

## **Conservation of Supercellular Vorticity: A Possible Origin of Severe Mesovortices in the Middle to Lower Missouri River Valley**

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Multiple quasi-linear convective systems (QLCSs) are examined using several Doppler radars to investigate the origin and evolution of both tornadic and non-tornadic mesovortices and their radar appearances. Numerous instances of mesovortex tornadoes associated with QLCSs have occurred in recent years and have been detected by Weather Surveillance Radar-1988 Doppler (WSR-88D) radars at Alma and Wichita, Kansas, Pleasant Hill, Missouri and Valley, Nebraska. Damage up to EF3 was observed with one of the tornadic mesovortices while the other mesovortices produced up to EF2 tornado damage or straight-line wind damage equivalent to an EF-1 tornado. Prior studies have shown that vorticity is conserved in the transition from supercell to QLCS convective modes and it is hypothesized that the conservation of this vorticity is a primary mechanism for QLCS mesovortex tornadogenesis in the middle to lower Missouri River Valley region.