



National Weather Service Des Moines



May 11, 2015 Storm Survey for the Lake City/Rockwell City Tornadoes

Updated on May 16, 2015

Overview:

Storms formed in the evening hours of Sunday, May 10th 2015 out ahead of a cold front associated with an area of low pressure across South Dakota. The front was stretching SSE across western Iowa by early evening. As one storm lifted northeastward and interacted with a warm front, it produced two tornadoes. The first tornado of EF-1 intensity touched down in northern Carroll County about 3 miles northwest of Lidderdale and moved northeast, impacting Lake City and the western edge of Rockwell City before lifting just north of town. An additional brief touchdown occurred 2 miles west-southwest of Manson based, but no damage was found.

A few other storms became severe across western and central Iowa with an 80 mph wind gust reported at the Carroll Airport and some wind damage reported with this storm near Lidderdale. This storm moved north and produced baseball size hail near Lake City shortly after the tornadic storm had moved through the town. A machine shed was destroyed by straight-line winds in northern Audubon County and also power lines and poles were downed just south of Van Meter in Dallas County.



Track map of the two tornadoes that hit west central Iowa on May 10, 2015

Tornado 1: Lake City/Rockwell City

This tornado touched down a little over 3 miles northwest of Lidderdale and tracked northeast, striking the west side of Lake City. The tornado continued passing through rural Calhoun County and passed just west of Rockwell City before lifting about 2 miles north of town. Much of the damage included leaning/snapped power poles, damaged outbuildings, and uprooted trees. In the town of Lake City, the roof was removed from the high school and a double-wide manufactured home. The tornado was relatively weak but multi-vortex in nature, with only small and short-lived pockets of EF-1 intensity winds associated with the transient vortices rotating around the broader circulation. This tornado was well photographed and surveyed by an NWS ground team and satellite imagery.

Tornado Strength: EF-1

Time: 7:10 pm - 8:00 pm CDT

Start Location: 3.3 miles NW of Lidderdale

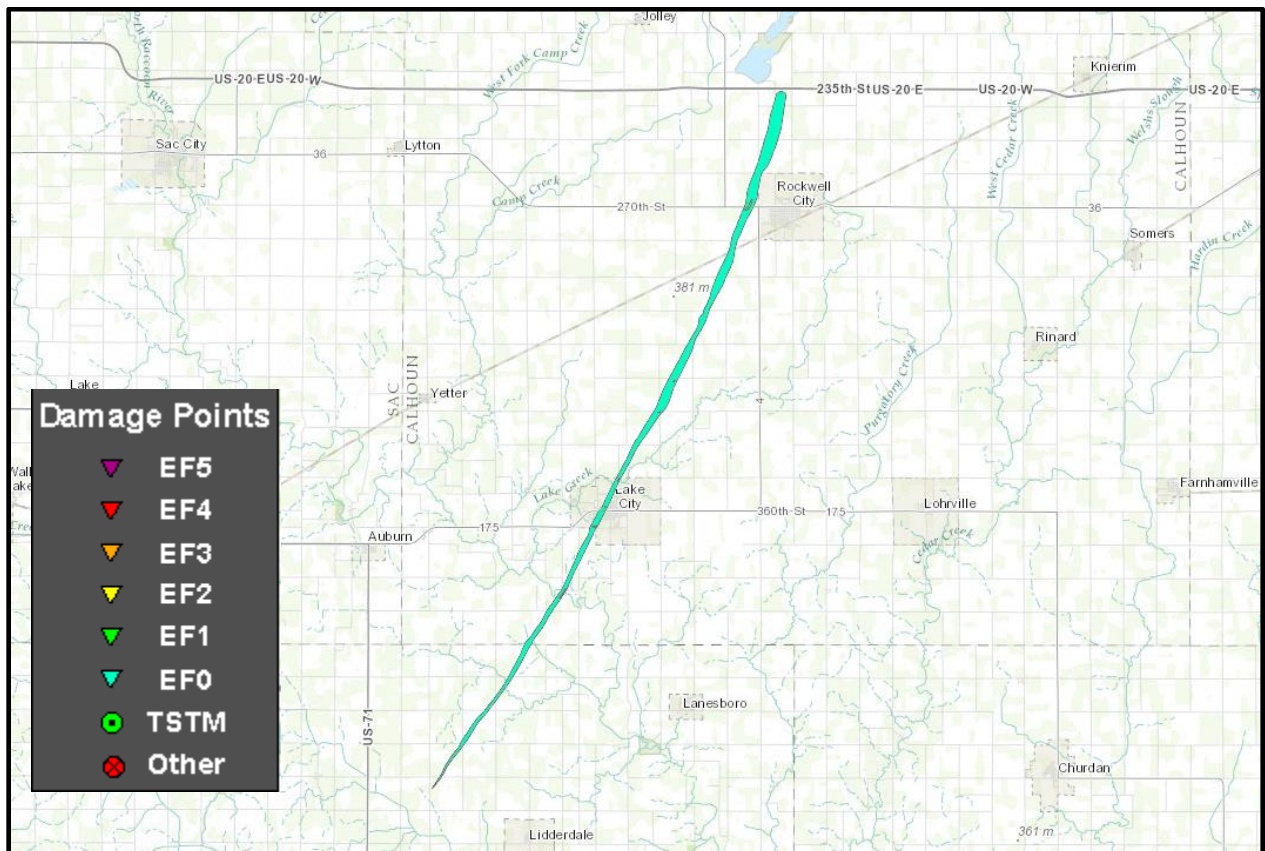
Peak Wind Speed: 100 mph

Path Length: 23.50 miles

Maximum Path Width: 700 yards (average around 300-400 yards)

Injuries/Fatalities: 0/0

Tornado 1 Path Map:



Tornado 1 Damage Photos:

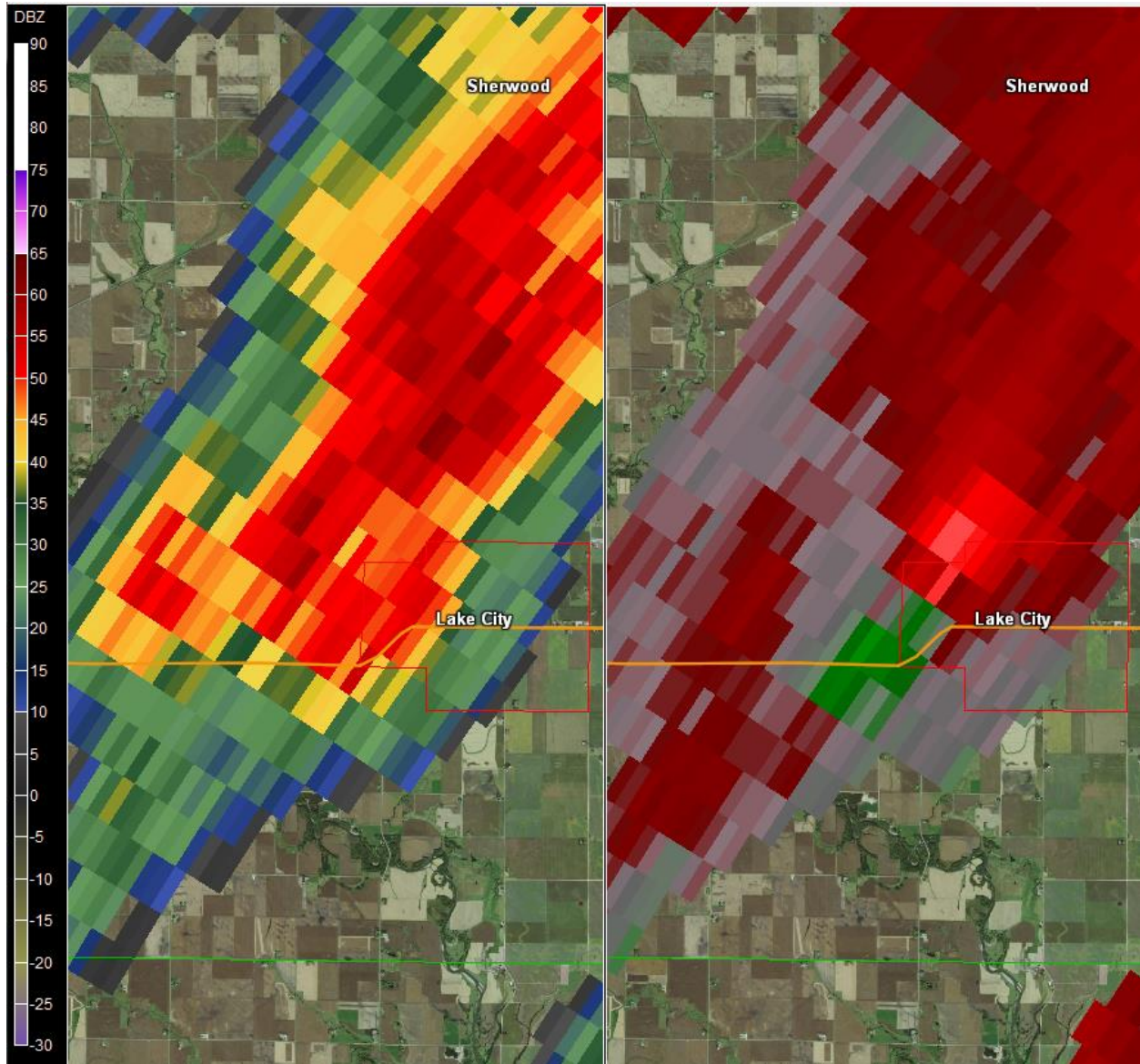


The roof was torn off the high school in Lake City. The tornado was rated a higher-end EF-1 with a maximum wind speed of 100 mph at this location

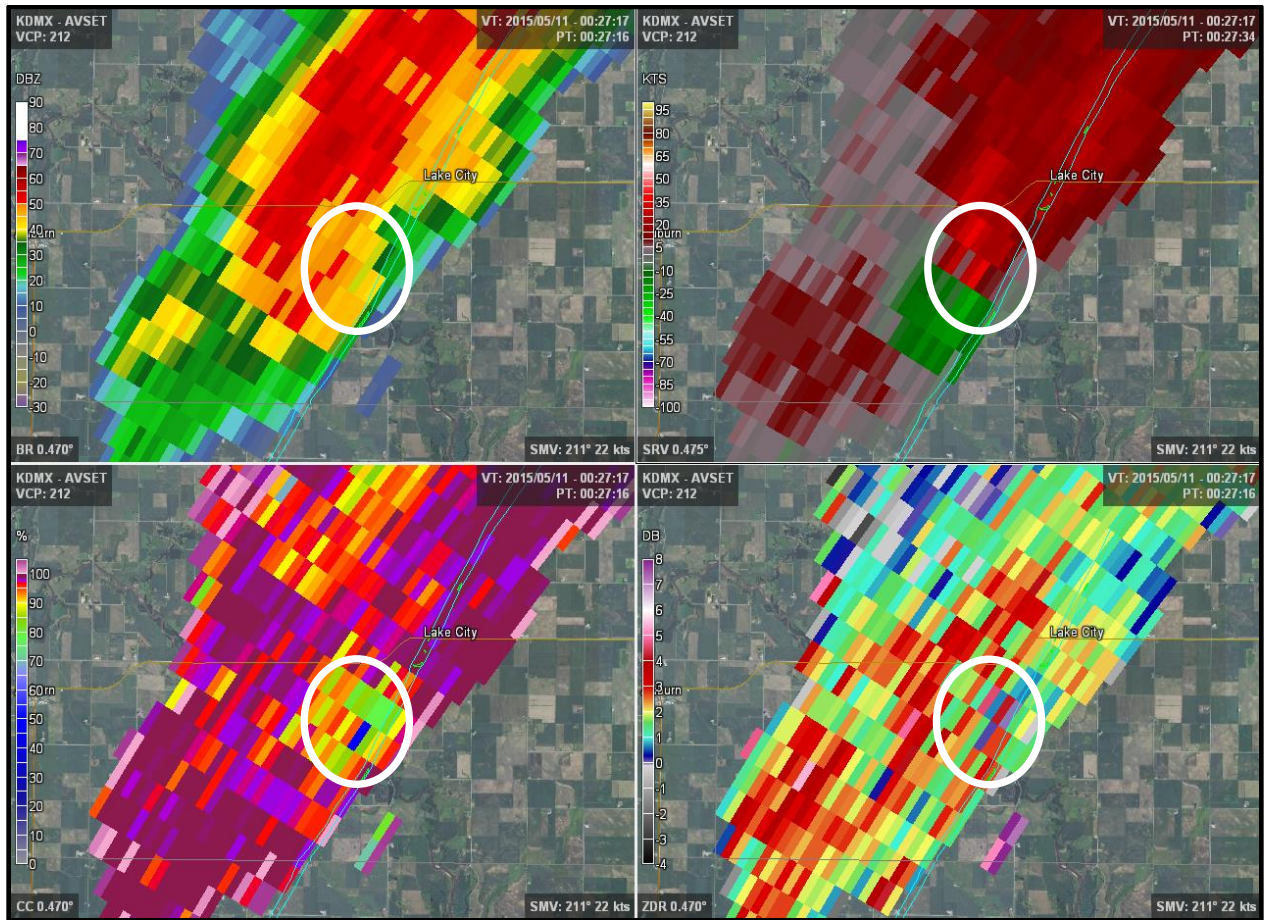


Large trees were snapped or uprooted to the south and north of Lake City, where the tornado was of EF-1 intensity.

Tornado 1 Radar Images:



Imagery from the Des Moines WSR-88D radar while the tornado was over Lake City at 7:32 pm CDT. The image on the left is base reflectivity and the right image is storm-relative velocity.



Imagery from the Des Moines WSR-88D radar while the tornado was southwest of Lake City at 7:27pm CDT. The top left image is base reflectivity and the top right image is storm-relative velocity. The bottom two images are correlation coefficient (CC) and differential reflectivity (ZDR). Low values of CC, combined with a velocity couplet, are a strong indicator of debris being lofted by a tornado, a signature also called a tornadic debris signature (TDS). ZDR values may also lower as a result of the tumbling of this debris.

The tornadic debris signature of the Lake City tornado shows up well in CC (orange, green, and blue areas within the white circle), but ZDR is noisy and does not show any appreciable signal. Nonetheless, this TDS persisted on CC for much of the tornado's life.

Tornado 2

A second tornado briefly touched down in a rural area of northeastern Calhoun County 2.4 miles southwest of Manson with no damage reported from this second tornado. This tornado formed from the same storm that had produced the Lake City Tornado.

Tornado Strength: EF-0

Estimated Time: 8:14 pm - 8:16pm CDT

Start Location: 2.4 miles SW of Manson

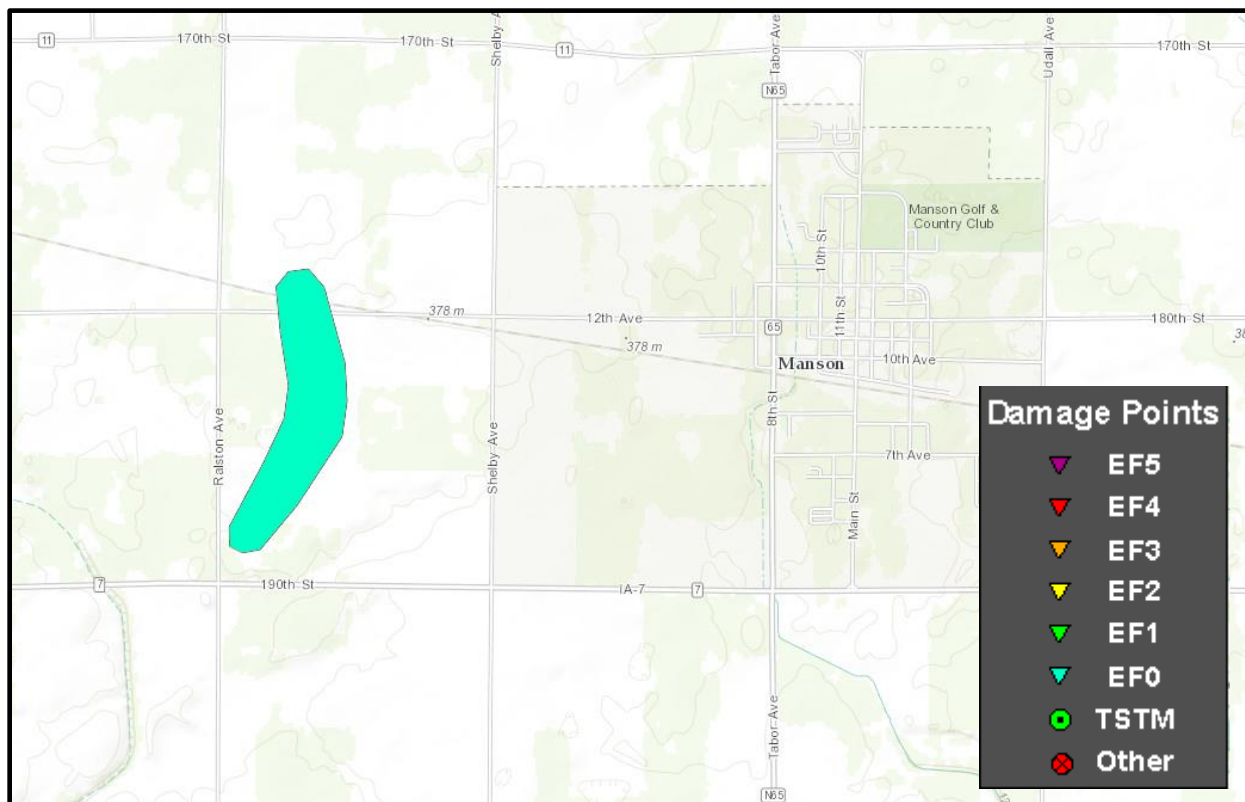
Peak Wind Speed: N/A

Path Length: 1.12 miles

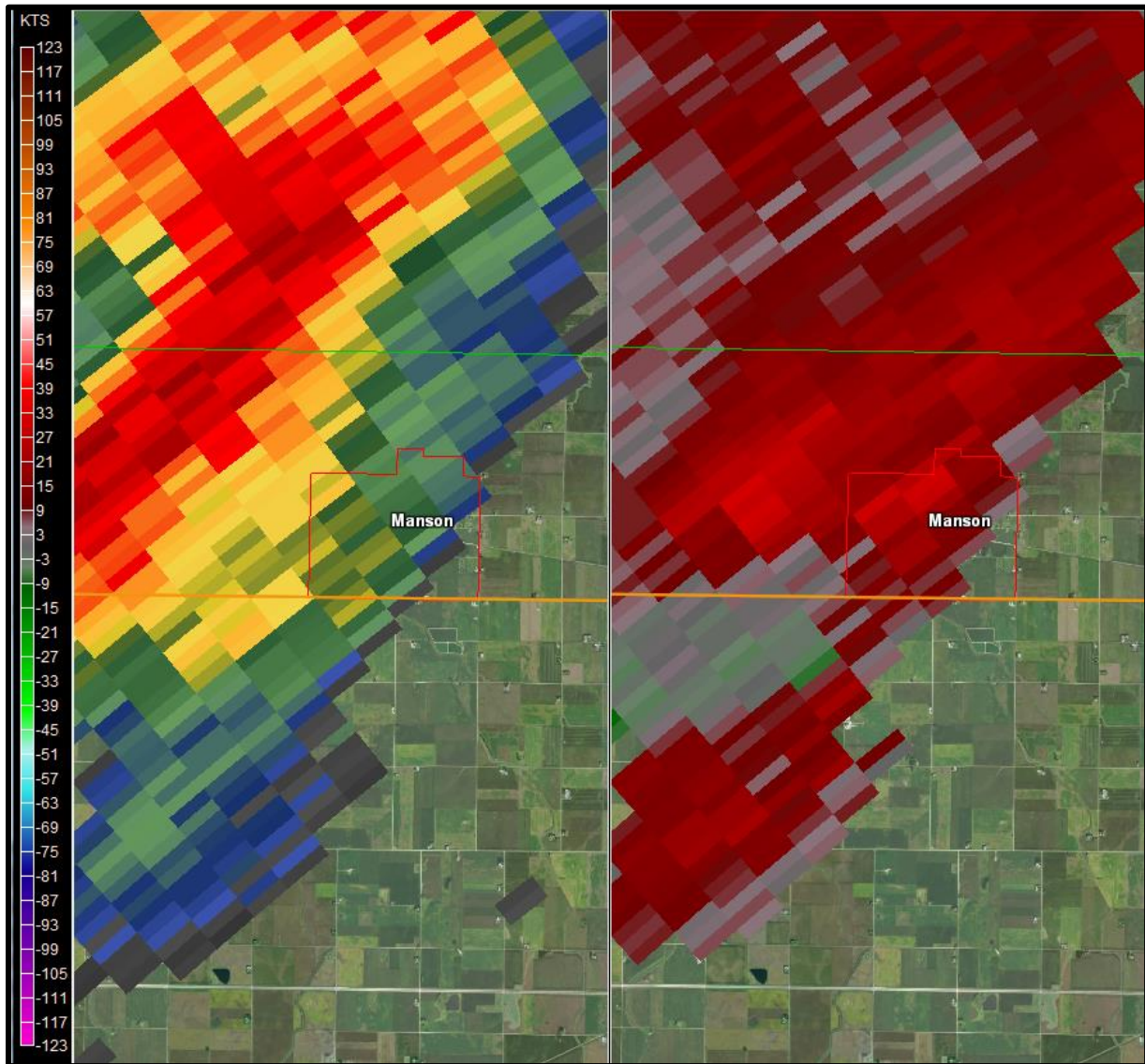
Average Path Width: 400 yards

Injuries/Fatalities: 0/0

Tornado 2 Path Map:



Tornado 2 Radar Image:



Imagery from the Des Moines WSR-88D radar around the time of tornado touchdown 2.4 miles SW of Manson at 814 pm CDT. The image on the left is base reflectivity and the image on the right is storm-relative velocity.
