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AUSTIN | 7–11 JANUARY 2018

American Meteorological Society

773: Bulk Shear, Supercell Composite, Precipitable Water, and More: Exploring MetPy's New CAPE-abilities with an Interactive Sounding Plotter
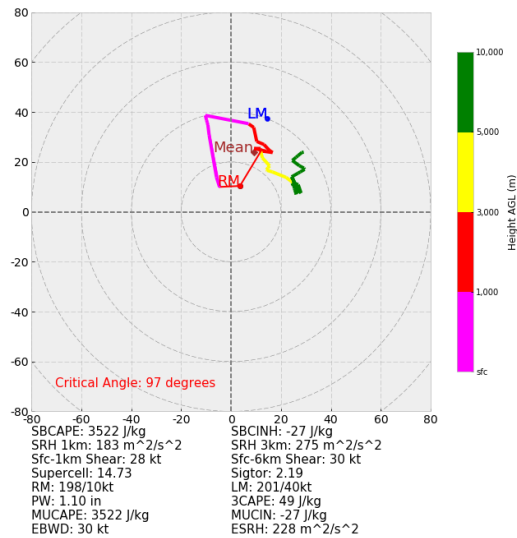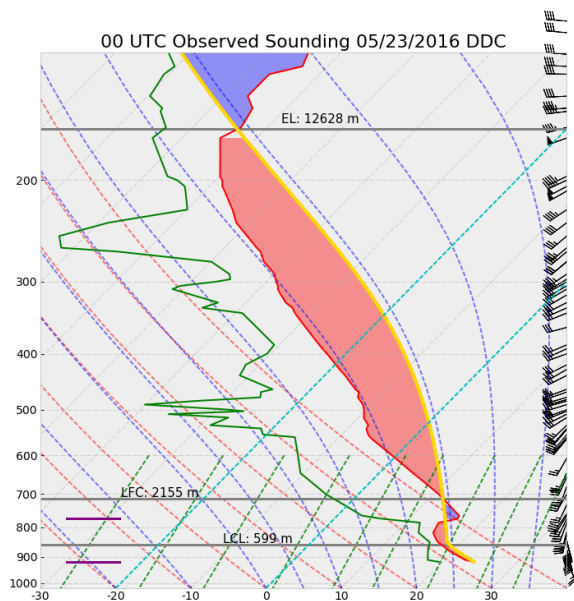
Tuesday, 9 January 2018
03:45 PM - 05:30 PM
Austin Convention Center and Hilton - Exhibit Hall 3 (ACC)

MetPy is an open-source Python package for working with meteorological datasets developed and maintained by Unidata and community contributors. An important function of this package is the ability to work with observed or model-forecast sounding data, with an eventual aim for NSHARP or SharpPy-like functionality. As part of the 2017 Unidata Summer Internship program, several steps were taken toward this goal, including the implementation or improvement of calculations for a number of kinematic, thermodynamic, and derived sounding parameters as well as enhancements to MetPy's hodograph plotting routines. The added parameters include precipitable water, storm-relative helicity, bulk shear, pressure-weighted mean wind, Bunkers storm motion, supercell composite, significant tornado parameter, and critical angle.

This work will give an overview of the progress made on MetPy's sounding plotting functionality and the challenges encountered in implementing these improvements, including overcoming issues with interactions between pint's unit library and various numpy functions and fixing several bugs in MetPy's EL and LFC calculations. Examples demonstrating how to use these additions to MetPy have been added to the Unidata Python Gallery. Furthermore, MetPy's new capabilities will be showcased through the demonstration of an interactive sounding plotter using Jupyter widgets which can access any sounding from the University of Wyoming's upper air data archive and allows the user to modify sounding surface conditions and input a custom storm motion.

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