## A Preliminary Study of the 16 June 2014 Tornadoes in Northeast Nebraska





Two tornadoes looking north on a county road northwest of Wisner, NE.. The tornado on the left is the one that struck the town of Pilger. The tornado on the right is one that developed southeast of Pilger and moved northnortheast. . Photo courtesy of Greg Johnson..



Debris loaded tornado as it passes through downtown Pilger, NE. Photo courtesy of Greg Johnson.



Impressive Skew-T from the 19Z upper air launch at the Valley WFO. Mixed layer CAPE was 4203 J Kg-1 and the surface to one kilometer storm relative helicity was 348 m2 s-2.



Radar sequence of base reflectivity and storm-relative motion displays at 0.5 degree elevation angles from 2113 to 2151Z. This sequence shows the cyclic nature of this sequence shows the cyclic nature of the tornado developed southeast of the tornado developed The tornado that struck Pilger continued to move northeast, crossing the path of the other tornado.

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During the afternoon of June 16, 2014 a lone Supercell thunderstorm developed in an extremely unstable air mass south of a surface warm front in northeast Nebraska. The combination of strong vertical wind shear, and a highly unstable air mass set the stage for one of the most significant tornado events in recent Nebraska history. This cyclic Supercell produced four tornadoes that were rated EF4 strength and killed 2 people. What was unprecedented was that multiple violent tornadoes were producing significant damage as close as 1.2 miles apart. This is a preliminary study of this event as viewed by Doppler radar, damage survey analysis, and satellite imagery.





Aerial photo looking to the southwest over Pilger, NE. The town took a direct hit from the tornado.

Picture taken in the center of damage in Pilger. Homes were leveled and the local cooperative station was demolished.



Tracks of four of the five tornadoes that struck northeast Nebraska on June 16, 2014. The map was constructed utilizing damage survey information, aerial photos, and satellite imagery. Each tornado was rated an EF4



Debarked trees where two tornadoes crossed. Both tornadoes struck this farmstead approximately seven miles northeast of Pilger.



Terra satellite imagery that reveal the tornado tracks. This image clearly shows where the two tornado tracks crossed. Estimating the EF scale can be challenging at the crossover point..









These are the remains of a farm home that was struck twice by the two tornadoes. The resident took refuge in the basement which was uncovered from the first tornado. Seeing the second tornado bearing down on him from the west, the farmer then climbed out of his basement and took shelter in a nearby storm cellar.



Gibson-Ridge Lit volume view of the Pilger storm at 2121Z. The Descending Reflectivity Cores (DRC) associated with each tornado is indicated in this image. It is suspected that the Rear Flank downdrafts were very buoyant as there were was a lack of RFD damage and no storm chaser accounts of intense