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A C-Band, Dual-Polarimetric Radar Analysis of a Tornadic Mesoscale Convective System: The 25 May 2011 Northern Illinois and Indiana Tornado Event

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During the morning hours of 25 May 2011, at least six tornadoes struck a narrow corridor of Northeast Illinois and Northwest Indiana. Two tornadoes were rated EF0, three EF1, and one EF2. These tornadoes occurred in conjunction with a mesoscale convective system (MCS) that traveled northeast across the region during the early to mid-morning hours, between 1200 UTC and 1500 UTC. The tornadoes occurred at least 65 km away from the nearest NEXRAD WSR-88D radar site. The confirmed tornadoes from this event occurred without severe thunderstorm or tornado warnings likely due to the fact that (1) the squall-line was oriented parallel to the radar beam, (2) there were minimal real-time spotter reports, (3) embedded circulations were shallow, and (4) the tornado-producing storms did not exhibit classic radar signatures at the nearest NEXRAD locations. The tornadoes occurred anywhere from approximately 50-75 km from the C-band dual-polarimetric radar located on the campus of Valparaiso University in Valparaiso, IN. In this presentation, we examine the data gathered from the C-band, dual-polarimetric radar at Valparaiso University. We review the data in hopes of revealing methods that could have better detected the tornadoes produced during this event.

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Anthony Lyza, Sarah Mustered, Travis Elless, Sarah Al-Momar, and Ian Lee are students at Valpo. Raquel Evaristo is the Geography/Meteorology Department radar meteorologist and Adam Stepanek is a staff meteorologist in the department. Eric Lenning is the Science and Operations Officer for the NOAA/NWS Forecast Office in Romeoville, IL. Teresa Bals-Elsholz, Bart Wolf, Kevin Goebbert, and Craig Clark are all faculty members from the VU Geography/Meteorology Department.

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