Importance of low-level humidity and shear for the tornadogenesis process

- Low humidity in the boundary layer leads to colder outflow, which is detrimental to stretching needed for tornadoes.
- Strong near-surface shear promotes intense low-level mesocyclones.
- Recent research suggests the orientation of near-surface horizontal vorticity in the inflow environment is determinative of the storm’s tornadic potential due to contrasting low-level mesocycle configurations.

Composite soundings

- The RUC temperature profile exhibits minimal errors.
- RUC dry biases exist in the low- to mid-troposphere, while moist biases are found in the upper troposphere.
- Winds below 500 m are too fast in the RUC, however the hodograph shape is well-represented in both cases.

Future Work

- Incorporate SPC mesoanalysis into near-surface RUC analyses.
- Use observed storms motions for SRH calculations.
- Spatially average RUC pseudo-soundings using a Barnes analysis technique.

Any questions? Email me at becoffer@ncsu.edu