

# SPC MESO ANALYSIS PAGE

PARAMETER	KEY VALUES		
<i>Normalized CAPE</i> (CAPE divided by depth of the buoyancy layer)	$\leq 0.1 \text{ m}^2/\text{s}^2$ "Tall Skinny" CAPE Weaker accelerations		$0.3 - 0.4 \text{ m}^2/\text{s}^2$ "Fat" CAPE Large accelerations
<i>BL to 6km Shear</i>	$\geq 35-40$ knots Supercells		
<i>Effective Bulk Shear</i> (LPL to 50 % EL)	10-25 kts Non-Supercells	25-40 kts Supercells more likely	$>40$ kts Supercells likely
<i>BRN Shear</i>	$\geq 35-40 \text{ m}^2/\text{s}^2$ Supercells		
<i>0-1km SRH</i>	$\geq 100 \text{ m}^2/\text{s}^2$ Threat of TORs from supercells		
<i>0-3km SRH</i>	$\geq 250 \text{ m}^2/\text{s}^2$ Threat of TORs from supercells		
<i>Effective SRH</i> (inflow layer ONLY)	$\geq 200 \text{ m}^2/\text{s}^2$ ESRH <b>AND</b> $\leq 500-1000$ m Effective Height		
<i>SFC – 1km Vertical Shear</i>	$>15-20$ kts favor Supercell Tornadoes		
<i>SFC – 2km SR Winds</i>	$\geq 15-20$ kts Majority of Supercells		
<i>4-6 km SR Winds</i>	$< 15$ kts Non-tornadic Supercells	$> 15$ kts Tornadic Supercells	
<i>9-11 km SR Winds/ Anvil Level SR Winds</i>	$< 40$ kts HP Supercells	40-60 kts Classic Supercells	$>60$ kts LP Supercells
<i>Supercell Composite Parameter (SCP)</i>	0.5-3.5 Marginal/Elevated	2-11 Moderate/SB Supercells	$>11$ High/SB Supercells
<i>SCP for Left Moving Supercells</i>	-0.5 to -2 Low		$< -2$ High
<i>Significant Tornado Parameter (STP)</i>	$< 1$ Non-Tornadic Supercells	$> 1$ Significant TORs ( $\geq F2$ )	
<i>Significant Hail Parameter (SHIP)</i>	0-1 (Hail $<1.5''$ )	1-3 (Hail $2.5''-4''$ )	$\geq 4$ (Hail $>4''$ )
<i>Craven/Brooks SigSVR</i> 2+''hail/65+kts/F2+ Tor	5-20 $\text{m}^3/\text{s}^3$ Low	20-40 $\text{m}^3/\text{s}^3$ Moderate	$>40 \text{ m}^3/\text{s}^3$ High
<i>0-1km Energy Helicity Index (EHI)</i>	$> 1-2$ Significant TORs Possible		
<i>0-3km EHI</i>	$> 2$ Significant TORs Possible		
<i>Vorticity Generation Parameter (VGP)</i>	$0.15 - 0.20 \text{ m}^2/\text{s}^2$ (Consider TOR warn)	$>0.20 \text{ m}^2/\text{s}^2$ Tornado more likely	
<i>LFC Height</i>	$>2000$ m agl Low	1500-2000 m Tors more likely	$<1000$ m Strong support for Tors
<i>LCL Height</i>	$>1250$ m Tors less likely	1000-1250 m Mod support for Tors	500-1000 m Strong support - Tors

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<i>SB CAPE / CIN</i> (Seasonal Variability)	<500 J/kg & any CIN Little support	500 – 1500 J/kg & CIN 50-100 J/kg Supercells more likely	>1500 J/kg & CIN <50 J/kg Supercells likely
<i>ML CAPE / CIN</i> (Seasonal Variability)	<500 J/kg & any CIN Little support	500 – 1500 J/kg & CIN 50-100 J/kg Supercells more likely	>1500 J/kg & CIN <50 J/kg Supercells likely
<i>MU CAPE / LPL Height</i> (Lifted Parcel Level) (Seasonal Variability)	<500 J/kg & LPL >1500 m Little support	500 – 1000 J/kg & LPL 500-1500 Mod support for supercells	>1000 J/kg & LPL <500 m Strong support for Supercells
<i>SB LI and SB CIN</i> (Seasonal Variability)	LI > 0 C & CIN > 100 J/kg Weak chc SB storms	LI 0 to -2 C & CIN 50-100 J/kg Mod chc SB storms	LI < -2 C & CIN 0-50 J/kg Strong chc SB storms
<i>0-3km CAPE / SFC Vort</i>	0-25 J/kg & vort 0-1 Low Tor	25-50 J/kg & vort 1-3 Mod Tor	>50-75 J/kg & vort >3 High Tor

parameter values relative to general support for significant supercell tornadoes

parameter	"poor"	"marginal"	"ok"	"strong"
0-1 km EHI	< 1.0	1.0-1.9	2.0-2.9	>= 3.0
BL-6 km shear	< 30 kts	30-37 knots	38-44 kts	> 45 kts
LCL height	> 1500 m	1250-1499 m	1000-1249 m	< 1000 m
CIN	> 150 J/kg	100-149 J/kg	50-99 J/kg	< 50 J/kg
LFC height	>= 2500 m	2000-2499 m	1500-1999 m	< 1500 m
0-3 km CAPE	< 30 J/kg	30-59 J/kg	60-89 J/kg	>= 90 J/kg

environment support for supercell tornadoes?	criteria
Red box (favorable)	EHI and/or BL-6 km shear "strong", low-level thermodynamics not "poor"
Yellow box (marginal)	EHI and BL-6 km shear "ok" or "marginal", low-level thermodynamics not "poor"
Light box (unfavorable)	One or more parameters fall well into the "poor" category

Table 1	mean	mean	mean	mean	mean	mean	mean	mean
F1-F4 tornadoes (338) from 2001-2004 RUC database	CAPE J kg <sup>-1</sup>	0-1 km SRH m <sup>2</sup> s <sup>-2</sup>	LCL m AGL	0-2 km lapse rate °C km <sup>-1</sup>	0-3 km lapse rate °C km <sup>-1</sup>	0-3 km CAPE J kg <sup>-1</sup>	0-1 km EHI	STP
SRH <sub>0-1</sub> < 75 m <sup>2</sup> s <sup>-2</sup> (71)	2294	38	1401	8.2	7.7	109	.56	0.3
SRH <sub>0-1</sub> ≥ 75 m <sup>2</sup> s <sup>-2</sup> (267)	1937	226	998	6.4	6.4	91	2.52	3.1
LCL > 1300 m (95)	2599	112	1673	8.2	8.0	78	1.79	0.9
LCL < 1300 m (243)	1782	216	851	6.2	6.2	101	2.23	3.2