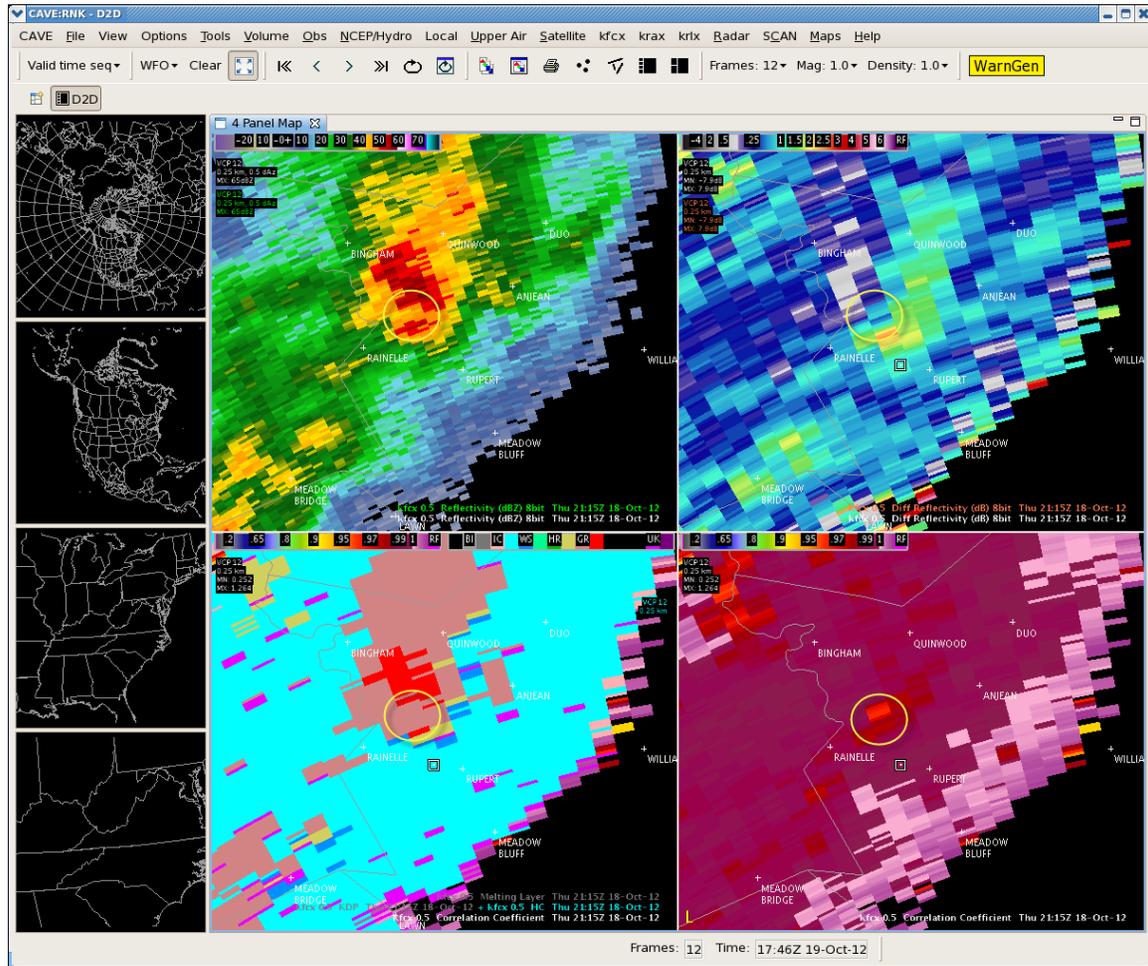


KFCX Dual-Pol Data Suggests Hail Threat with Storm on October 18



The above 4-panel images from the late afternoon of October 18, 2012, over northwest Greenbrier County, WV show legacy reflectivity data (Z) in the upper left; differential reflectivity (ZDR) in the upper right; correlation coefficient (CC) in the lower right; and the algorithm-based hydrometeor classification output (HCA) in the lower left. The latter three products are all based on dual-polarization technology, which has been running operationally at the KFCX NWS Doppler radar site since October 8.

While traditional products were helpful in identifying the potential for severe hail in this storm, these new dual-pol products helped to confirm or at least increase our confidence that indeed there was large hail at the level the radar was viewing (in this case about 6,000 feet above the ground). The standard reflectivity (Z) image actually indicated lower values than we often observe with large hail, and on its own suggests heavy rain or perhaps small hail. Meanwhile, in the region inside the yellow circle we added to all four images (not to be confused with a mesocyclone symbol), note that values of CC (lower right) are lower than surrounding values, indicated that particle shapes and sizes are very different, and above that in the upper right the ZDR values are also fairly low, indicating

a tendency for more rounder objects compared to flatter hamburger bun shaped objects (or in other words, more hail stones vs. large rain drops). Not shown is another important dual-pol product known as specific differential phase (KDP), which can further help identify where heavy rain is more likely, and inside this circle those values were also indicating less likely hood of heavy rain. The resultant algorithm output in the lower left, suggests a region of either small hail, or hail and rain mix. The specific values of CC and ZDR (which are hard to read exactly in this picture) were in the range where studies have shown that marginally severe hail is possible. In fact, at about this time (5:15pm) and location (near Charmco a few miles northwest of Rupert), we received a report of 1.0” diameter hail (quarter size), which is the lower end threshold for severe hail.

There will be times when these hail signatures are more subtle, and time when they are more obvious, but they can be one more clue as to whether or not a storm has a likelihood of producing severe size hail. We will continue to learn how best to use this new data as we gain more experience with it. We do expect improved detection of various wintry precipitation types with the dual-pol technology this winter!

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