

RAXPOL DEPLOYMENT SUMMARY

DATE: 11 MAY 2014

CREW: HOWIE, KYLE, ZACH

LOCATION: SOUTH-CENTRAL KANSAS

TOTAL NUMBER OF DEPLOYMENTS: 4

SUMMARY:

RaXPol departed Norman at approximately 1700 UTC and headed west on I-40 towards Calumet, and then Northwest on 281/270 towards Woodward with an initial target of E/NE of Dodge City, Kansas. Storm initiation began at approximately 1900 UTC west of Dodge City, with storms propagating northeastward off of the dryline. We determined that it would be in our best interest to take a north route out of Woodward to intercept the cells to the southeast of Dodge City, giving them time to mature prior to deploying the radar.

Our first deployment took place approximately 2.1 miles west of Ashland, KS on highway 160. The deployment lasted 39 minutes, during which time we observed two supercells. Initially, a 60km scanning strategy was used to observe both the tail-end supercell to our southwest, and a second supercell to our northwest which was out of range of a 30km scan. The northwest cell had developed an appendage and wall cloud early in the deployment, but by 2133 UTC it became slightly less organized than the southern-most cell, at which point we switched to a 30km scanning strategy. Weak rotation was observed throughout this time and a very distinct low-reflectivity ribbon was also observed in Doppler reflectivity (see image below). Deployment 1 ended at approximately 2204 UTC, and RaXPol headed northeast in an attempt to keep up with this cell.

RaXPol continued east and north for the next 120 minutes attempting to (unsuccessfully) catch and reposition in front of the initial cell, which failed to turn right or slow down as we may have expected. Meanwhile, two new supercells that initiated approximately 3 hours after the first were approaching from the west, one tornado warned. Deployment 2 took place approximately 8 miles north of St. Johns, KS in between the two newest cells advancing from the west and the initial tail-end storm. 60km scans were used initially to document the cells on both sides of our position, but after 8 minutes of scanning, the eastern cell was abandoned for the two western supercells. RaXPol observed a strong vortex couplet during this deployment coincident with a weak-echo hole in reflectivity, although we observed no funnel cloud or tornado in any of the day's deployments (see second image). Deployment 2 ended at 0035 UTC and we continued east.

Deployment 3 took place approximately 4 miles north and 1 mile east of Hudson, KS and scanning lasted only 3 minutes as we repositioned ahead of the advancing gust front. Deployment 4 took place several miles due east of the third, approximately 8 miles south and 3 miles west of Raymond, KS. Scanning began at 0110 UTC lasted 24 minutes during which time two supercells, one to our north and one to our west, were documented. Both supercells were visually stunning at this point with laminar, striated bases. Strong shear was observed in Doppler velocity, particularly in the western-most cell (likely that which went on to produce a tornado near McPherson, KS). Deployment 4 ended at 0134 UTC at which time heavy rain, small hail, and strong winds were observed (likely due to the rear-flank downdraft) at our location. Radar observations concluded for the day at this time. RaXPol headed southeastward through Hutchinson, KS and through Wichita, KS and returned to Norman.

DEPLOYMENT 1:

LAT: 37.193059° LON: -99.797500°

2.1 miles west of Ashland, KS

Scanning strategy 1 -- Began 2125 UTC -- Ended 2133 UTC

0°-20°/1° increments, 60 km range, 150 m resolution, 500 µm PRI

Scanning strategy 1 -- Began 2133 UTC -- Ended 2204 UTC

0°-20°/1° increments, 30 km range, 75 m resolution, 250 µm PRI

DEPLOYMENT 2:

LAT: 38.115791° LON: -98.747597°

8 miles north of St. Johns, KS

Scanning strategy 1 -- Began 0014 UTC -- Ended 0022 UTC

0°-20°/1° increments, 60 km range, 150 m resolution, 500 µm PRI

Scanning strategy 1 -- Began 0022 UTC -- Ended 0030 UTC

0°-20°/1° increments, 30 km range, 75 m resolution, 250 µm PRI

Scanning strategy 1 -- Began 0030 UTC -- Ended 0035 UTC

0°-20°/1° increments, 30 km range, 30 m resolution, 250 µm PRI

DEPLOYMENT 3:

LAT: 38.1586889° LON: -98.6383115°

4 miles north and 1 mile east of Hudson, KS

Scanning strategy 1 -- Began 0052 UTC -- Ended 0055 UTC

0°-20°/1° increments, 30 km range, 30 m resolution, 250 µm PRI

DEPLOYMENT 4:

LAT: 38.158310° LON: -98.472957°

8 miles south and 3 miles west of Raymond, KS

Scanning strategy 1 -- Began 0110 UTC -- Ended 0134 UTC

0°-20°/1° increments, 30 km range, 30 m resolution, 250 µm PRI

NOTES:

- Computer clock 87 seconds slower than atomic clock

- It would be useful to set up a good 45km scanning strategy prior to the next field operation so that we are not limited to only 30km and 60km scans.

