Wind

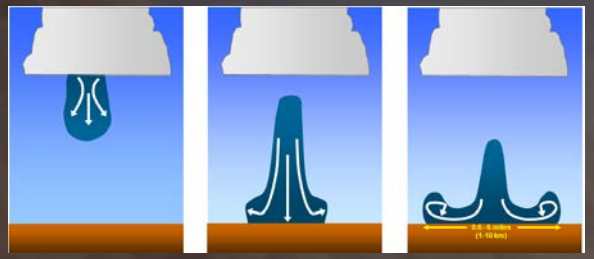
Near Storm Environment

Storm Characteristics

Individual Cell Downburst/Microburst

Wet Microburst:
- Wet microburst severity index (WMSI) > 80
- Microburst composite (MBCP) ≥ 5-8
- 0-3 km max theta-e difference ($\Delta\theta_e$) > 25°C
- Surface-based CAPE (SBCAPE) ≥ 3100 J/kg
- Downdraft CAPE (DCAPE) ≥ 900 J/kg
- Precipitable water (PW) ≥ 1.5”

Dry Microburst:
- Inverted-V sounding (apex based in mid-levels)
- Most unstable CAPE (MUCAPE) > 0 J/kg
- 100-mb mean parcel LCL height > melting level
- Weak effective bulk wind difference (EBWD)
- Weak boundary layer winds
- 0-3 km lapse rate (LR_{0-3}) ≥ dry adiabatic

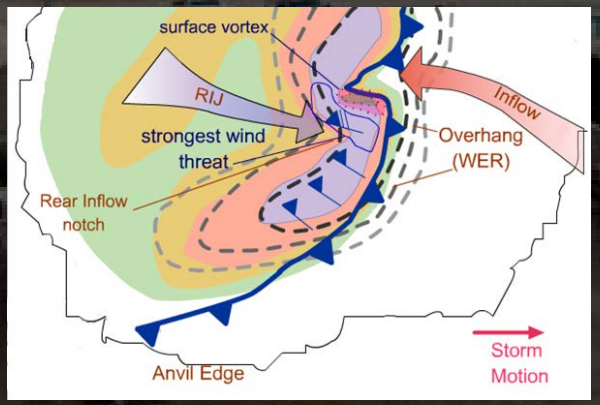


- Rapid formation of strong core aloft
- Descending core bottom
- Mid-altitude radial convergence (MARC) (0°C to lifted condensation level (LCL)) ΔV > 15 kt
- Wet hail signature (Three-Body Scatter Spike (TBSS), CC ~ 0.93-0.96, KDP > 3°C/km)
- Low-level (< 1500 ft AGL) velocity (V) > 30 kt

Note: Beware of low reflectivity (Z) cells w/high lifted condensation levels (LCLs) at 0 ℃ and/or strong wind in mixing layer

Quasi-Linear Convective System (QLCS)/Derecho/Cold-Pool Driven

- Derecho composite parameter (DCP) > 2
- Downdraft CAPE (DCAPE) > 980 J/kg
- 0-6 km mean wind > 16 kt
- Most unstable CAPE (MUCAPE) > 2000 J/kg
- Effective bulk wind difference (EBWD) > 20 kt



- Strong leading reflectivity (Z) gradient
- Bow echo
- Rear inflow jet (RIJ)
- Mid-altitude radial convergence (MARC) ΔV > 50 kts at 3-5 km AGL
- Deep convergence zone (DCZ) > 10 kft
  - > 15-20 kft is optimal
- Gust front hugs close to reflectivity (Z) gradient
- Linear weak echo region (WER) along leading edge
- Fast storm motion

Note: A mesovortex w/RIJ produces strongest wind