



Observations of the Streamwise Vorticity Current from Project TORUS

Christopher Weiss (1), Alex Schueth (1), and Adam Houston (2)

(1) Texas Tech University, Lubbock, United States (chris.weiss@ttu.edu), (2) University of Nebraska, Lincoln, United States (ahouston2@unl.edu)

During the spring seasons of 2019 and 2020, the Targeted Observation by Radars and UAS of Supercells (TORUS) field campaign will take place across the U.S. Plains, seeking to provide a more comprehensive understanding of how the thermodynamic and kinematic gradients characterizing supercell thunderstorm boundaries support or inhibit the production of near-surface vertical vorticity. This project will feature an unprecedented integration of high- and low-frequency mobile Doppler radar, sounding systems, and in situ measurements made at the surface and over the lowest 750 m AGL via unmanned aircraft systems (UAS).

The first part of the presentation will offer an overview of the main aims of the TORUS project, with specific focus on a set of objectives involving the streamwise vorticity current (SVC), an area of often intense horizontal vorticity that resides within the lowest 300 m AGL within the left- and forward-flank regions of some supercell thunderstorms. The SVC has been identified in a few recent high-resolution numerical supercell simulations (e.g., Orf et al. 2017; Rasmussen 2018; Schueth and Weiss 2019), but TORUS will represent the first comprehensive effort to obtain observations of such a feature in real storms. We will focus the second portion of the presentation on comparison of these new observations with the recently published literature.