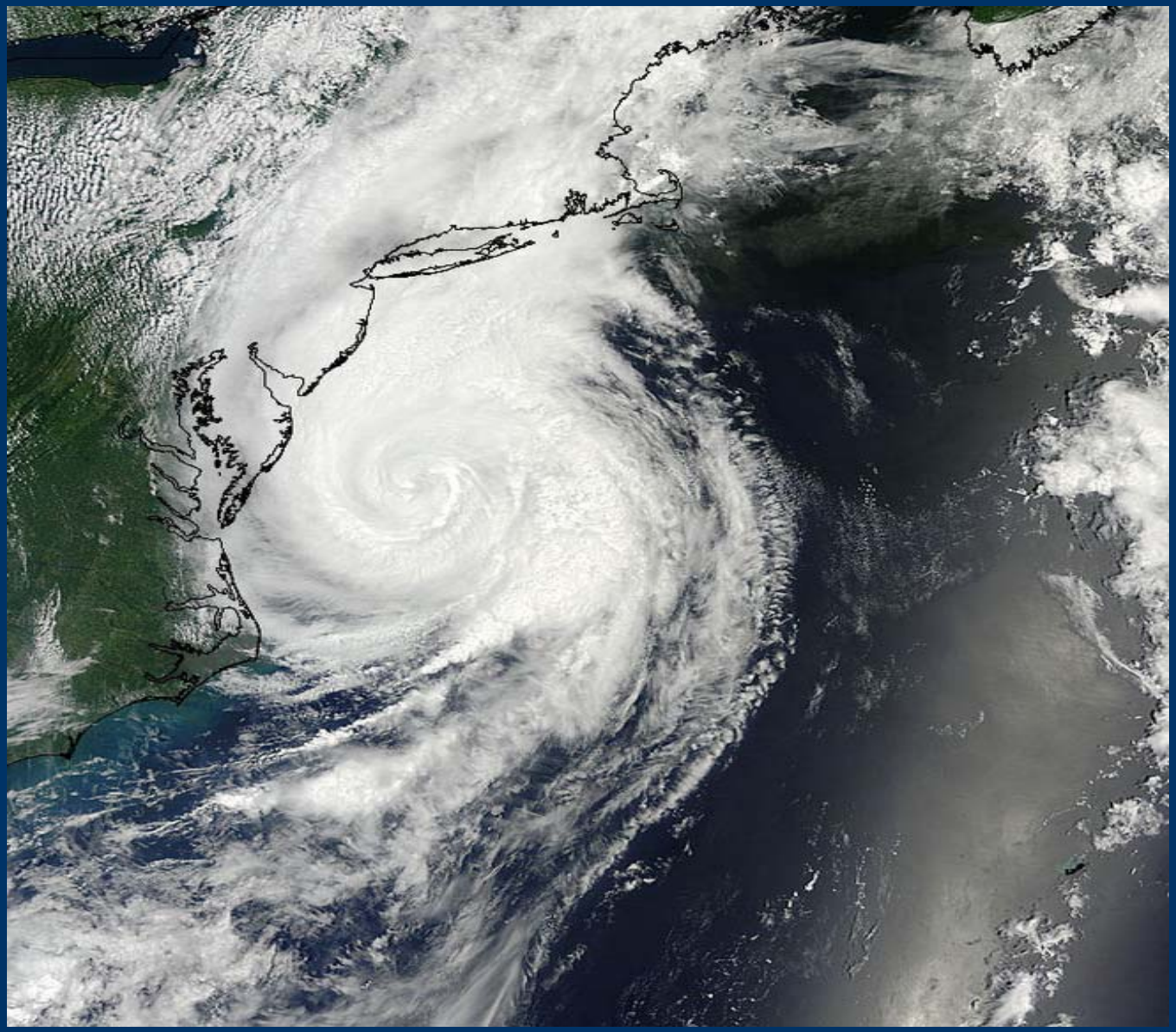
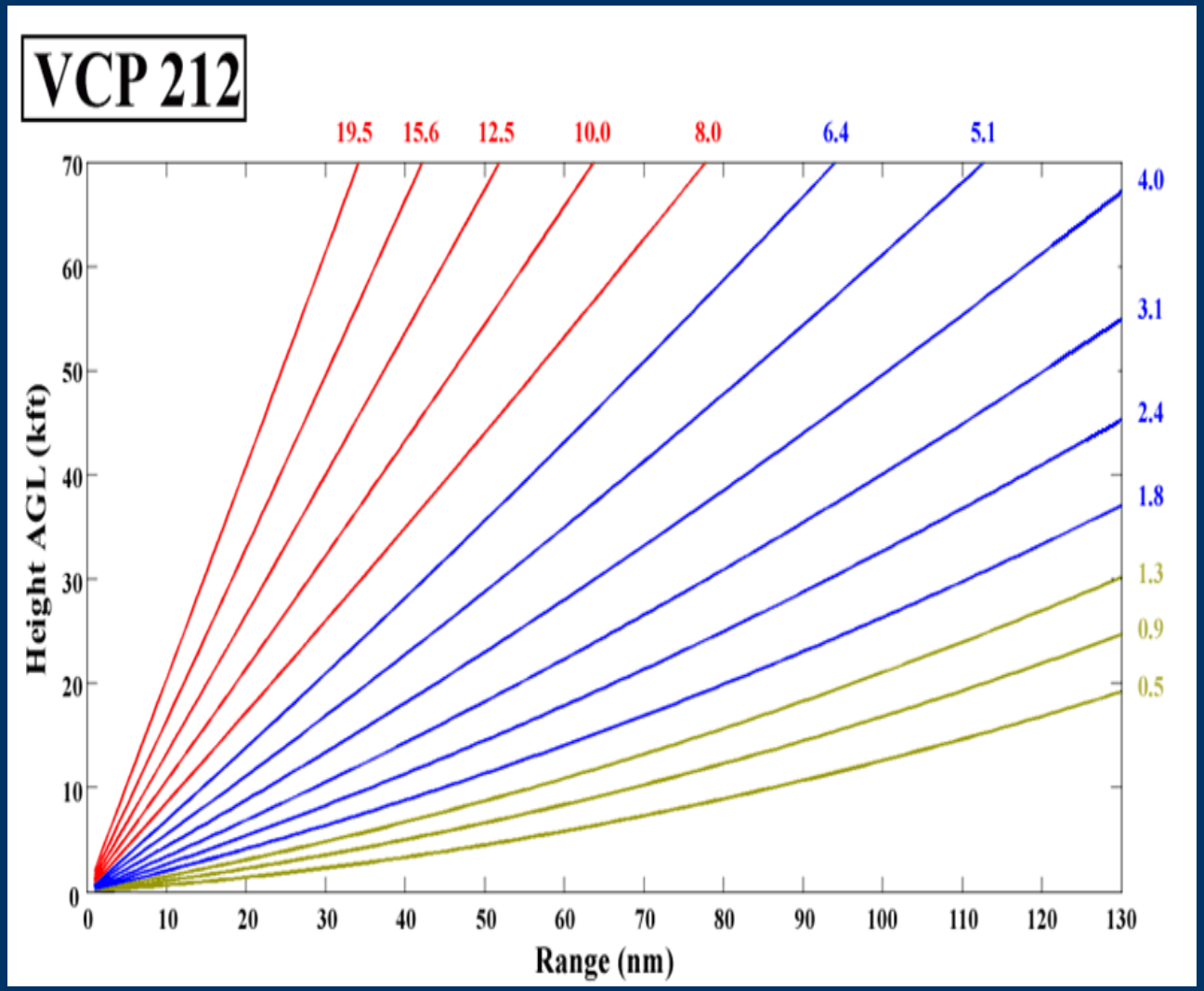
A Quick Radar Review



Darin J. Figurskey
Meteorologist-in-Charge
NOAA's National Weather Service
Raleigh, NC

Arthur, 7/4, 1120 AM
Image Courtesy of NASA



VCP 212

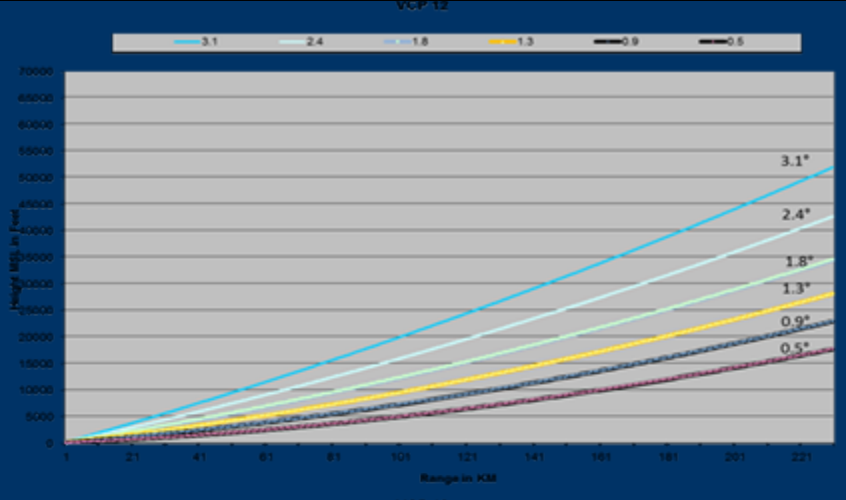
"VCP" means "volume coverage pattern"

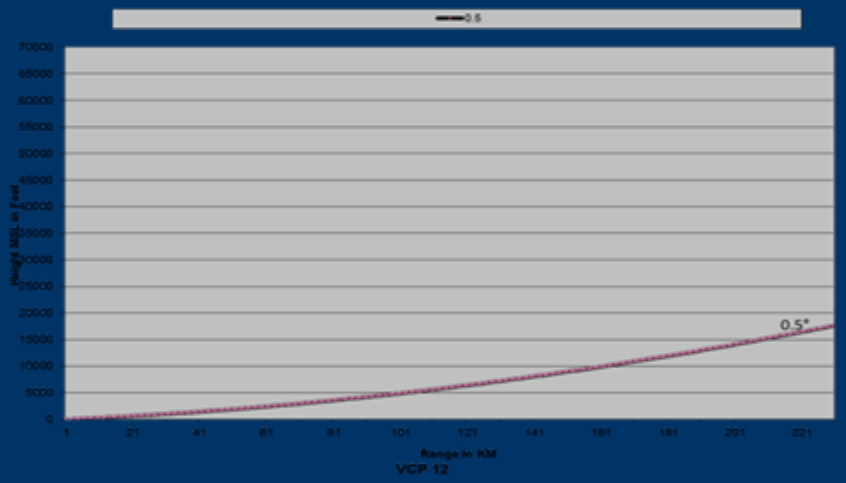
VCP 212 samples nine elevation angles in about 4 ½ minutes

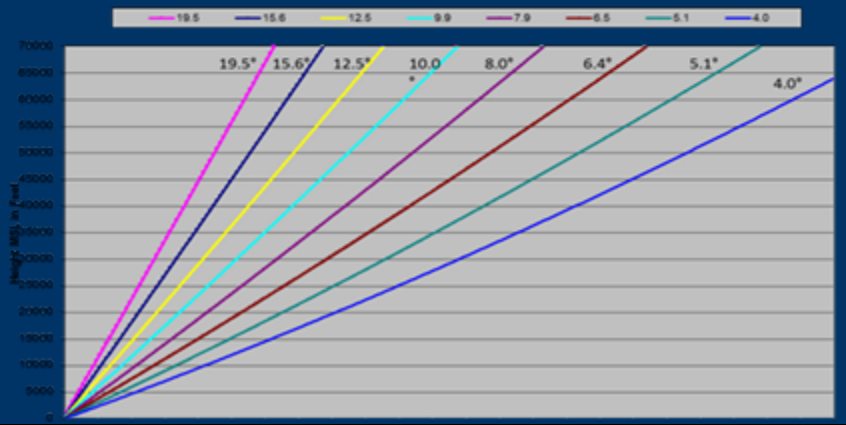
VCP 212 with SAILS: 5 min 10 sec
w/o SAILS: 4 min 30 sec

SAILS

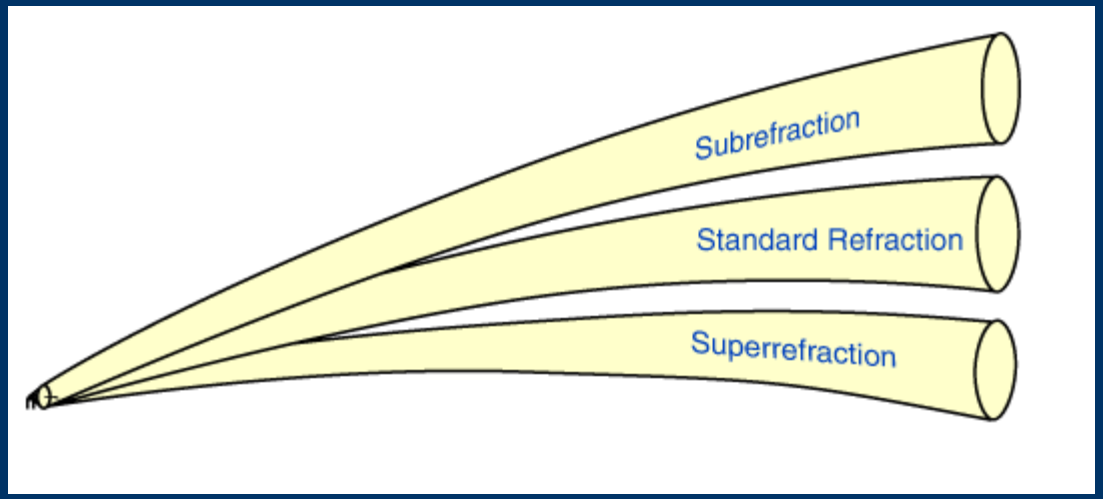
Supplemental Adaptive Intra-Volume Low-Level Scan



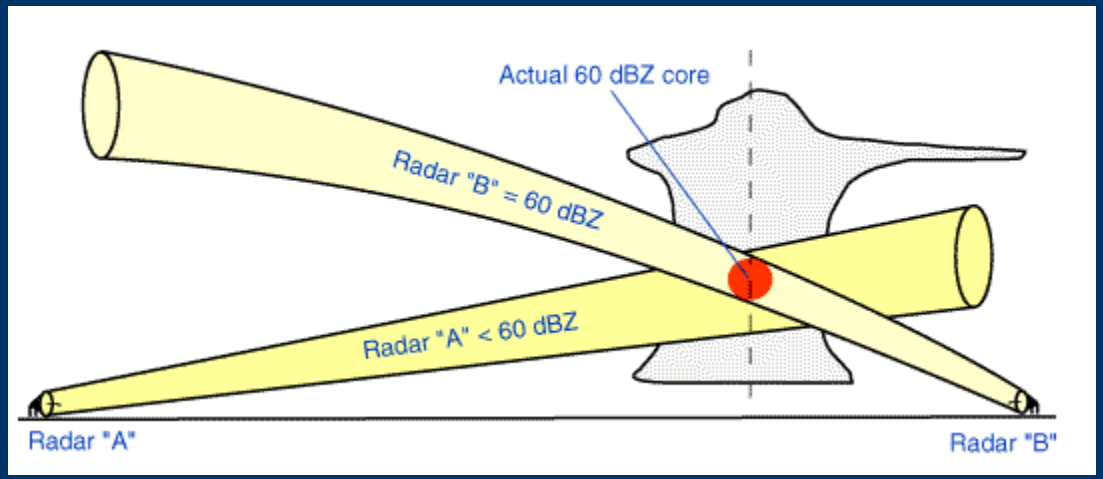




Variables

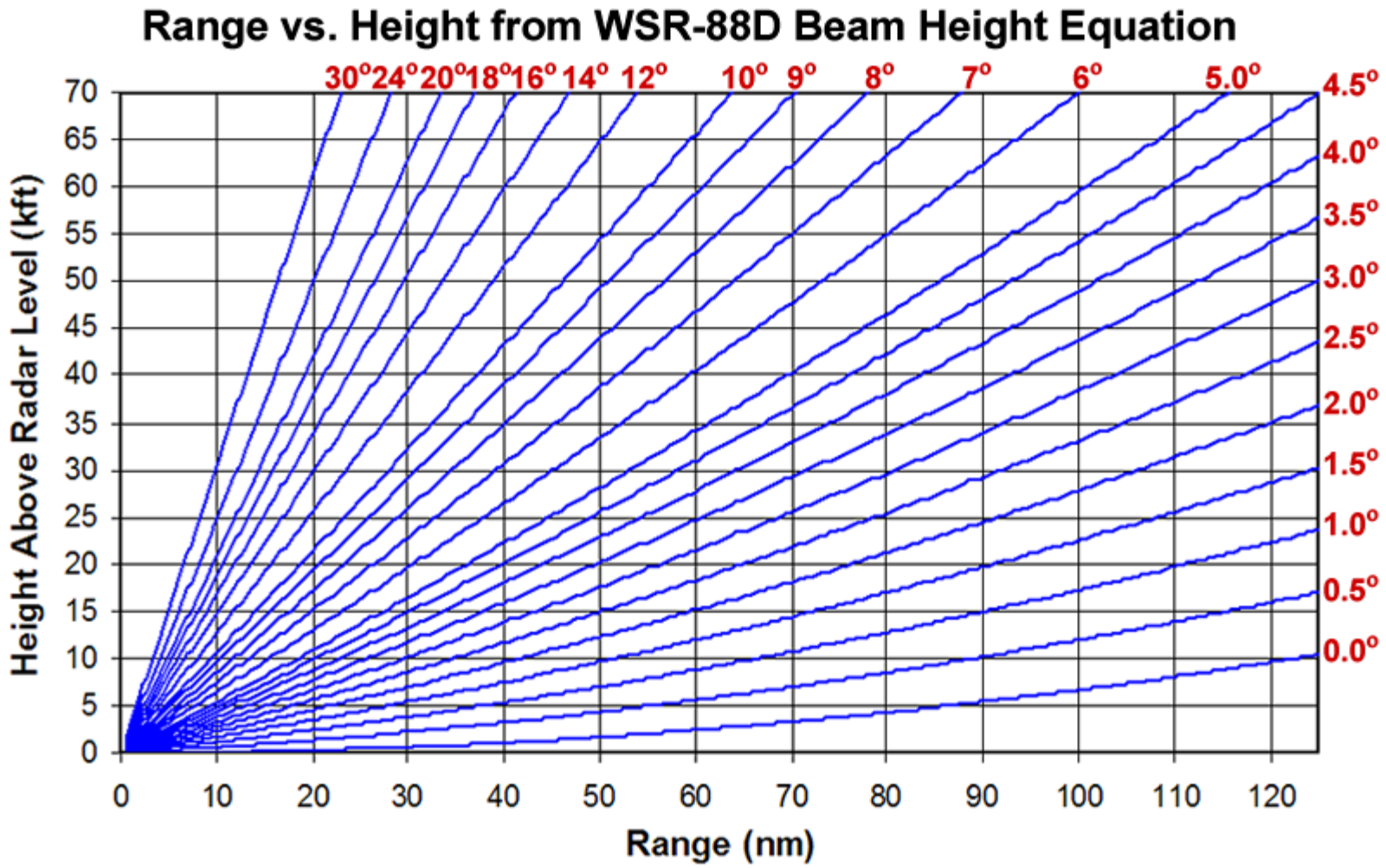


Beam propagation



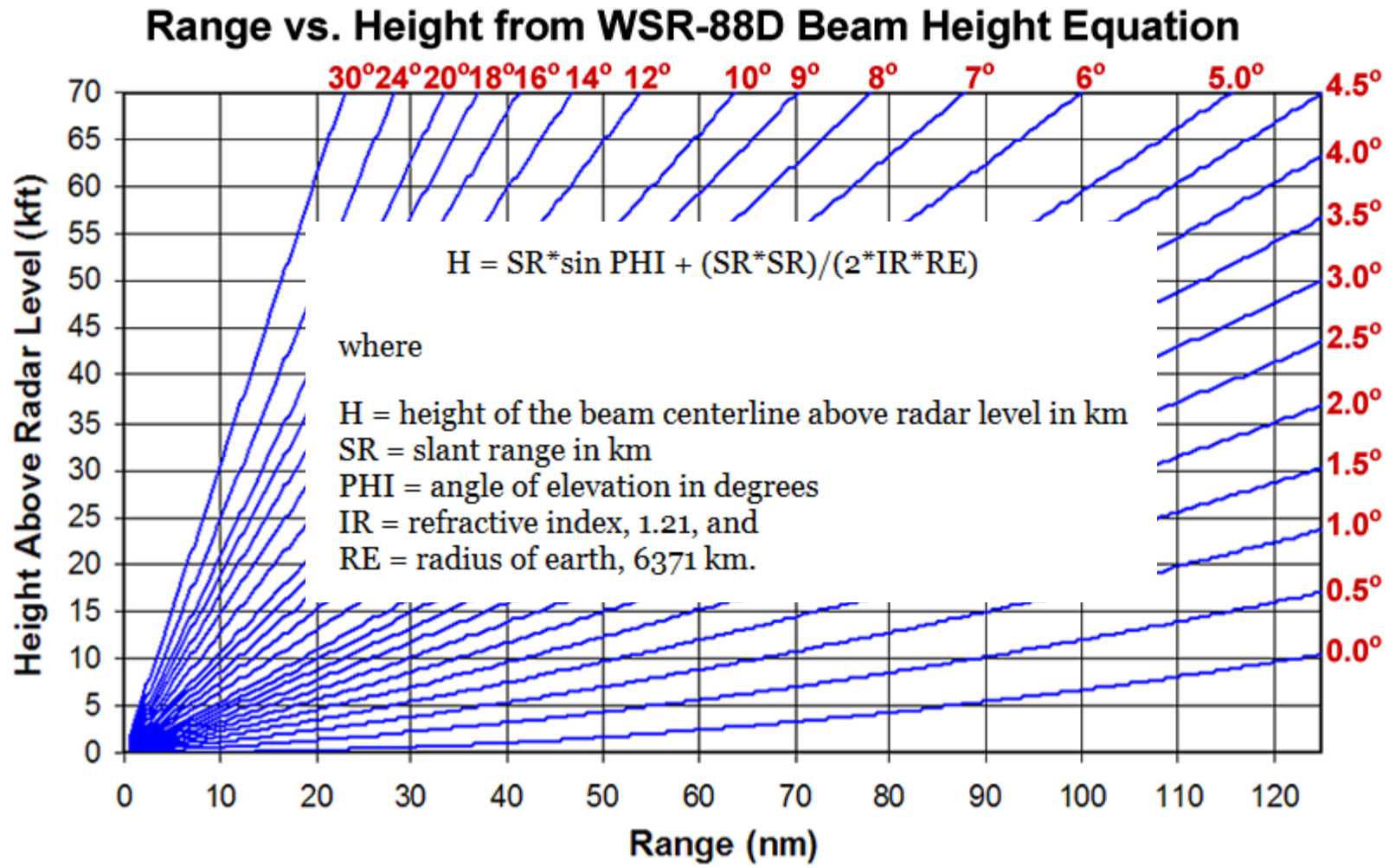
Incomplete beam filling

Variables



Beam height above ground in standard conditions

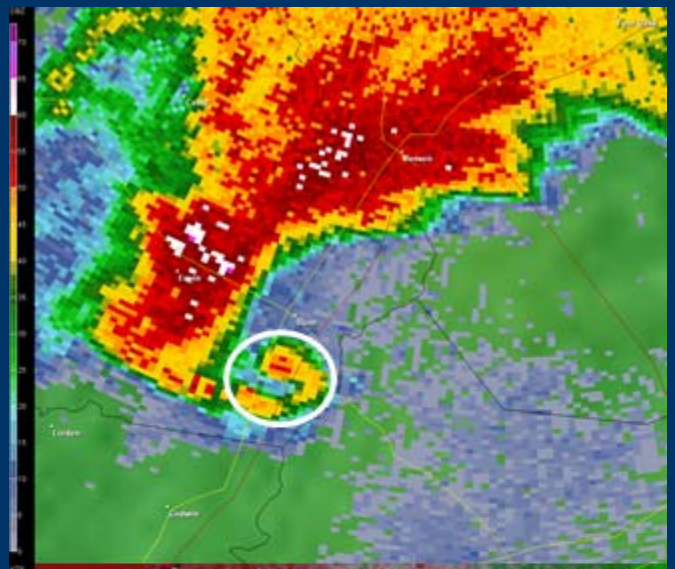
Variables

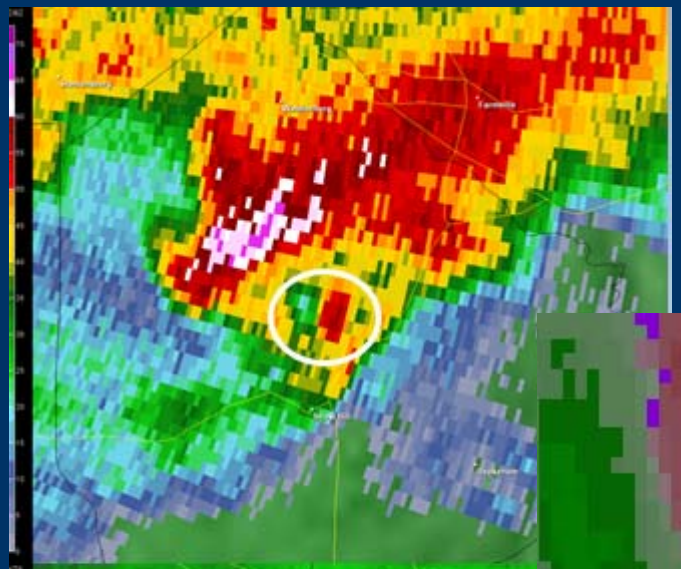


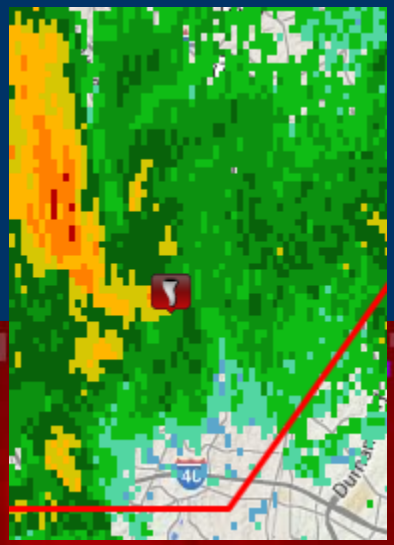
Beam height above ground in standard conditions

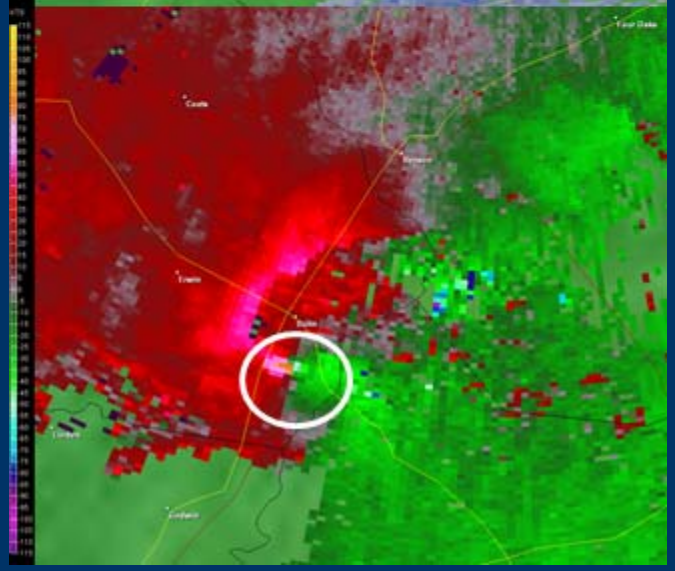
Hooks and Velocities

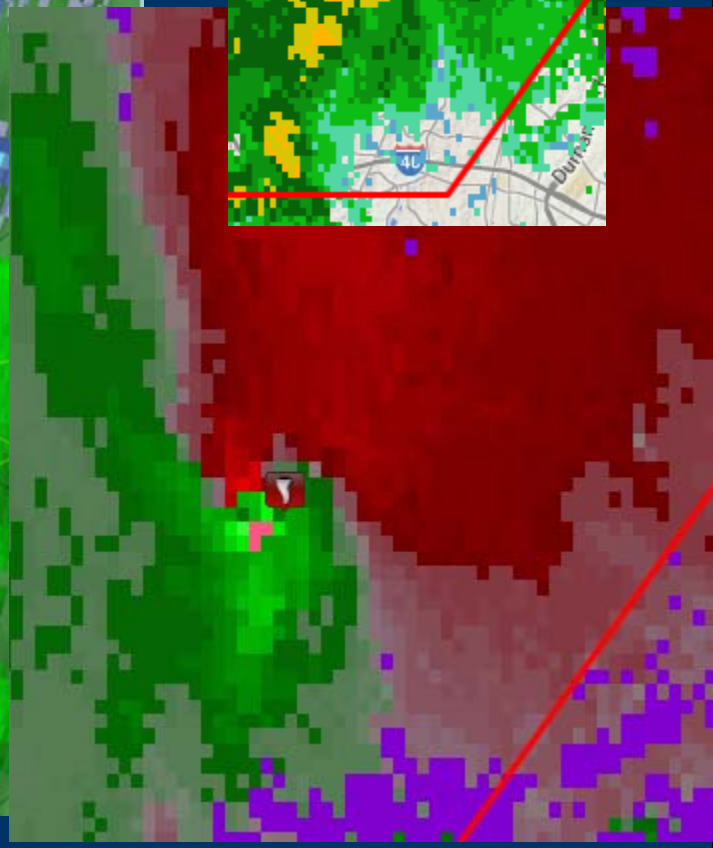
5/15/2014







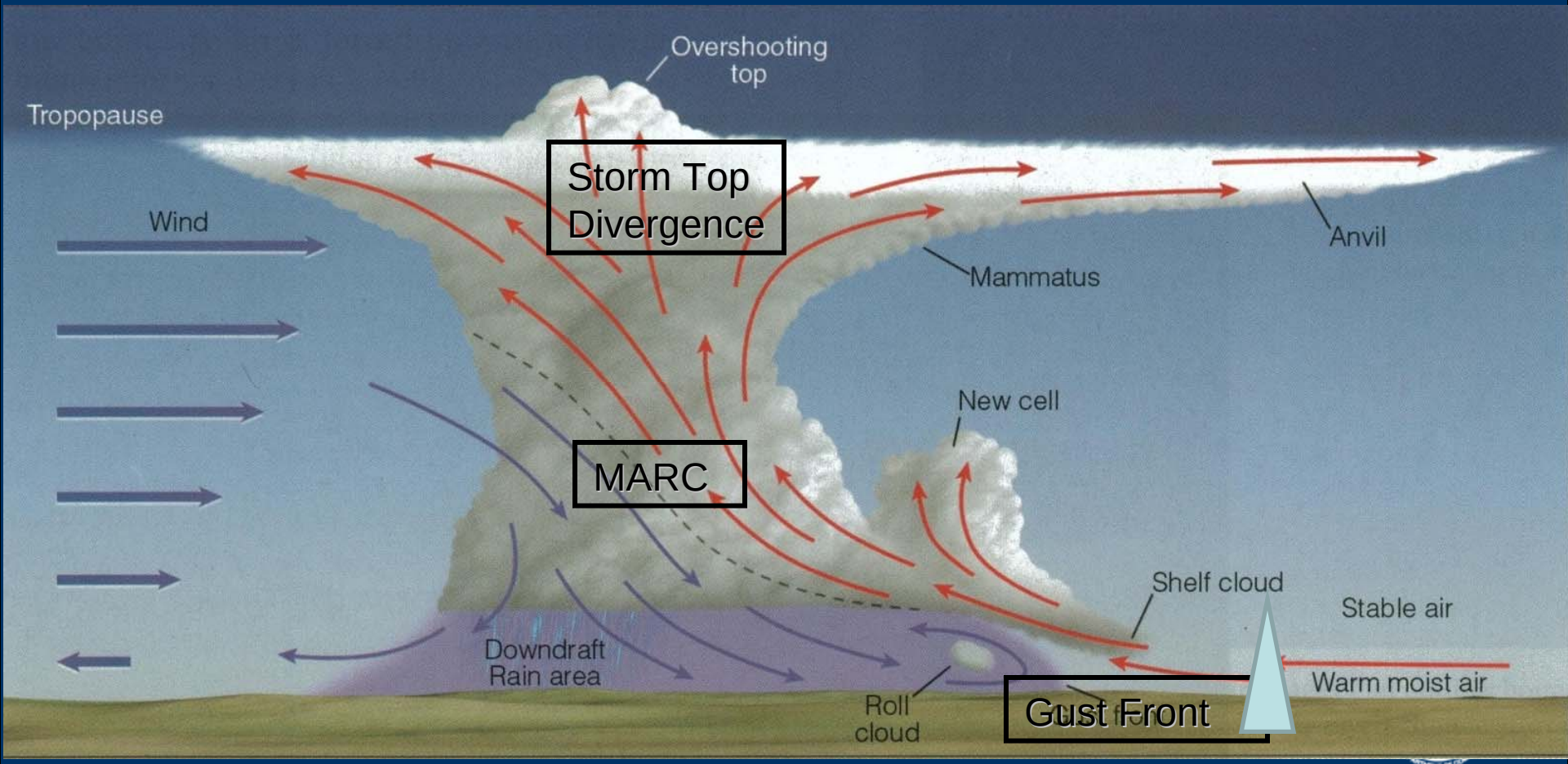




4/16/2011

4/16/2011

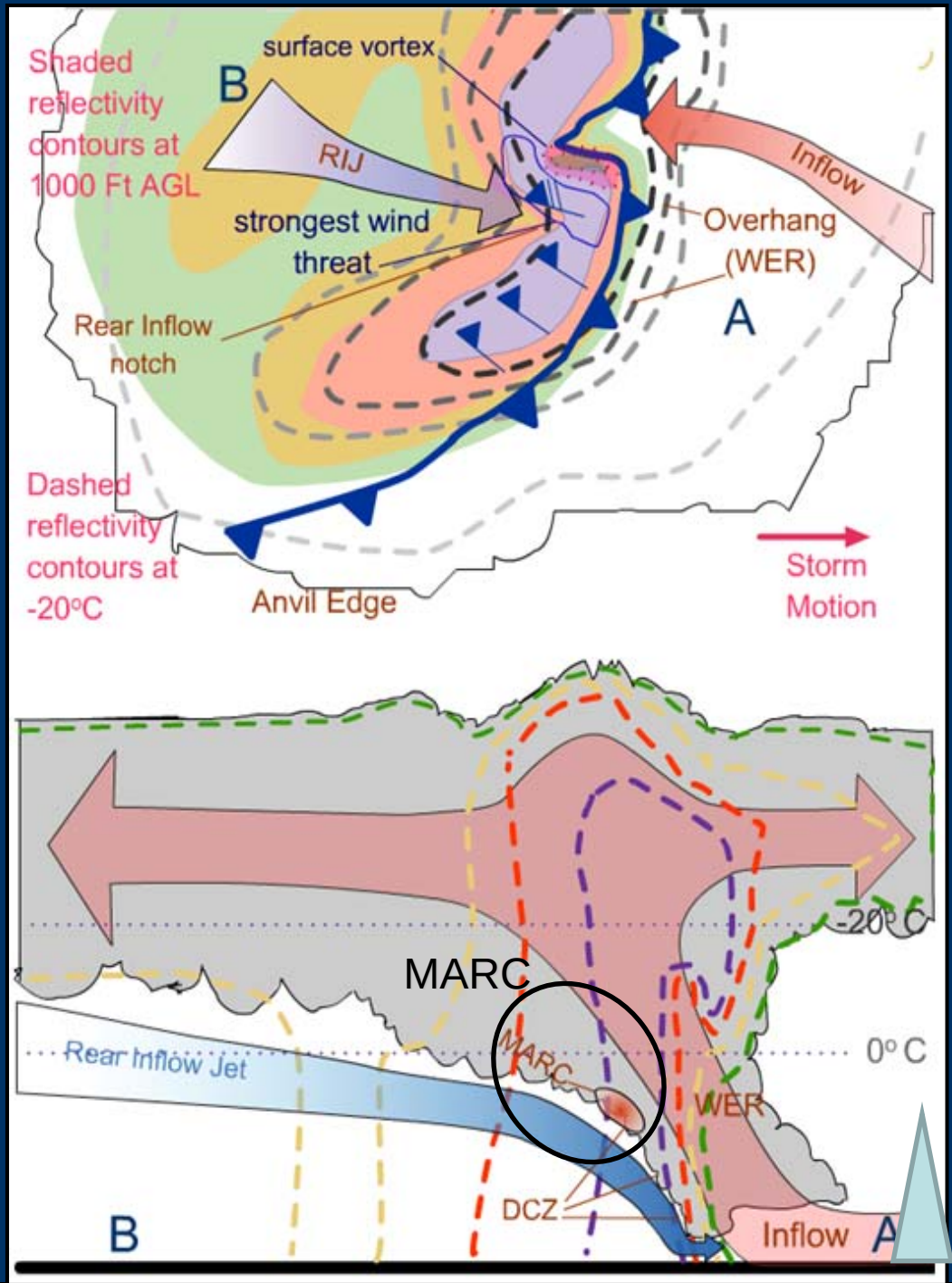
Example Radar Images for Selected Radar Warning Strategies

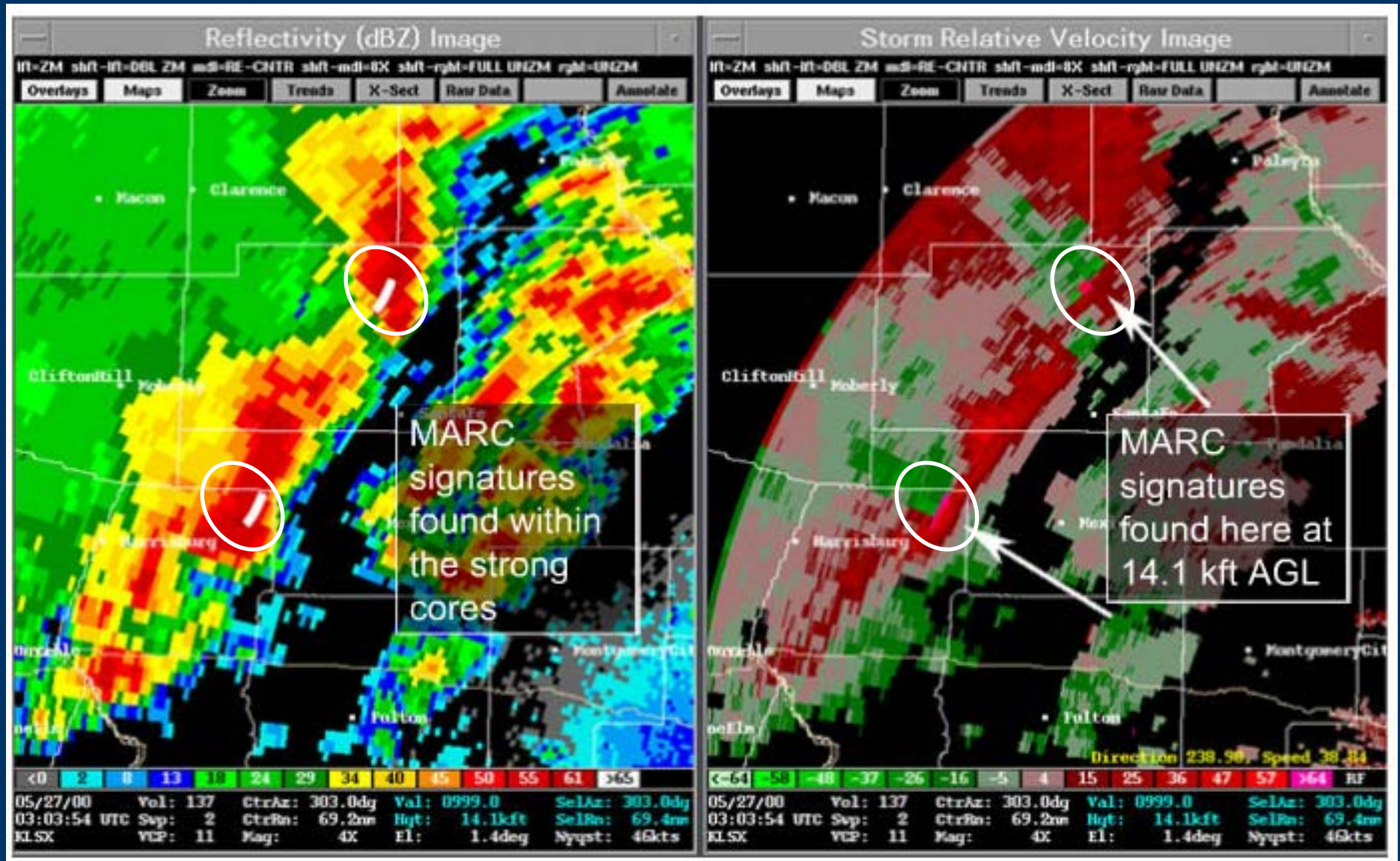


MARC

The mid-altitude radial convergence (MARC) velocity signature is defined as a localized zone of enhanced mid-level radial convergence. The MARC represents the interface between the front-to-rear ascending branch and rear-to-front or rear inflow jet.

- Used for linear features
- Found at mid levels 13-23kft
- Look for delta-V of 50 kts in a small region




Reflectivity (dBZ) Image
Overlays
Maps
Zoom
Trends
X-Sect
Raw Data
Annotate
Macon
Clarence
Clifton Hill
Moberly
Harrisburg
Fulton
MARC signatures found within the strong cores
05/27/00 03:03:54 UTC KLSX
Vol: 137 Swp: 2 VCP: 11
CtrAz: 303.0dg CtrRn: 69.2nm Mag: 4X
Val: 0999.0 Hgt: 14.1kft El: 1.4deg
SelAz: 303.0dg SelRn: 69.4nm Nyqst: 46kts
Storm Relative Velocity Image
MARC signatures found here at 14.1 kft AGL
Direction 238.90, Speed 38.84

Storm Top Divergence

The presence of strongly divergent flow at storm summit ([Vout] + [VIN] > 75 kts) indicates a strong updraft capable of producing severe hail.

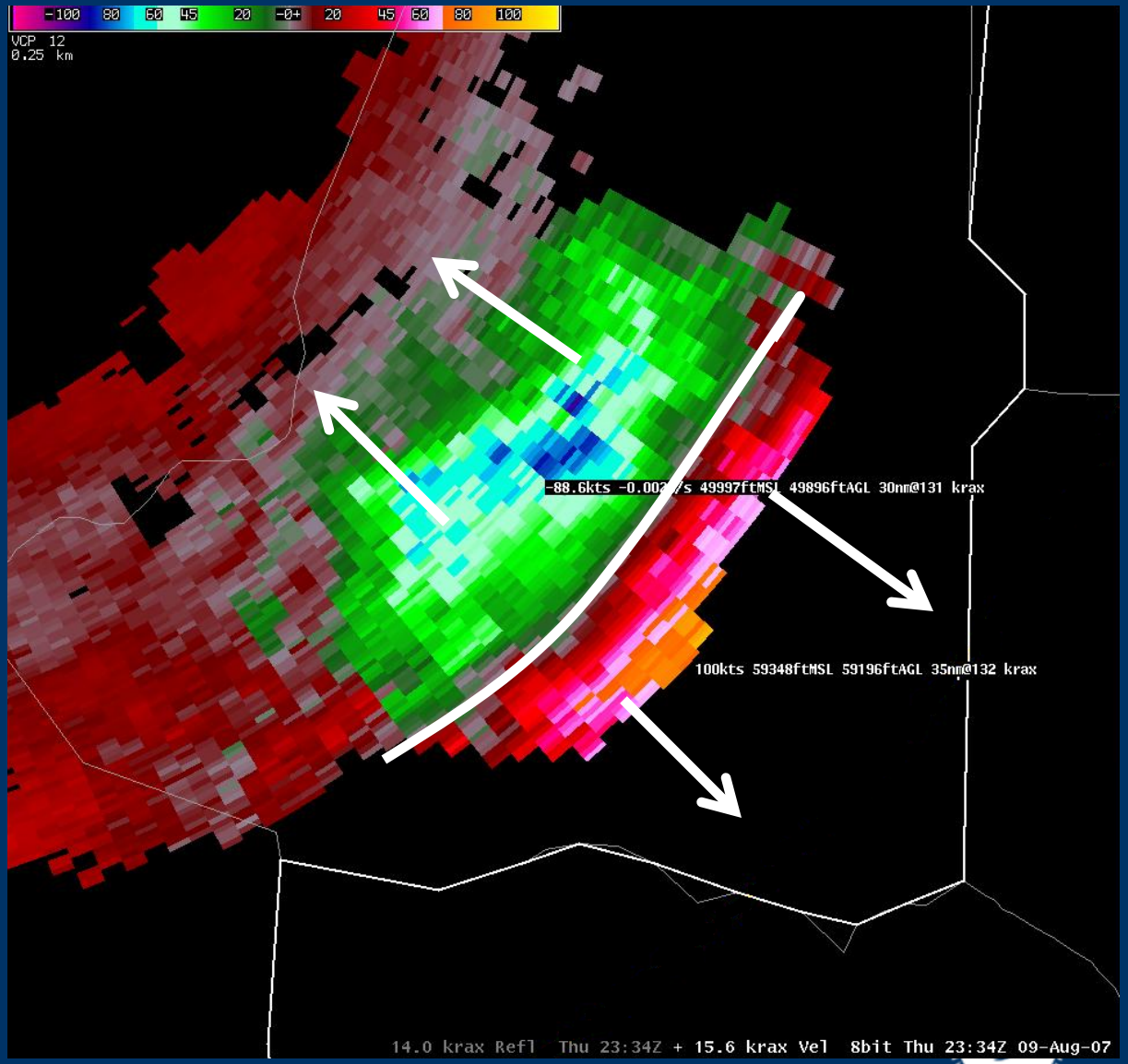
- Storm top divergence is simply the addition of the absolute value of the maximum inbound wind plus the maximum outbound wind at the top of the storm.
- Sampling data along the radial provides the best data.
- Use the chart to the right to estimate the hail size given the storm top divergence.

Storm-Top Divergence = |Vout| + |Vin|	
Velocity Difference (kts)	**Maximum Hail Size**
75 – 110 kt	Dime (> 0.75 in)
110 – 135 kt	Golf ball (1.75 in)
135 – 175 kt	Tennis Ball (2.50 in)
175 – 225 kt	Baseball (2.75 in)
> 225 kt	Softball (4.0+ in)

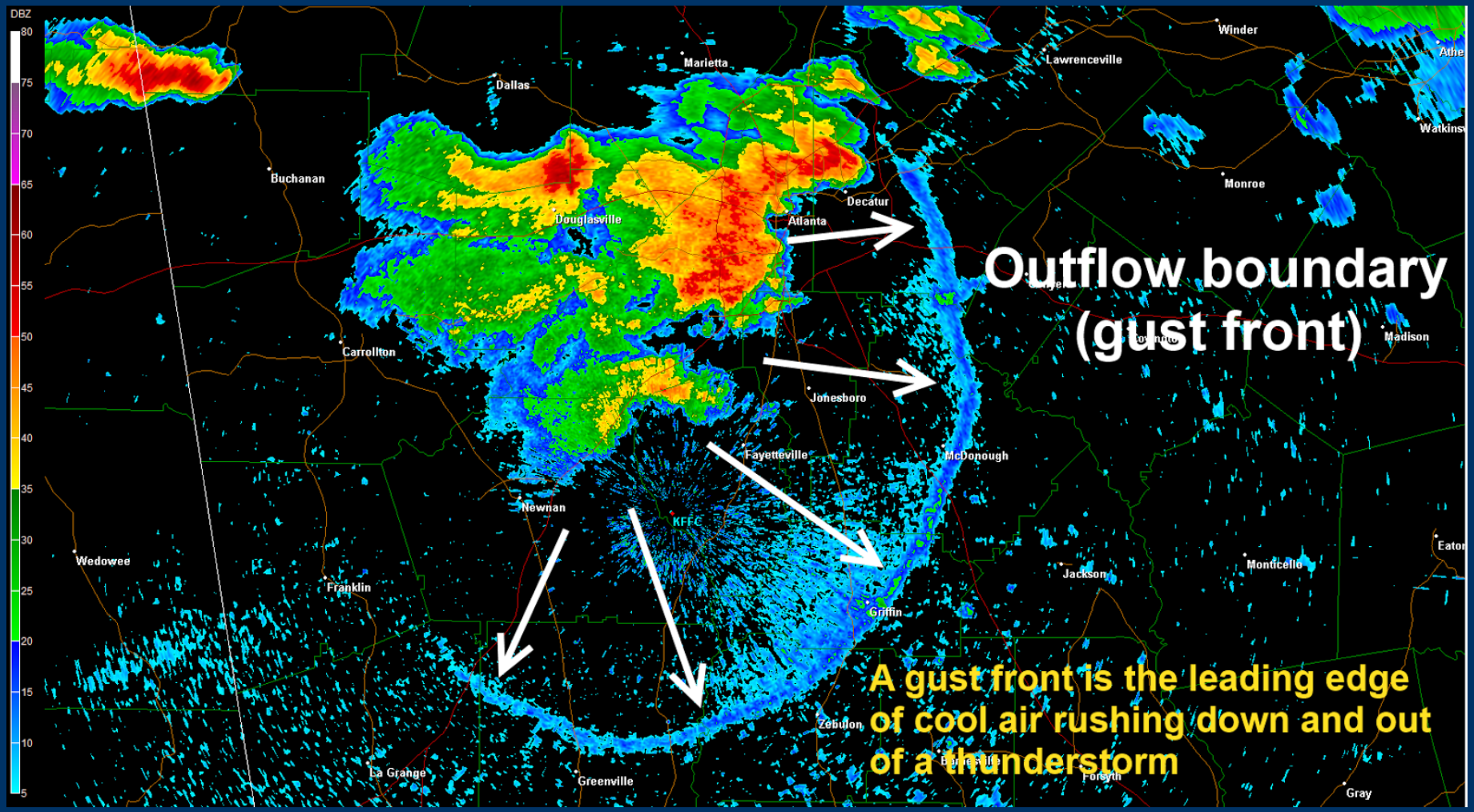
From Witt and Nelson, 1991

Storm Top Divergence Example

188 kts of storm-top divergence with 2 inch hail observed.



Gust Front Example



Odds and Ends

- **Barrett Smith is the newest senior forecaster at the NWS in Raleigh.**
- **A new "Recreational Forecast for Central NC Lakes" is issued each day at 4:50 am and pm, and is based on our regular public forecast.**
  - The morning issuance gives a detailed forecast for today/tomorrow, plus an extended outlook.
  - The afternoon issuance provides details for the following two days, plus the extended forecast.
  - Automated and not updated.
- **Thanks for all of the support!**

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RECREATIONAL FORECAST FOR CENTRAL NC LAKES
NATIONAL WEATHER SERVICE RALEIGH NC
450 AM EDT TUE JUL 8 2014

THIS FORECAST IS ISSUED EACH DAY IN THE EARLY MORNING AND LATE
AFTERNOON FROM MARCH THROUGH OCTOBER... AND IS NOT UPDATED.
PLEASE CHECK THE LATEST FORECASTS VIA NOAA WEATHER RADIO OR
WEATHER.GOV/RALEIGH FOR THE LATEST WATCHES... WARNINGS... AND
ADVISORIES.


NCZ038-090600-
HIGH ROCK LAKE NC-
450 AM EDT TUE JUL 8 2014

...HIGH ROCK LAKE NC...

.TODAY...
MAX TEMPERATURE...IN THE LOWER 90S.
MIN TEMPERATURE...IN THE LOWER 70S.
MINIMUM HUMIDITY...35 TO 45 PERCENT.
WIND...SOUTHWEST 5 TO 10 KNOTS. LIGHT CHOP EXPECTED.
PRECIPITATION...SLIGHT CHANCE OF THUNDERSTORMS.
LIGHTNING...ISOLATED.

.WEDNESDAY...
MAX TEMPERATURE...IN THE LOWER 90S.
MIN TEMPERATURE...IN THE UPPER 60S.
MINIMUM HUMIDITY...45 TO 55 PERCENT.
WIND...NORTH UP TO 5 KNOTS. WATERS GENERALLY SMOOTH.
PRECIPITATION...SCATTERED THUNDERSTORMS.
LIGHTNING...SCATTERED.


.EXTENDED...
.THURSDAY...MOSTLY CLOUDY. SCATTERED THUNDERSTORMS. LOWS IN THE
UPPER 60S. HIGHS IN THE UPPER 80S.
.FRIDAY...PARTLY CLOUDY. CHANCE OF THUNDERSTORMS. LOWS IN THE UPPER
60S. HIGHS IN THE UPPER 80S.

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