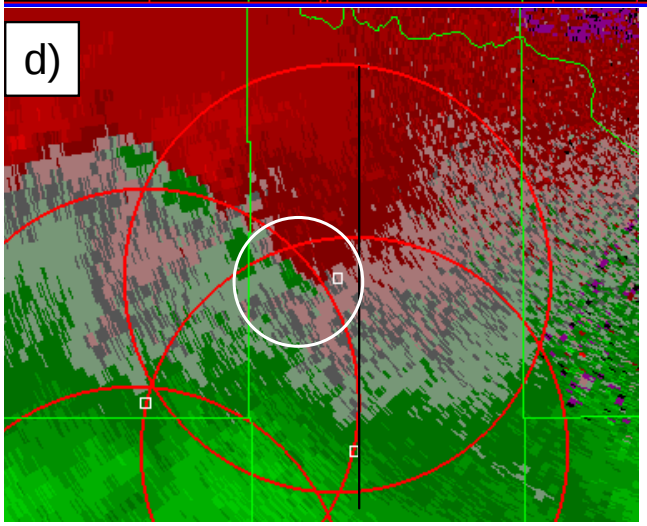
8 May 2007



Ability to see fine-scale details.

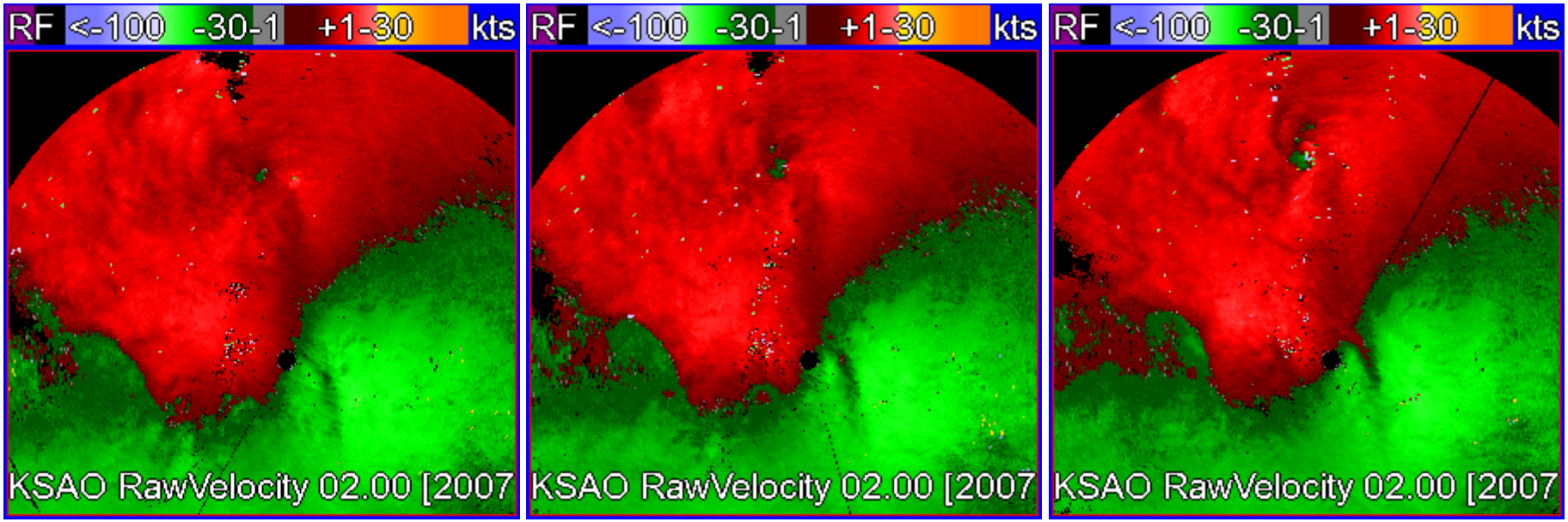
8 May 2007





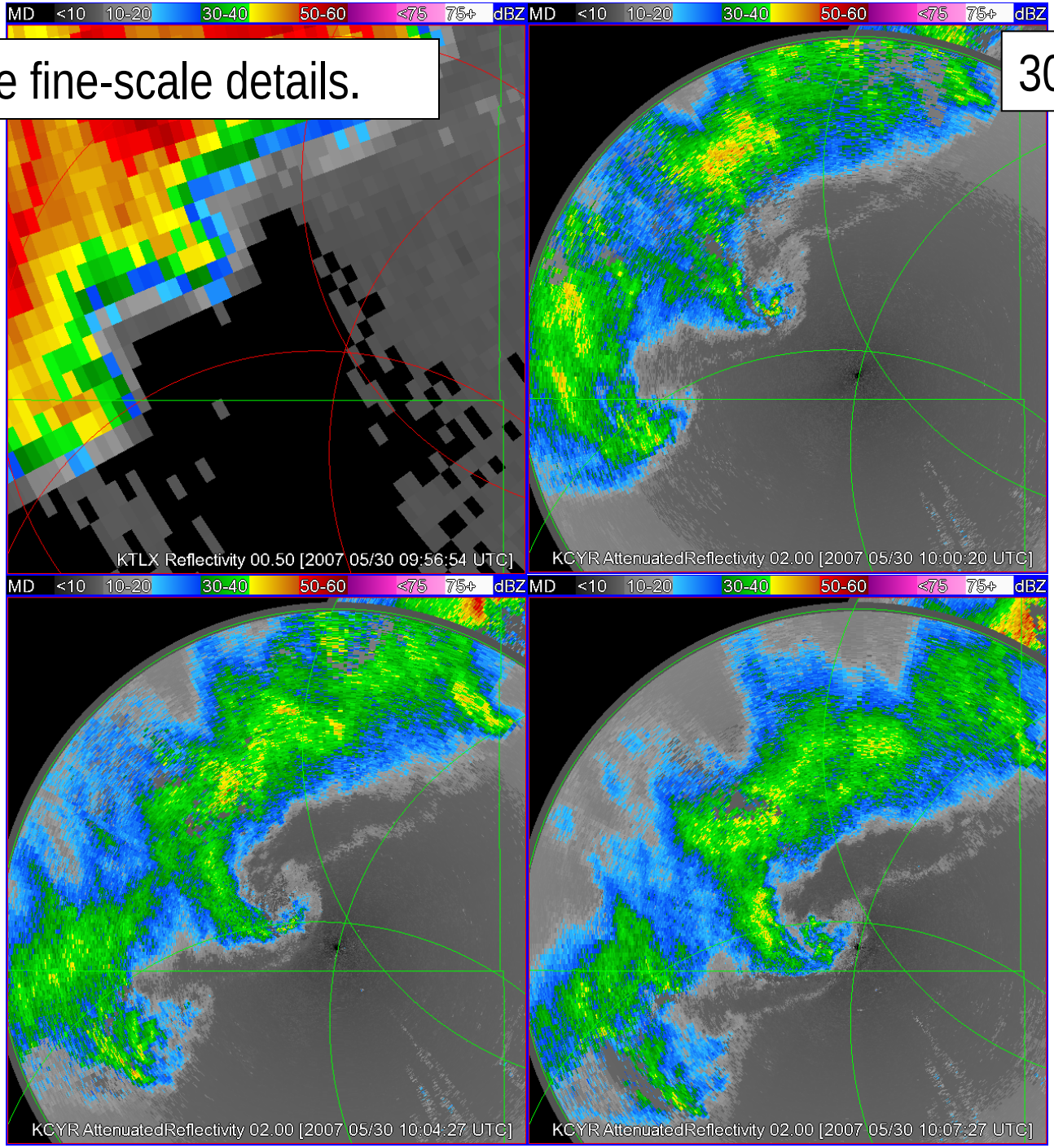
In this case, a fine scale downdraft was observed in the CASA radar data.

“Egg Beater”

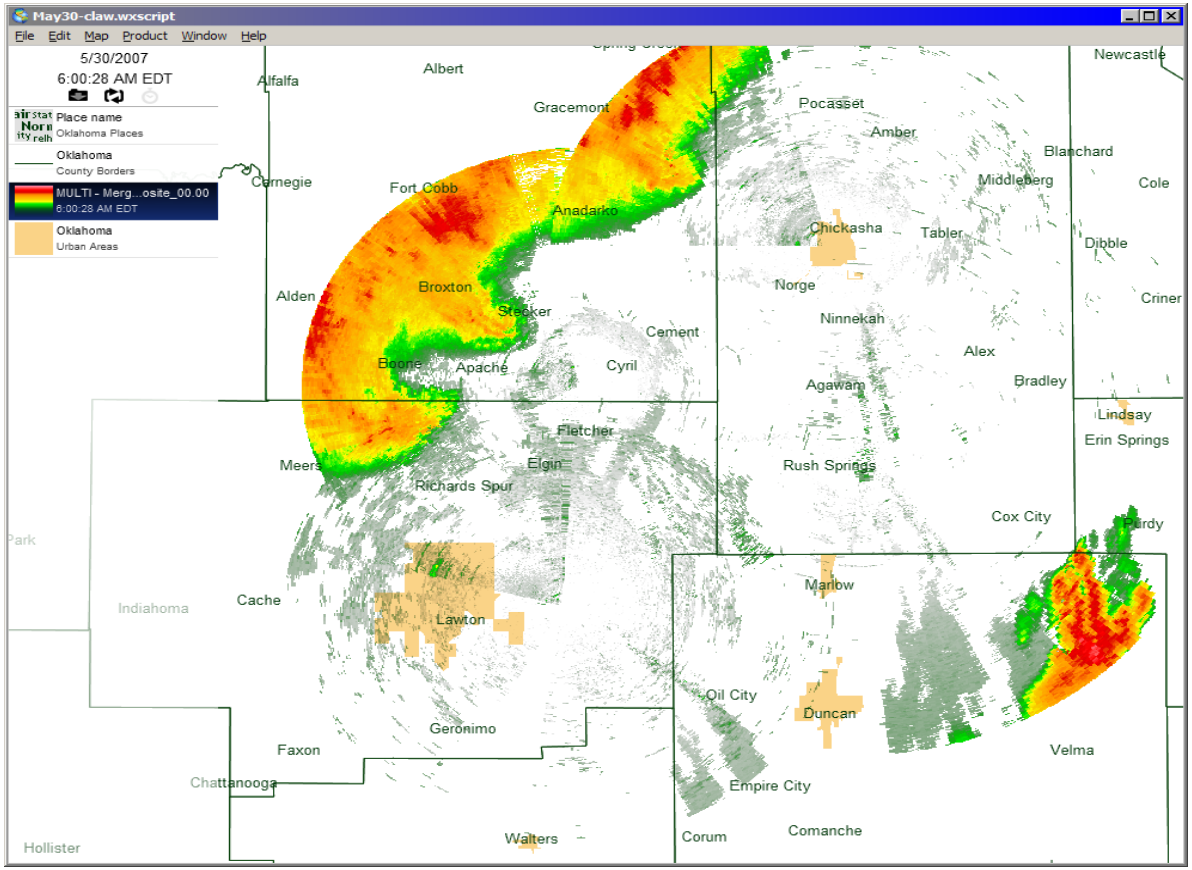

RF <-100 -30-1 +1-30 kts
KSAO RawVelocity 02.00 [2007
RF <-100 -30-1 +1-30 kts
KSAO RawVelocity 02.00 [2007
RF <-100 -30-1 +1-30 kts
KSAO RawVelocity 02.00 [2007

Ability to see fine-scale details.

30 May 2007



“The Claw”


May30-claw.wxscript
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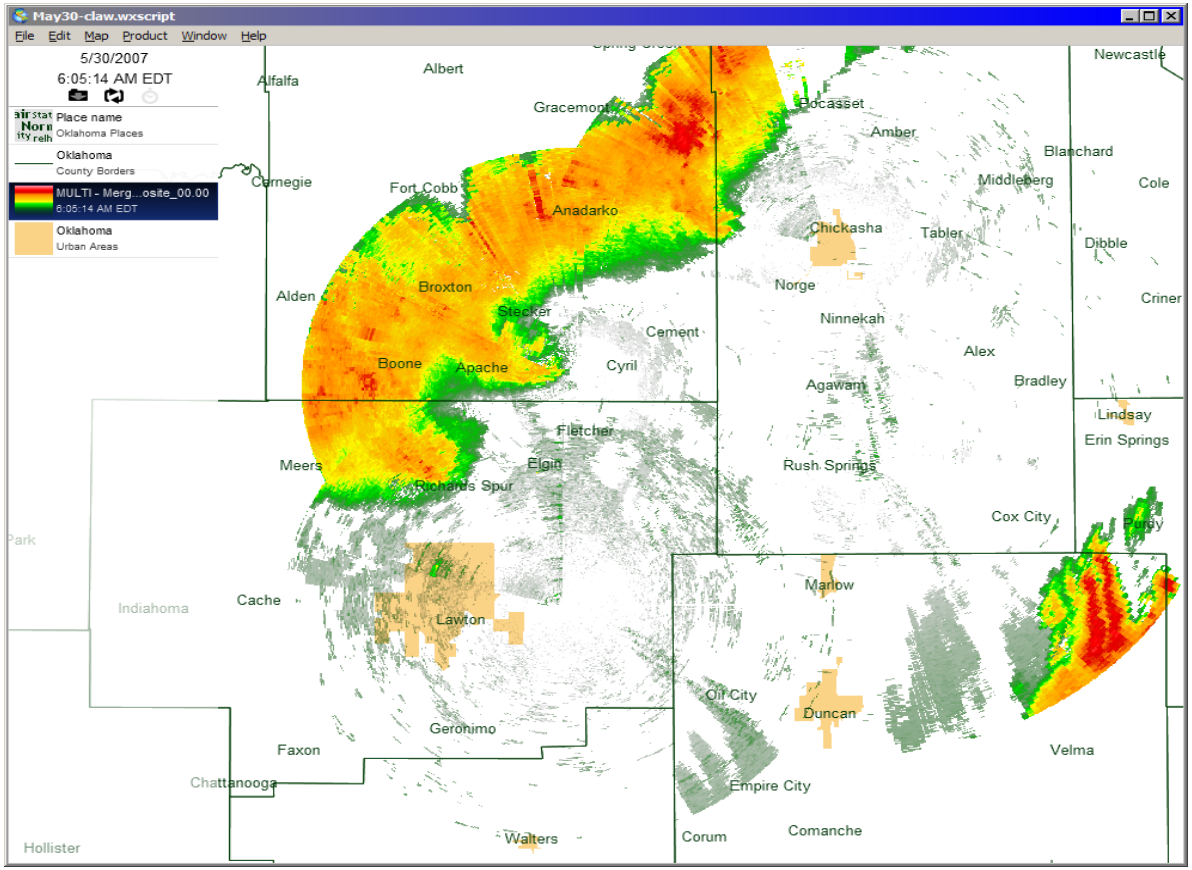
Oklahoma Places
Oklahoma
County Borders
MULTI - Merg...osite_00.00
6:00:28 AM EDT
Oklahoma
Urban Areas
Alfalfa
Albert
Gracemont
Pocasset
Amber
Blanchard
Newcastle
Carnegie
Fort Cobb
Anadarko
Middleberg
Cole
Chickasha
Tabler
Dibble
Alden
Broxton
Norge
Criner
Stecker
Ninnekah
Cement
Alex
Boone
Apache
Cyril
Agawam
Bradley
Lindsay
Fletcher
Erin Springs
Meers
Elgin
Rush Springs
Richards Spur
Cox City
Pardy
Park
Marlow
Indiahoma
Cache
Lawton
Oil City
Duncan
Velma
Geronimo
Faxon
Chattanooga
Empire City
Hollister
Walters
Corum
Comanche

“The Claw”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Gracemont
Bocasset
Amber
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Blanchard
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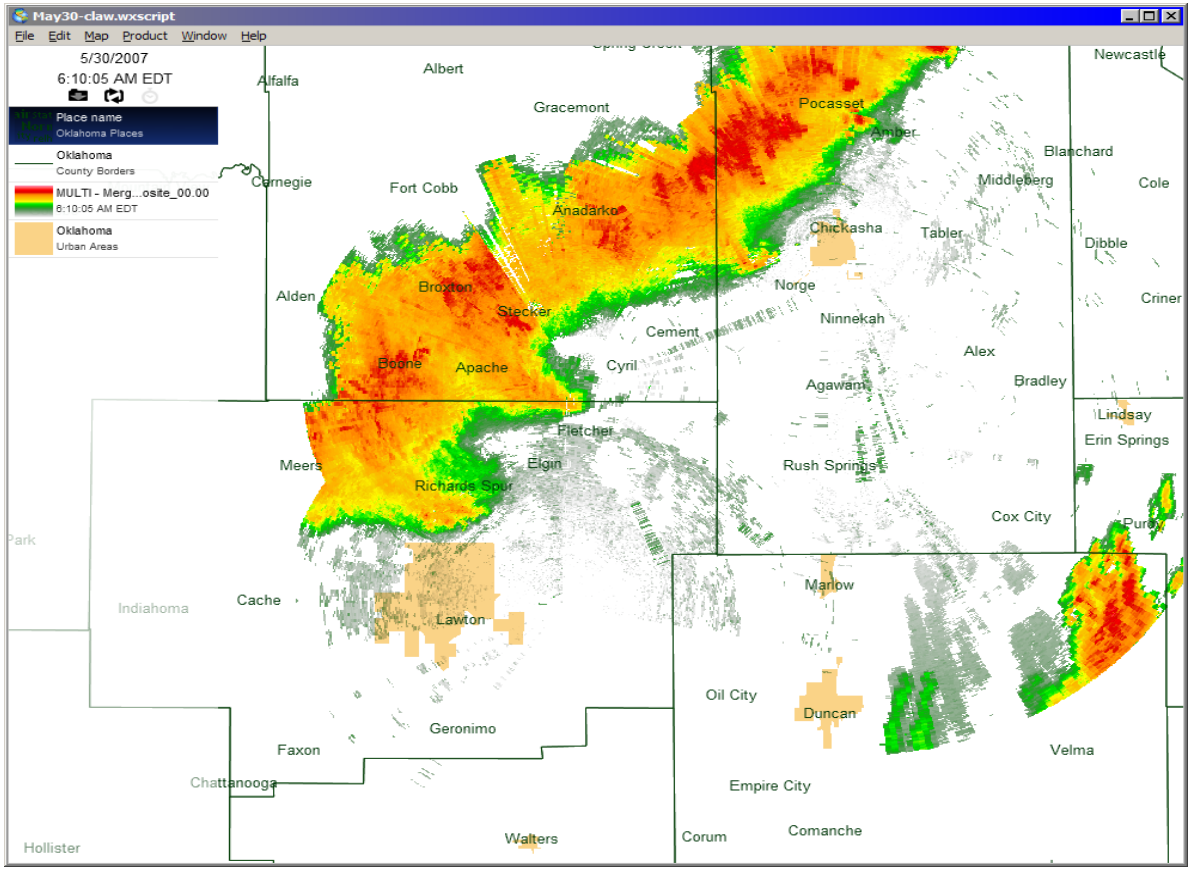
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County Borders
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Oklahoma
Urban Areas
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Albert
Gracemont
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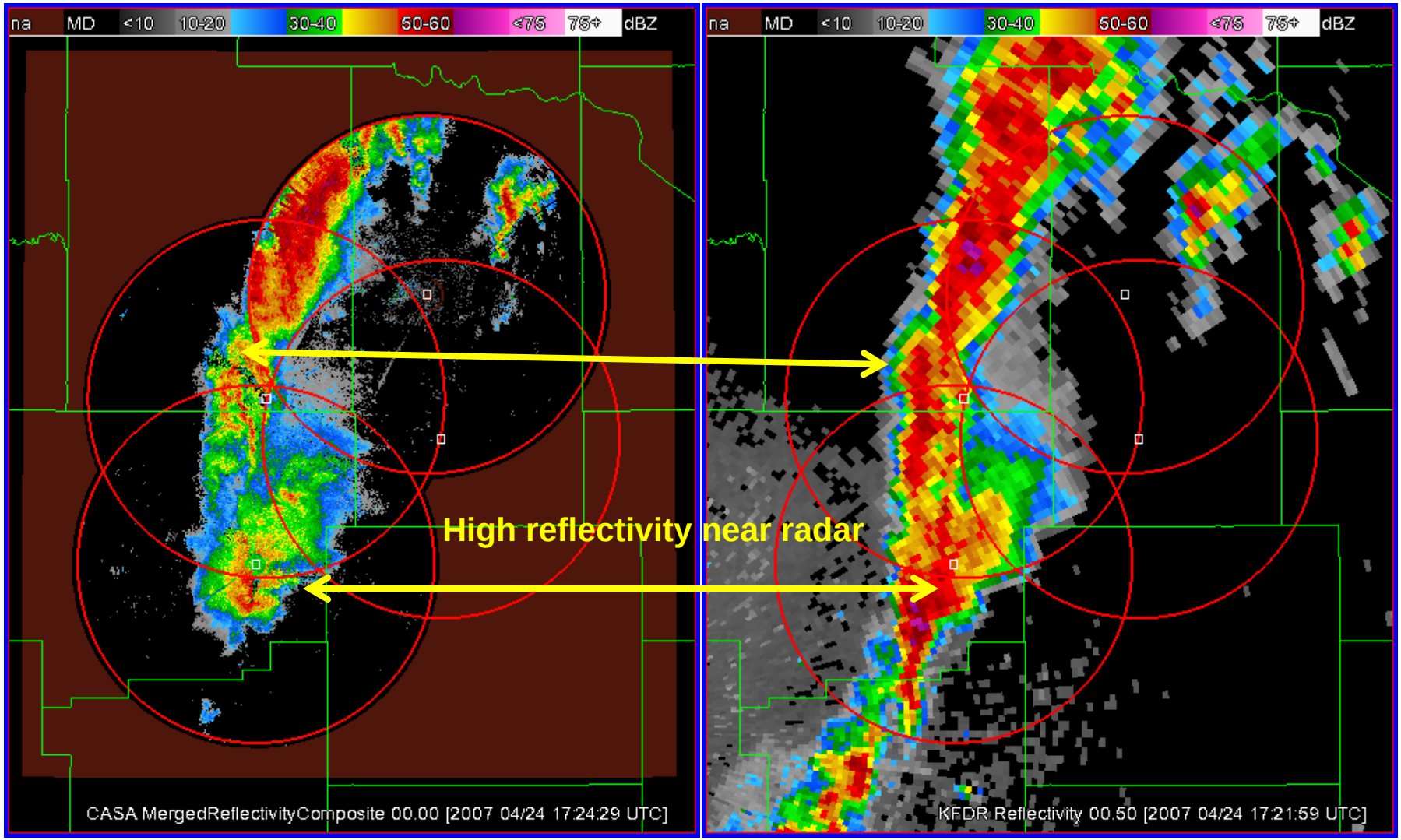
Attenuation with high reflectivity over radars



Ability to resolve 2D, 3D wind via multi-Doppler analysis.

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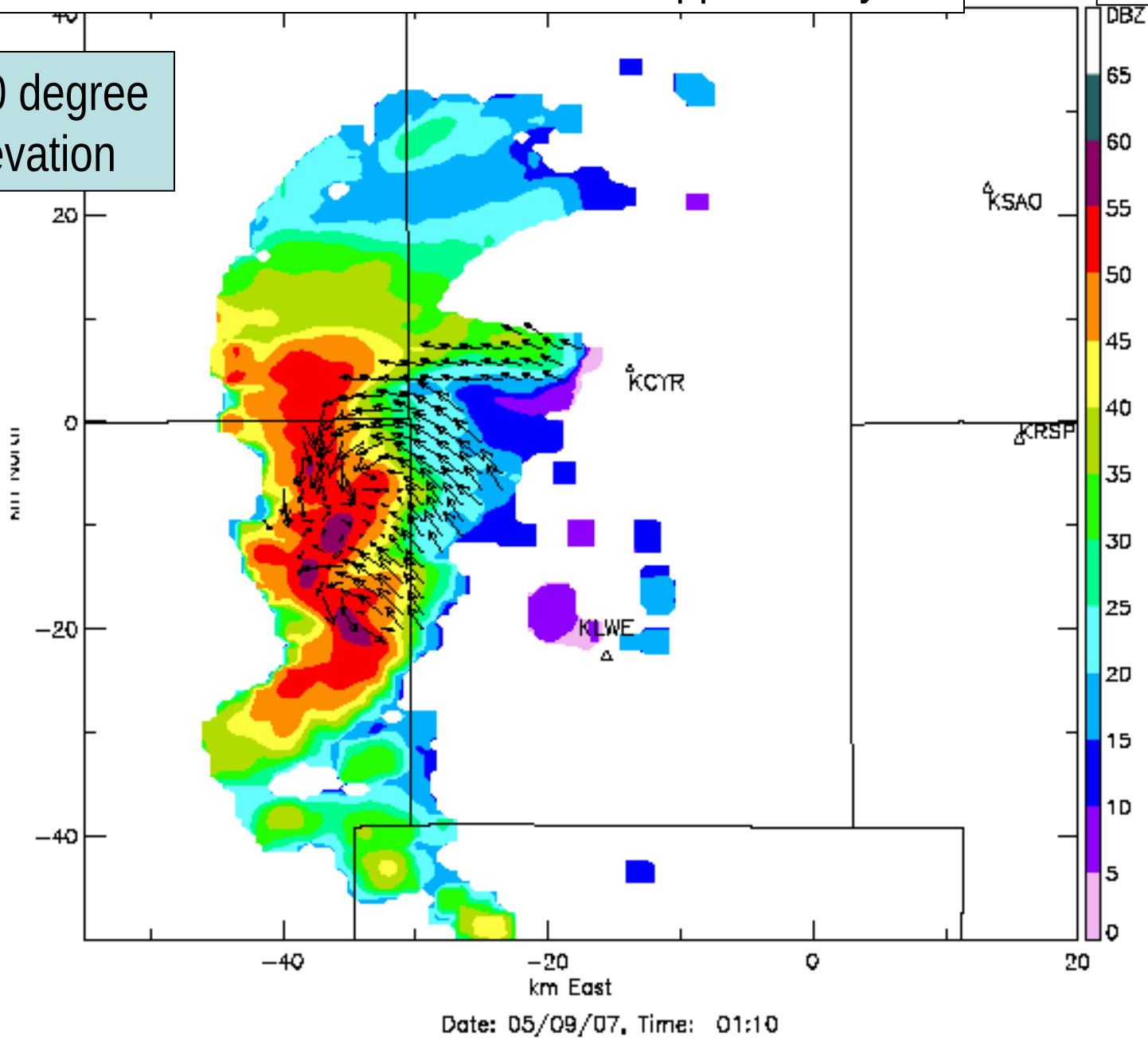
2.0 degree elevation



Ability to resolve 2D, 3D wind via multi-Doppler analysis.

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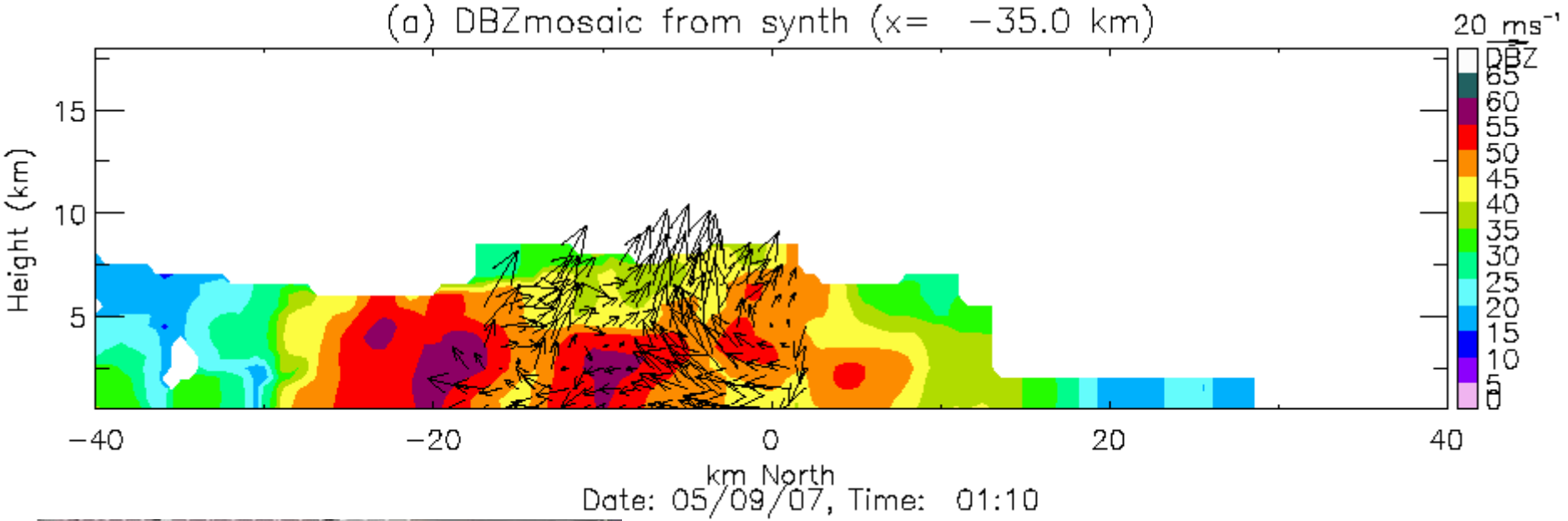
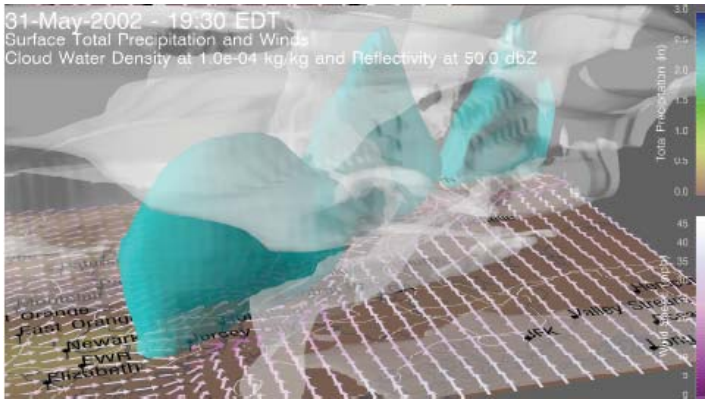
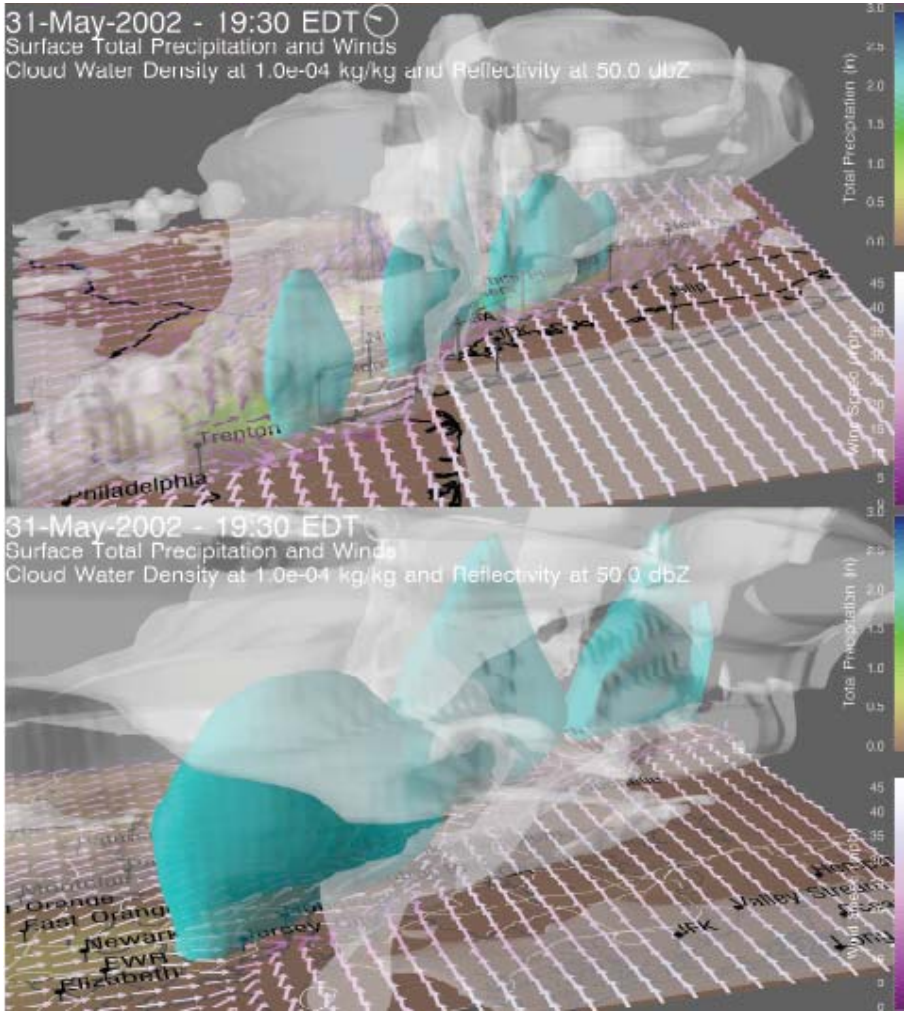




3-D Multi-Variable

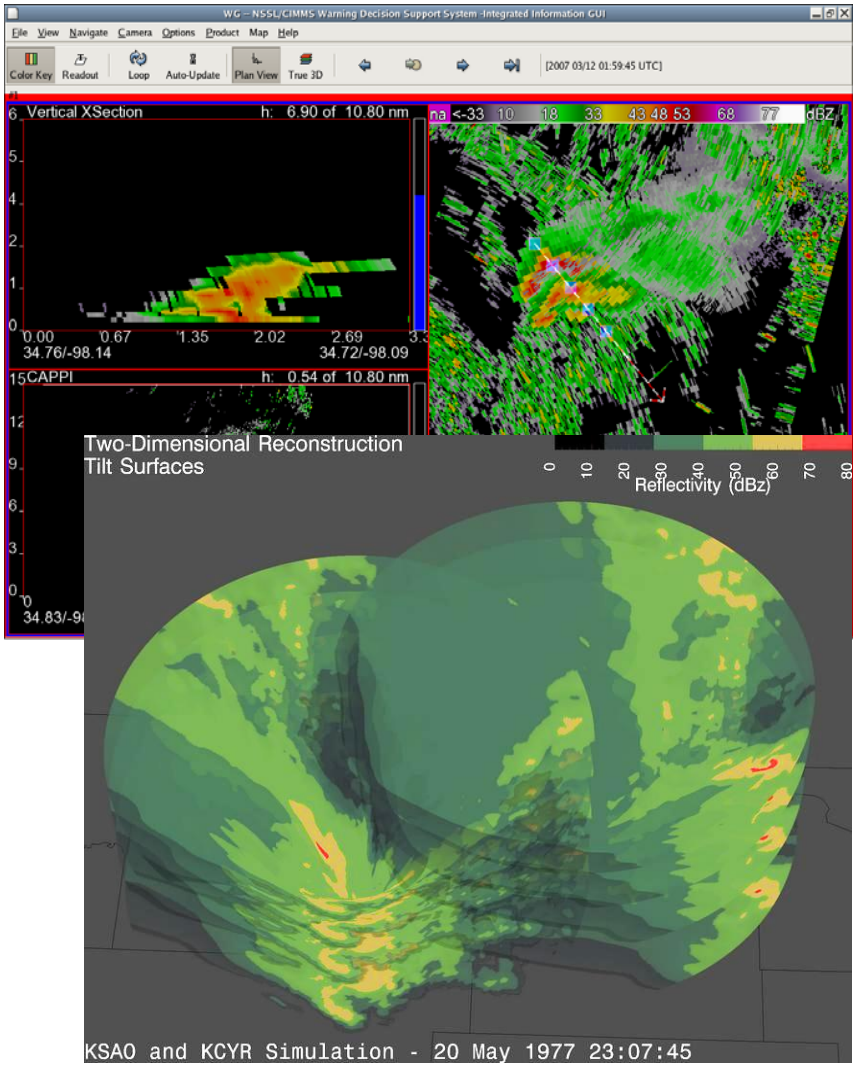
(based on IBM's Deep Thunder)

Visualization Research



3-D Multi-Variable
(based on IBM's Deep Thunder)

Vertical Cross Sections



Volume Rendering

If you live in the 4-node testbed in Oklahoma
See me after the presentation

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