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# Plains Elevated Convection at Night (PECAN): Preliminary Analyses of Severe Surface Wind Production during the Transition from Daytime-to-Nocturnal Convection

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The transition from surface-based to elevated convection and the subsequent organization and evolution of MCSs as the nocturnal stable boundary layer (NSBL) develops are not well understood. During the transition from discrete cells to an MCS, severe surface winds may be generated but the processes responsible for the onset, intensification, and cessation of severe surface winds at night are uncertain. Hydrometeor type, distribution, and evolution within these transitioning storms, as well as the evolving properties of the NSBL, environmental shear and other factors likely play important roles in the initiation and maintenance of intense, surface-reaching downdrafts.

Until recently, there have been no integrated and targeted observations of nocturnal convection. This will change with the execution of the Plains Elevated Convection At Night (PECAN) experiment, which will occur in the Great Plains of the United States from 1 June – 15 July 2015. PECAN will deploy a diverse array of instrumentation, including mobile and stationary radars, surface weather stations, mobile mesonets, and soundings in and near nocturnal MCSs and convection transitioning from daytime to nocturnal/MCS organization in the presence of a developing NSBL enabling the study of initiation/transition, evolution, internal kinematics and microphysics of severe-surface-wind-producing and potentially severe-surface-wind-producing convective systems.

We will present preliminary analyses of a severe-wind-producing convective system transitioning from supercellular to MCS organization that occurred during PECAN. Dual-Doppler analysis of mobile radar data will be used to quantify the three-dimensional winds through the depth of the convection. Internal microphysical processes will be inferred from the radar reflectivity and dual-polarization fields and surface disdrometer data. Sounding systems and wind profilers will be used to diagnose atmospheric stability, depth of the nocturnal boundary layer, vertical wind structure and the location of the nocturnal low-level jet (LLJ). Mobile mesonet and stationary weather stations will be used to quantify the strength and horizontal span of the surface cold pool, and characterize severe winds at the surface.

This is companion paper to: Plains Elevated Convection At Night (PECAN): Preliminary Analyses of Severe Surface Wind Production in a Nocturnal MCS.