

Review of August 11, 2015 Severe Weather Event

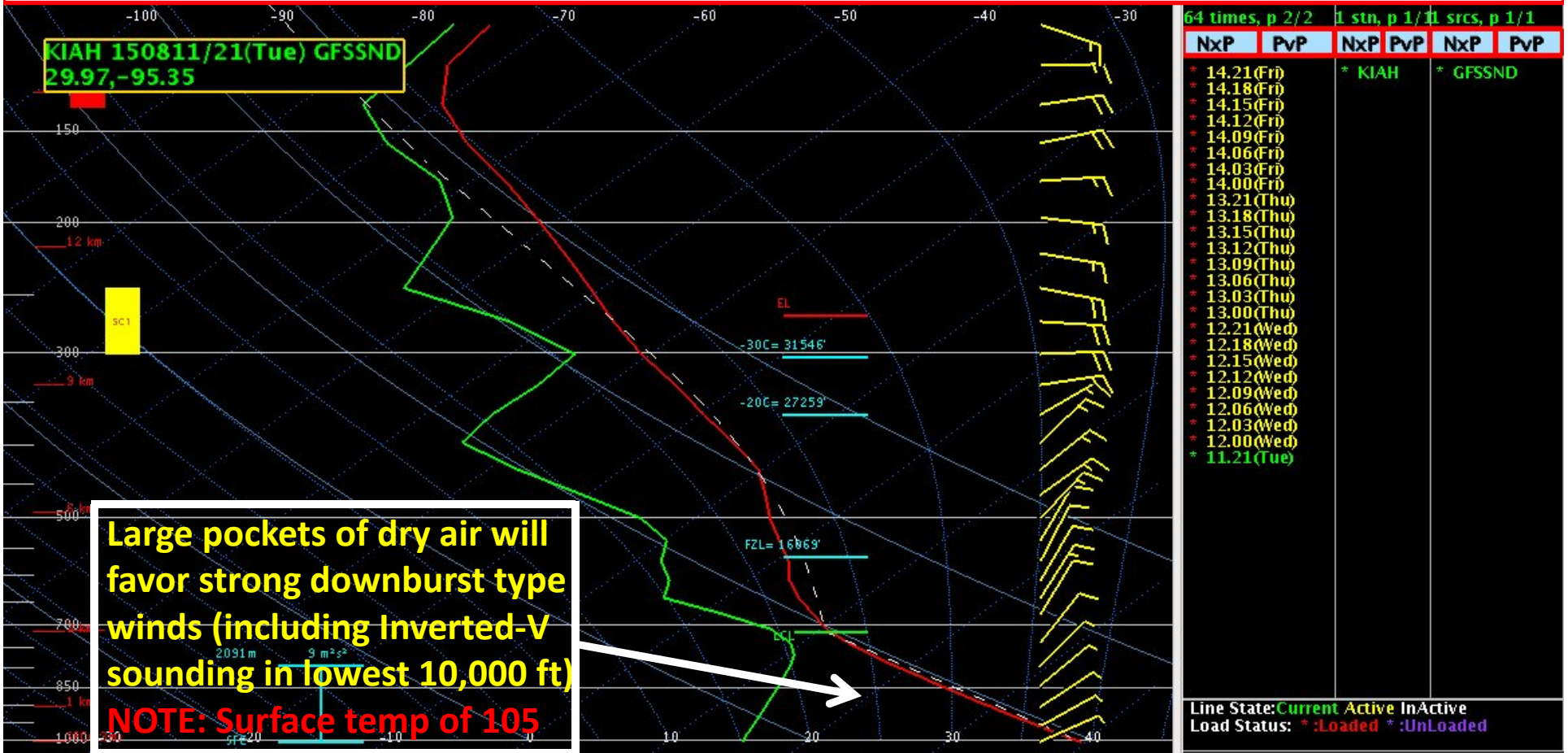
Eric Zappe

National Weather Service

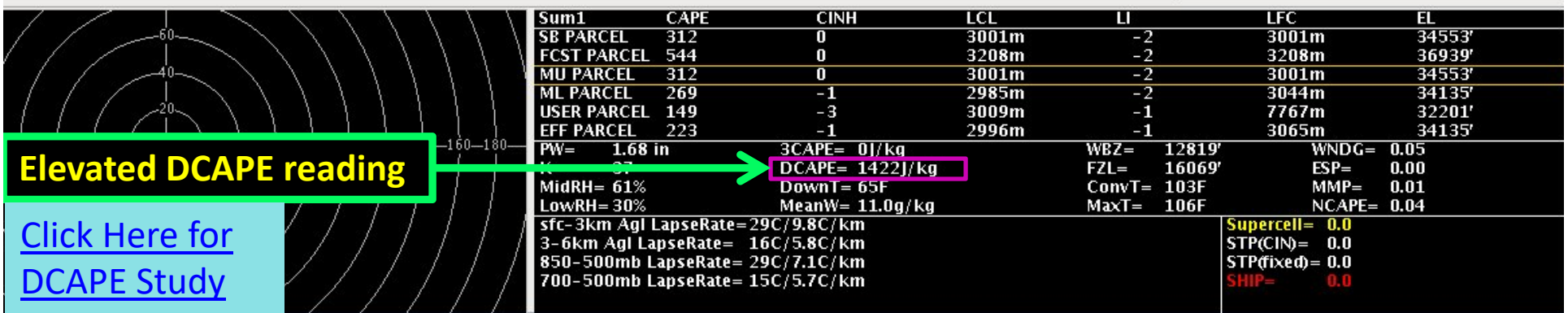
Houston Center Weather Service Unit



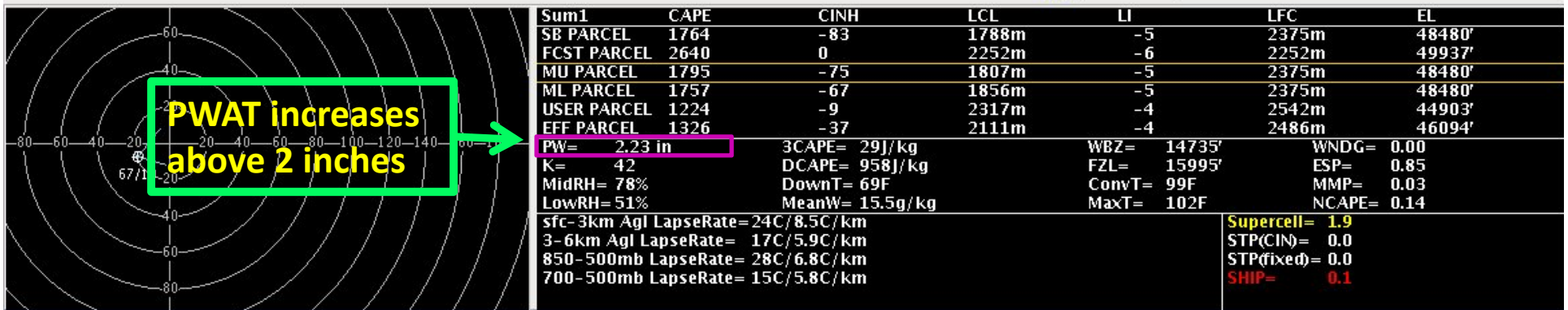
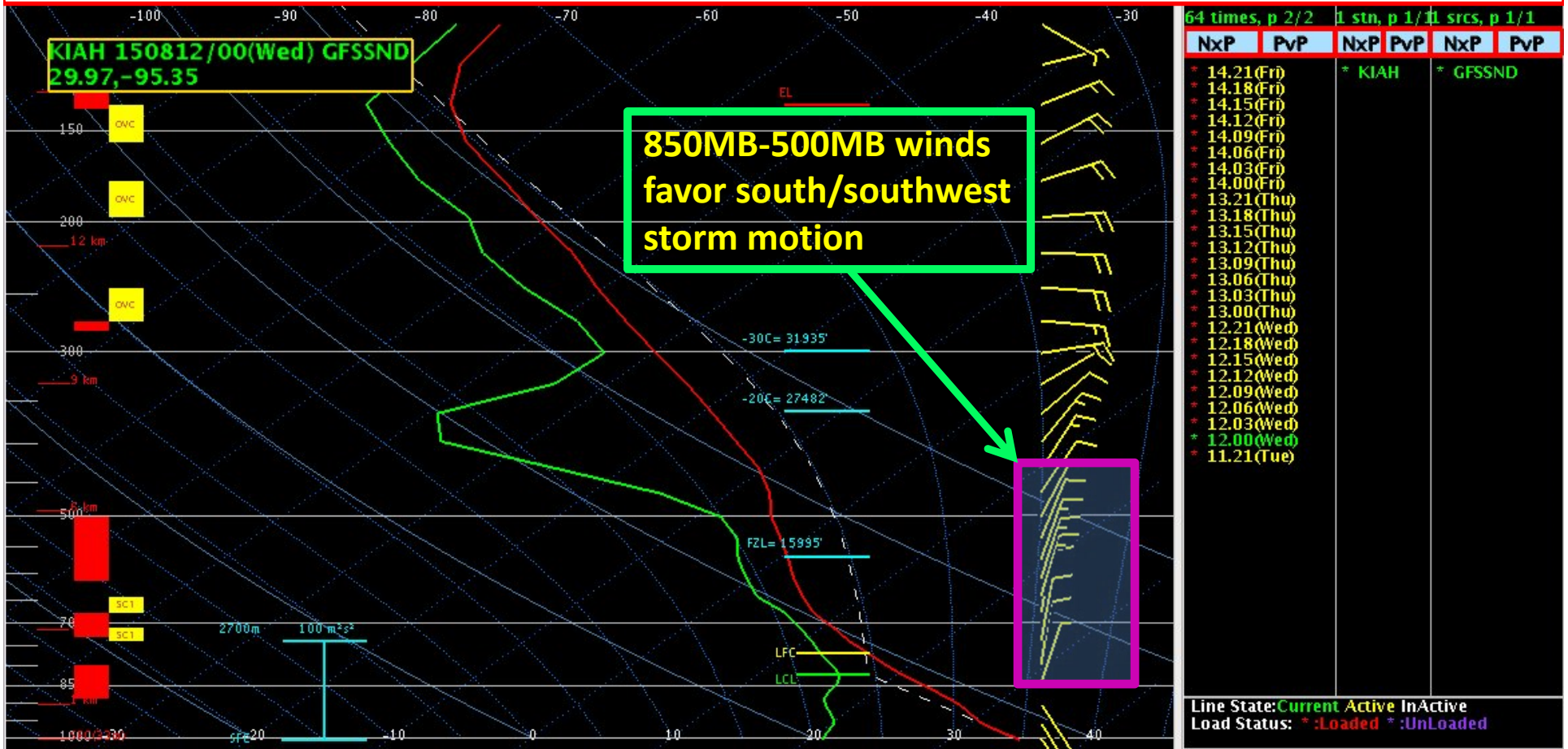
GFS BUFR Sounding – KIAH (Aug 11 21Z)



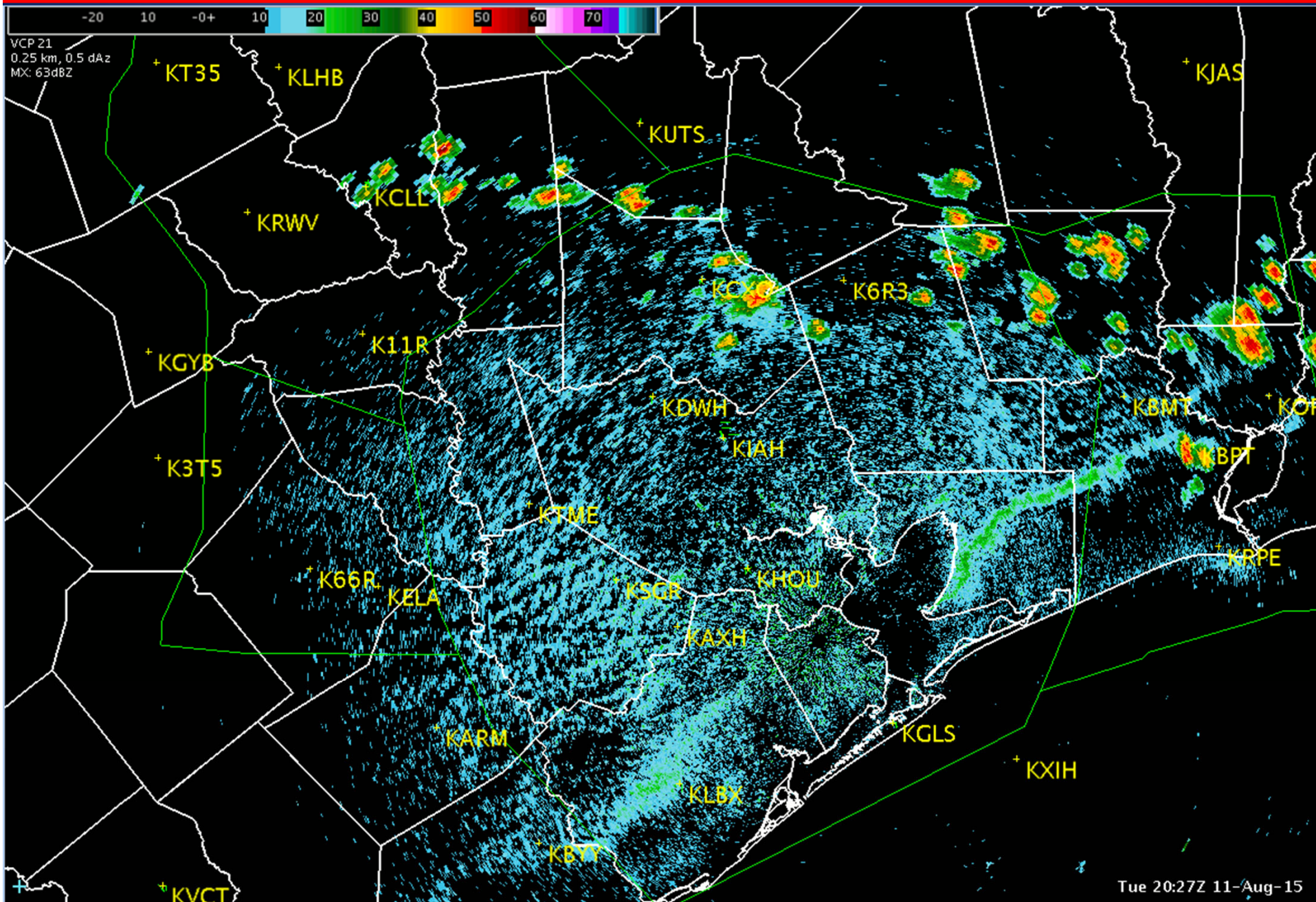
Large pockets of dry air will favor strong downburst type winds (including Inverted-V sounding in lowest 10,000 ft)
NOTE: Surface temp of 105



GFS BUFR Sounding – KIAH (Aug 12 00Z)



kiah Reflectivity Loop (Aug 11 20:27Z – Aug 12 02:28Z)



KIAH Vertical Wind Profile (Aug 11 15Z Issuance)

KIAH VERTICAL WIND PROFILE

RAP MODEL 08-11-15
MODEL SURFACE ELEVATION: 81 ft

15Z

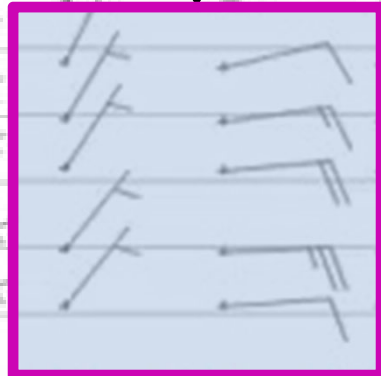
HGT-MSL
(1000 FT)

11
10
9
8
7
6
5
4
3
2
1
0

STD
ATM
PRES
(MB)

11
10 -700
9
8
7
6
5 -850
4
3
2
1
0 -1000

Notice abrupt wind change (veering wind direction and increasing speed) between 21Z and 22Z. These winds will spread moisture inland as well as increase strength of any downburst winds



16Z 17Z 18Z 19Z 20Z 21Z 22Z 23Z 00Z
08-11-2015 DATE/TIME 08-12-2015

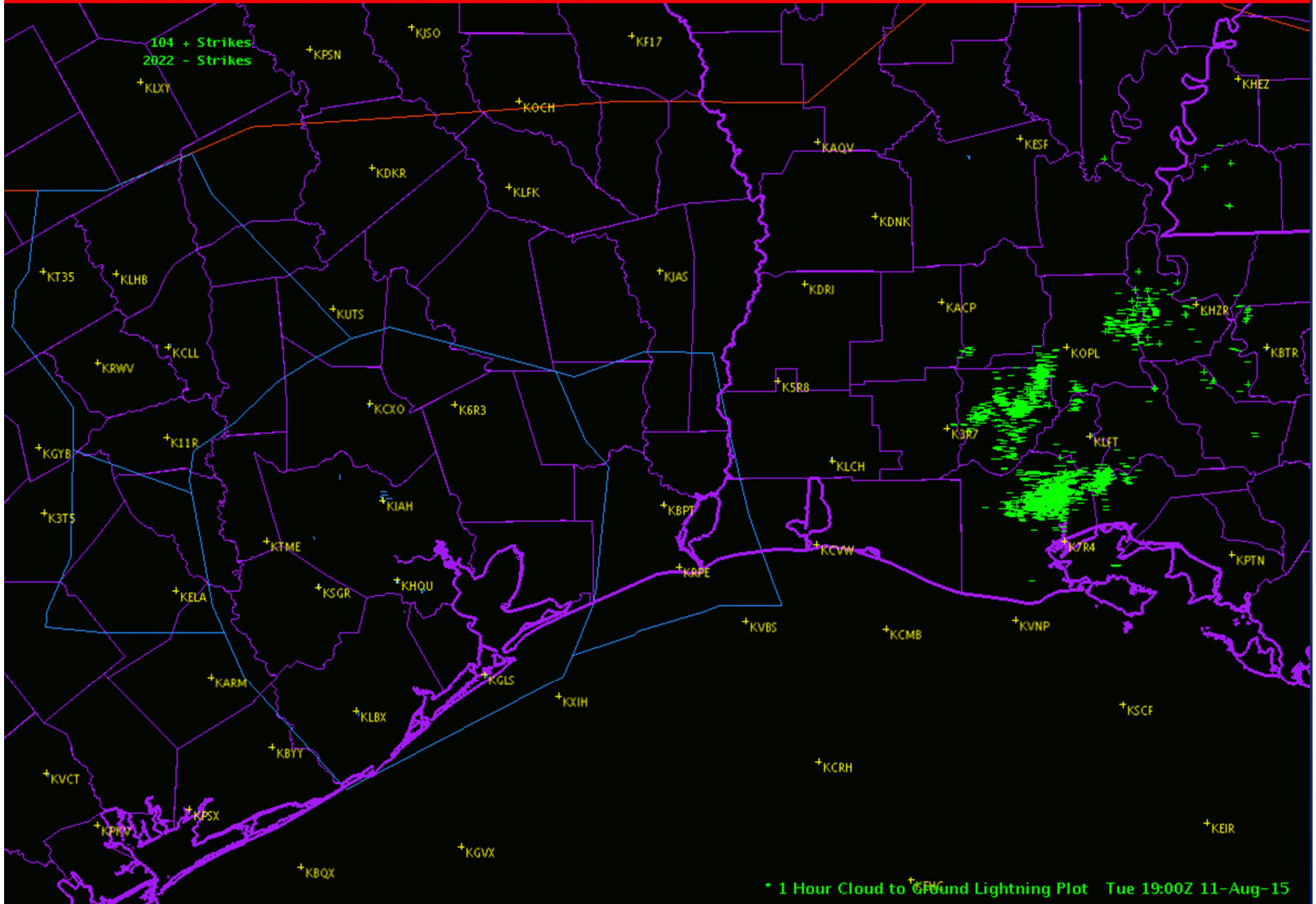


 >50
 43-47
 38-42
 33-37
 28-32
 23-27
 18-22
 13-17
 8-12
 3-7
 0-2

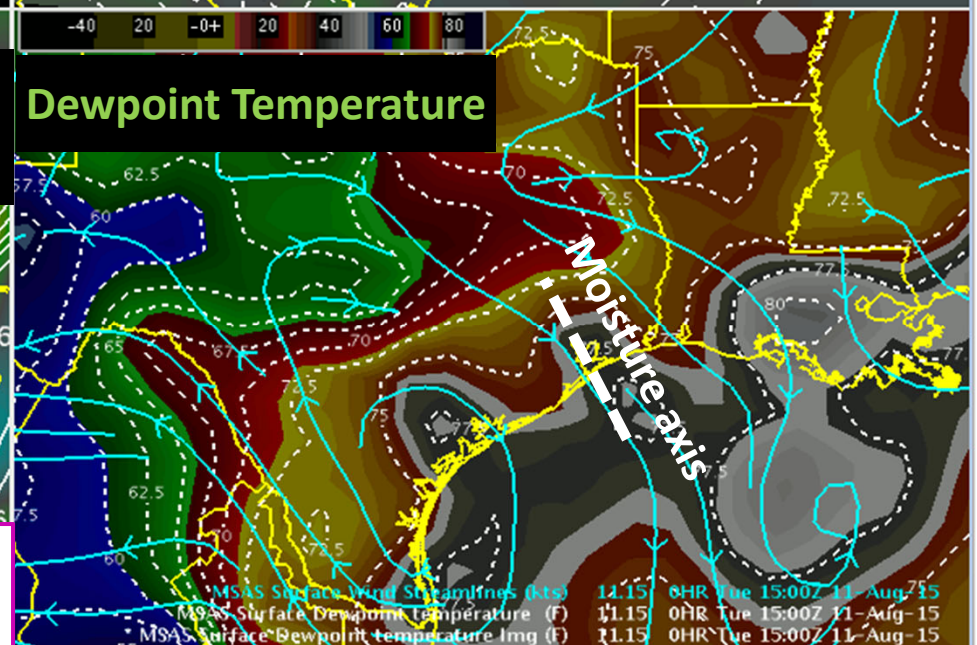
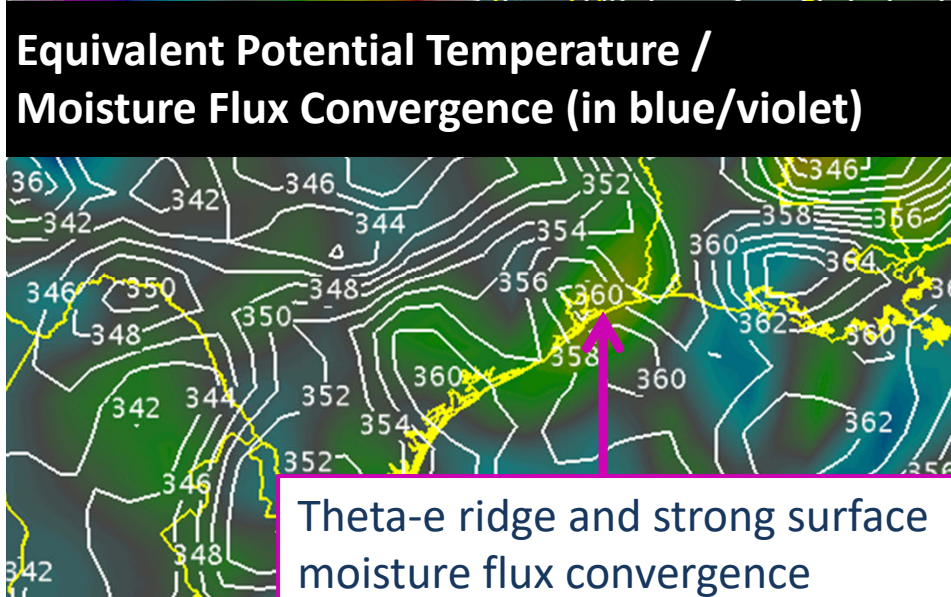
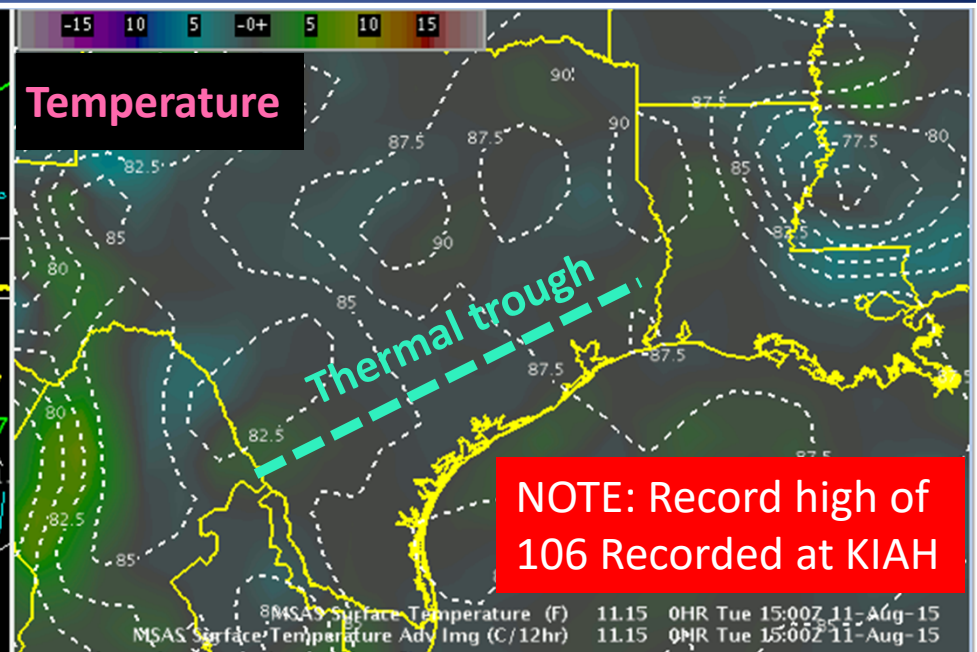
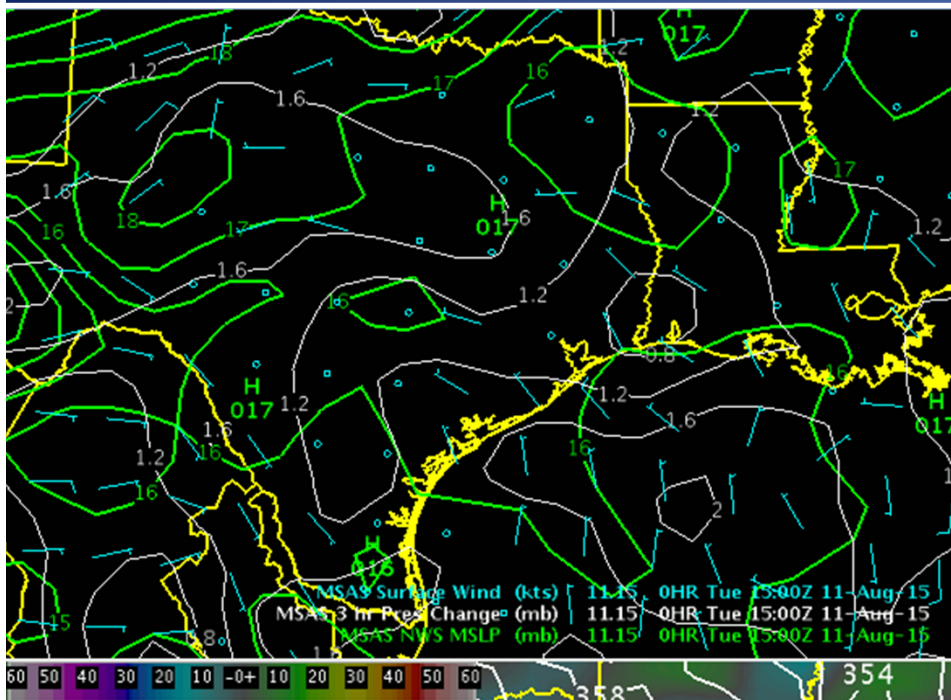
(STAFF = WIND DIRECTION AND BARBS = WIND SPEED IN KTS)



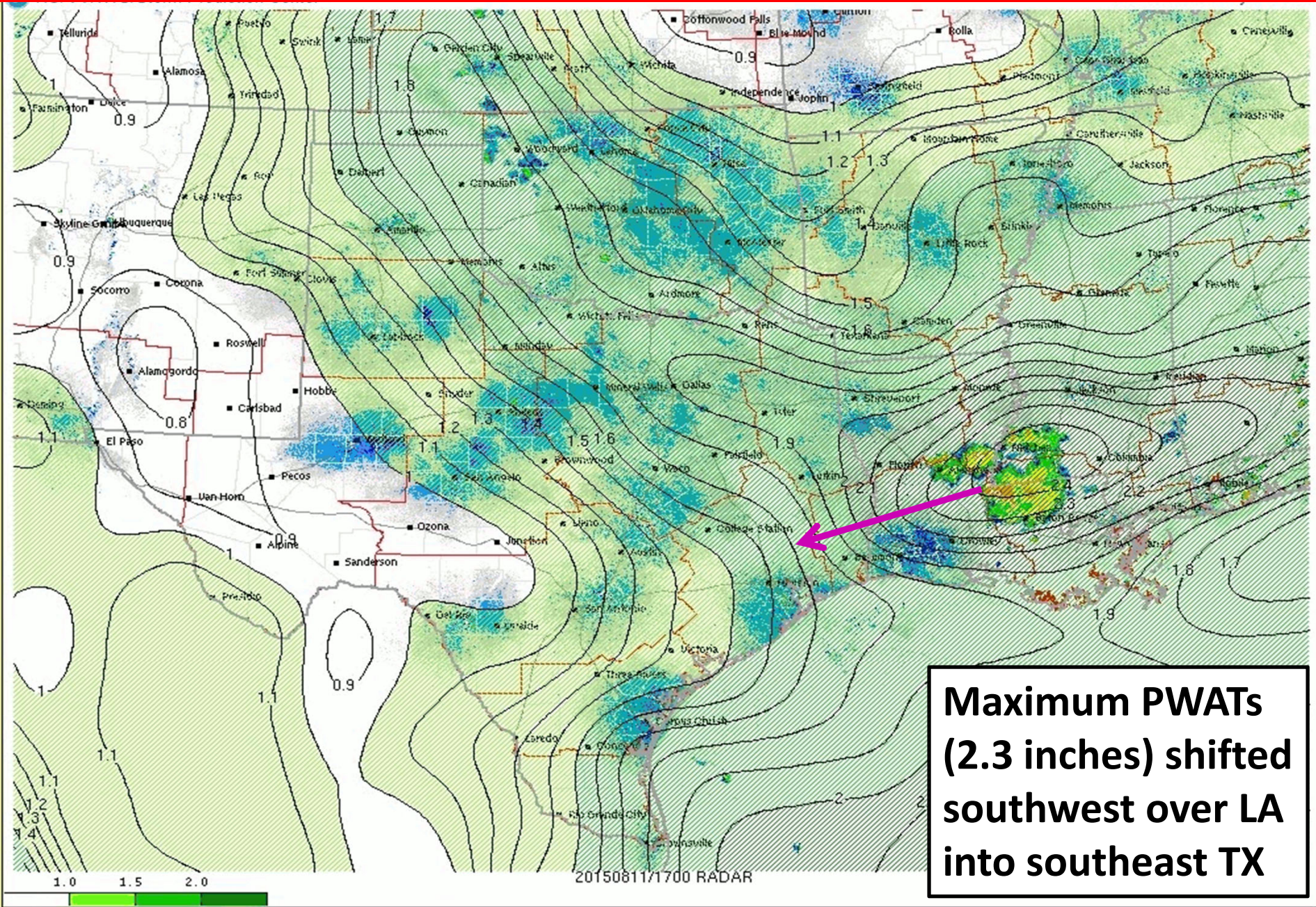
One Hour Lightning Plot Loop (Aug 11 19Z - Aug 12 02Z)



MSAS Analysis Loop (Aug 11 15Z – Aug 12 02Z)

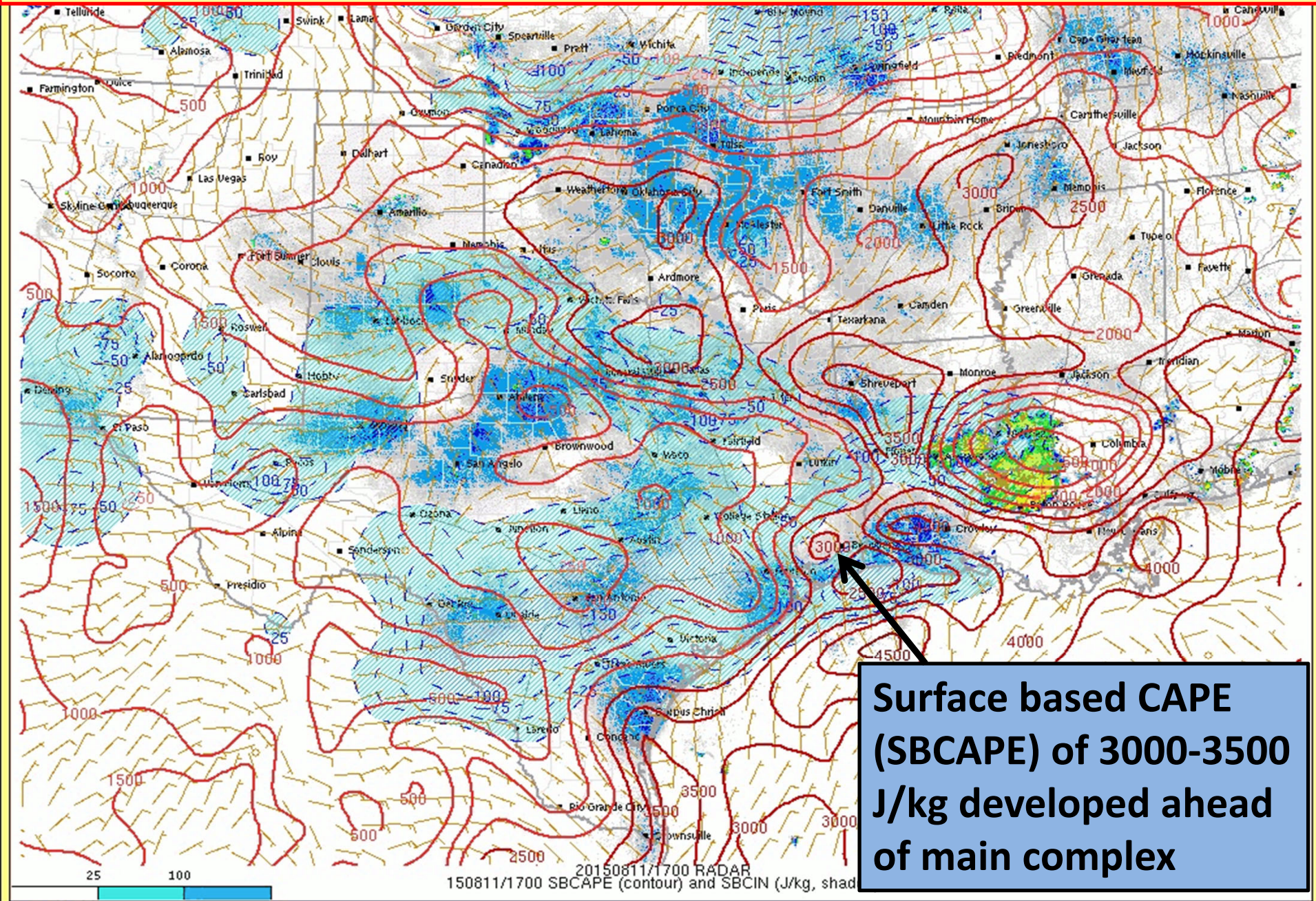


SPC Meso-Analysis PWAT Loop (Aug 11 17Z – Aug 12 02Z)



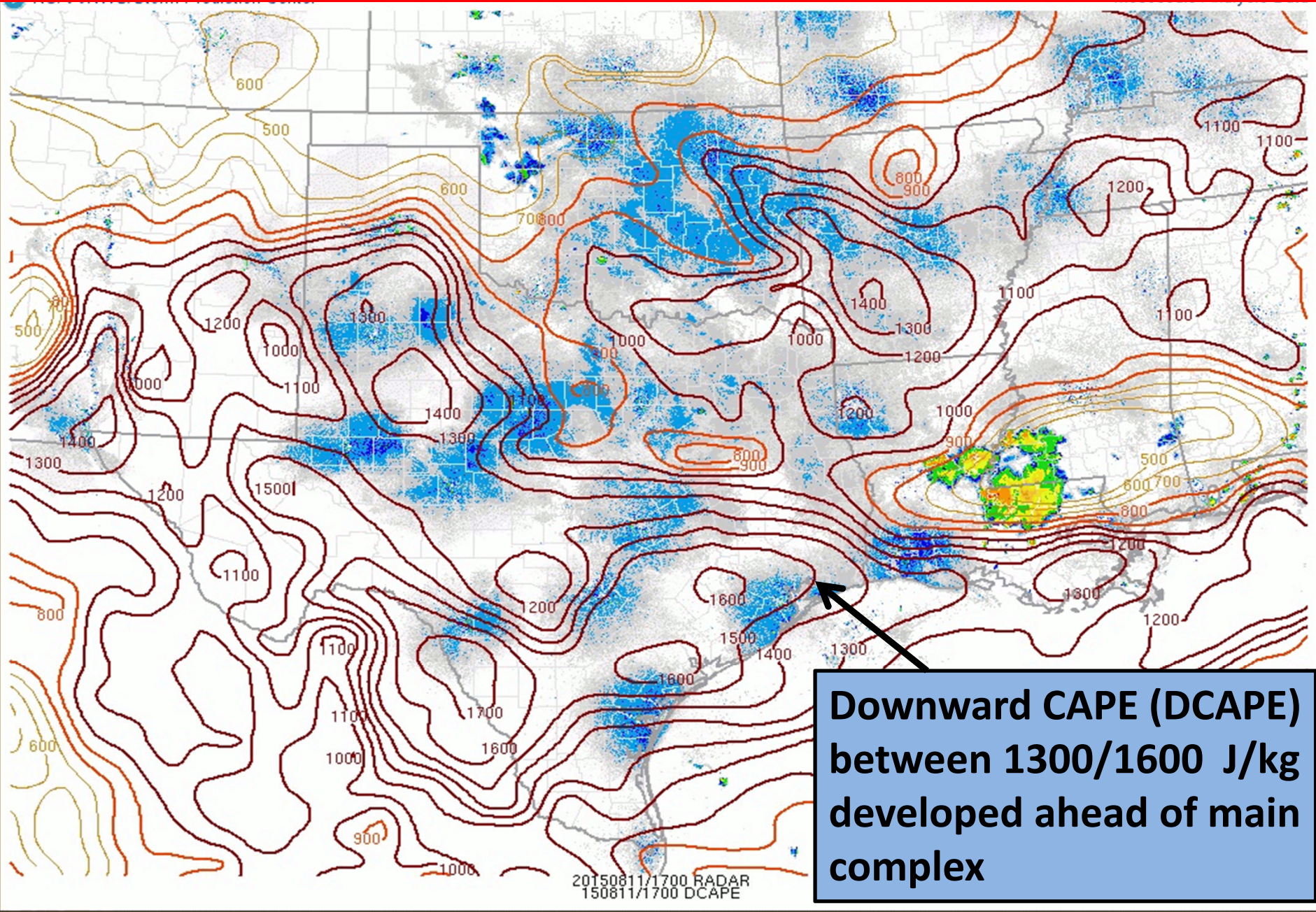
**Maximum PWATs
(2.3 inches) shifted
southwest over LA
into southeast TX**

SPC Meso-Analysis SBCAPE Loop (Aug 11 17Z – Aug 12 02Z)

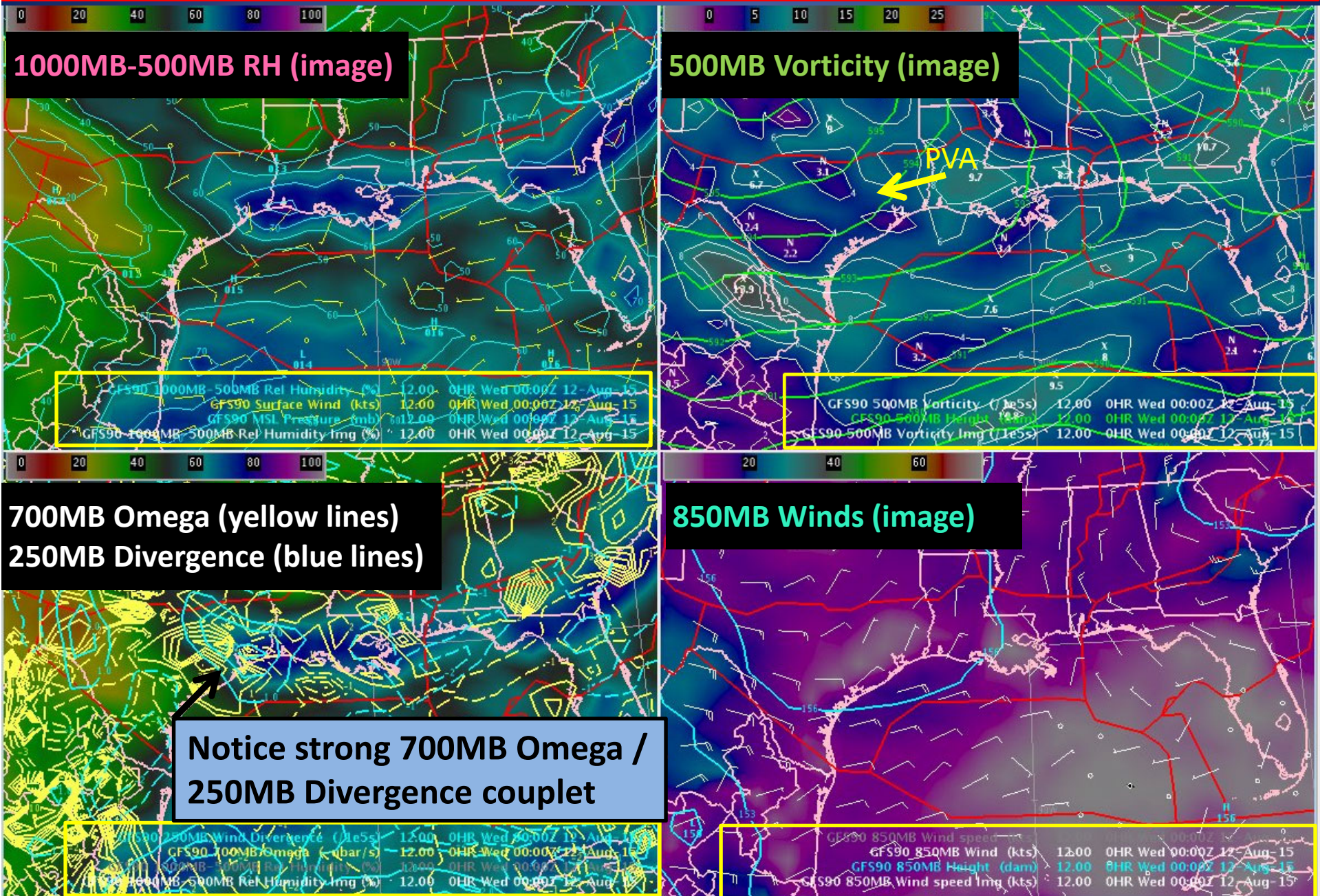


Surface based CAPE (SBCAPE) of 3000-3500 J/kg developed ahead of main complex

SPC Meso-Analysis DCAPE Loop (Aug 11 17Z – Aug 12 02Z)



GFS90 4-Panel (Aug 12 00Z)



Record High Temperatures Set on Aug 11

RECORD EVENT REPORT
NATIONAL WEATHER SERVICE HOUSTON/GALVESTON TX
0234 AM CDT WED AUG 12 2015

...RECORD HIGH TEMPERATURE WAS SET AT HOUSTON INTERCONTINENTAL AIRPORT YESTERDAY...

A RECORD HIGH TEMPERATURE OF 106 DEGREES WAS SET AT HOUSTON INTERCONTINENTAL AIRPORT YESTERDAY. THIS BREAKS THE OLD RECORD OF 102 SET IN 2011.

...RECORD HIGH TEMPERATURE WAS SET AT HOUSTON/HOBBY AIRPORT...

A RECORD HIGH TEMPERATURE OF 104 DEGREES WAS SET AT HOUSTON/HOBBY AIRPORT YESTERDAY. THIS BREAKS THE OLD RECORD OF 101 SET IN 2011.

PRELIMINARY LOCAL STORM REPORT...SUMMARY
NATIONAL WEATHER SERVICE HOUSTON/GALVESTON TX
814 AM CDT WED AUG 12 2015

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
	..REMARKS..		
0424 PM 08/11/2015	TSTM WND DMG	5 WSW MONTGOMERY MONTGOMERY	30.36N 95.77W TX BROADCAST MEDIA

TREES BLOWN DOWN... ONE ON A TRUCK

0454 PM 08/11/2015	TSTM WND GST M60 MPH	7 S TOMBALL HARRIS	30.00N 95.62W TX ASOS
-----------------------	-------------------------	-----------------------	--------------------------

THUNDERSTORM WIND GUST WAS MEASURED AT DWH ASOS SITE.

0554 PM 08/11/2015	MARINE TSTM WIND M43 MPH	2 E MORGAN'S POINT HARRIS	29.68N 94.98W TX PORTS
-----------------------	-----------------------------	------------------------------	---------------------------

WIND GUST WAS MEASURED AT MORGANS POINT PORTS SITE.

0600 PM 08/11/2015	TSTM WND DMG	HOUSTON HARRIS	29.77N 95.39W TX BROADCAST MEDIA
-----------------------	--------------	-------------------	-------------------------------------

FREEWAY SIGN WIND DAMAGE AT SCOTT STREET AND LOOP 610

0600 PM 08/11/2015	TSTM WND DMG	11 ENE CALDWELL BURLESON	30.59N 96.53W TX BROADCAST MEDIA
-----------------------	--------------	-----------------------------	-------------------------------------

3 TREES DOWN NEAR HIGHWAY 21 AND BRAZOS RIVER. KBTX
MEDIA RETWEET.

0615 PM 08/11/2015	MARINE TSTM WIND M43 MPH	4 NNE SAN LEON GMZ335	29.54N 94.91W TX MESONET
-----------------------	-----------------------------	--------------------------	-----------------------------

WIND GUST WAS MEASURED AT A WEATHERFLOW SITE IN
GALVESTON BAY.

0618 PM 08/11/2015	MARINE TSTM WIND M39 MPH	13 E BAYOU VISTA GMZ355	29.36N 94.73W TX PORTS
-----------------------	-----------------------------	----------------------------	---------------------------

WIND GUST WAS MEASURED AT GALVESTON NORTH JETTY PORTS
SITE.

0619 PM 08/11/2015	TSTM WND GST M69 MPH	3 W SOUTH HOUSTON HARRIS	29.65N 95.28W TX ASOS
-----------------------	-------------------------	-----------------------------	--------------------------

ASOS REPORT FROM HOUSTON HOBBY AIRPORT.

0624 PM 08/11/2015	HAIL E1.00 INCH	2 NW SUGAR LAND FORT BEND	29.64N 95.64W TX PUBLIC
-----------------------	--------------------	------------------------------	----------------------------

0631 PM TSTM WND GST SUGAR LAND 29.62N 95.62W
08/11/2015 M61 MPH FORT BEND TX ASOS

WIND GUST WAS MEASURED AT SUGAR LAND ASOS SITE KSGR.

0642 PM TSTM WND DMG 2 WNW SOUTH HOUSTON 29.67N 95.26W
08/11/2015 HARRIS TX PUBLIC

LARGE TREE WAS DOWNED IN A BACKYARD NEAR THE
INTERSECTION OF MONROE ROAD AND INTERSTATE 45.

0642 PM HAIL RICHMOND 29.58N 95.77W
08/11/2015 E0.88 INCH FORT BEND TX PUBLIC

NICKEL SIZE HAIL

0644 PM MARINE TSTM WIND 13 E BAYOU VISTA 29.36N 94.73W
08/11/2015 M39 MPH GMZ355 TX PORTS

WIND GUST WAS MEASURED AT NORTH JETTY PORTS SITE.

0645 PM HAIL RICHMOND 29.58N 95.77W
08/11/2015 M1.00 INCH FORT BEND TX PUBLIC

QUARTER SIZE HAIL IN RICHMOND.

0647 PM MARINE TSTM WIND 3 SE CHANNELVIEW 29.77N 95.08W
08/11/2015 M46 MPH HARRIS TX MESONET

WIND GUST WAS MEASURED AT A WEATHERFLOW SITE IN
GALVESTON BAY.

0721 PM LIGHTNING KENDLETON 29.45N 96.00W
08/11/2015 FORT BEND TX LAW ENFORCEMENT

CAR SEVERELY DAMAGED BY LIGHTNING. TIME ESTIMATED.

KIAH Observations on Aug 11

Weather Conditions for:

Houston Intercontinental Airport, TX. KIAH (NWS/FAA)

Elev: 89 ft; Latitude: 29.98440; Longitude: -95.36074

NOTE: Record high of 106

Time (CDT)	Temp (f)	Dew (f)	Relative Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility (miles)	WX	Clouds	Sea Level Pressure (mb)	Altimeter Setting (inches)	Station Pressure (inches)	Precip 1 hour (inches)	Precip 3 hour (inches)	Precip 6 hour (inches)	6 Hr Max Temp
11 Aug 10:27 pm CDT	77	73	89	SE	9	8.00	-RA	FEW035 SCT075 OVC110		30.04	29.952	0.03			
11 Aug 10:13 pm CDT	77	73	89	SE	8	9.00	TSRA	SCT035CB SCT075 OVC100		30.04	29.952	0.02			
11 Aug 9:53 pm CDT	77	73	89	ESE	18	4.00	TSRA BR	SCT033CB SCT060 OVC095	1017.4	30.05	29.962	0.09	0.09		
11 Aug 9:28 pm CDT	81	73	79	NE	18G28	10.00	-TSRA	SCT030CB SCT070 BKN100 OVC180		30.09	30.002	T			
11 Aug 9:15 pm CDT	82	72	70	NE	21G25	10.00	-TSRA	SCT030CB SCT070 BKN110 OVC180		30.09	30.002	T			
11 Aug 9:09 pm CDT	82	72	70	NE	20	10.00		FEW030 SCT070 BKN085 BKN180 OVC250		30.08	29.992				
11 Aug 8:53 pm CDT	83	72	70	NNE	18	10.00		FEW075 SCT110 BKN180 OVC250	1017.6	30.05	29.962				
11 Aug 7:53 pm CDT	81	70	69	S	9	10.00		FEW060 SCT150 BKN180 BKN250	1015.2	29.98	29.893	T			
11 Aug 6:53 pm CDT	84	71	65	S	16G22	10.00	-RA	FEW035 SCT065 BKN140 BKN180 BKN250	1014.8	29.97	29.883	T		T	106
11 Aug 6:27 pm CDT	86	70	59	ESE	22G29	10.00		FEW030 SCT065 BKN150 BKN170 BKN250		29.96	29.873				
11 Aug 5:53 pm CDT	91	70	50	NW	3	10.00		FEW035 SCT070 BKN100 BKN150 BKN250	1013.5	29.93	29.843				
11 Aug 5:09 pm CDT	93	66	41	NNE	14G22	10.00		FEW040 SCT075 BKN130 BKN250		29.92	29.833				
11 Aug 5:07 pm CDT	93	66	41	NNE	16	10.00		FEW040 SCT075 BKN130 BKN250		29.92	29.833				
11 Aug 4:53 pm CDT	95	68	42	NNE	18	10.00	TS	SCT040CB SCT080 BKN170 BKN250	1012.6	29.91	29.823				
11 Aug 4:43 pm CDT	97	68	39	NNE	22G30	10.00	TS	SCT040CB SCT075 BKN100 BKN250		29.91	29.823				
11 Aug 4:31 pm CDT	100	70	38	NNE	20G24	10.00	TS	FEW040CB SCT075 BKN250		29.91	29.823				
11 Aug 3:53 pm CDT	104	68	32	VRBL	3	10.00		FEW065 BKN250	1012.8	29.91	29.823				
11 Aug 3:29 pm CDT	104	68	32	NE	8	10.00		FEW065 BKN250		29.92	29.833				
11 Aug 2:53 pm CDT	104	70	34	VRBL	3	10.00		FEW065 SCT250	1014.0	29.95	29.863				
11 Aug 1:53 pm CDT	101	70	37	CALM		10.00		FEW060 SCT250	1014.7	29.97	29.883				
11 Aug 12:53 pm CDT	101	70	37	VRBL	3	10.00		FEW250	1015.4	29.99	29.903				101
11 Aug 11:53 am CDT	98	67	37	VRBL	5	10.00		FEW250	1015.9	30.01	29.922				
11 Aug 10:53 am CDT	93	67	43	NW	8	10.00		FEW250	1016.2	30.01	29.922				

KHOU Observations on Aug 11

Weather Conditions for:

Houston, Houston Hobby Airport, TX. [KHOU](#) (NWS/FAA)

Elev: 46 ft; Latitude: 29.63750; Longitude: -95.28250

NOTE: Lost Power after 5:53 PM CDT

Time (CDT)	Temp. (f)	Dew (f)	Relative Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility (miles)	WX	Clouds	Sea Level Pressure (mb)	Altimeter Setting (inches)	Station Pressure (inches)	Precip 1 hour (inches)	Precip 3 hour (inches)	Precip 6 hour (inches)
11 Aug 5:53 pm CDT	97	74	48	S	12	10.00	TS	FEW040CB SCT070 BKN250	1013.0	29.90	29.859			
11 Aug 5:36 pm CDT	99	73	45	S	14	10.00	TS	FEW040CB SCT070 BKN250		29.91	29.869			
11 Aug 4:53 pm CDT	103	67	32	VRBL	5	10.00		FEW040 SCT070 BKN250	1012.3	29.89	29.849			
11 Aug 3:53 pm CDT	102	67	32	ESE	12	10.00		FEW075 BKN250	1013.2	29.91	29.869			
11 Aug 2:53 pm CDT	103	68	33	ENE	7	10.00		FEW080 BKN250	1014.2	29.94	29.899			
11 Aug 1:53 pm CDT	100	67	34	CALM		10.00		SCT250	1015.0	29.96	29.919			
11 Aug 12:53 pm CDT	99	68	37	VRBL	3	10.00		SCT250	1015.7	29.98	29.939			
11 Aug 11:53 am CDT	95	66	39	NW	6	10.00		SCT250	1016.2	30.00	29.959			
11 Aug 10:53 am CDT	92	70	49	NNW	8	10.00		SCT250	1016.3	30.00	29.959			

KSGR Observations on Aug 11

Weather Conditions for:

Houston, Sugar Land Municipal / Hull Field Airport, TX. **KSGR** (NWS/FAA)

Elev: 82 ft; Latitude: 29.62222; Longitude: -95.65667

Time (CDT)	Temp. (f)	Dew (f)	Relative Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility (miles)	WX	Clouds	Sea Level Pressure (mb)	Altimeter Setting (inches)	Station Pressure (inches)	Precip 1 hour (inches)	Precip 3 hour (inches)	Precip 6 hour (inches)	6 Hr Max Temp
11 Aug 8:45 pm CDT	76	73	91	S	7	10.00	-RA	CLR		30.00	29.920	T			
11 Aug 8:30 pm CDT	76	72	88	SSE	12	10.00	VCTS -RA	CLR		29.99	29.910	T			
11 Aug 8:18 pm CDT	76	72	88	SSE	14	10.00	-RA	CLR		29.99	29.910	T			
11 Aug 8:03 pm CDT	76	71	85	SE	8	10.00	VCTS -RA	CLR		29.99	29.910	T			
11 Aug 7:53 pm CDT	75	71	88	SSW	14	10.00	-TSRA	CLR	1015.1	29.97	29.890	0.30			
11 Aug 7:23 pm CDT	75	71	88	WSW	18G31	3.00	+TSRA BR	FEW050 BKN090 BKN110		30.00	29.920	0.27			
11 Aug 7:05 pm CDT	77	72	85	SSE	18G25	1.50	+TSRA	SCT034 BKN080 OVC090		30.01	29.930	0.11			
11 Aug 6:53 pm CDT	78	71	79	SSE	21G28	1.75	+TSRA	BKN026 BKN050 OVC085	1016.7	30.02	29.940	0.59		0.59	104
11 Aug 6:45 pm CDT	80	68	67	ENE	8G51	1.00	+TSRA	BKN026 BKN050 OVC080		30.01	29.930	0.39			
11 Aug 6:39 pm CDT	78	68	71	WNW	36G51	0.50	+TSRA	BKN022 BKN050 OVC075		29.97	29.890	0.36			
11 Aug 6:37 pm CDT	78	69	74	WNW	26G61	0.75	+TSRA	BKN020 BKN050 OVC090		29.97	29.890	0.33			
11 Aug 6:31 pm CDT	77	70	79	N	26G61	1.00	+TSRA SQ	SCT020 BKN050 BKN075		29.98	29.900	0.14			
11 Aug 6:12 pm CDT	97	75	50	SSE	16	10.00	TS	SCT090		29.92	29.840				
11 Aug 6:01 pm CDT	98	74	46	S	20G25	10.00	VCTS	FEW003 FEW090		29.89	29.810				
11 Aug 5:53 pm CDT	99	73	44	SSE	20	10.00		SCT090	1012.5	29.90	29.820				
11 Aug 4:53 pm CDT	103	66	31	CALM		10.00		SCT085	1012.1	29.89	29.810				
11 Aug 3:53 pm CDT	103	67	32	E	6	10.00		CLR	1013.1	29.92	29.840				
11 Aug 2:53 pm CDT	103	68	33	VRBL	5	10.00		CLR	1014.2	29.95	29.870				
11 Aug 1:53 pm CDT	100	68	36	VRBL	3	10.00		CLR	1014.9	29.97	29.890				
11 Aug 12:53 pm CDT	99	67	36	NNW	7	10.00		CLR	1015.6	29.99	29.910				99
11 Aug 11:53 am CDT	95	68	42	NW	6	10.00		CLR	1016.1	30.01	29.930				
11 Aug 10:53 am CDT	92	71	51	NNW	8	10.00		CLR	1016.1	30.01	29.930				
11 Aug 9:53 am CDT	87	75	68	NW	7	10.00		CLR	1016.5	30.02	29.940				