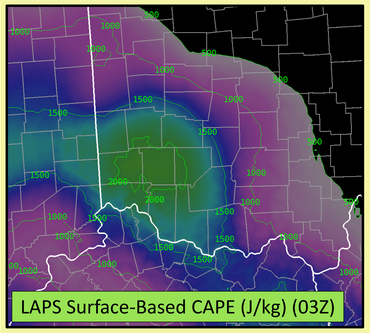
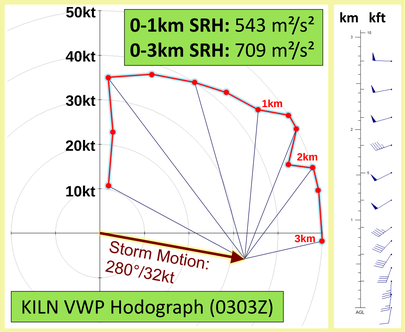
Tornado Outbreak on Memorial Day 2019

Andrew Hatzos • National Weather Service Wilmington OH

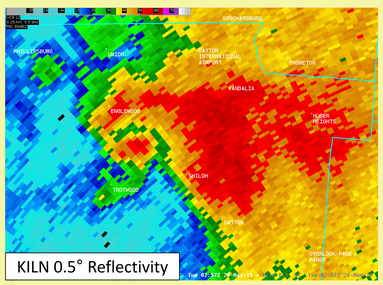


LAPS Surface-Based CAPE (J/kg) (03Z)

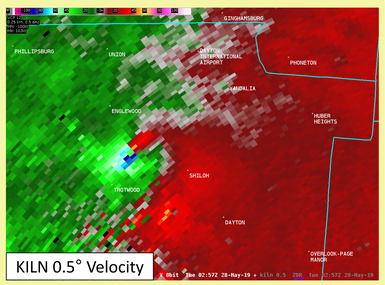


KILN VWP Hodograph (0303Z)

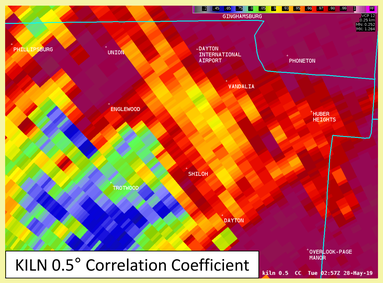
The most intense tornadoes developed along the northern gradient of instability, in an environment with extreme low-level wind shear.



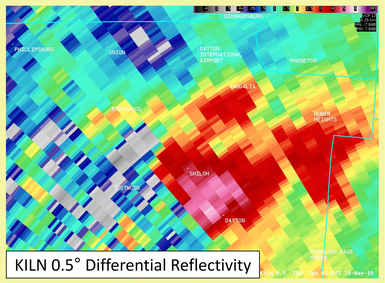
KILN 0.5° Reflectivity



KILN 0.5° Velocity

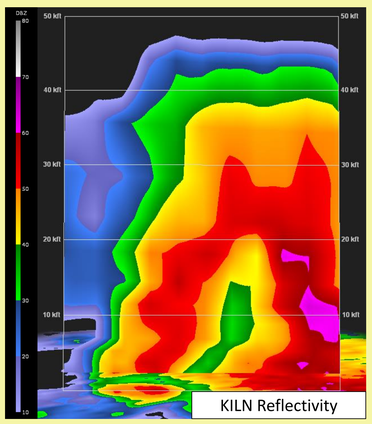


KILN 0.5° Correlation Coefficient

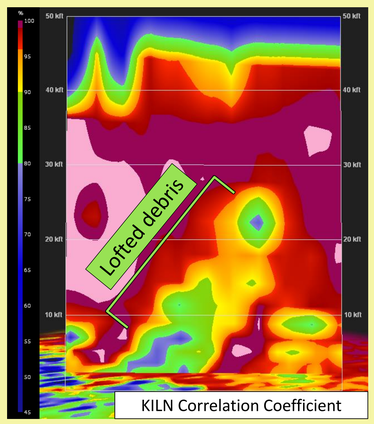


KILN 0.5° Differential Reflectivity

Radar imagery at 10:57 PM on May 27, 2019, at the exact time of Tornado Emergency issuance for the supercell near Trotwood, Ohio.



KILN Reflectivity

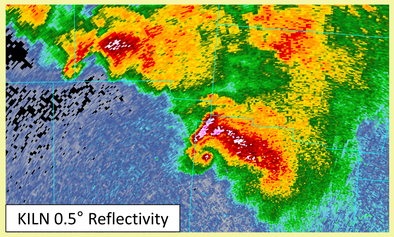


KILN Correlation Coefficient

Cross-section radar imagery of the tornado near Trotwood, Ohio at 10:57 PM on May 27, 2019. Reductions of correlation coefficient were observed above 20,000 feet, suggesting a violent (EF4+) tornado.

On the evening of May 27, 2019, the state of Ohio was hit by a major tornado outbreak. It was the largest outbreak in the history of the NWS forecast office in Wilmington, Ohio, with 19 tornadoes in the span of just a few hours. Overall, 21 tornadoes were confirmed in Ohio, with the greatest impacts in the Dayton metropolitan area.

In spite of the severity of the tornadoes, and the densely populated areas which were hit, only one direct fatality resulted from the storms.

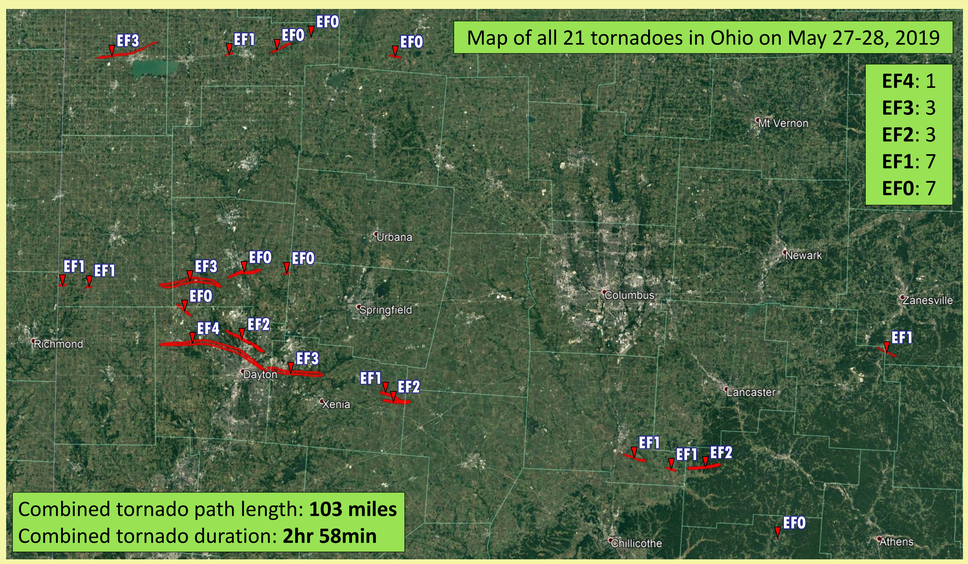


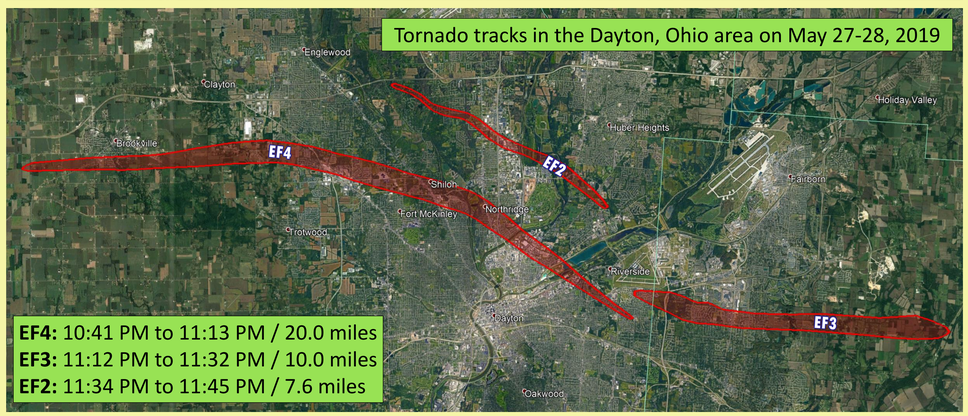
KILN 0.5° Reflectivity

Radar imagery of the two supercells affecting the Dayton, Ohio area at 11:17 PM on May 27, 2019.

NWS Wilmington Ohio Performance Statistics:

Tornado Warnings Issued: 37
Tornado Probability of Detection: 100%
Tornado Touchdown Lead Time: 6 to 34 minutes
Lead Time for Dayton EF4 Damage: 34 minutes
Damage Surveys Conducted: 12





The strongest tornadoes caused significant damage to well-built homes and buildings. Remarkably, for the size of the outbreak, very few mobile homes and poorly-built structures were directly impacted.

Photo by Brandon Peloquin

The Trotwood-Dayton tornado was rated EF4 (170 MPH) on the Enhanced Fujita Scale, based on significant damage to multi-story apartments (Damage Indicator 5) and debarking to nearby trees.

An EF3 tornado destroyed this home near West Milton, Ohio. The homeowner sheltered inside the interior bathroom and was uninjured.

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