# Hail

## Near Storm Environment

### Severe (≥ 1-inch)
- Large hail parameter (LHP) > 4
- Most unstable CAPE (MUCAPE) ≥ 1600 J/kg
- Effective bulk wind difference (EBWD) ≥ 29 kt

### Significant (≥ 2-inch)
- Significant hail parameter (SHIP) > 1
- Large hail parameter (LHP) ≥ 5
- Most unstable CAPE (MUCAPE) ≥ 1850 J/kg
- Effective bulk wind difference (EBWD) ≥ 39 kt
- 700-500 mb lapse rate (LR7-5) ≥ 6.5°C/km
- Surface to equilibrium level bulk shear (ShearEL) ≥ 46 kt

### Giant (≥ 4-inch)
- Large hail parameter (LHP) ≥ 8
- Most unstable CAPE (MUCAPE) ≥ 3000 J/kg
- Effective bulk wind difference (EBWD) ≥ 46 kt
- 700-500 mb lapse rate (LR7-5) ≥ 7.0°C/km
- Surface to equilibrium level bulk shear (ShearEL) ≥ 60 kt

## Storm Characteristics

### Severe (≥ 1-inch)
- Discrete thunderstorm
- Weak echo region (WER)
- 50 dBZ thickness above the melting level ≥ 16 kft
- Reflectivity (Z) ≥ 60 dBZ
- Correlation coefficient (CC) = 0.93-0.97
- Three body scatter spike (TBSS)
- Storm-top divergence (STD) ΔV > 70-102 kt
- Hail detection algorithm (HDA) > 1”
- Max estimated size of hail (MESH) > 1”

### Significant (≥ 2-inch)
- Discrete supercell
- Bounded weak echo region (BWER)
- Updraft persists ≥ 30 min
- 60 dBZ above -20°C
- Correlation coefficient (CC) ≈ 0.7-0.9
- Differential reflectivity (ZDR) ≈ 0 dB
- Storm-top divergence (STD) ΔV > 130-162 kt
- Peak rotational velocity (Vr) ≥ 27-41 kt
- Hail detection algorithm (HDA) ≥ 2”
- Max estimated size of hail (MESH) ≥ 2”

### Giant (≥ 4-inch)
- Storm-top divergence (STD) ΔV > 233-267 kt
- Peak rotational velocity (Vr) > 39-56 kt