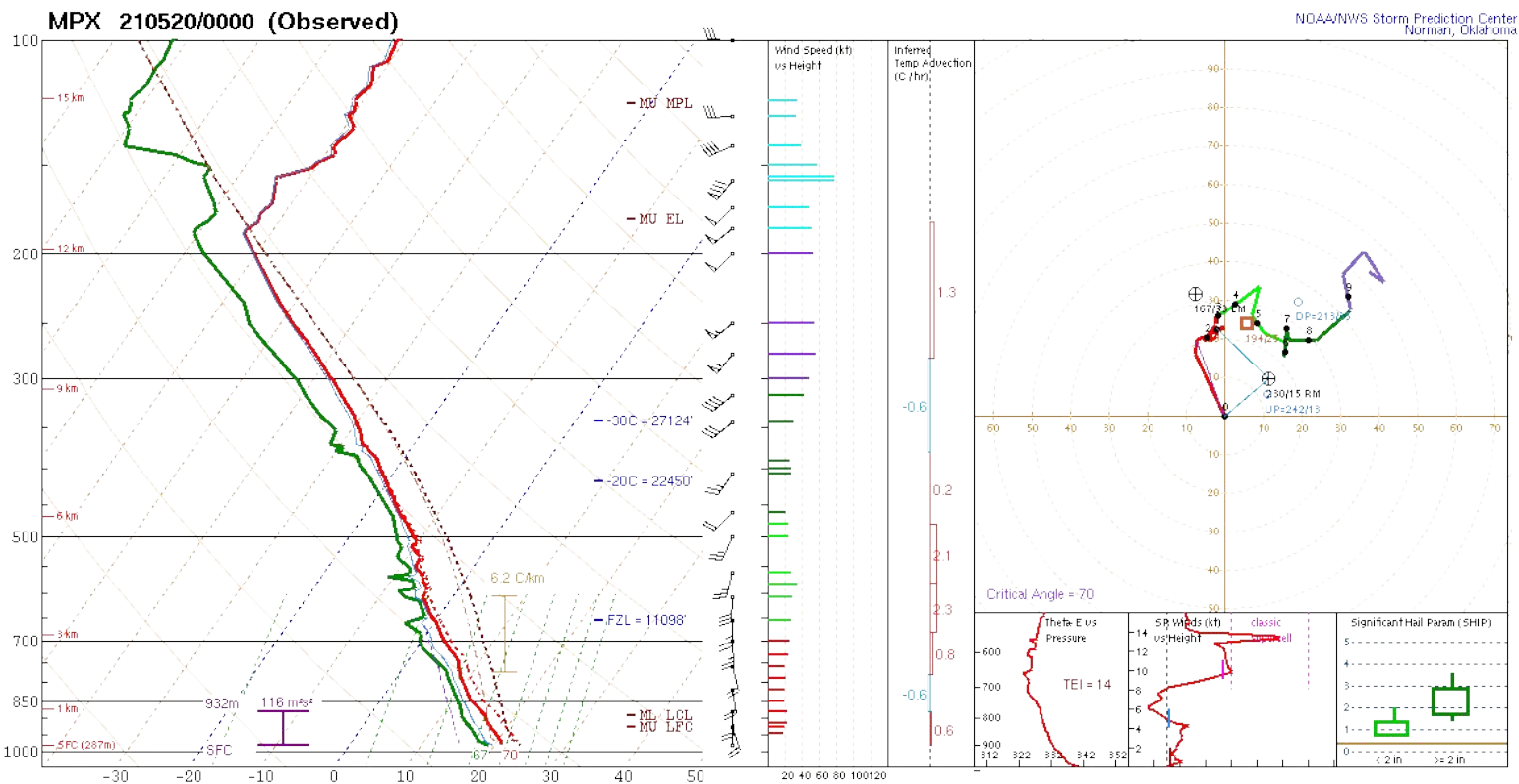
Event Summary

Several Low topped supercells developed along a warm front across Southern Minnesota Wednesday evening, May 19th. Preliminary reports indicate these storms produced 7 tornadoes across Southern Minnesota. This was a marginal CAPE, marginal wind shear environment with low cloud bases. A strengthening low-level jet led to an increase in low-level wind shear. This was able to produce a few low-topped supercells that were efficient tornado producers.

Near Webster, Minnesota

05/20 00Z Sounding



PARCEL	CAPE	CINH	LCL	LI	LFC	EL
SURFACE	1597	-5	221m	-4	506m	41216'
MIXED LAYER	476	-10	841m	-2	1226m	28521'
FCST SURFACE	1262	0	1272m	-4	1272m	40881'
MU (980 mb)	1597	-5	221m	-4	506m	41216'

PW = 1.49 in	3CAPE = 88 J/kg	WBZ = 10254'	WNDG = 0.0
K = 32	DCAPE = 385 J/kg	FZL = 11098'	ESP = 0.0
MidRH = 83%	DownT = 60 F	ConvT = 76F	MMP = 0.26
LowRH = 84%	MeanW = 12.0 g/kg	MaxT = 80F	NCAPE = 0.13
SigSevere = 5670 m3/s3			

Sfc-3km Agl Lapse Rate =	6.3 C/km
3-6km Agl Lapse Rate =	5.6 C/km
850-500mb Lapse Rate =	5.6 C/km
700-500mb Lapse Rate =	5.4 C/km

Supercell = 2.1
Left Supercell = 0.2
STP (eff layer) = 0.0
STP (fix layer) = 0.0
Sig Hail = 0.3

	SRH(m2/s2)	Shear(kt)	MnWind	SRW
SFC - 1 km	114	23	168/17	114/16
SFC - 3 km	132	26	171/20	122/17
Eff Inflow Layer	116	23	168/16	113/16
SFC - 6 km		23	180/21	133/17
SFC - 8 km		30	185/21	137/15
LCL - EL (Cloud Layer)		48	193/24	154/15
Eff Shear (EBWD)		23	181/21	135/16

BRN Shear = 16 m²/s²
4-6km SR Wind = 170/16 kt

.....Storm Motion Vectors.....
Bunkers Right = 230/15 kt
Bunkers Left = 167/33 kt
Corfidi Downshear = 213/35 kt
Corfidi Upshear = 242/13 kt

1km & 6km AGL Wind Barbs

*** BEST GUESS PRECIP TYPE ***
Rain.
Based on sfc temperature of 70.2 F.

SARS - Sounding Analogs

SUPERCELL	SGFNT HAIL
No Quality Matches	No Quality Matches
(2 loose matches) SARS: 100% TOR	(30 loose matches) SARS: 13% SIG

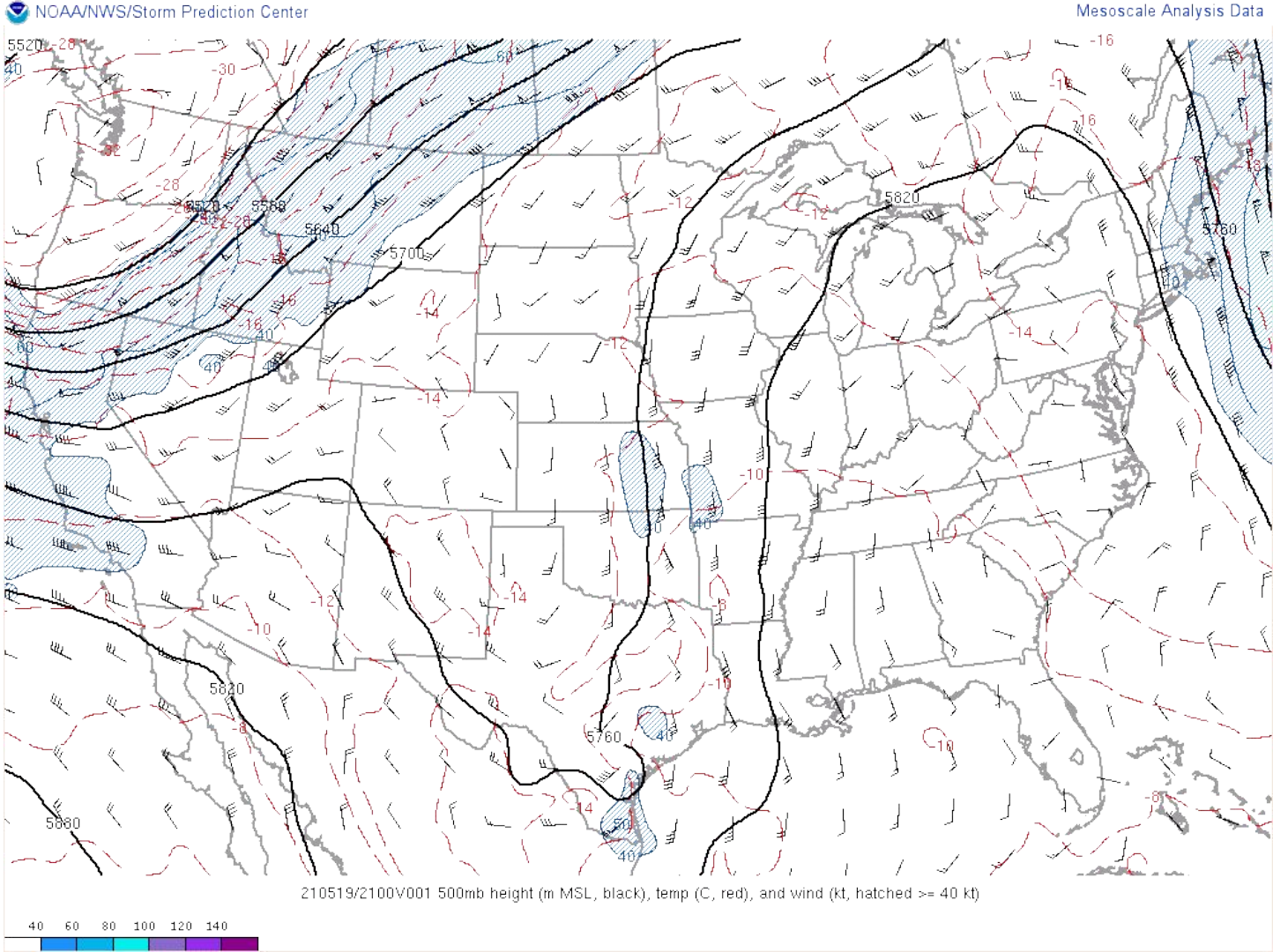
Effective-Layer STP (with CIN)

Prob EF2+ Torn with supercell
Sounding CLIMO = .15 sigtor

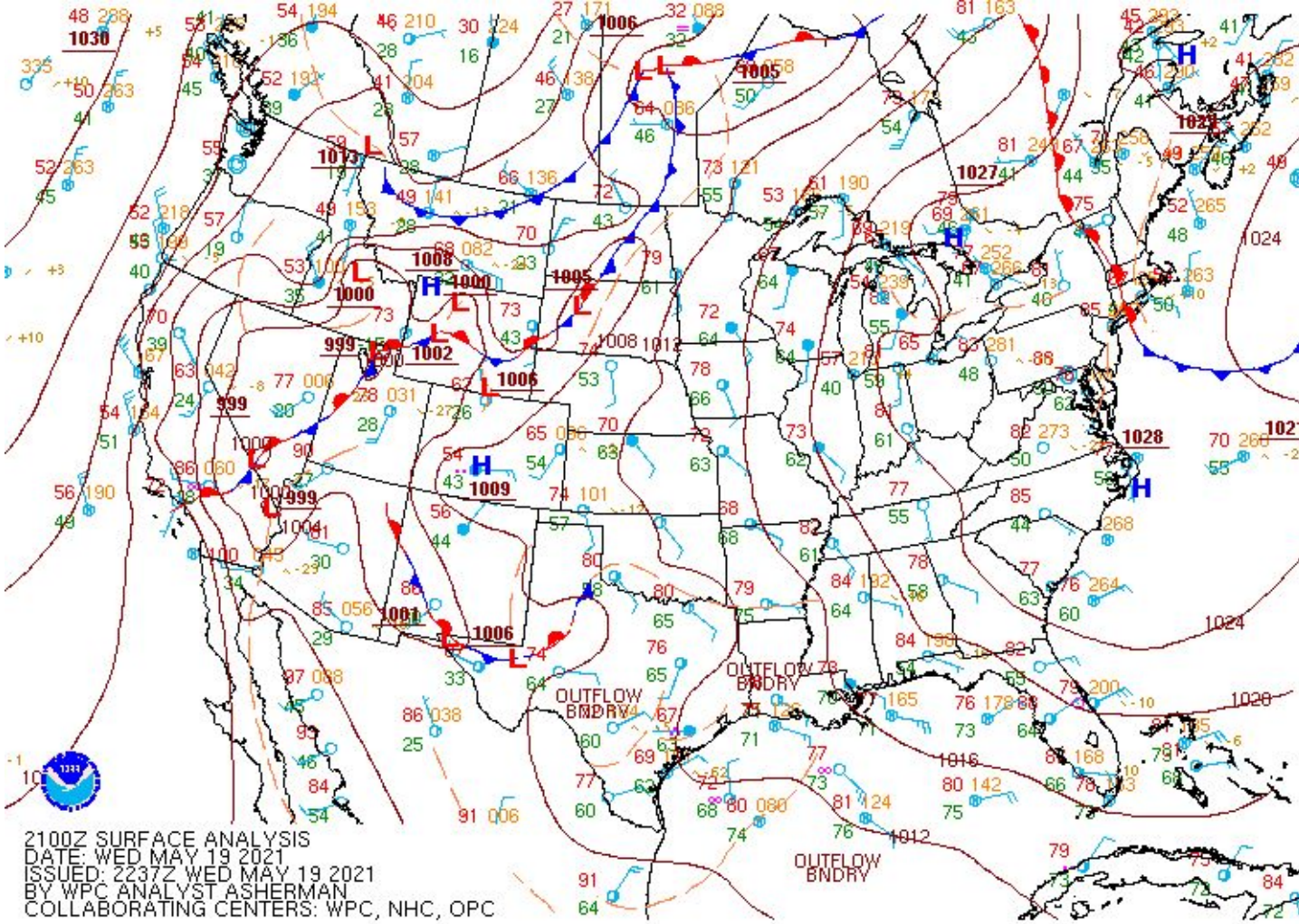
based on MLCAPE:	0.14
based on MLLCL:	0.19
based on ESRH:	0.08
based on EBWD:	0.05
based on STP_fixed:	0.05
based on STP_effective:	0.06

EF4+ EF3 EF2 EF1 EF0 NONTOR

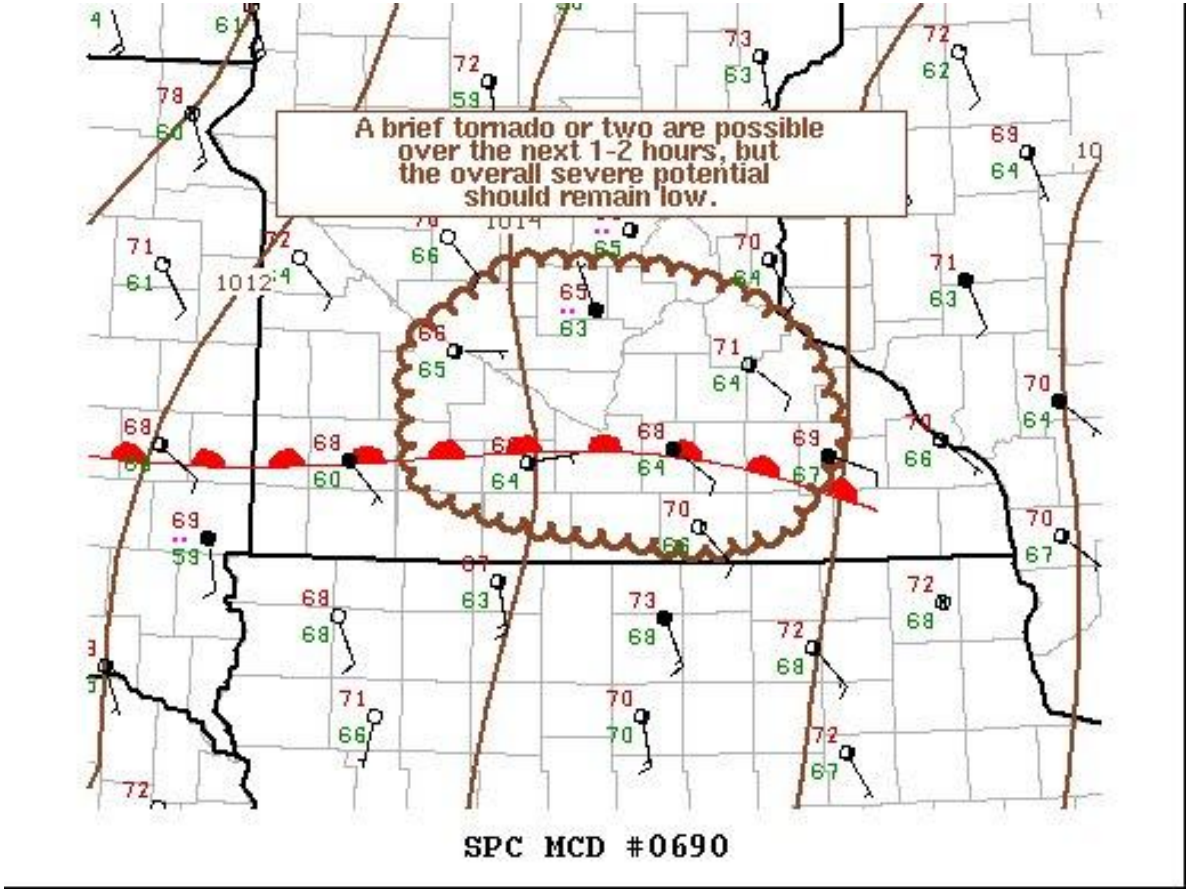
05/19 21Z 500mb height



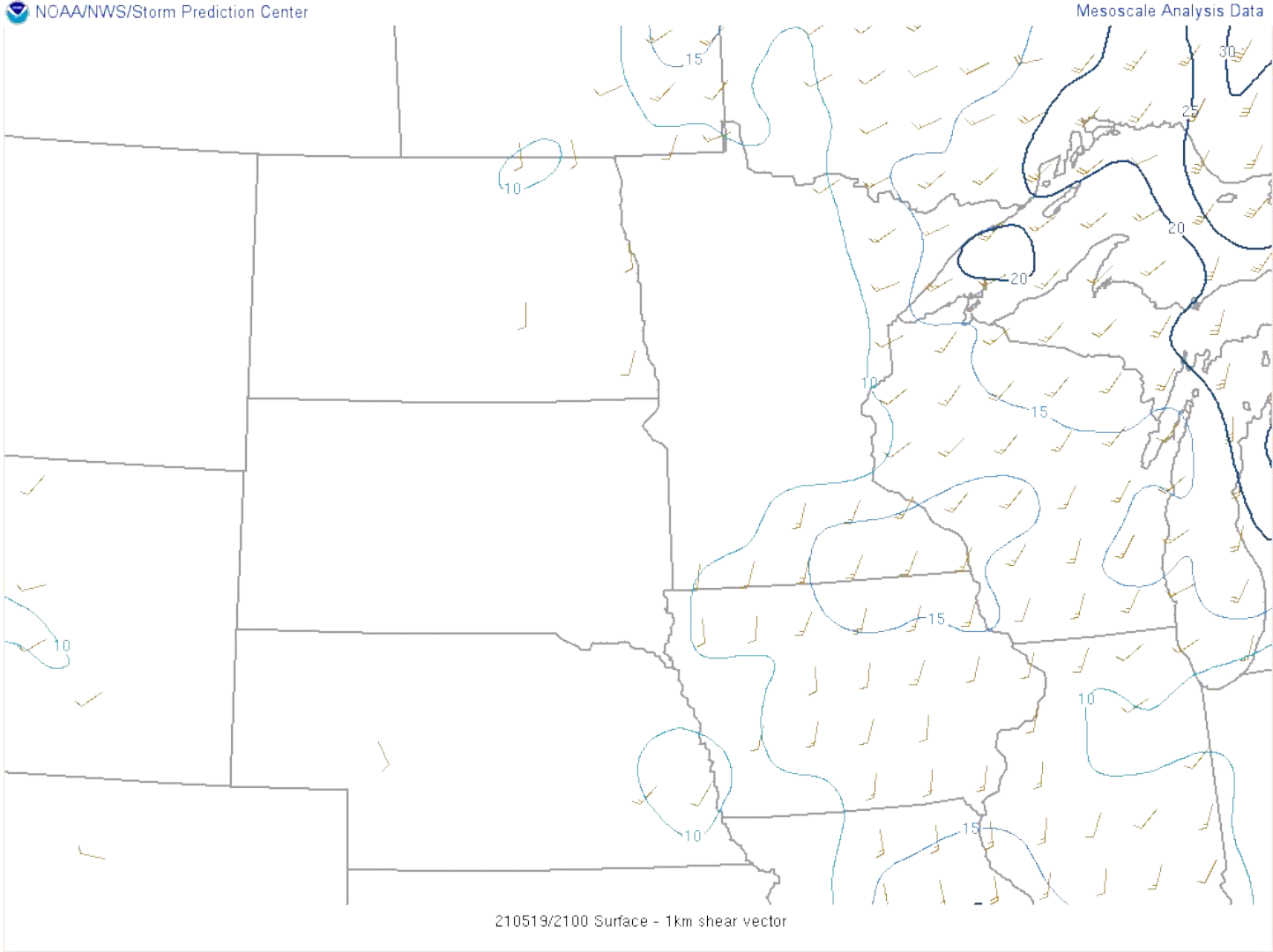
21Z Surface analysis



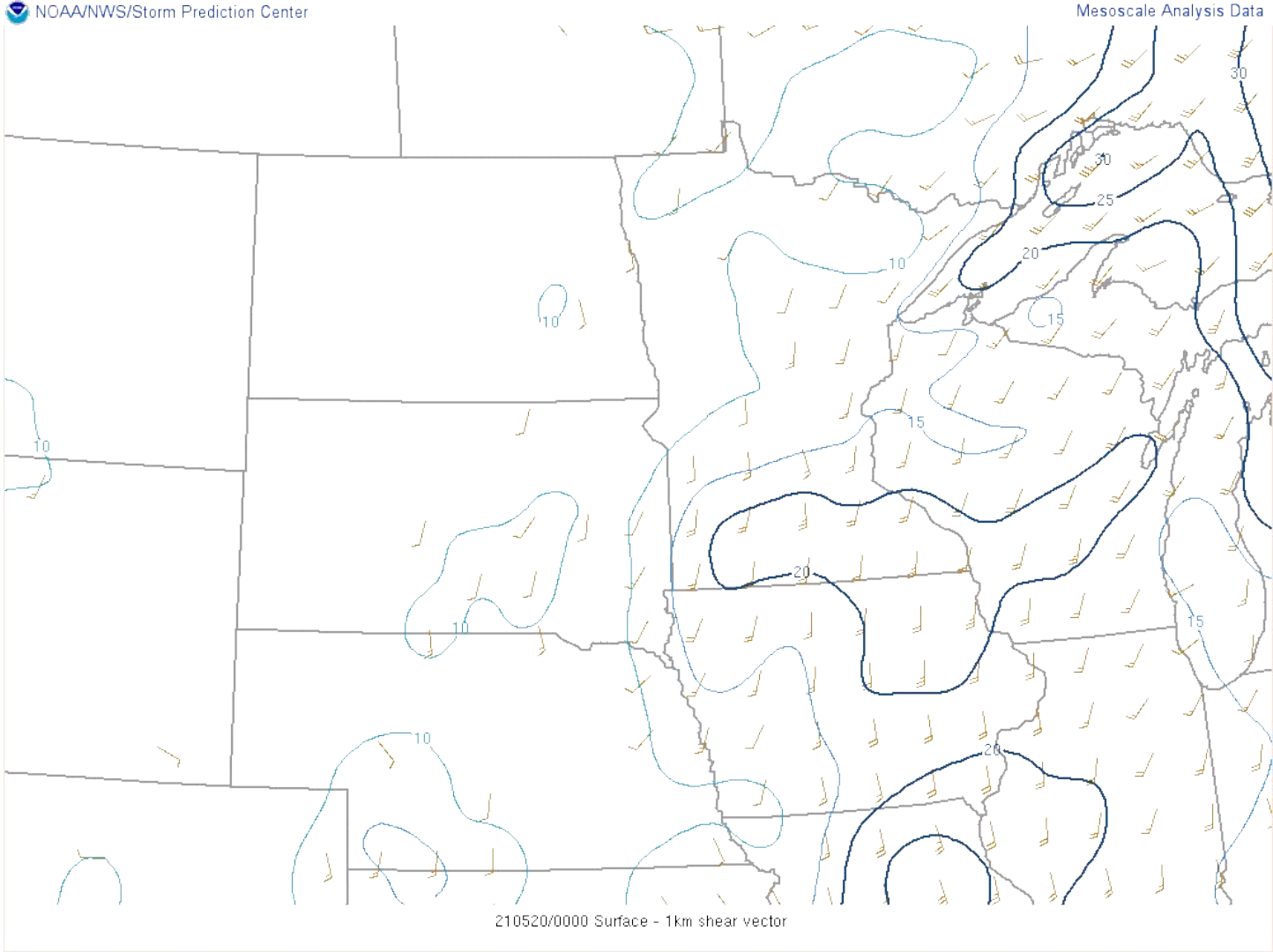
SPC issued a Mesoscale Discussion at 0051Z 05/20



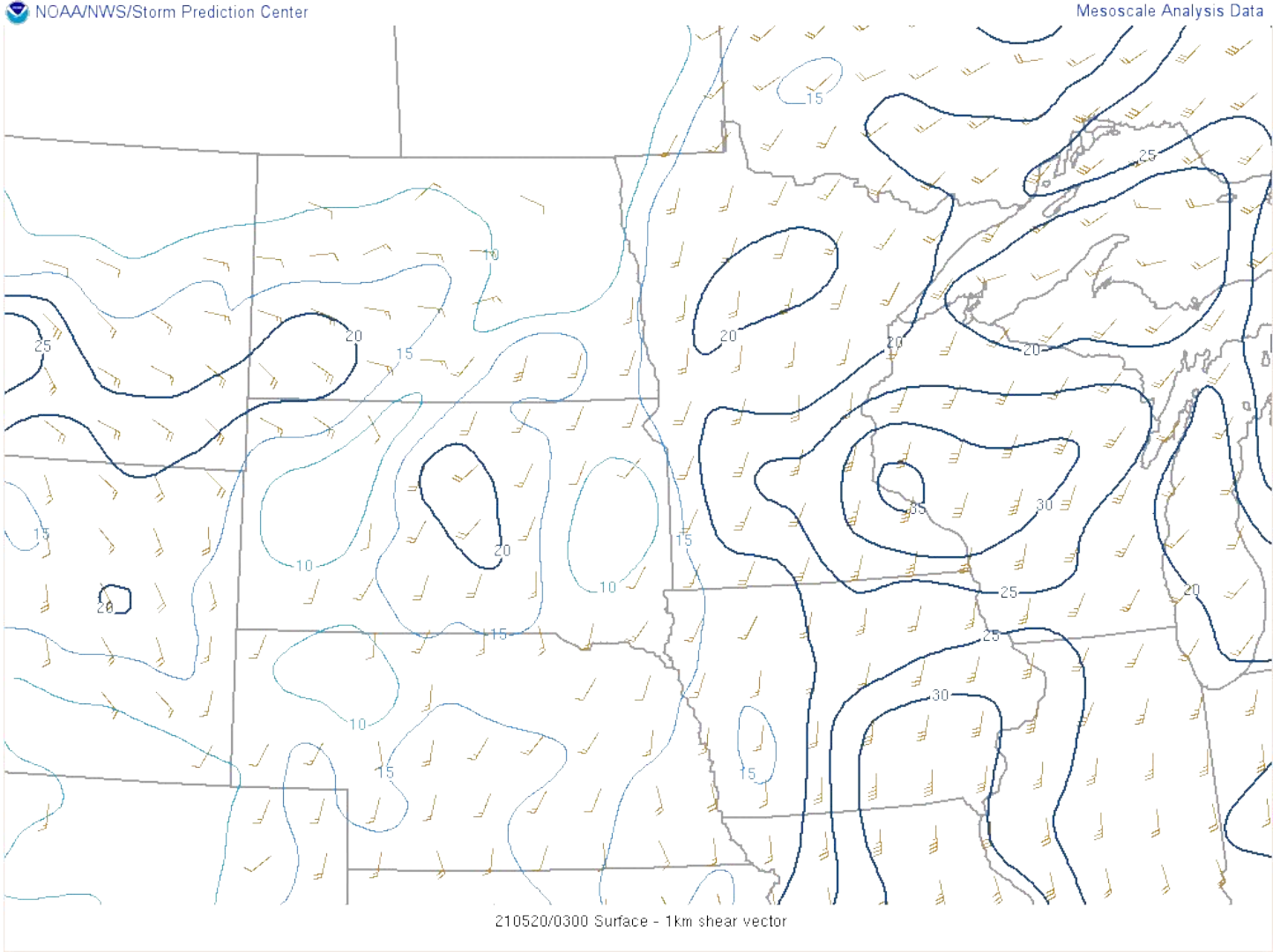
05/19 21Z
Surface - 1km
shear vectors



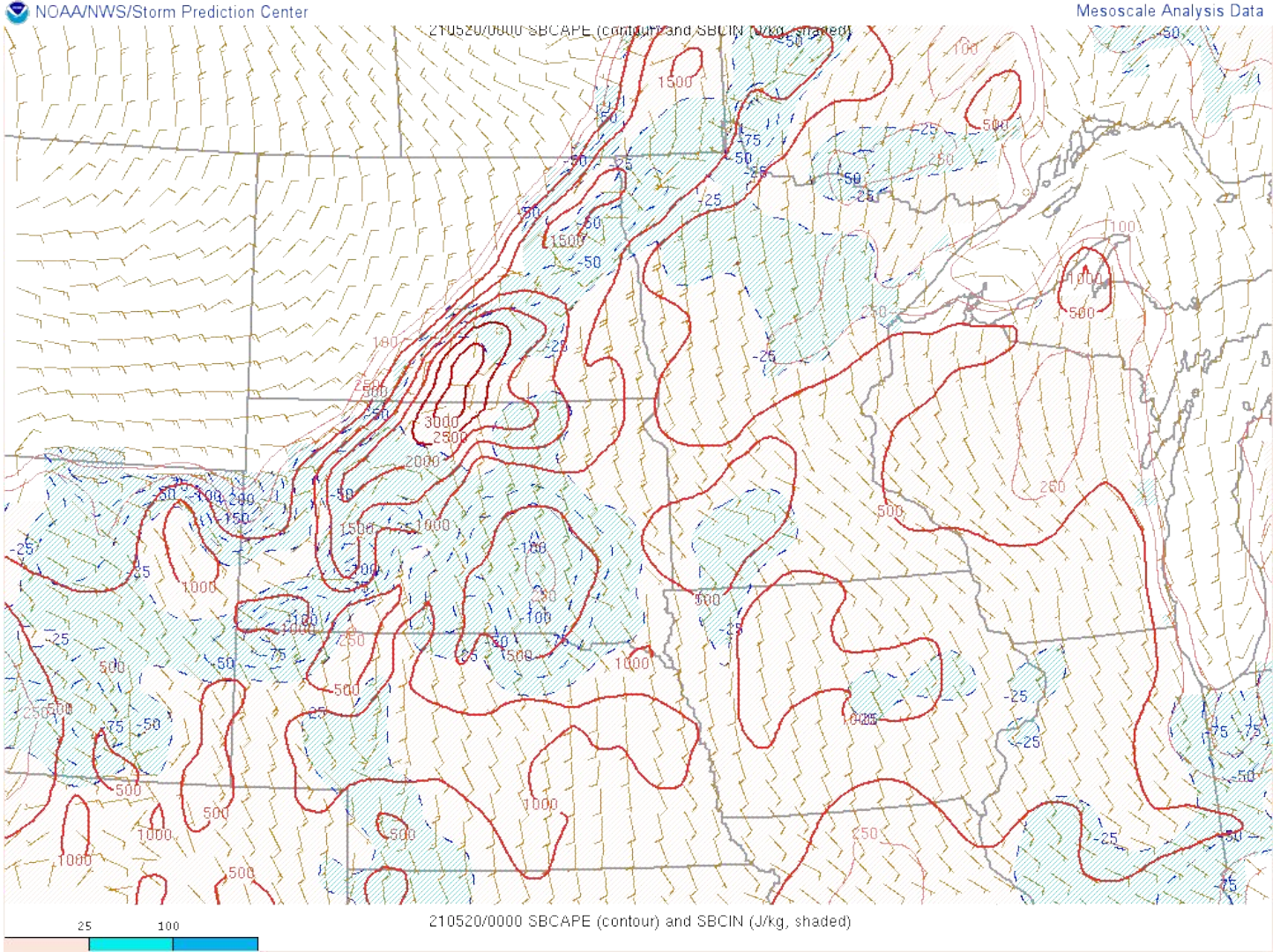
05/20 00Z Surface - 1km shear vectors



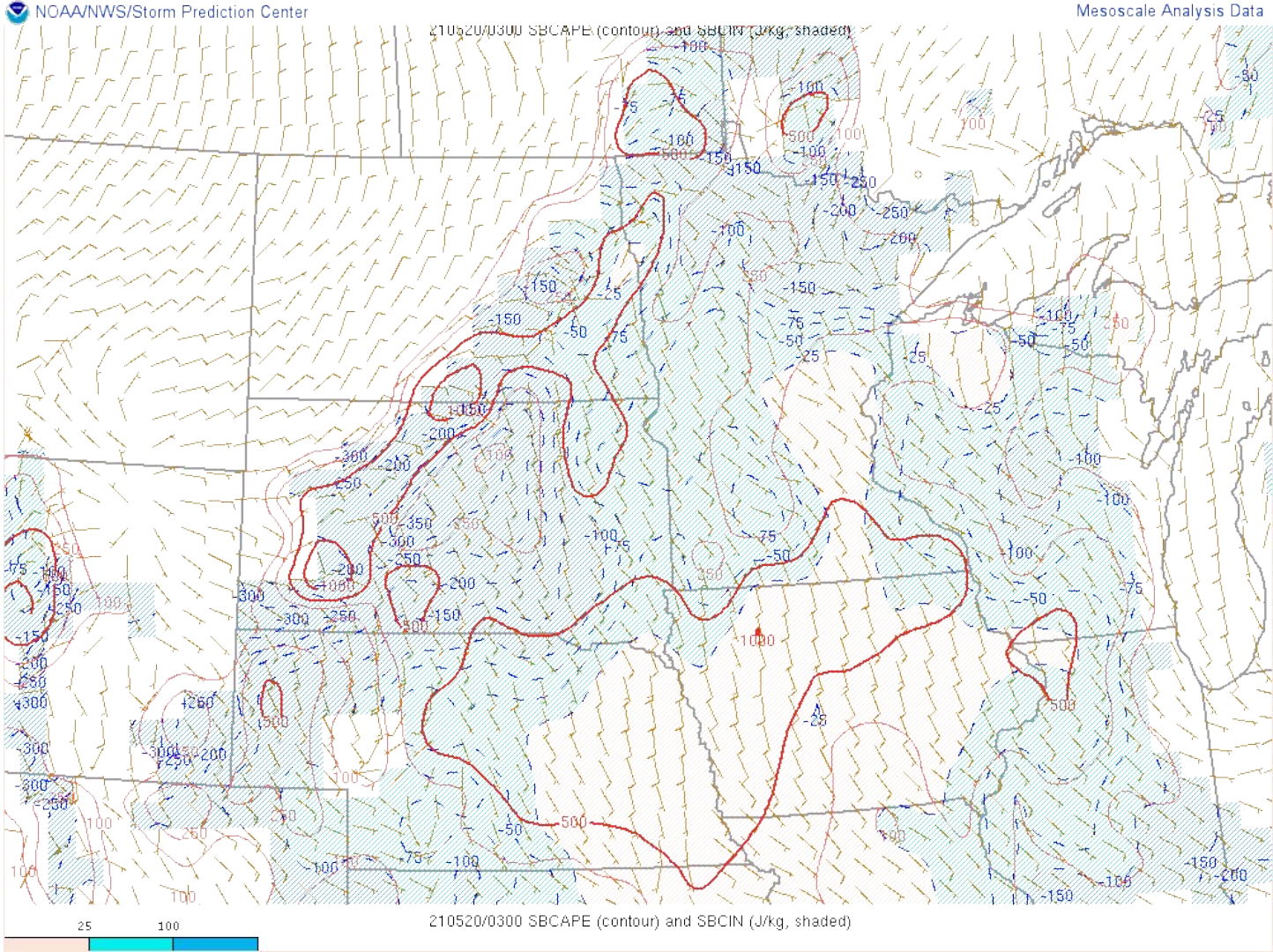
05/20 00Z
Surface - 1km
shear vectors



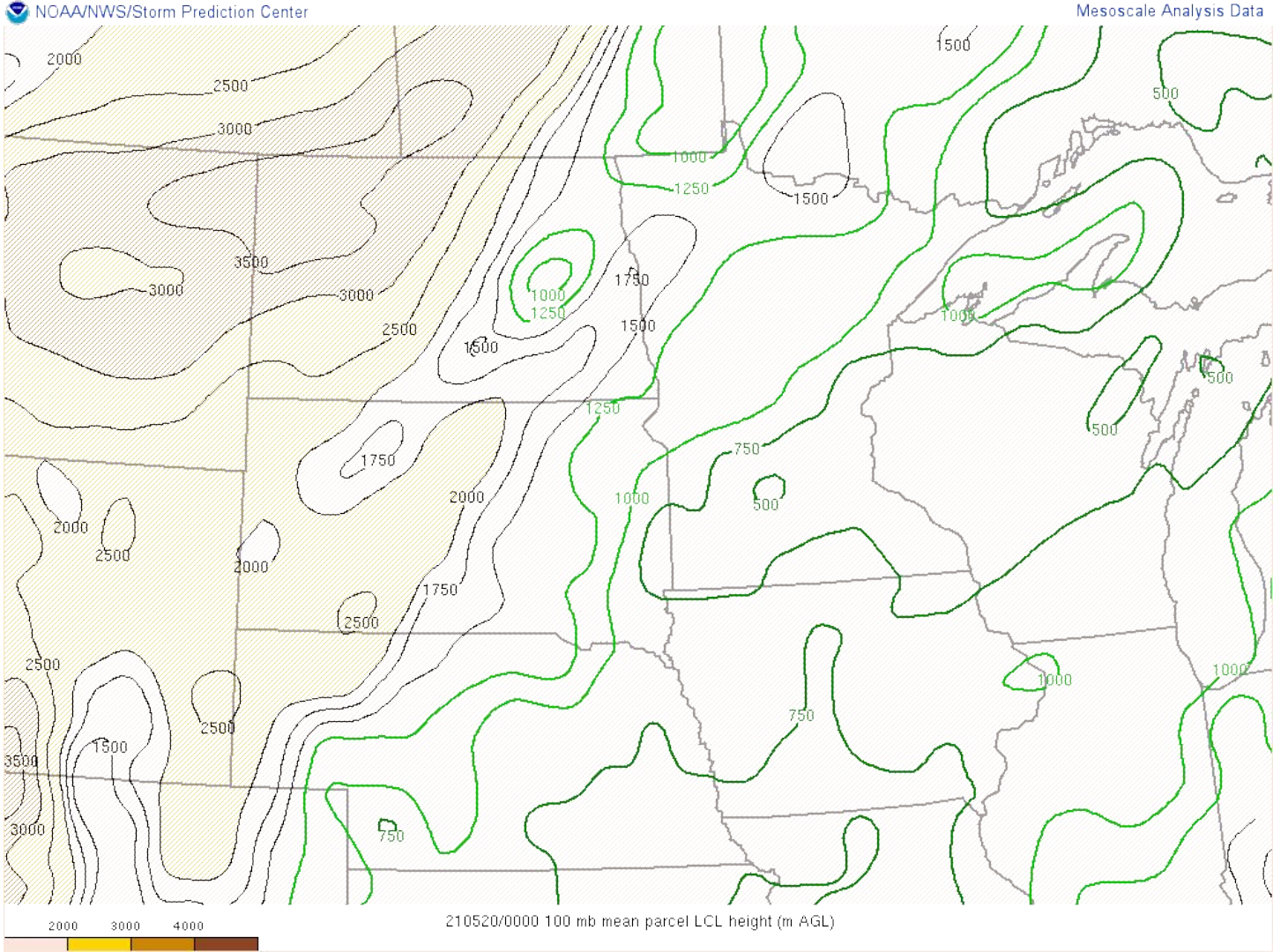
05/20 00Z
SBCAPE



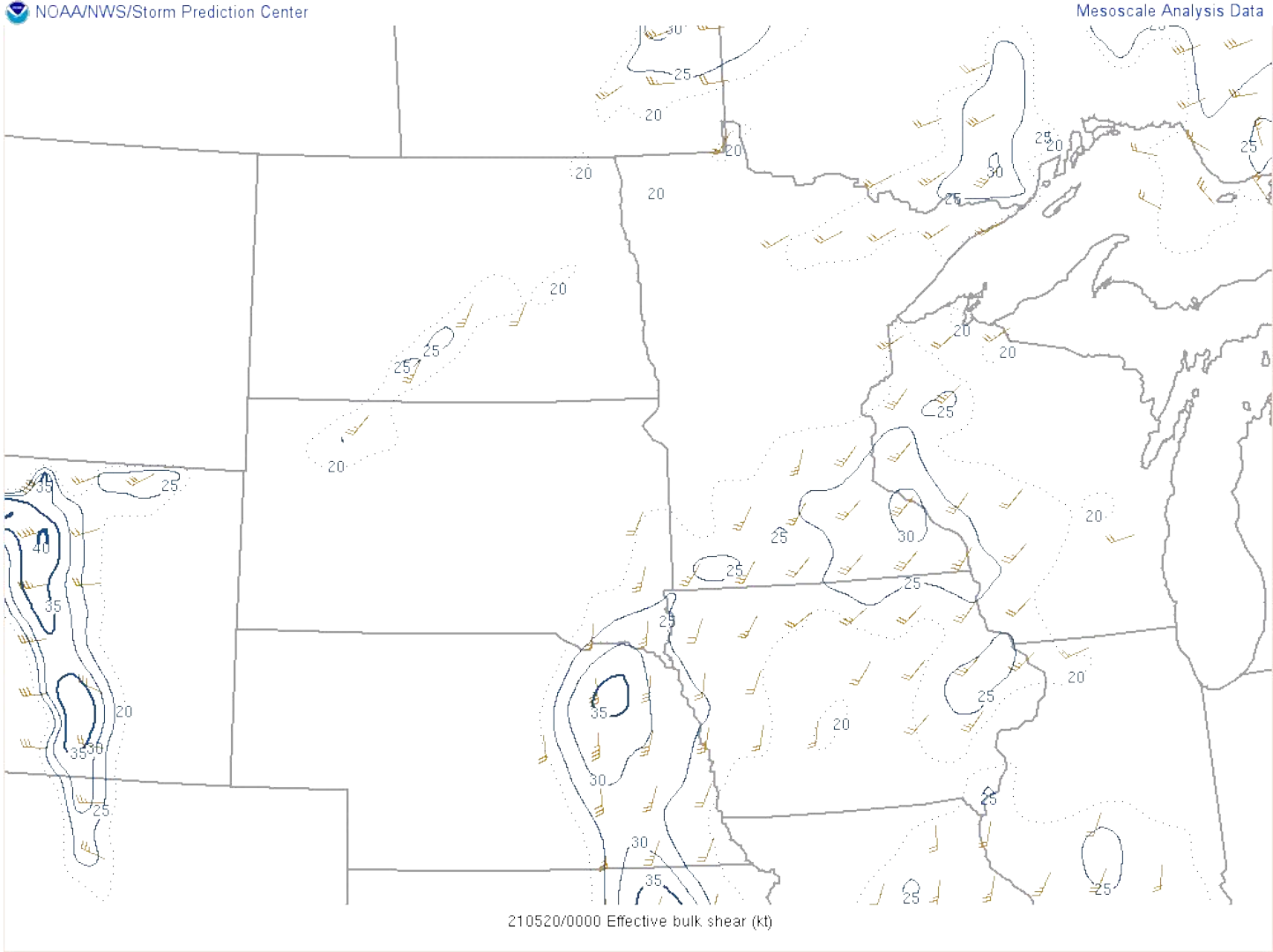
05/20 03Z
SBCAPE



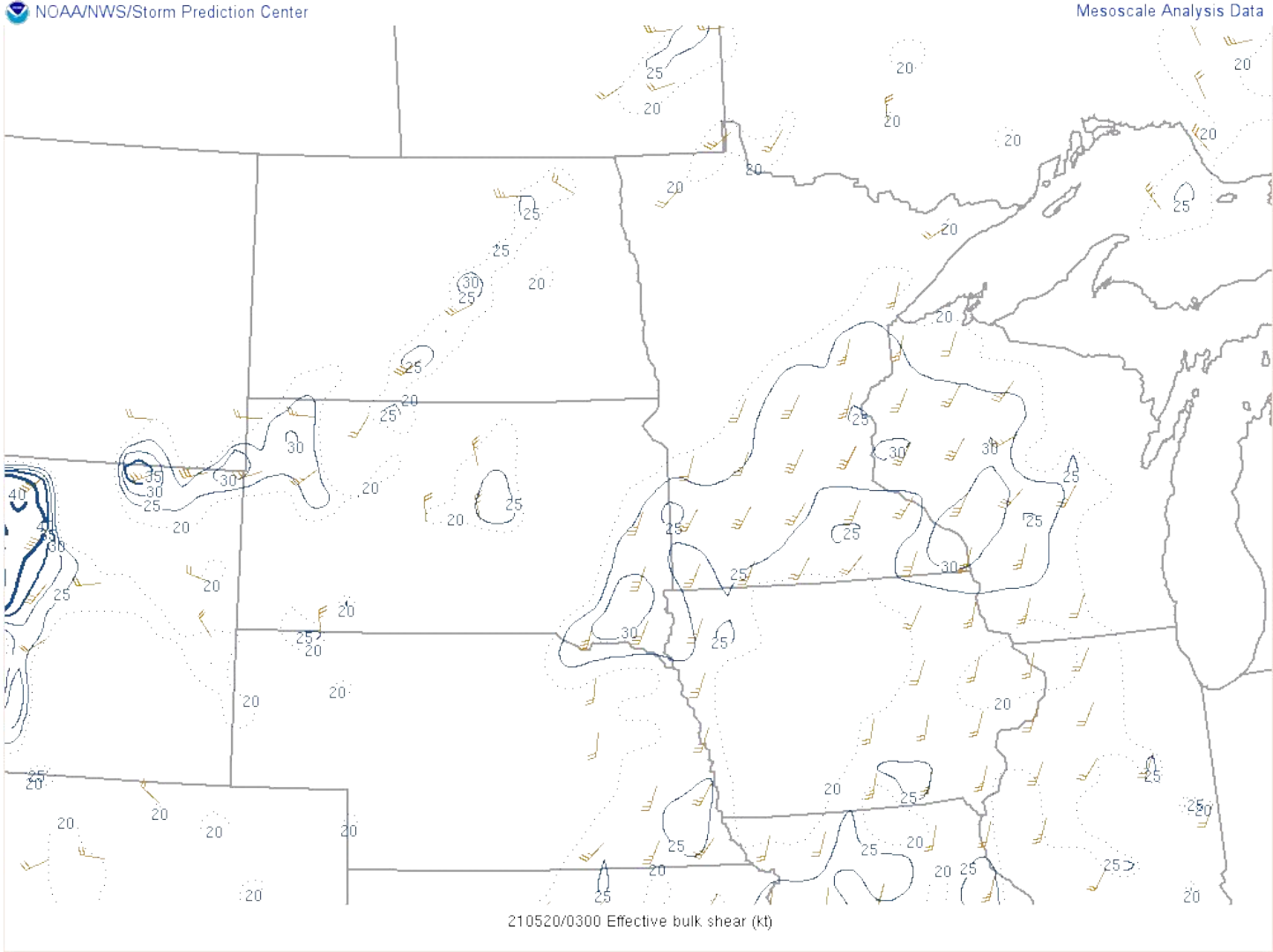
05/20 00Z ML
LCL heights



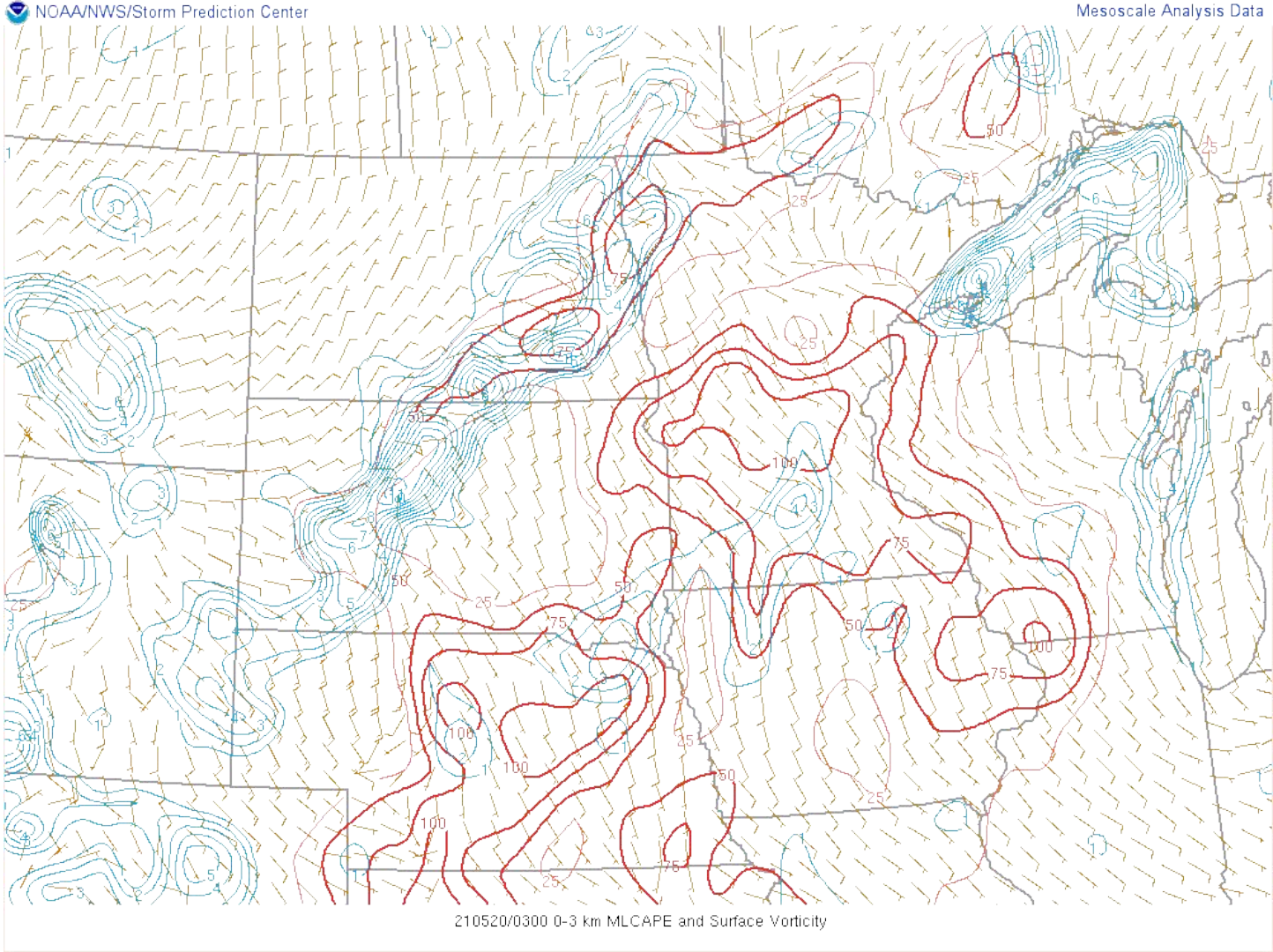
05/20 00Z
Effective bulk
shear vectors



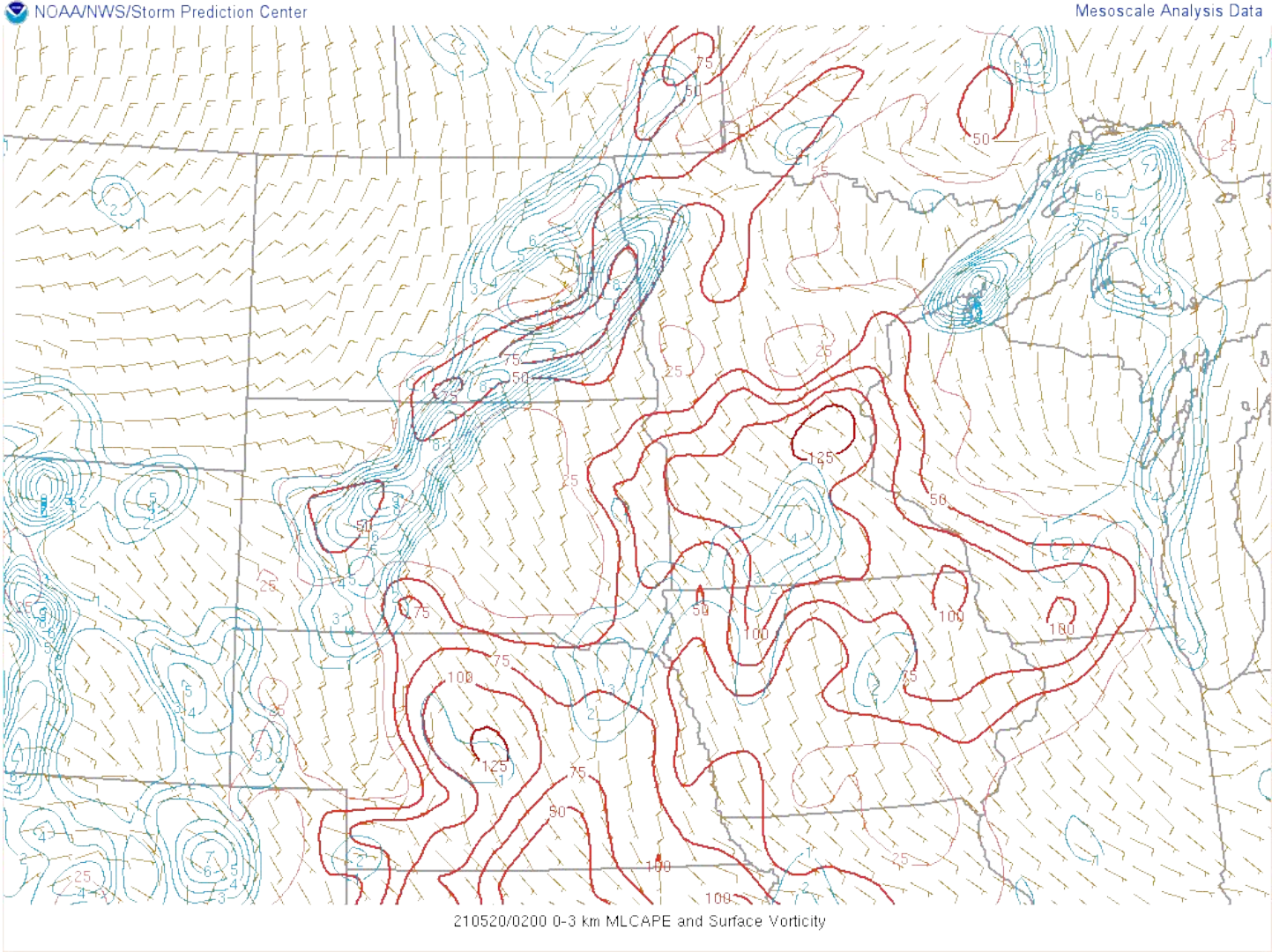
05/20 03Z
Effective bulk
shear vectors



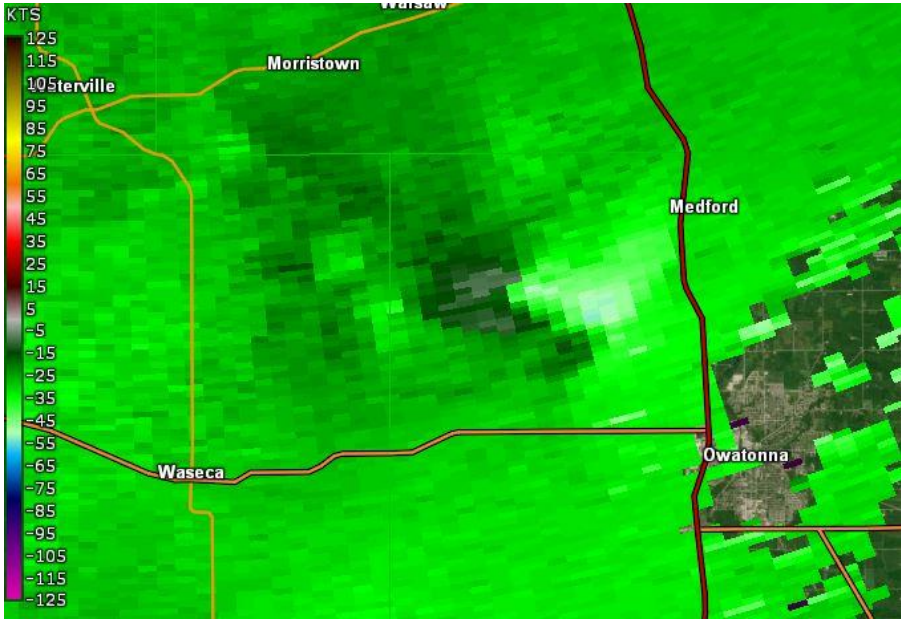
05/20 03Z 0-3km MLCAPE & Surface Vorticity



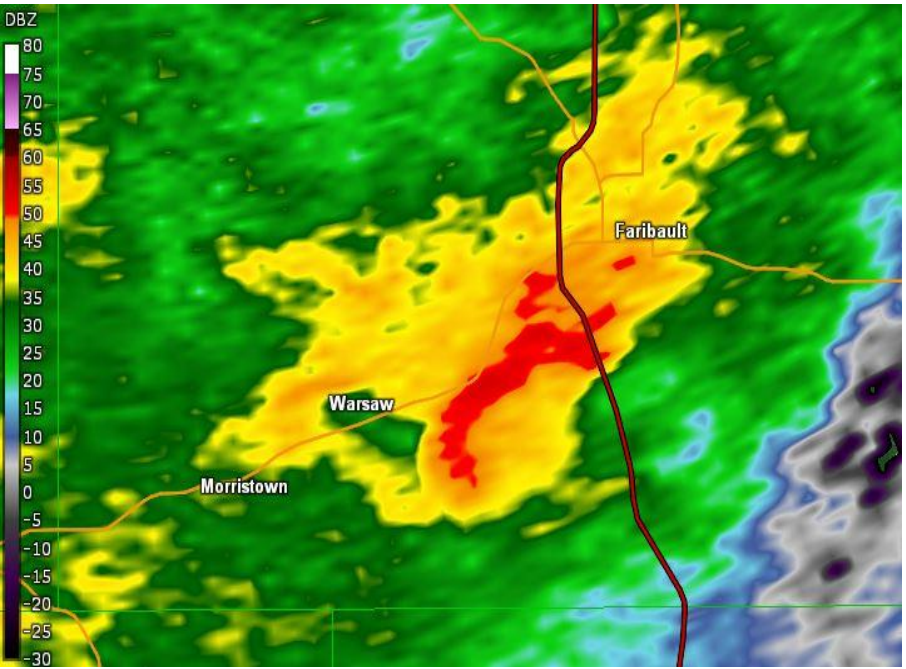
05/20 02Z
Effective bulk
shear vectors

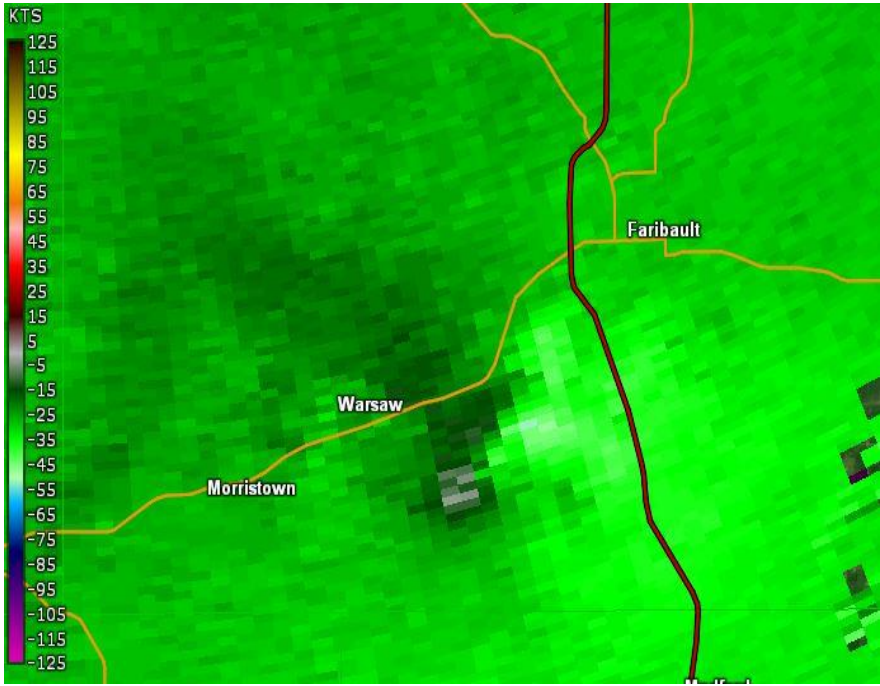


1st Tornado Warning BR/BV 0026Z

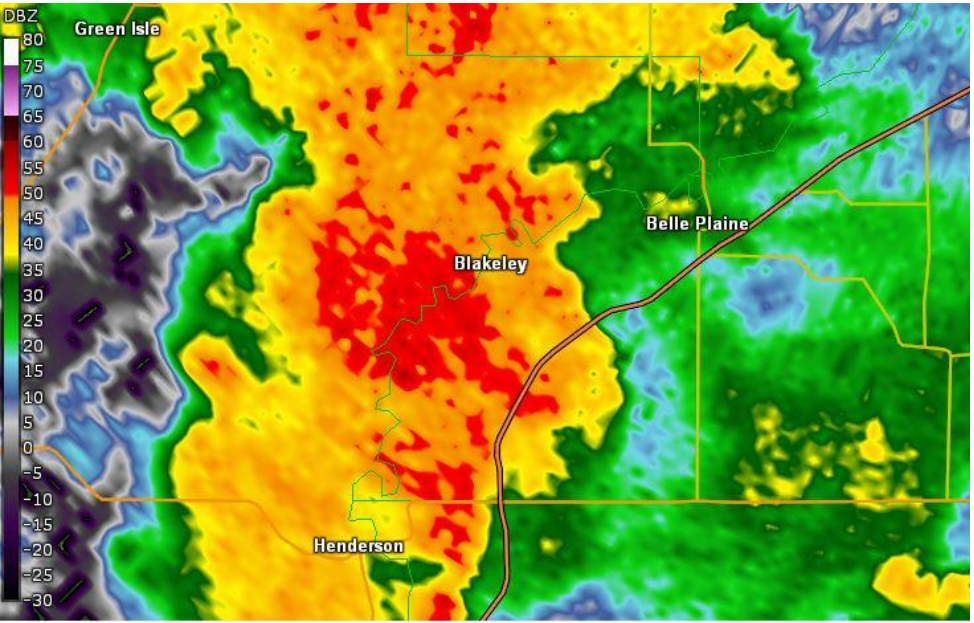


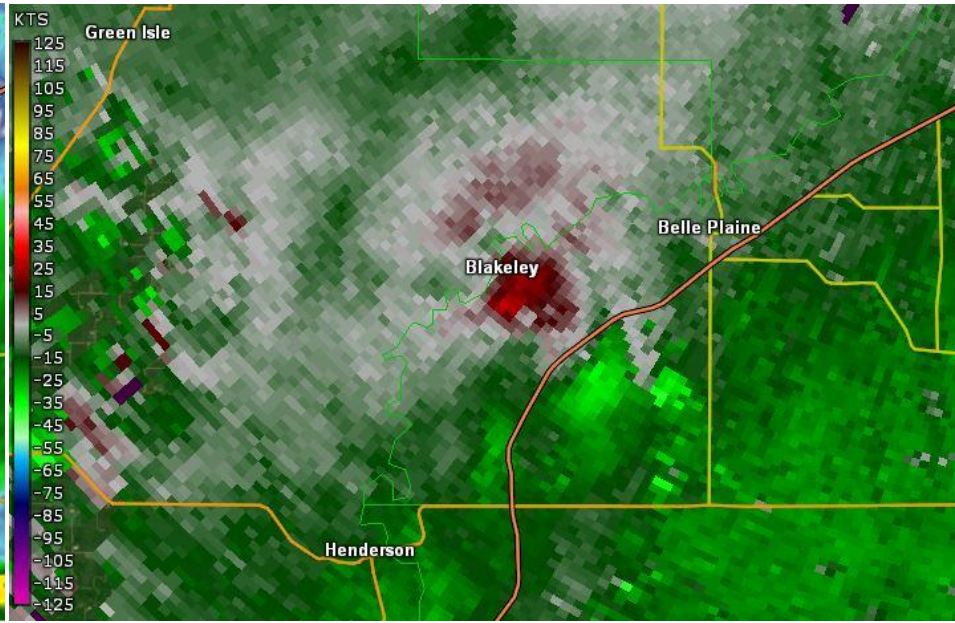
2nd Tornado Warning BR/BV 0043Z





3rd Tornado Warning BR/BV 0104Z





4th Tornado Warning BR/BV 0109Z