Bulk Shear, Supercell Composite, Precipitable Water, and More: Exploring MetPy's New CAPE-abilities with an Interactive Sounding Plotter

8Python 773

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Motivation

- Users frequently requested the addition of various sounding parameters (CAPE, SRH, precipitable water, etc.) to MetPy
- Various improvements were also requested for the MetPy Skew-T plotting functions.
- Sounding parameter calculations for gridded fields are often needed in addition to calculations for point soundings.

Additions

- Sounding Parameters
  - CAPE, Storm-Relative Helicity, Bulk Shear, Precipitable Water, Mean Pressure-Weighted Wind
- Severe Weather Indices
  - Supercell Composite, Significant Tornado Parameter, Bunkers Storm Motion, Critical Angle
- Hodograph can now be segmented and colored according to height, wind speed, or any other parameter
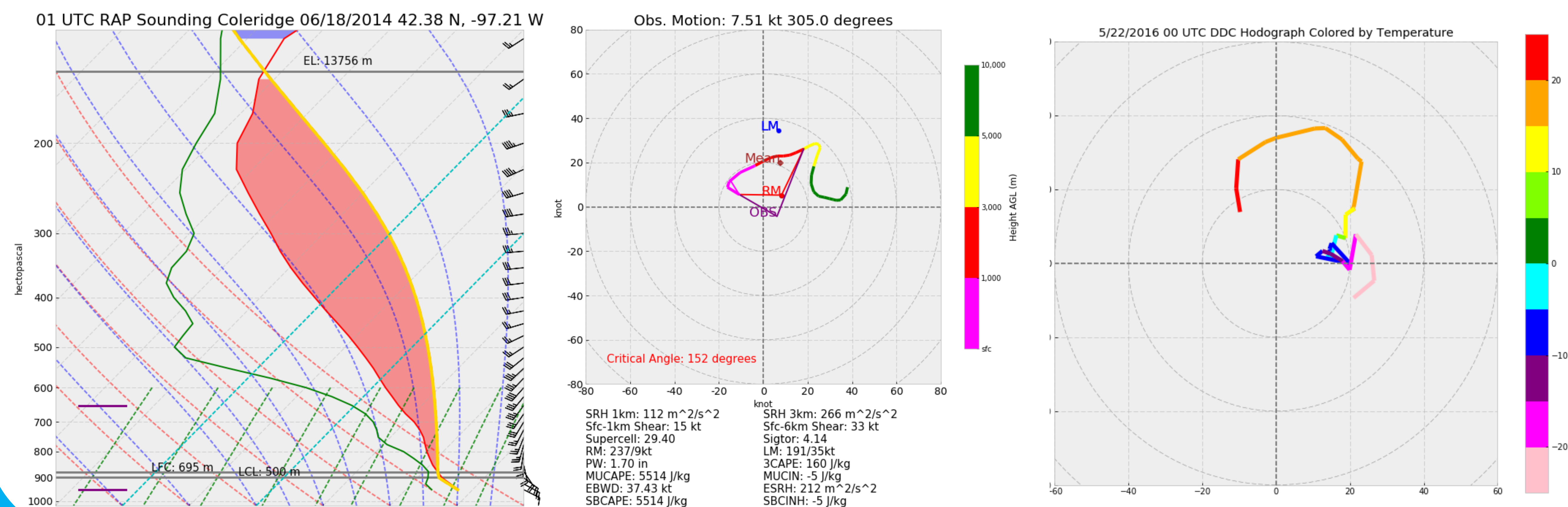
Future Work

- Add more parameters and examples!
- Make parameter calculations for gridded data faster
- Add virtual temperature correction for CAPE/CIN as part of a parcel assumptions object
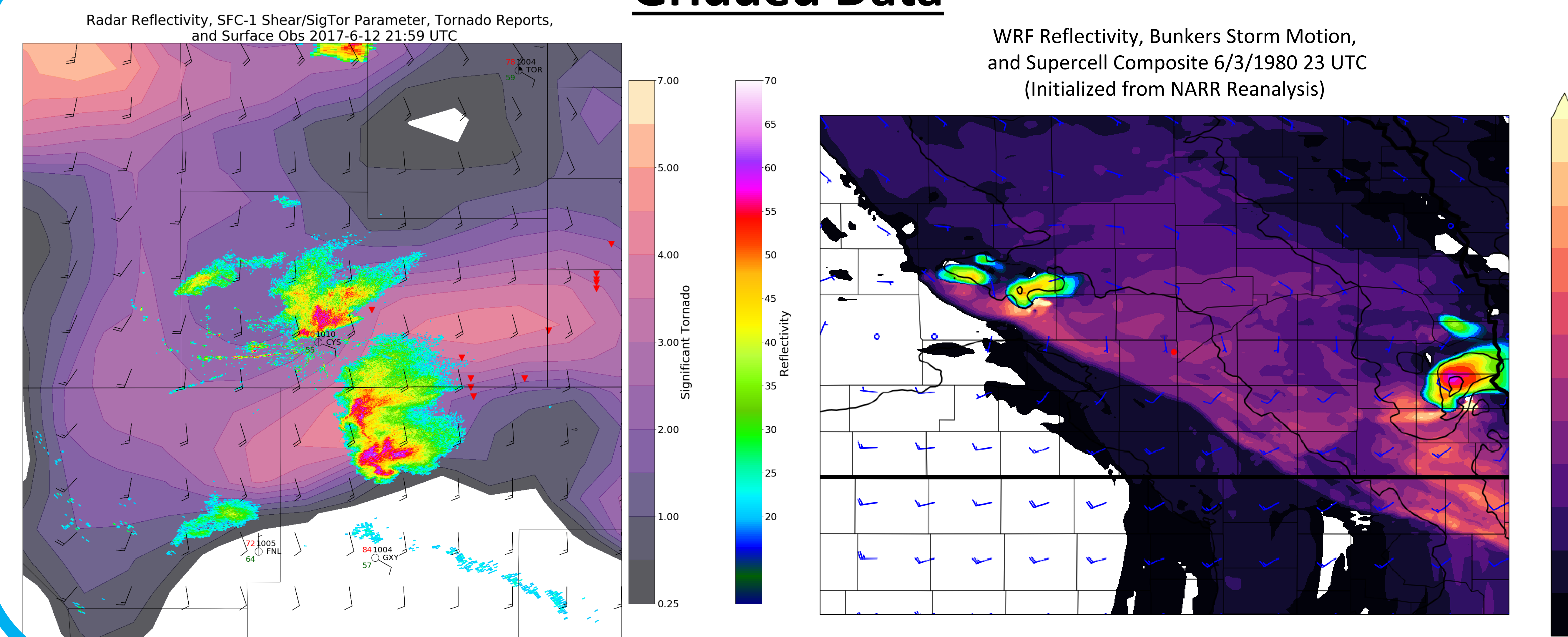
Acknowledgements

Soundings

Gridded Data

Got a feature idea? Have a bug to report? Just want to see what's going on with MetPy? Visit https://github.com/Unidata/MetPy/issues

MetPy's documentation is available at https://unidata.github.io/MetPy