Sounding and Hodograph Help Information

Run Times

1. Only 0000 UTC and 1200 UTC soundings are created. The program runs at 0037, 0052, 0117, 1237, 1252, and 1317 UTC; new images are available about 5 min after these times.
2. The warm-season soundings are created day 100 to day 290 (roughly mid April to mid October); cool-season soundings are created otherwise.

All Sounding Displays

1. The latest profile is in red (T) and green (Td). The profile from 12 hours prior is the same but with only a 20% brightness.
2. The current wind barbs are color coded with break points at 12.5, 22.5, 32.5, 42.5, 62.5, 82.5, 102.5, and 122.5 knots.
3. Wind barbs from 12 hours prior are smaller and black with a 20% brightness.

Cool-Season Sounding Display

1. The surface-based parcel trace is a black line. The SBLCL is labeled in black.
2. If SBCAPE > 50, CAPE area is shaded in orange and CIN area is shaded in light cyan.
3. The 0° isotherm is dashed turquoise and the -12 and -18°C isotherms are dashed purple (for freezing drizzle and the dendritic growth zone).
4. Plotted indices include:
    a. SBCAPE (magenta if > 500; red if 250-500; blue if 50-250; otherwise black)
    b. SBCIN
    c. MUCAPE
    d. PWAT
    e. PWpct (PW percent of normal; magenta if ≥175; brown if < ≤25; otherwise black)
    f. PWtile (PW percentile of distribution; magenta if ≥90; brown if ≤10; otherwise black)
    g. WBZ (height of wet-bulb at the 0° level, in ft AGL)
    h. FZDZ (= YES, YES/snow, FZFG, SCdrops, or no); this is an algorithm that uses top-down approach to check for possibility of freezing drizzle; if the moist layer is too shallow for FZDZ (i.e., < 500 m thick), then either FZFG or supercooled drops (SCdrops, only if at the surface) may be indicated
    i. MixHgt (height of the mixing height in ft AGL; computed by adding 0.6K to the surface theta and then finding the first level above that where theta increases above the surface-adjusted value)

Warm-Season Sounding Display

1. The most-unstable parcel trace is a black line. The MULCL is labeled in black.
2. If MUCAPE > 50, CAPE area is shaded in orange and CIN area is shaded in light blue.
3. The 0° isotherm is dashed turquoise and the -10 and -30°C isotherms are dashed purple (for the melting level and hail growth zone).
4. The DCAPE moist adiabat (that shows the parcel descent) is plotted as a black-red line. This is based on finding the lowest theta-E in the bottom 35 to 400 mb of the sounding (i.e., the near-surface layer is not used).
5. Plotted indices include:
    a. MLCAPE (magenta if > 2500; red if 1500-2500; blue if 750-1500; otherwise black)
    b. MLCIN
    c. MUCAPE (magenta if sbcape < 100 and mucape ≥ 1000; red if sbcape < 50 and mucape ≥ 500; blue if sbcape < 10 and mucape ≥ 100; otherwise black); this is meant to highlight elevated convection environments
    d. MUCIN
    e. fSBCAPE (forecast SBCAPE based on max theta in lowest 1000 m AGL)
    f. fSBCIN (forecast SBCAPE based on max theta in lowest 1000 m AGL)
    g. DCAPE
    h. PWAT
    i. PWpct (PW percent of normal; magenta if ≥175; brown if < ≤25; otherwise black)
    j. PWtile (PW percentile of distribution; magenta if ≥90; brown if ≤10; otherwise black)
    k. SCP (magenta if > 10; red if 5-10; blue if 2.5-5; otherwise black); effective layer as defined on SPC's mesoanalysis page
    l. STP (magenta if > 5; red if 3-5; blue if 1-3; otherwise black); effective layer as defined on SPC's mesoanalysis page
    m. Significant Severe Parameter (SSP) divided by 1000 (magenta if > 30; red if 15-30; blue if 5-15; otherwise black).

Hodograph Display

1. Wind data are plotted every 250 m, but with markers at every 1 km from the surface to 10 km.
2. The surface to 0.5 km hodograph is magenta, the 0.5-3 km hodograph is red; the 3-7 km hodograph is green; and the 7-10 km hodograph is blue.
3. A gray circle with a radius of 8 knots is plotted at the origin to highlight the speeds to be especially concerned for slow-moving storms. When the RM and LM gray circles (noted below) intersect with the gray circle at the origin then the threat of slow-moving supercells increases.
4. The 0-6 km mean wind is plotted as a black box with a yellow "X".
5. **If the 0-6 km bulk wind difference is >= 18 knots and any CAPE is > 20:**

    a. The right-moving (RM) and left-moving (LM) supercell motions are plotted with arrows and purple circles with black “+” signs.
    b. Gray circles with a radius of 7.2 knots are plotted around the RM and LM storm motions to indicate the typical range of errors.
    c. **ADDED (4/10/2019):** vectors for the 0-500 m shear vector and RM storm-relative wind are plotted in light gray.
6. Plotted indices include:
    a. The bulk wind difference from 0-1 (Bulk1), 0-3 (Bulk3), 0-6 km (Bulk6), 0-8 km (Bulk8), and 0-10 km (Bulk10). Furthermore, the Bulk3 is highlighted blue (30-40 kt), red (40-50 kt), and magenta (>50 kt) for QLCS mesovortex forecasting.
    b. The mixed-layer BRN (magenta from 15-35; red from 35-55; blue from 5-15; otherwise black); used to highlight the most favorable range for supercells
    c. If Bulk6 > 15 knots and any CAPE is > 0, then the LM supercell motion and 0-3 km SRH are given.
    d. If Bulk6 > 15 knots and any CAPE is > 0, then the RM supercell motion and 0-3 km, and 0-0.5 km SRH are given. The 0-0.5 km SRH is color coded as magenta (≥ 130), red (110-130), blue (90-110), and black (< 90). This is based on VORTEX2 results.