

Steps in the Severe Weather Diagnosis and Prediction Process: Morning Assessment with Specific Reference to Joplin Tornadoic Thunderstorm

1. **Analyses:** Chart/Diagram Analyses and Diagnoses
 - a. Subsynoptic Analysis of Surface Features (Lab 9; 11)
 - i. Isobars at 2 mb Intervals, Highs/Lows,
 - ii. Boundaries, including fronts, outflow boundaries, wind shift lines (troughs), and Dry Lines
 - iii. Examination of pertinent satellite imagery for consistency with (1) and (2) just above;
 - b. Diagnosis of Features in the Middle/Upper Troposphere (Lab 9)
 - i. 500 mb chart analysis; Location of troughs/ridges, jet streams (Lab 9)
 - ii. Upper tropospheric chart analysis (either 300 mb or 250 mb) Location of troughs/ridges, jet streams
 - c. Assessment of Morning Thermodynamic and Shear Environment and Analysis of Potential Diurnal Heating Effects in Area of Risk
 - i. Stability and Shear Assessment of Nearby Soundings (Labs 9 and 11)
 1. Stability Class, LCL, LFC, EL
 2. CAPE/CIN Analysis or Diagnosis
 3. Assess whether deep and low level shear is favorable on the basis of hodograph analyses
 - ii. Assessment of Projected Afternoon Diurnal Heating Effects (Lab 11)
 1. CCL, CT
 2. CAPE/CIN Analysis or Diagnosis
 3. Try to assess if the shear environment will become more or less favorable by late afternoon by projecting changes to hodograph;
 - iii. Compare (2) with Forecast Model Soundings and hodographs (we won't be doing this in EARTH 260).
2. **Synthesis:** Assessment of Area of Greatest Risk
 - a. Determine Your Anticipated Best Area for Supercells or Tornadoic Supercells Based upon (1a);
 - b. Compare and contrast your assessment with that of SPC and resolve the differences (be careful of Argument by Authority issues; if you know what you are doing you may be disagreeing with SPC rightfully). (Lab 13)