



Impacts of polarimetric radar observations on hydrologic simulation

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This study presents an analysis of hydrologic simulations performed for a dataset of several rainfall-runoff events, including a 100-year event, that were captured by the polarimetric prototype of the WSR-88D radar, KOUN. The focus basin is the heavily instrumented Ft. Cobb basin in Oklahoma which features a Micronet, a network of 15 hydrometeorological stations, and four US Geological Survey stream gauges. The high-density rain gauge network was used to evaluate the polarimetric rainfall algorithms.

We also set up and rigorously calibrated the National Weather Service Office of Hydrologic Development's 19-parameter distributed hydrologic model over a three-year period. Benchmark simulations were produced using inputs from the rain gauge-only product that was used for calibration. The hydrologic model was then forced with rainfall using the standard WSR-88D reflectivity-to-rainfall (Z-R) relation as well as recently proposed rainfall algorithms based on polarimetric variables. Ultimately, this study aims to answer: "What will polarimetric radar do for flash flood prediction?"