Somerset and London, Kentucky

Tornadoes

May 16, 2025

Climavision

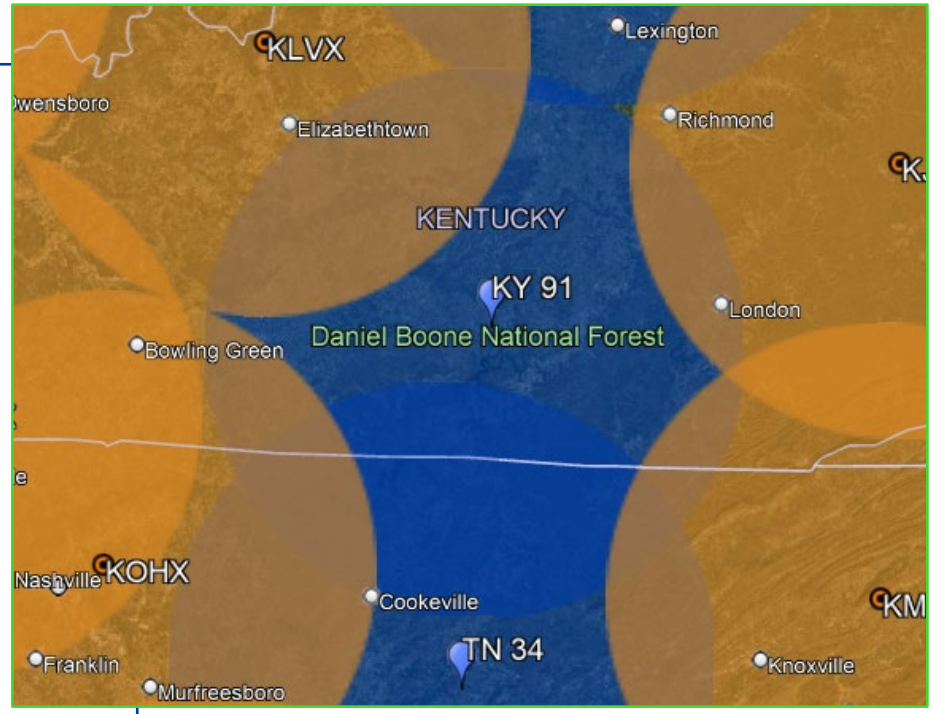
CASE STUDY

May 16, 2025

Somerset and London, Kentucky

Tornadoes

KY91 is located in Jamestown, KY and provides gap-filling coverage for 60 miles in every direction. Orange circles represent NEXRAD systems out to 4,000ft above the ground. Blue circles represent radar “gaps” and planned or live supplemental Climavision radar sites – areas with diminished coverage beyond the low-level visibility of NEXRAD systems. The nearest NEXRAD radar to Jamestown is KLVX around 86 miles away.



CASE STUDY

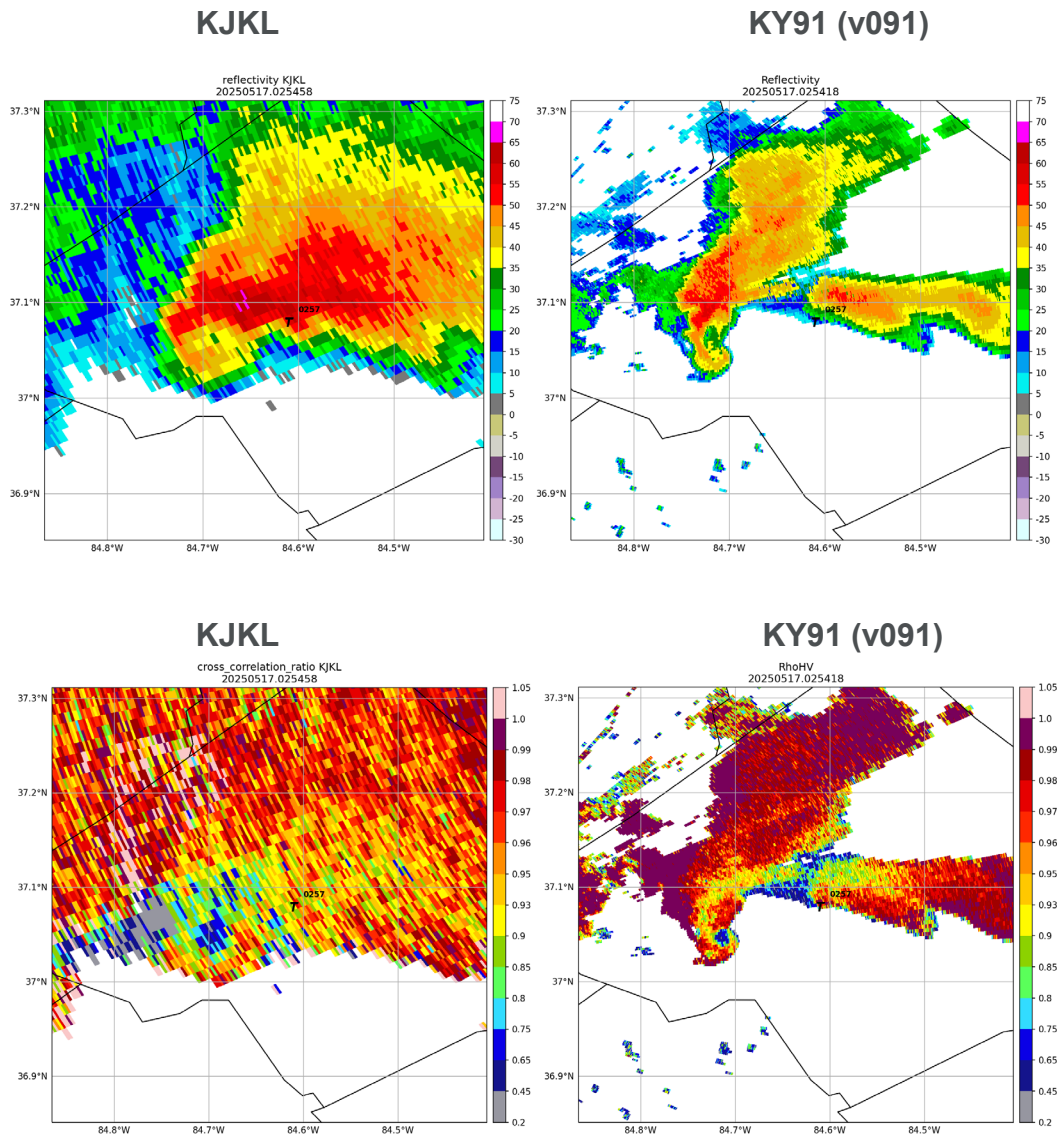
May 16, 2025

Somerset, KY

Tornado

On May 16th, 2025, a long line of severe storms moved across the central US. The line produced multiple tornadoes and caused widespread damage across several states from Oklahoma to Tennessee. In Kentucky, a supercell tracked from west to east across the southern portion of the state. A long-tracked tornado produced EF3 tornado damage. Several Fatalities were reported

Climavision's KY91 radar in Jamestown, KY detected this tornado. The system showed a clear reflectivity hook and a tornado debris signature (TDS). The NEXRAD located further away did not clearly detect the debris signature likely due to signal loss from hail outside of the tornado.



Reflectivity (top) and RhoHV (bottom) data from Climavision's KY91 (v091) radar and KJKL

Climavision

CASE STUDY

May 16, 2025

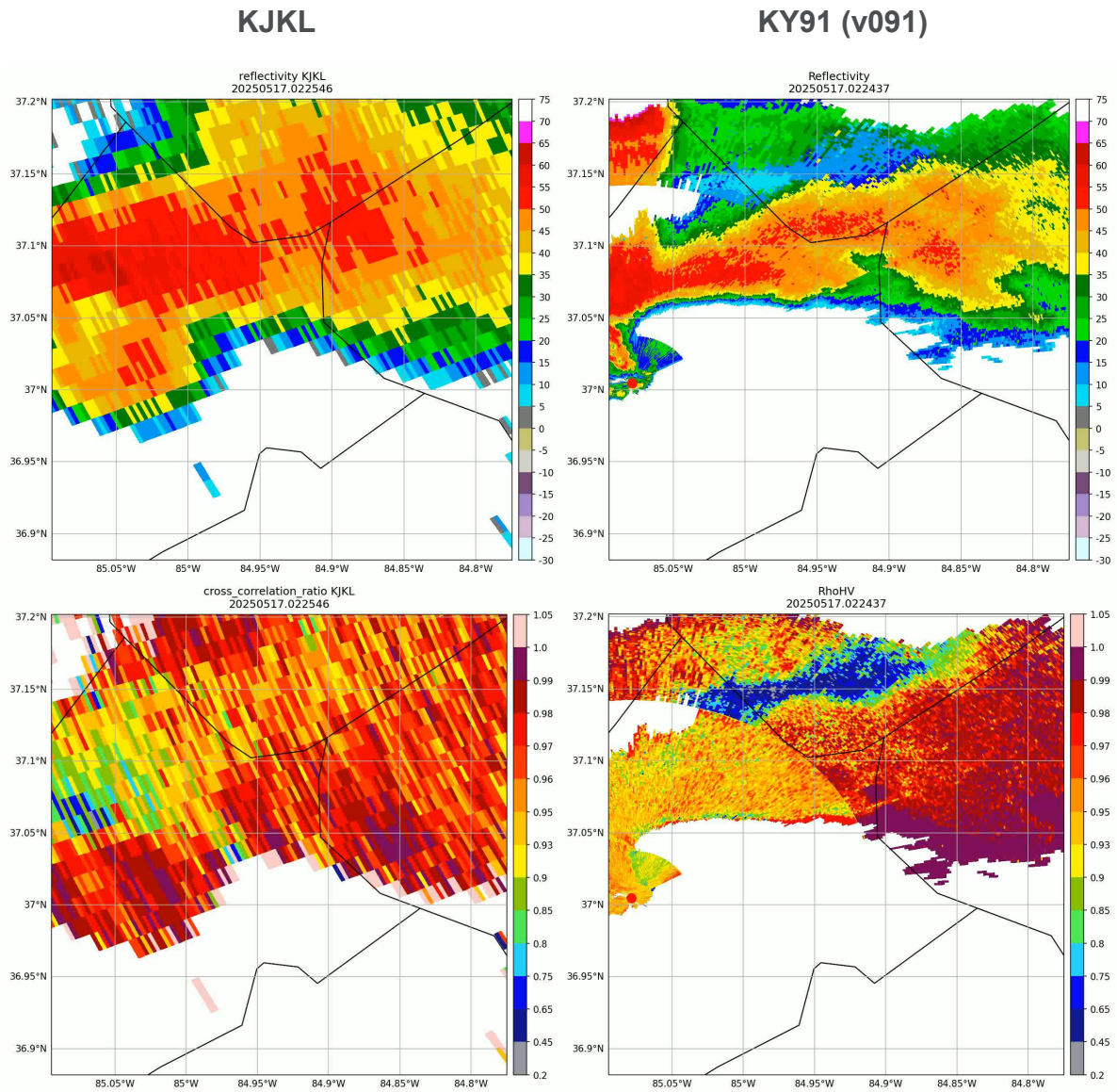
Somerset, KY

Tornado

KY91 first detected a TDS (0227 UTC) approximately 13 minutes before KJKL (0240 UTC).

To mitigate clutter impact, KY91 scanned at a 2.0 degree tilt and the TDS still showed up since beam heights were still at 165 meters AGL.

Warnings were issued, however the SPC report location and timing is not exact. In this instance, the supplemental radar could have helped to place the tornado at an earlier / more accurate time.



Reflectivity (top) and RhoHV (bottom) data from Climavision's KY91 (v091) radar and KJKL

Climavision

CASE STUDY

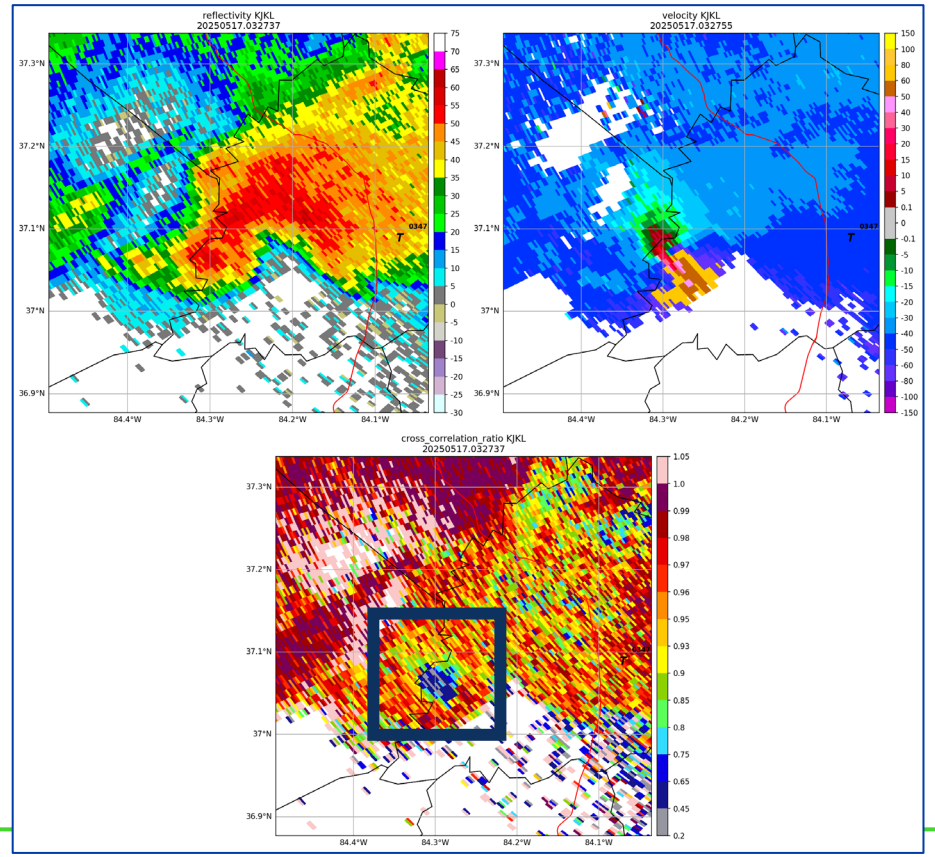
May 16, 2025

London, KY

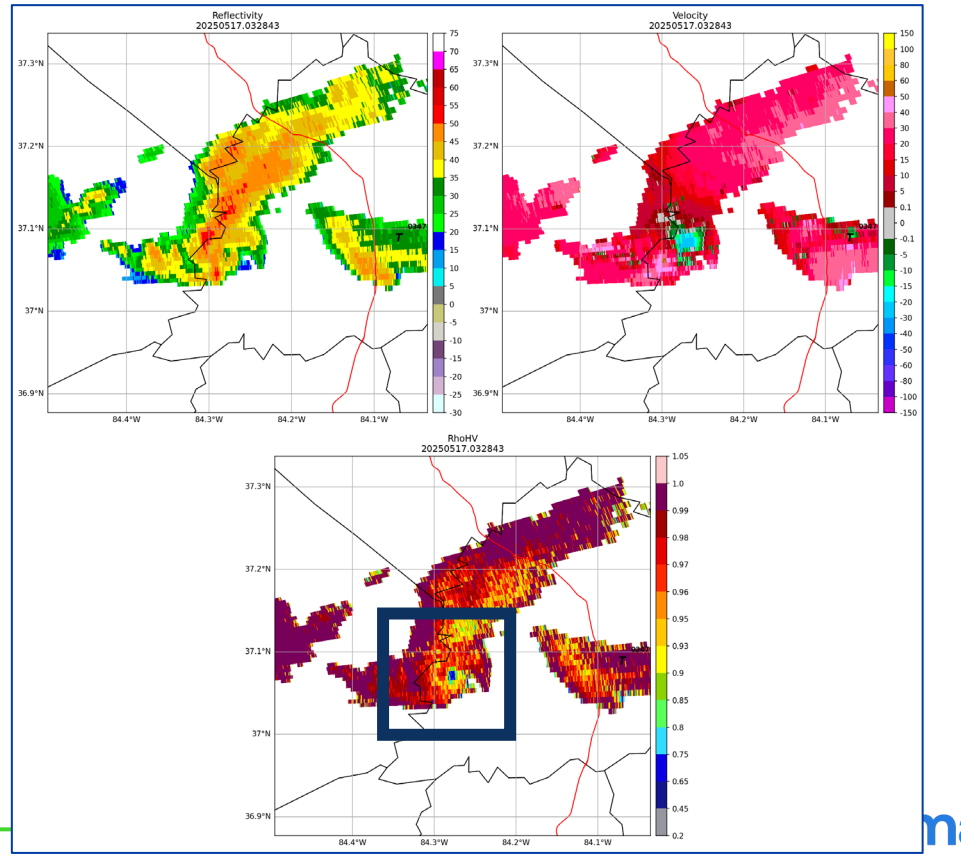
Tornado

On May 16th, 2025, a supercell tracked from west to east across southern KY and produced a long-track tornado. No survey has been conducted at this point, however the tornado caused widespread damage, as well as multiple injuries and deaths. Climavision's supplemental radar in Jamestown, KY91 (v091), detected a tornado debris signature even at the edge of the radar signal – indicating a very strong tornado.

KJKL



KY91 (v091)



CASE STUDY

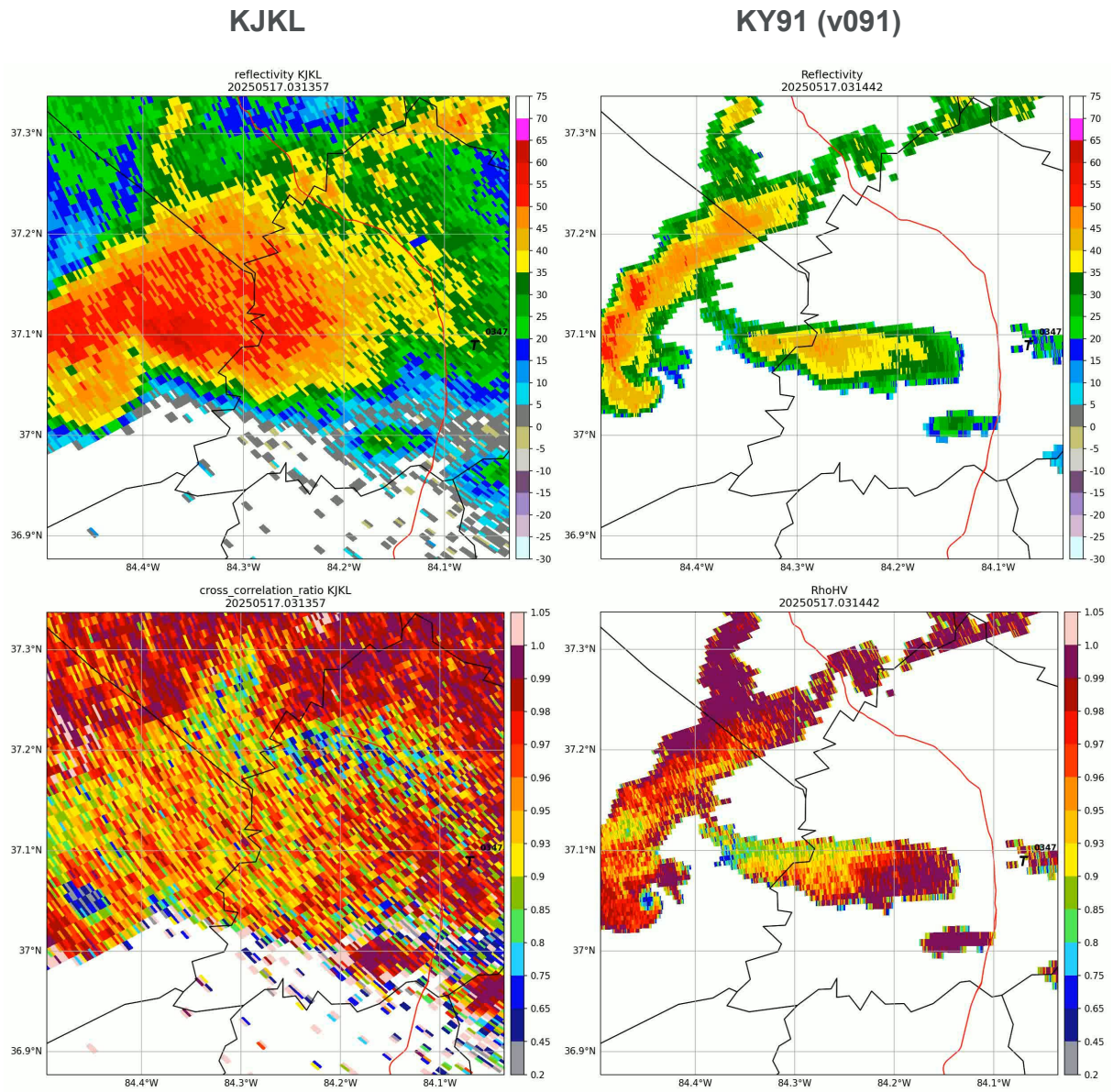
May 16, 2025

London, KY

Tornado

Both KJKL and KY91 performed well during this event. They each showed strong rotation and a clear tornado debris signature (TDS).

As complements to each other, the systems confirmed both timing and location for the event. Due to KY91's high resolution, the debris ball can be pinpointed on the supplemental system with more accuracy and clarity.



Reflectivity (top) and RhoHV (bottom) data from Climavision's KY91 (v091) radar and KJKL.

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CASE STUDY

May 16, 2025

Conclusion

London and Somerset, KY Tornadoes

Somerset Tornado:

- V091 (KY91)) first sampled a Tornado Debris Signature at 0227 UTC, approximately 13 minutes before KJKL. Other NEXRADs (KLVX) had similar beam heights and detected the TDS at same time as KJKL
- V091 performed better than the closest NEXRAD for the Somerset tornado due to v091's beam heights sampling at 350 meters while KJKL was at 2,400 meters AGL.
    - In addition to sampling the lowest parts of the storm, the spatial resolution allows one to pinpoint the debris ball with accuracy and shows a well-defined reflectivity hook.
    - KJKL was able to detect a debris ball, but it was less apparent and there wasn't as well-defined reflectivity hook.

London Tornado:

- Both radars (v091 and KJKL) performed well as the tornado progressed eastward away from V091 and toward KJKL.
- Tornado Debris Signature's with reflectivity hooks were sampled by both radars – The SPC report seems to be further east compared to when the tornado first was apparent on radar.

In both cases, NWS had warnings well in advance and performed great. Due to v091's strategic location, v091 was able to sample the lowest parts of the storm with better pinpointed accuracy of the TDS.

https://www.cnn.com/2025/05/18/weather/nws-staffing-kentucky-storms