

The Multi-Year Reanalysis of Remotely Sensed Storms (MYRORSS) Project

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What is MYRORSS?

- A joint effort between the National Severe Storms Laboratory (NSSL) and National Climatic Data Center (NCDC)
- WSR-88D data will be processed through NSSL's Warning Decision Support System—Integrated Information (WDSS-II)
- Paired with RUC model analyses, multi-radar multi-sensor (MRMS) grids of different reflectivity, reflectivity-derived and Doppler velocity-derived fields will be produced
- Two primary datasets will be produced: a severe weather dataset (**MYRORSS**) and a hydrometeorological (**HYDRO**) dataset
- These datasets will help fill the need for a high quality, high resolution, common reference dataset for severe weather and quantitative precipitation estimation (QPE)

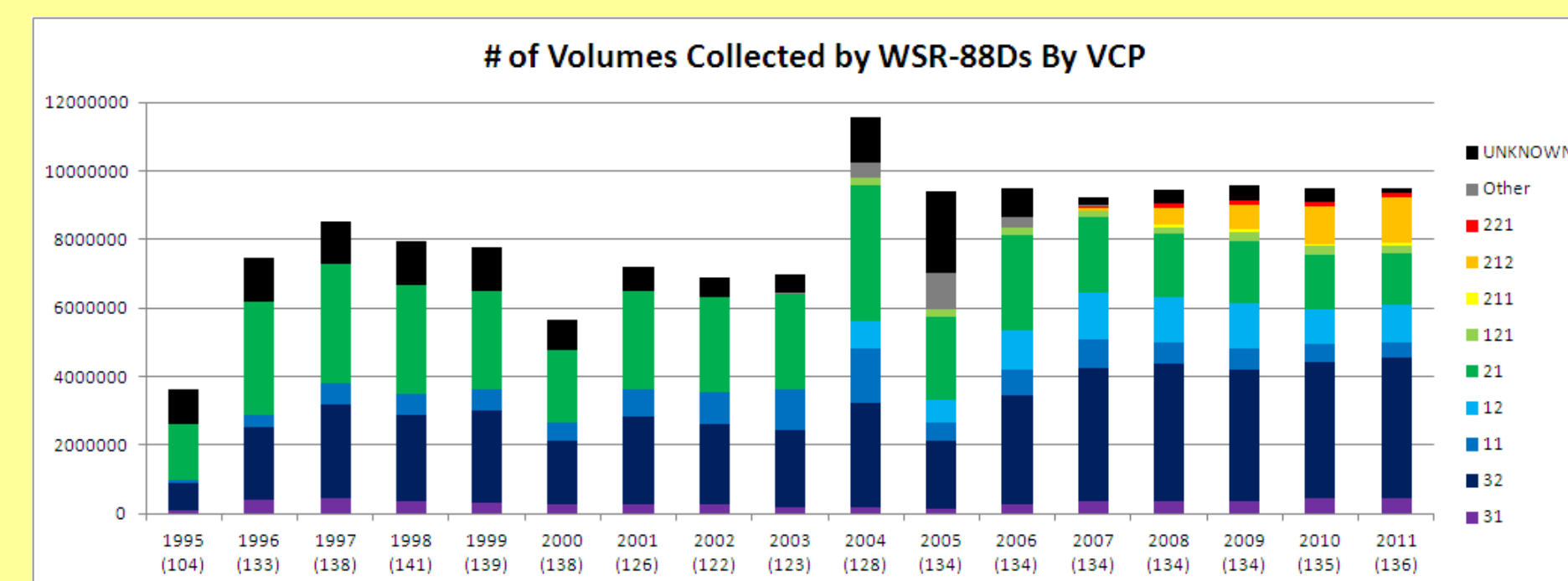
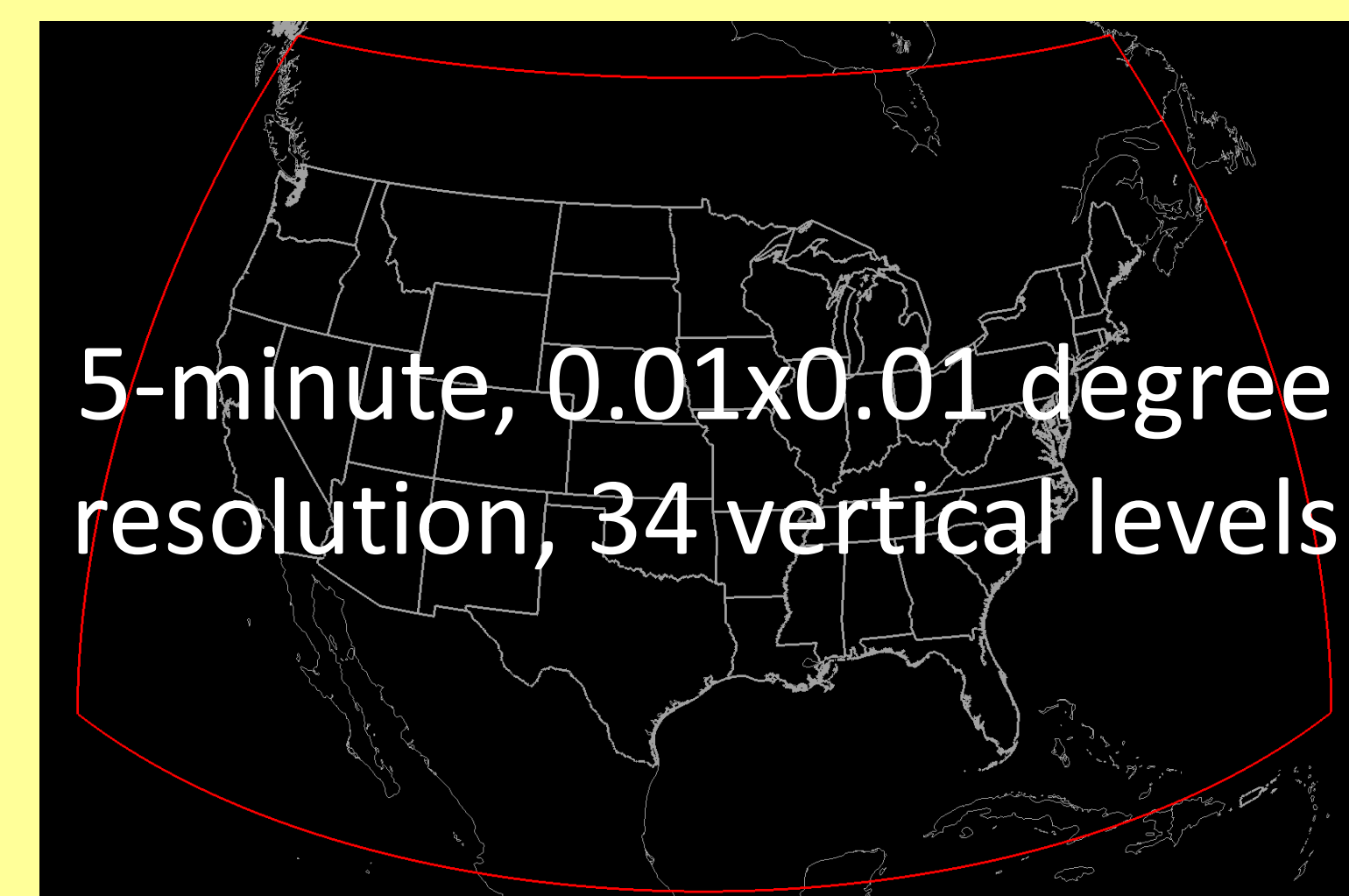
Product Lists

MYRORSS

- Reflectivity
- Reflectivity Composite
- Reflectivity at: lowest altitude, 0 C, -10 C, -20 C
- Low Level Shear
- Mid Level Shear
- Severe Hail Index
- Max. Expected Size of Hail
- Vertically Integrated Liquid
- 18 and 50 dBZ Echo Tops

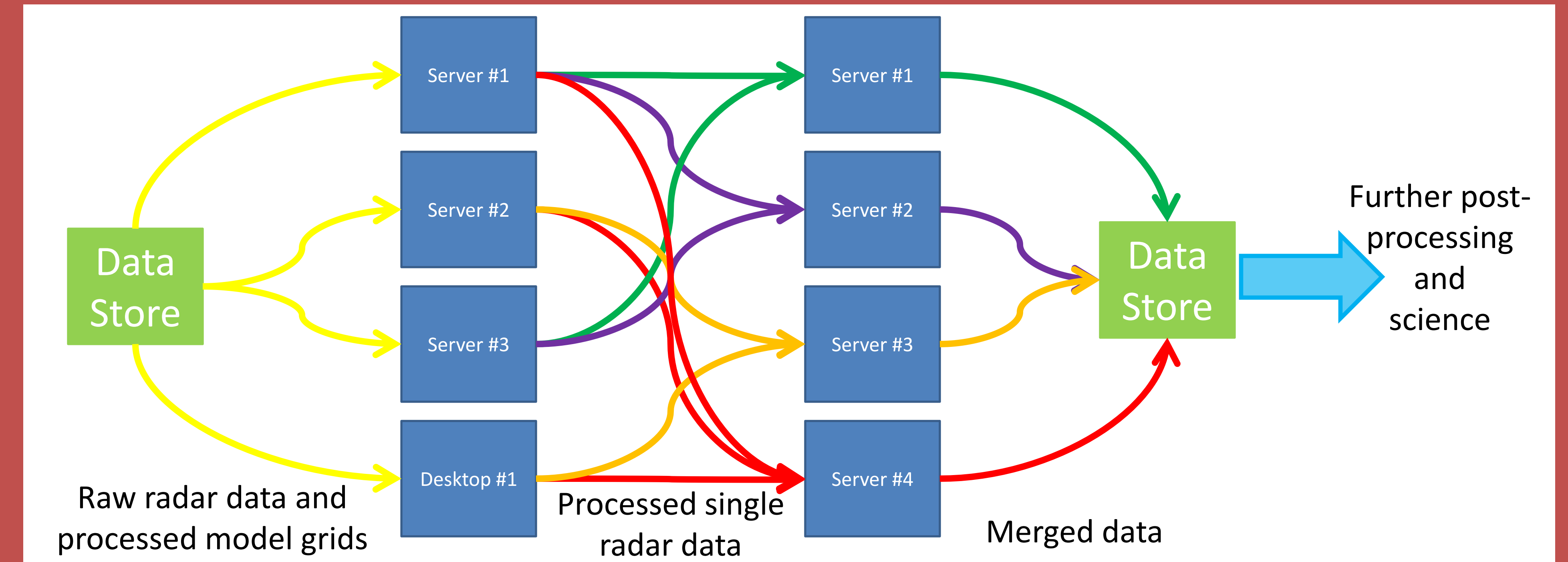
HYDRO

- Precipitation type
- Precipitation rate
- Quality field
- Gauge-corrected QPE



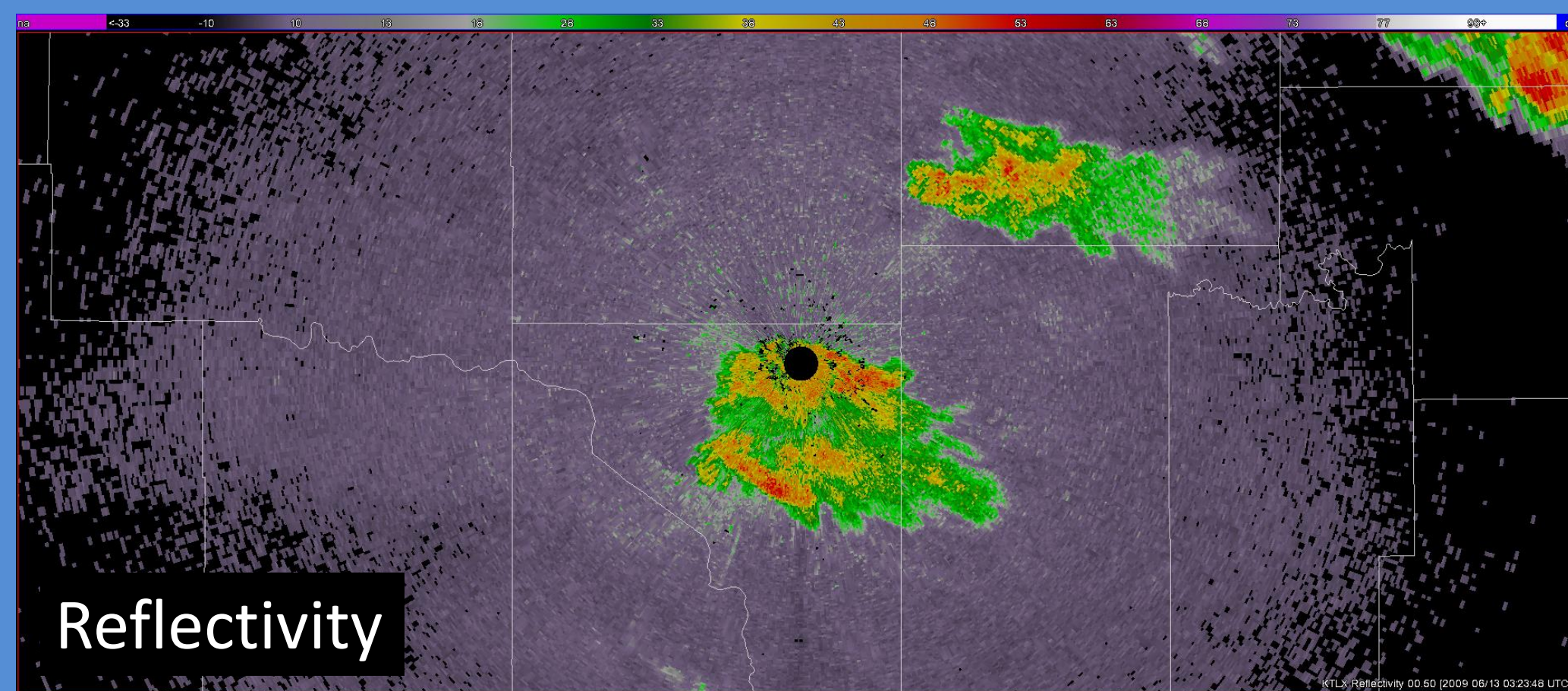
Processing has begun with data from 2008. The goal is to process the entire WSR-88D archive for CONUS radars which is nearly 140 million volume scans.

Processing Technical Details

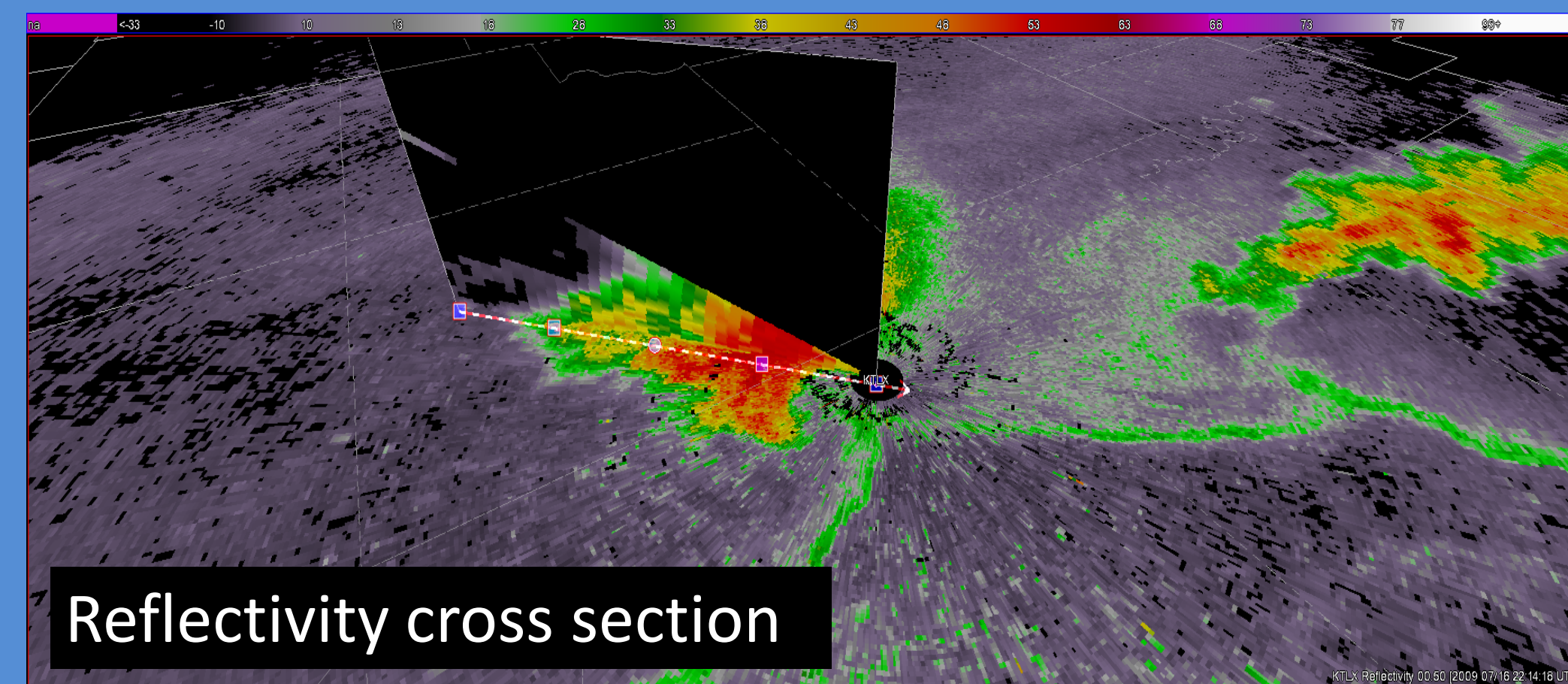


The processing uses a distributed computing strategy. The major limiting factor in processing speed is I/O read and write times. The system at NSSL uses 25 computers, 20 of which are servers capable of the CONUS-wide mergers. For legacy resolution radar data, it is estimated that 1 year of data can be processed in 1 month. For super-res radar data, it is estimated that 1 year of the data can be processed within 2 months. Errors are tracked and corrected as they are encountered. Most errors are due to corrupted data within the WSR-88D database hosted at NCDC.

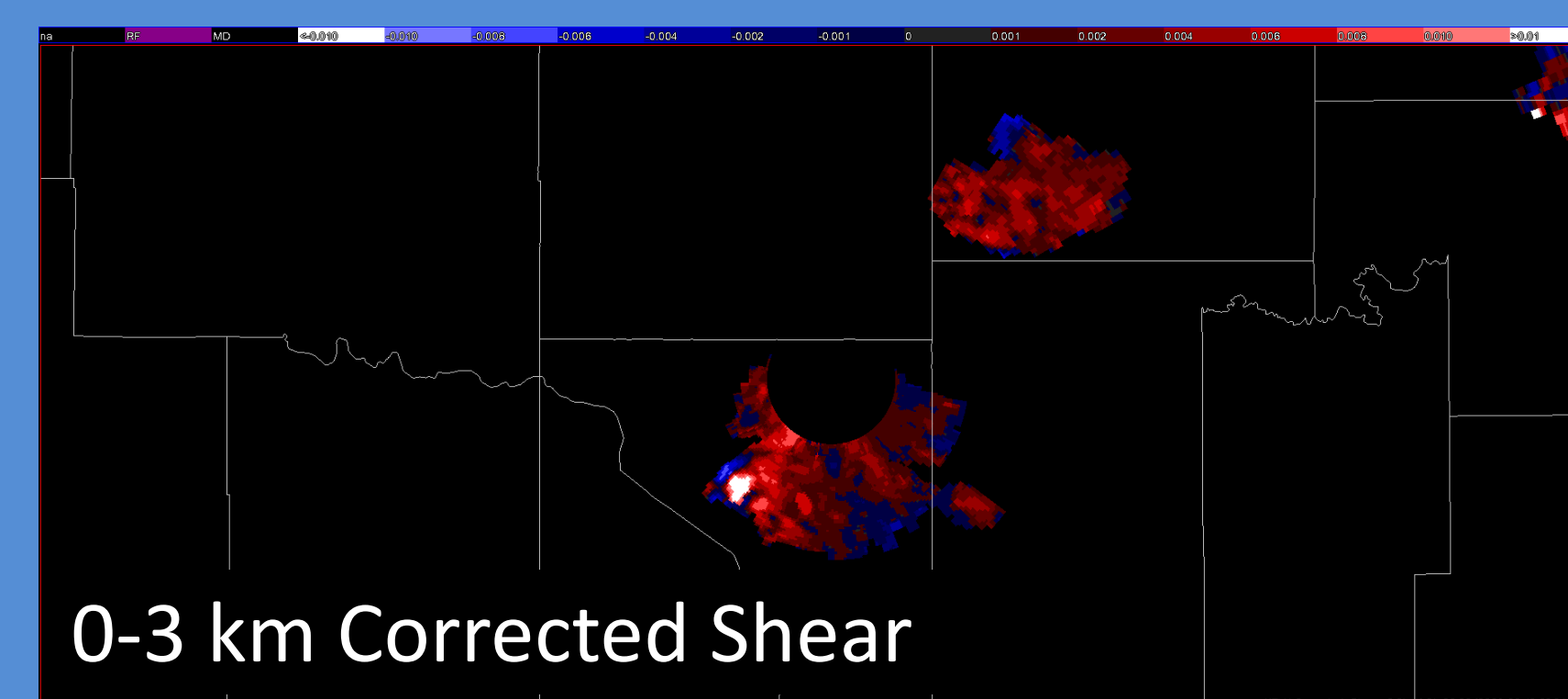
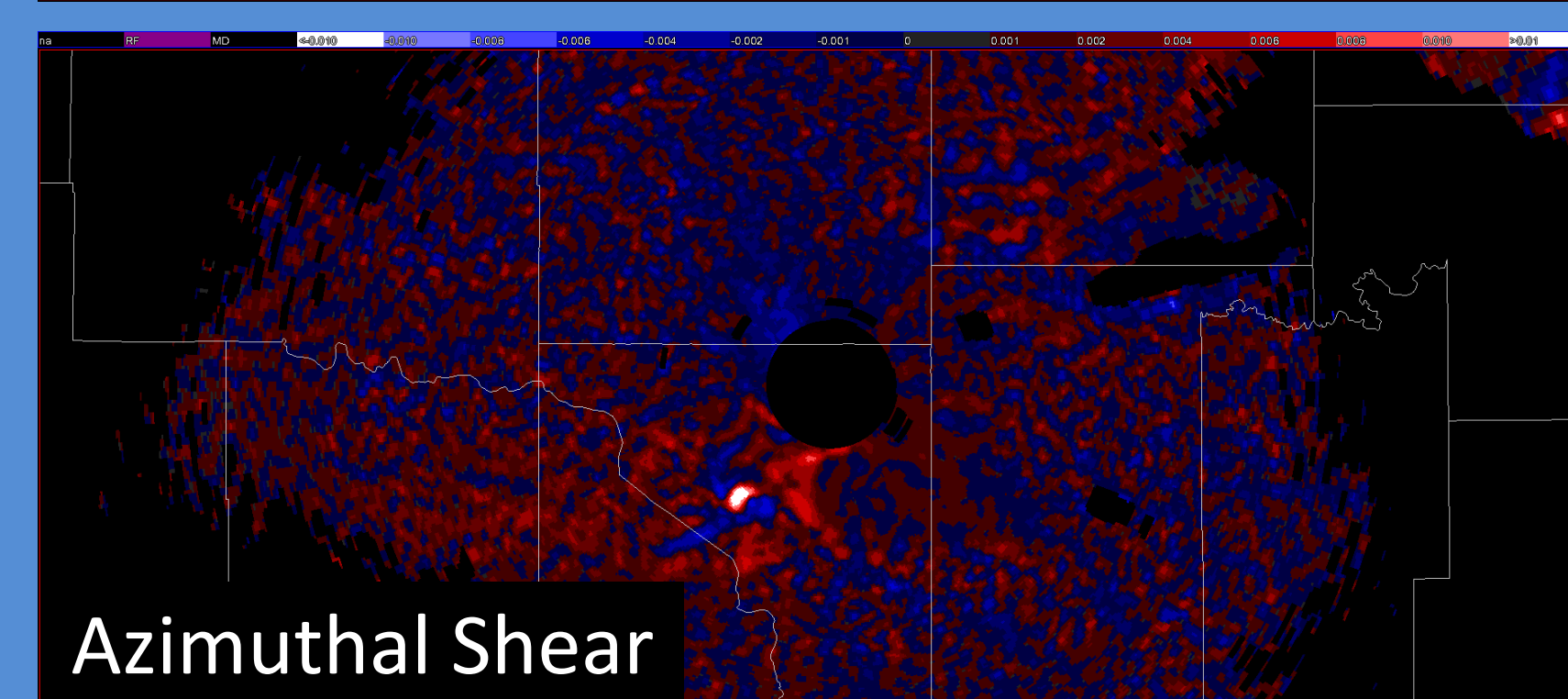
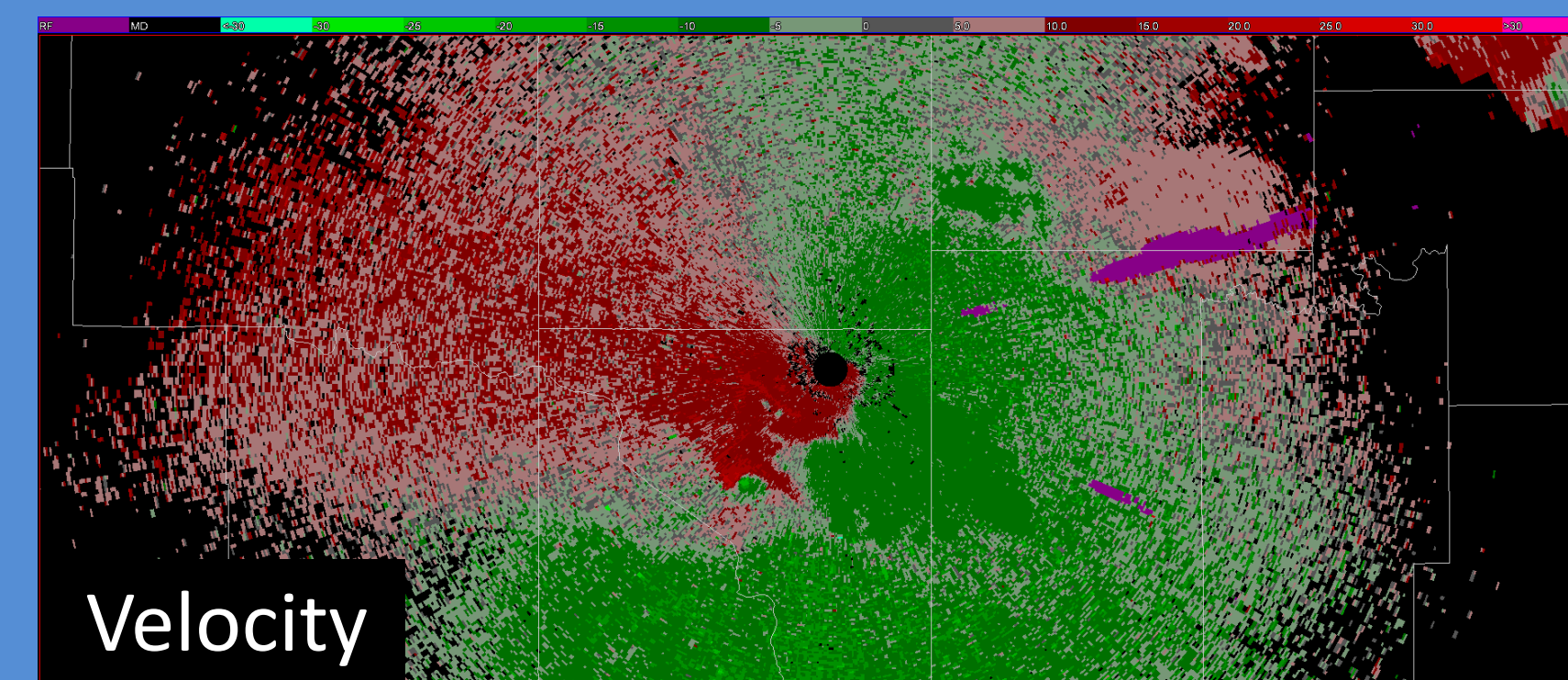
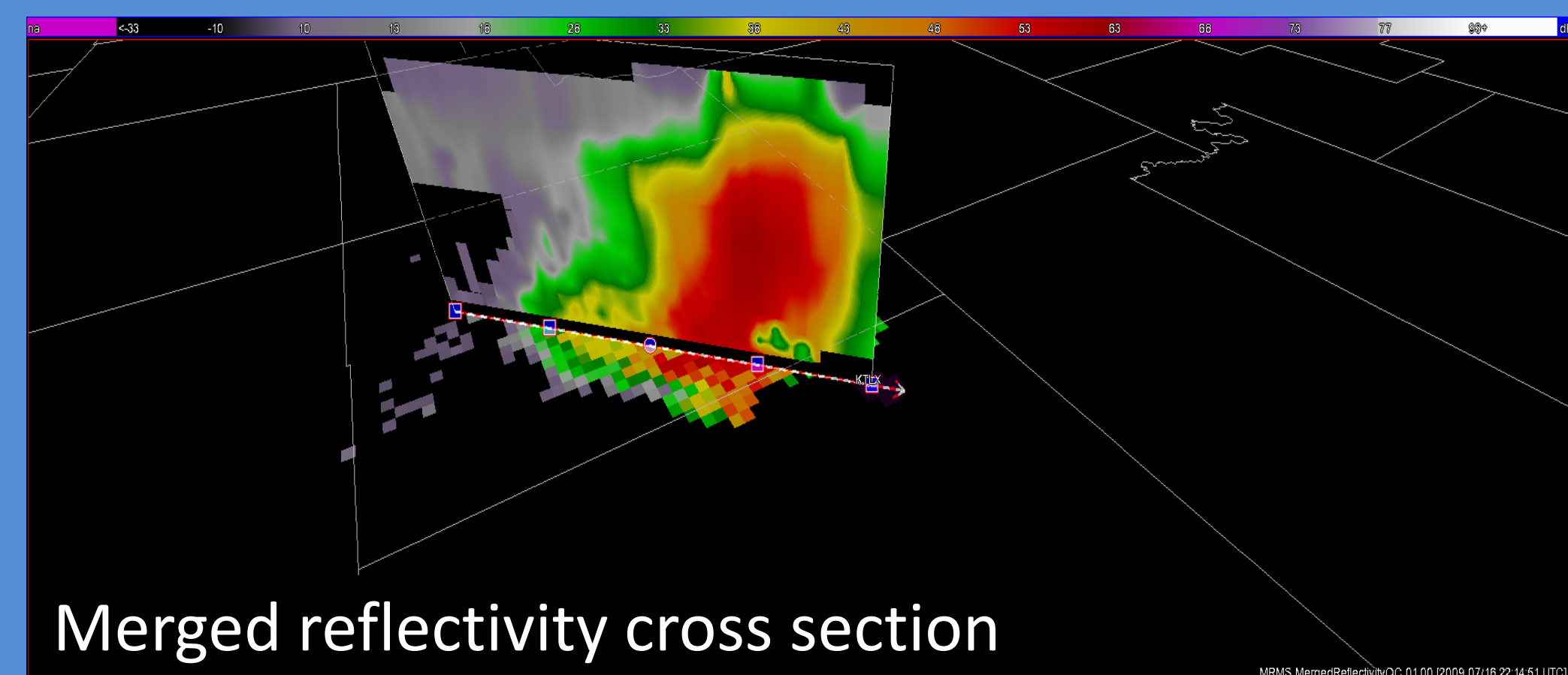
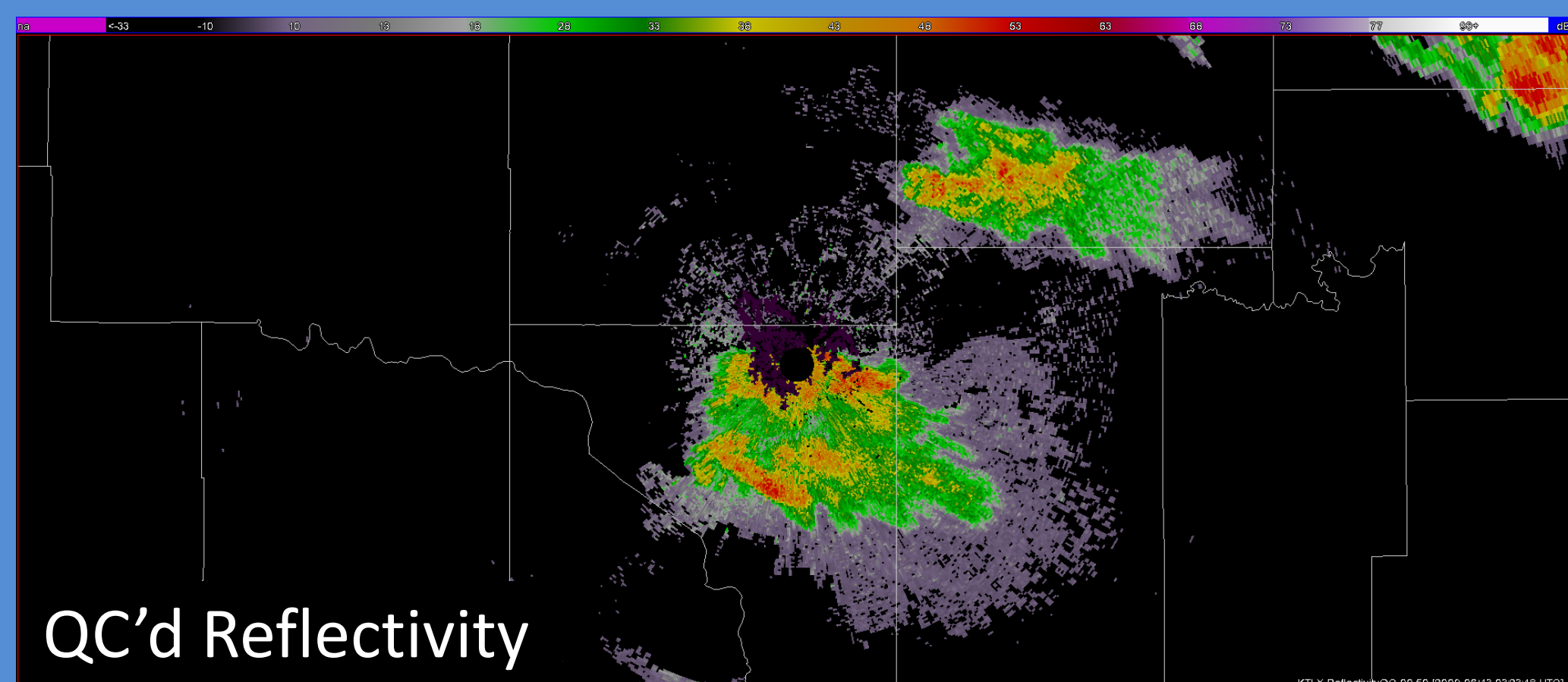
Processing: Radar Products



Reflectivity data is quality controlled to remove non-precipitation echoes and areas impacted by terrain blockages.



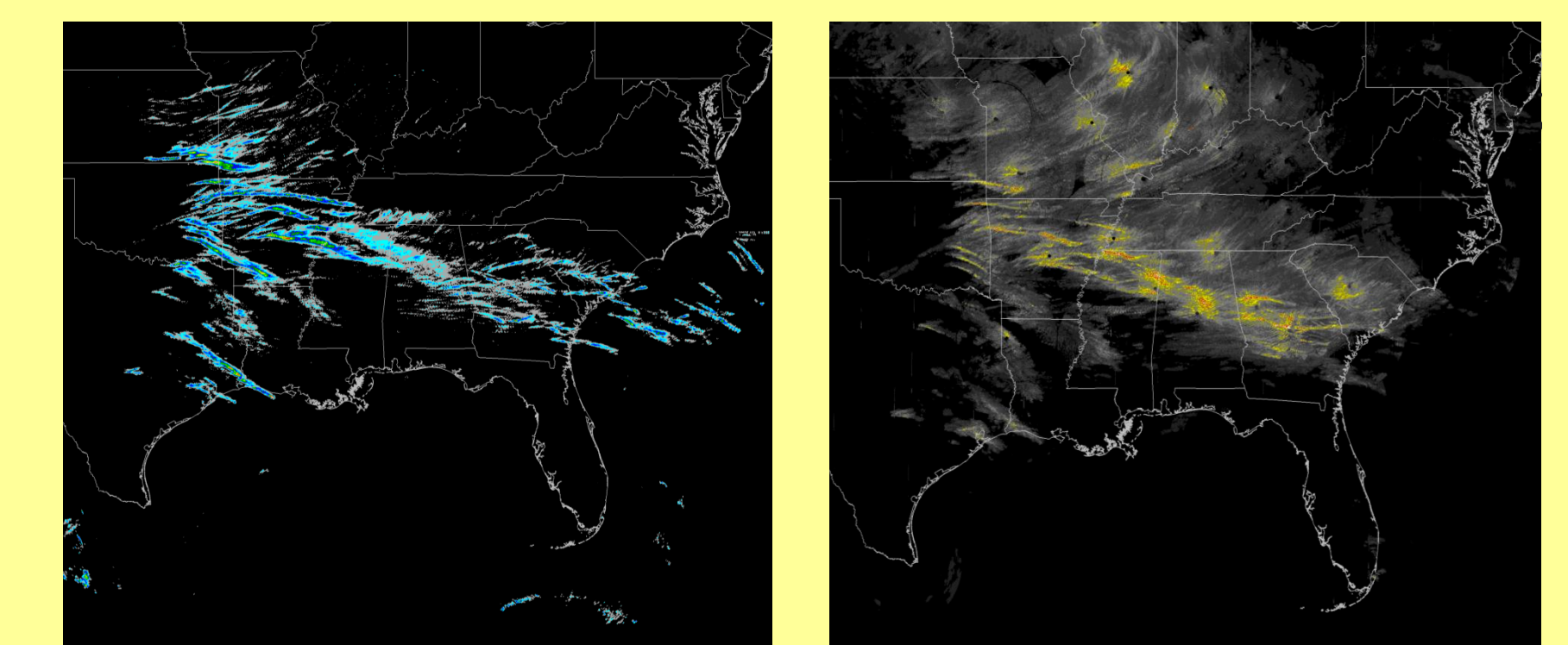
Up to 4 neighboring radars at a maximum distance of 300 km can be merged together at a single grid point.



Velocity data is first dealiased using a 2D technique. The dealiased velocity is then processed through a linear-least squares technique to produce an azimuthal shear field. The azimuthal shear field is then corrected (to account for differences due to distance) and stamped out with a 40 dBZ threshold. Two composite layers of the corrected shear field are created: a 0-3 km AGL composite and a 3-6 km AGL composite. These composites are then used in the merger.

Continuing Work

- Complete processing
 - NSSL: even years, NCDC: odd years
- Manually identify poor data
 - Bad data can filter through QC methods (i.e., "hot" radars)
- Complete early projects
- Publish dataset with NCDC



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