DISCOVER-AQ OUTLOOK -- September 19, 2013

Today (Thursday): No fly day.

Friday & Saturday: Not recommended. Moisture and clouds from what's left of Ingrid & Manuel move over the region and interact with a trough and surface front, likely producing some rain. Clearing begins on Saturday. With onshore flow and precipitation, ozone and PM are expected to remain low through Saturday.

Sunday & beyond: The TCEQ forecast is moderate for ozone Sunday, particularly to the S & SW sides of Houston. Better or even great flying weather likely, including an end to the persistent easterly/southeasterly flow of late. The surface front should move out of the study region, while another ridge builds over the continental US, preventing flow from the Gulf. A northerly flow will bring continental air to Houston.

Even further beyond: Keep an eye on the system near eastern Mexico as there is talk that it may be a big rainmaker (not as a tropical storm) for the northern Gulf Coast at the end of next week – too early to tell though.

9/19/2013 Weather Briefing

Clare Flynn

Recommendations

- Thursday, Friday, Saturday: No fly days. Too many clouds and high chances of precipitation.
- Sunday and beyond: Possible fly days. Clearing after cold front passes Friday night/Saturday morning.

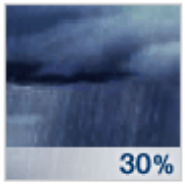
Conroe:

THIS AFTERNOON	TONIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
Chance Thunderstorms	Chance Thunderstorms	Thunderstorms	Thunderstorms Likely	Chance Thunderstorms	Partly Cloudy	Mostly Sunny	Mostly Clear	Sunny
High: 92 °F	Low: 74 °F	High: 89 °F	Low: 73 °F	High: 87 °F	Low: 68 °F	High: 89 °F	Low: 63 °F	High: 91 °F

Houston Hobby:

THIS AFTERNOON	TONIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
Chance Thunderstorms	Chance Thunderstorms	Thunderstorms Likely	Thunderstorms Likely	Thunderstorms Likely	Slight Chc Thunderstorms	Mostly Sunny	Mostly Clear	Sunny
High: 91 °F	Low: 77 °F	High: 89 °F	Low: 76 °F	High: 87 °F	Low: 70 °F	High: 89 °F	Low: 70 °F	High: 91 °F

Galveston:

THIS AFTERNOON	TONIGHT	FRIDAY	FRIDAY NIGHT	SATURDAY	SATURDAY NIGHT	SUNDAY	SUNDAY NIGHT	MONDAY
								
Chance Thunderstorms	Thunderstorms Likely	Thunderstorms Likely	Thunderstorms Likely	Thunderstorms Likely	Chance Showers	Mostly Sunny	Mostly Clear	Sunny
High: 88 °F	Low: 81 °F	High: 85 °F	Low: 81 °F	High: 86 °F	Low: 79 °F	High: 86 °F	Low: 80 °F	High: 86 °F

Current Conditions

Conroe:

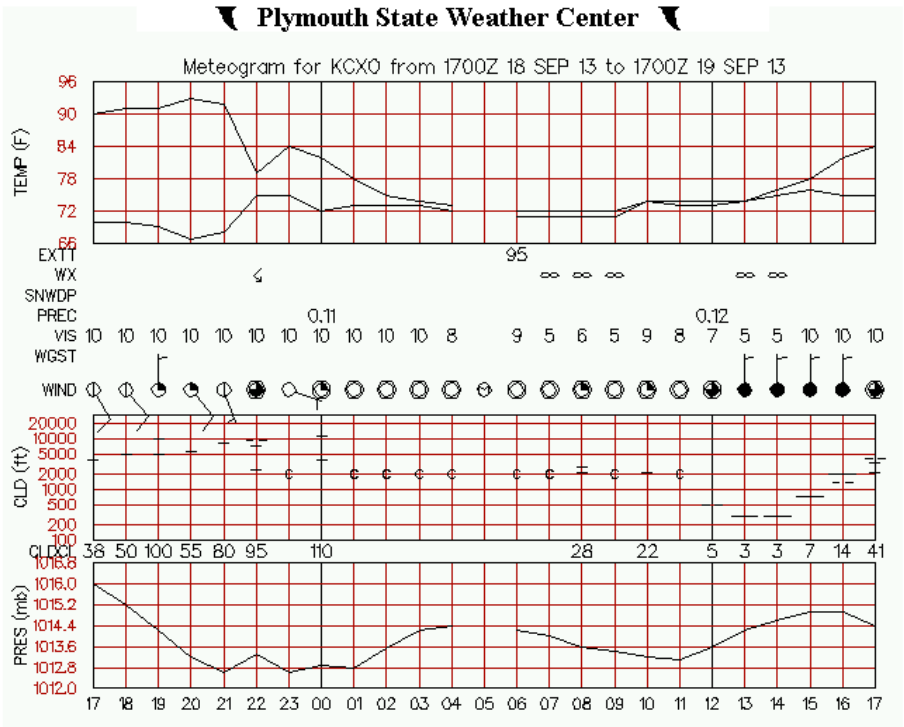
Mostly Cloudy

84°F

29°C

Humidity	74%
Wind Speed	Calm
Barometer	29.97 in (1014.4 mb)
Dewpoint	75°F (24°C)
Visibility	10.00 mi
Heat Index	92°F (33°C)

Last Update on 19 Sep 11:53 am CDT



Houston Hobby:

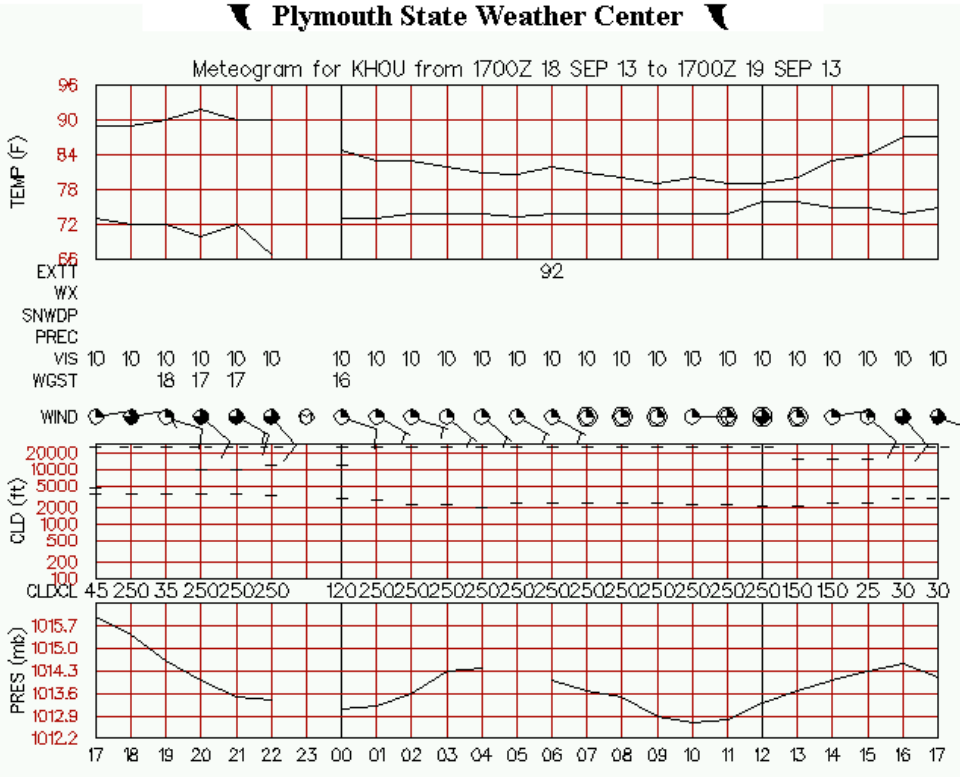
Mostly Cloudy

87°F

31°C

Humidity	67%
Wind Speed	E 10 mph
Barometer	29.94 in (1014.1 mb)
Dewpoint	75°F (24°C)
Visibility	10.00 mi
Heat Index	96°F (36°C)

Last Update on 19 Sep 11:53 am CDT



Current Conditions

Galveston:

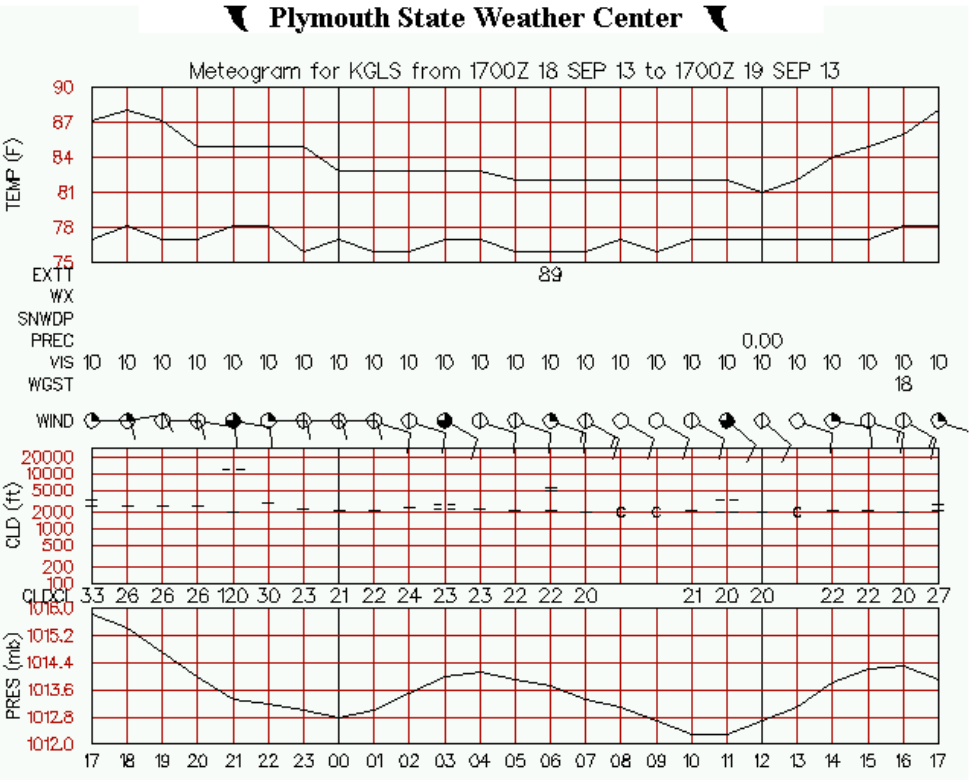
Partly Cloudy

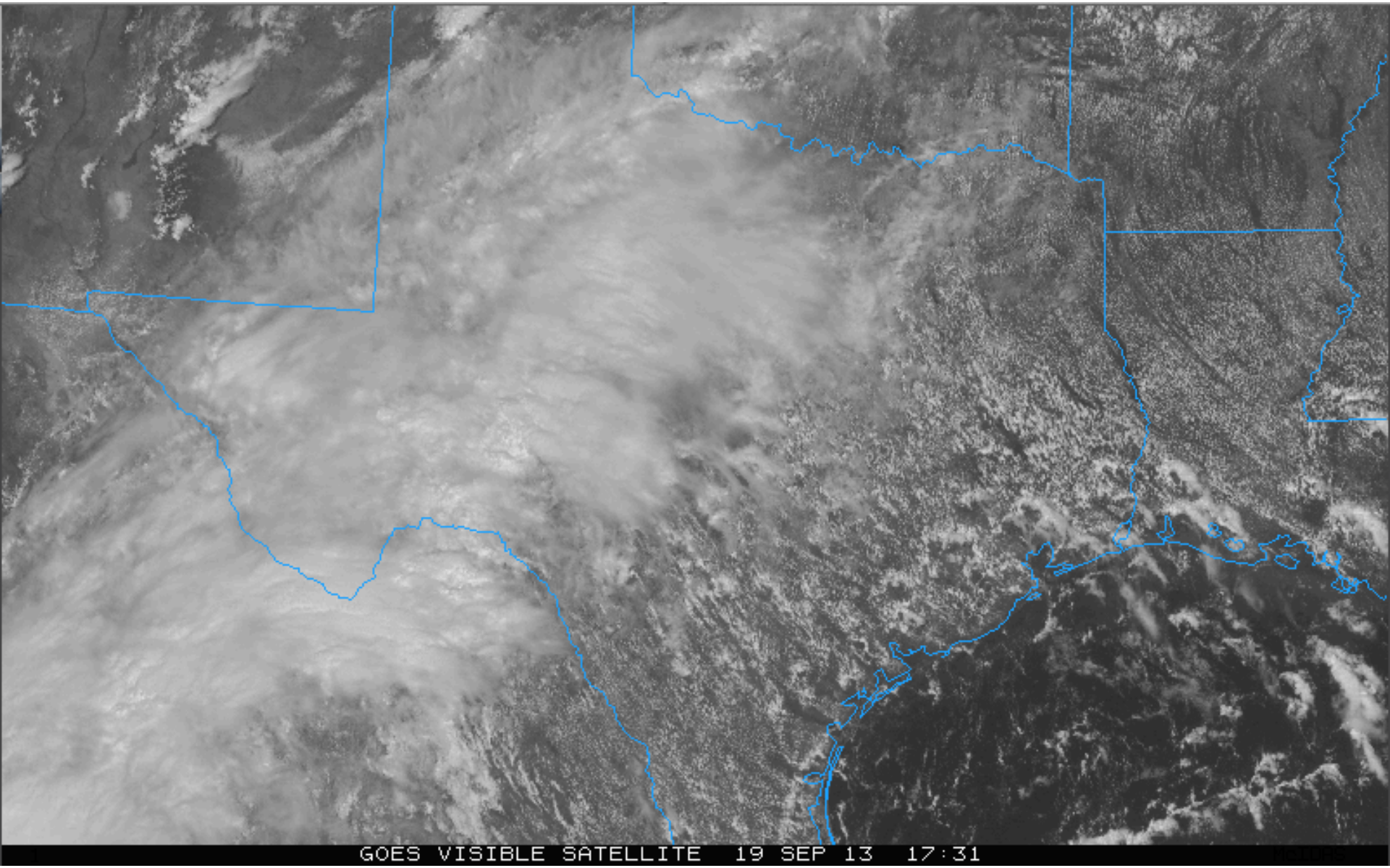
88°F

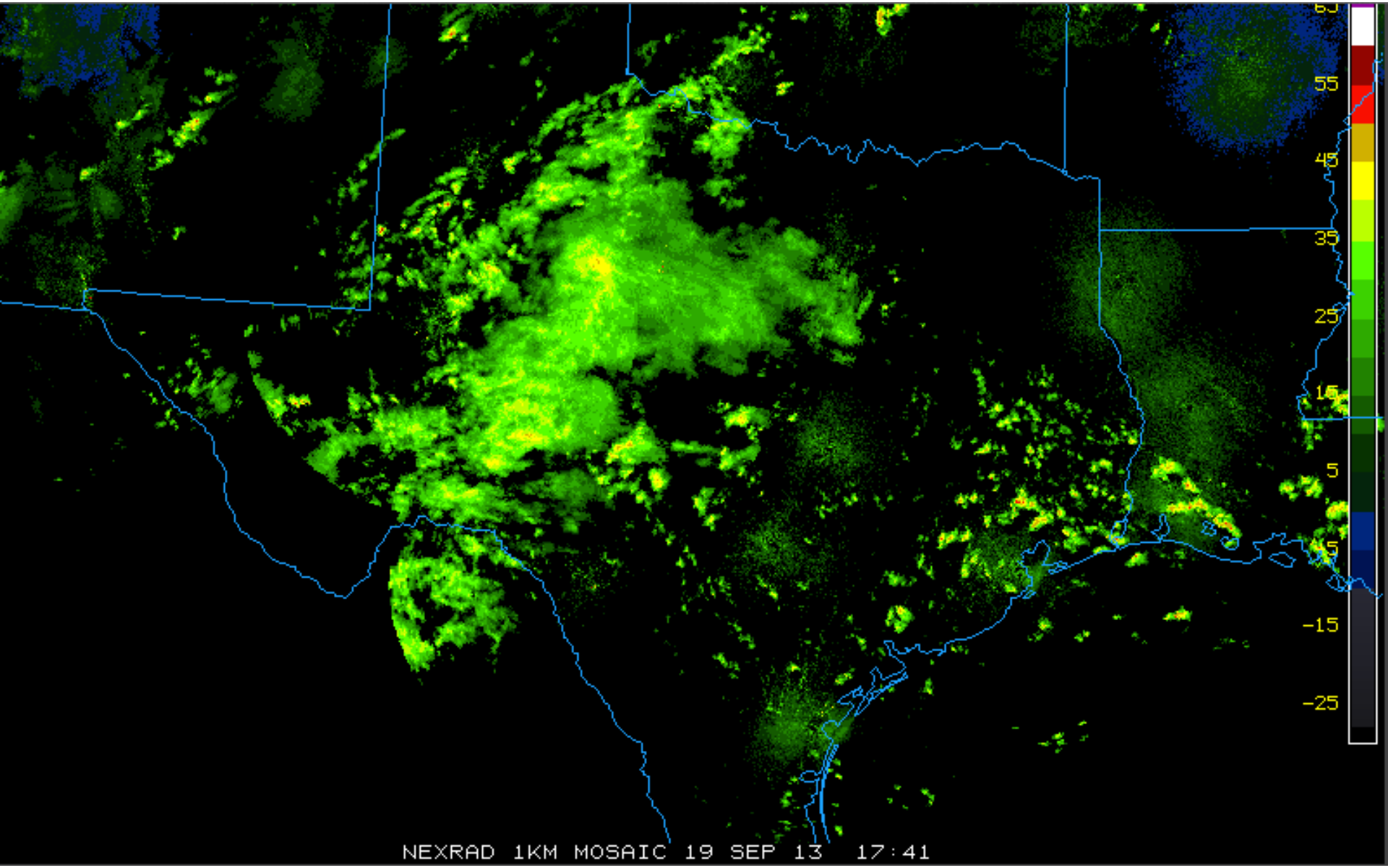
31°C

Humidity	73%
Wind Speed	E 14 mph
Barometer	29.94 in (1013.9 mb)
Dewpoint	78°F (26°C)
Visibility	10.00 mi
Heat Index	102°F (39°C)

Last Update on 19 Sep 11:52 am CDT




GOES VISIBLE SATELLITE 19 SEP 13 17:31


55
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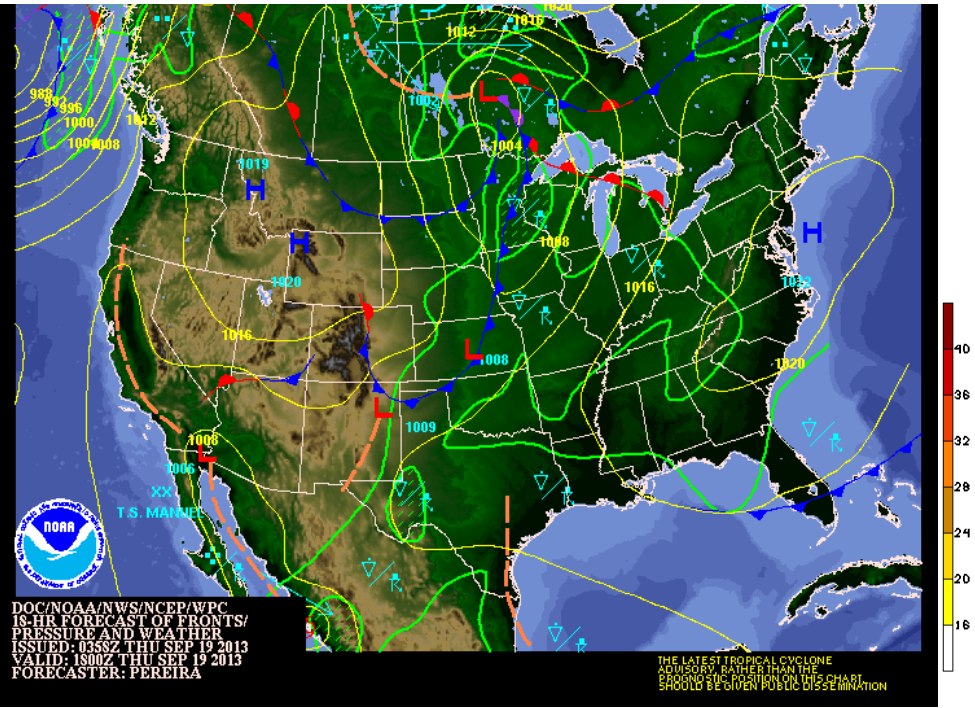
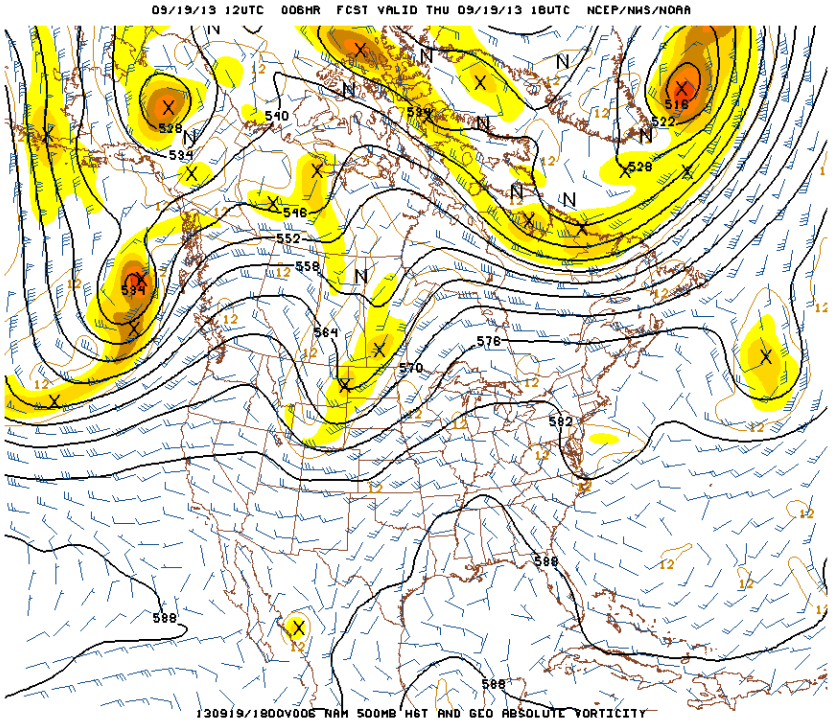
NEXRAD 1KM MOSAIC 19 SEP 13 17:41

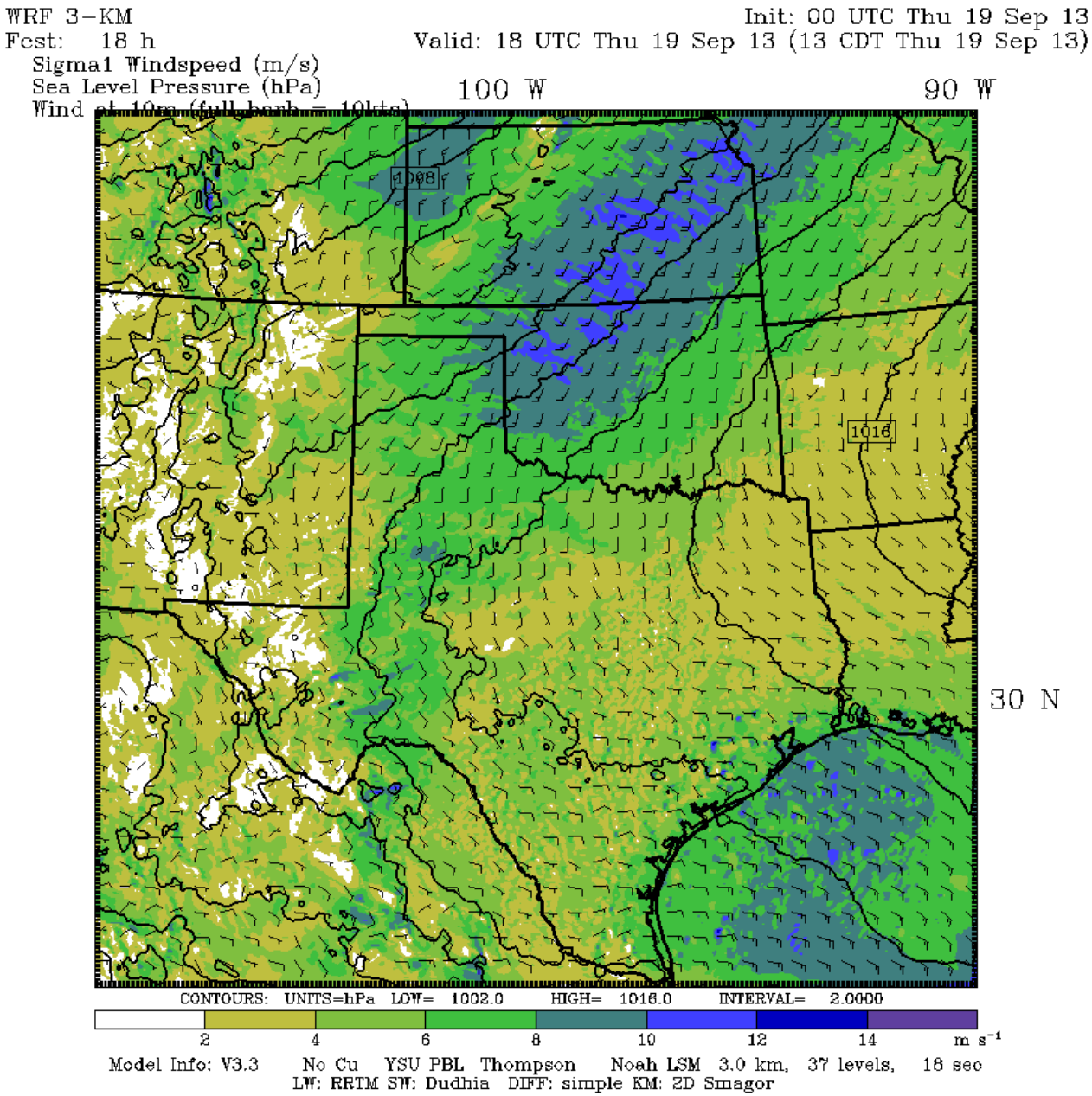
Today: Easterly flow. Region remains under influence of the upper trough, while surface cold front approaches from the north. Moisture streams in Ingrid and Manuel.

1 PM CDT
500 mb vorticity



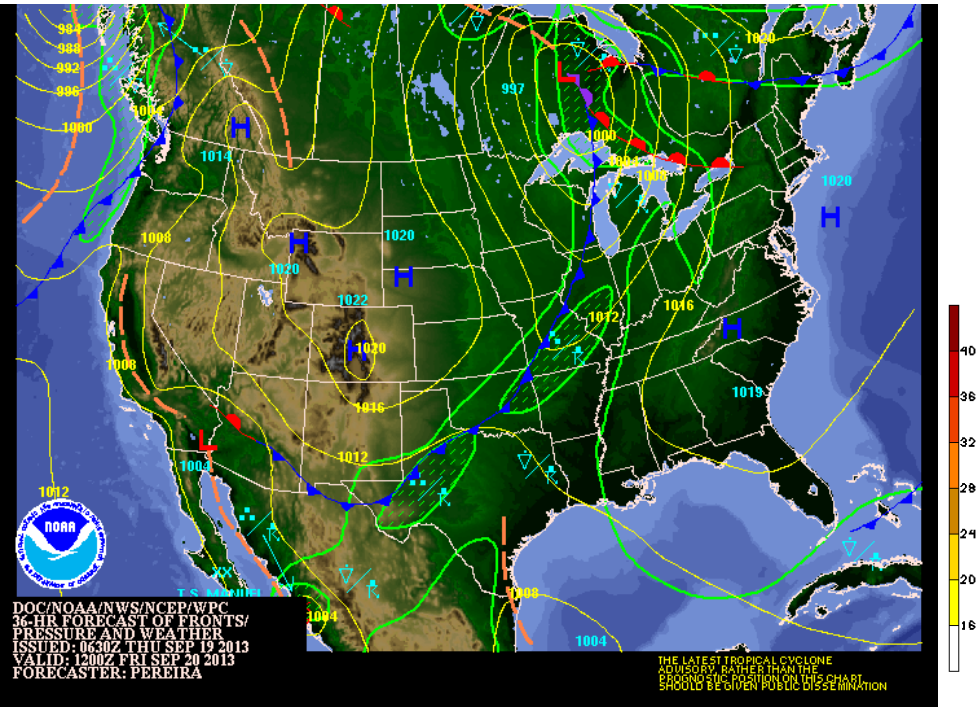


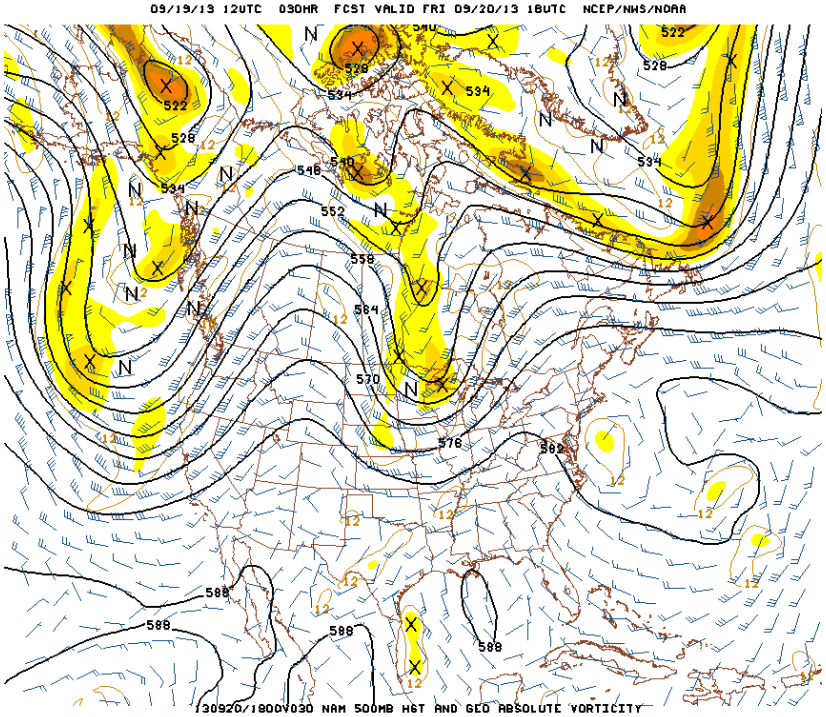
10 m winds at 1 PM today



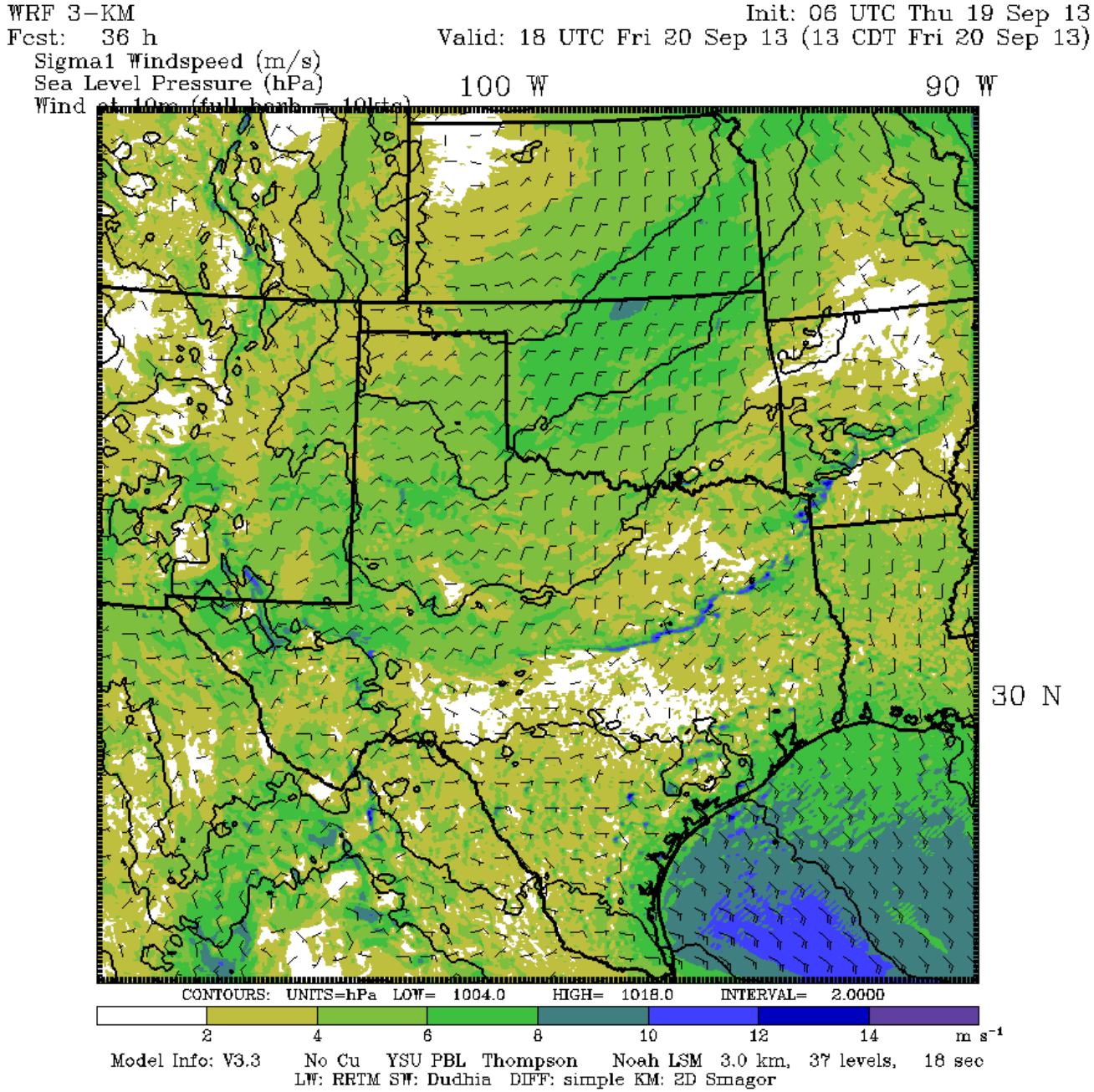
Tomorrow: Circulatory wind pattern at surface. Upper ridge builds in. Moisture streams in Ingrid and Manuel, while region is also impacted by the cold front and moisture influx from the Gulf.

1 PM CDT
500 mb vorticity





10 m winds at 1 PM tomorrow

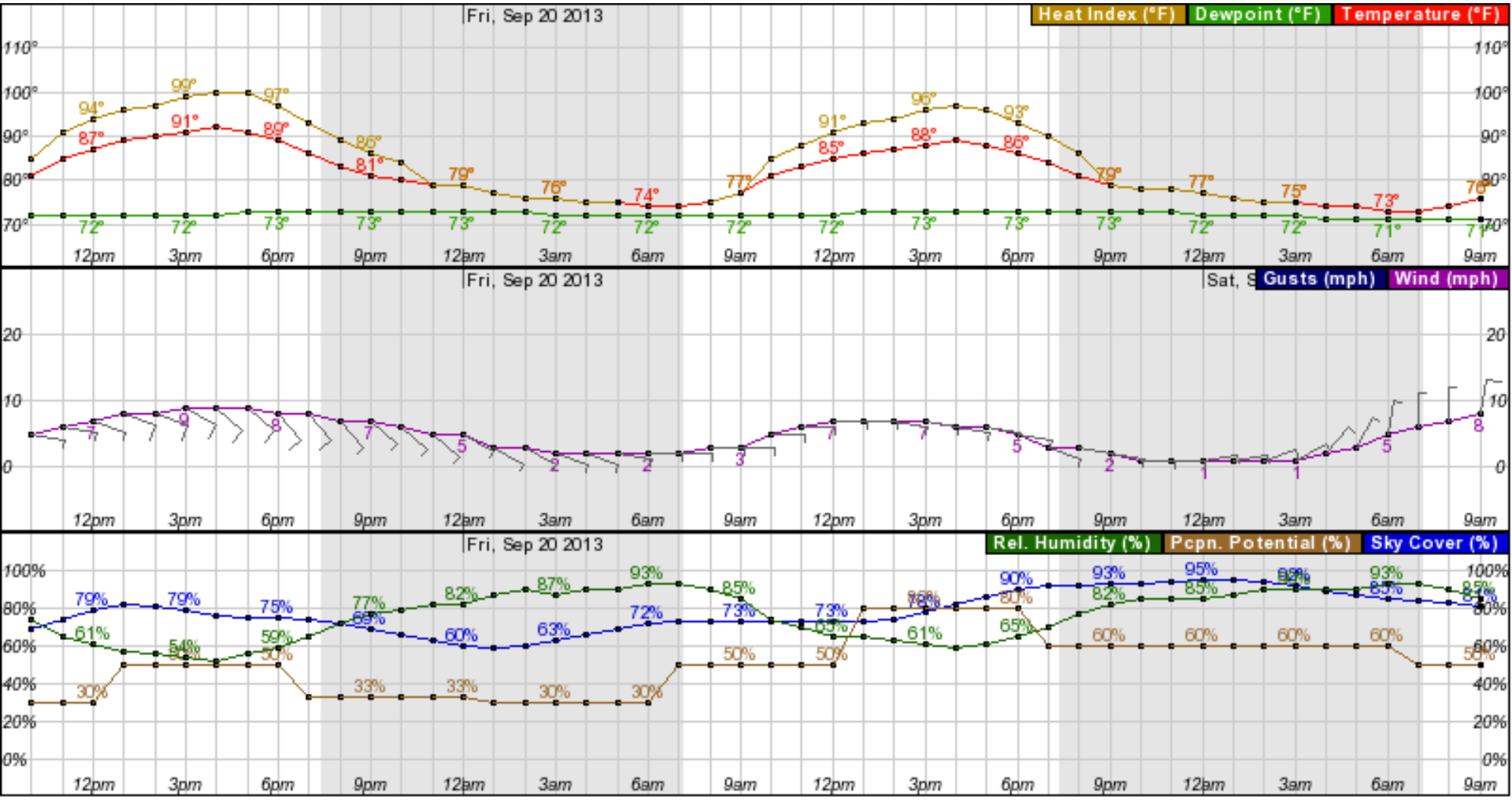


Conroe

Today: Mostly cloudy

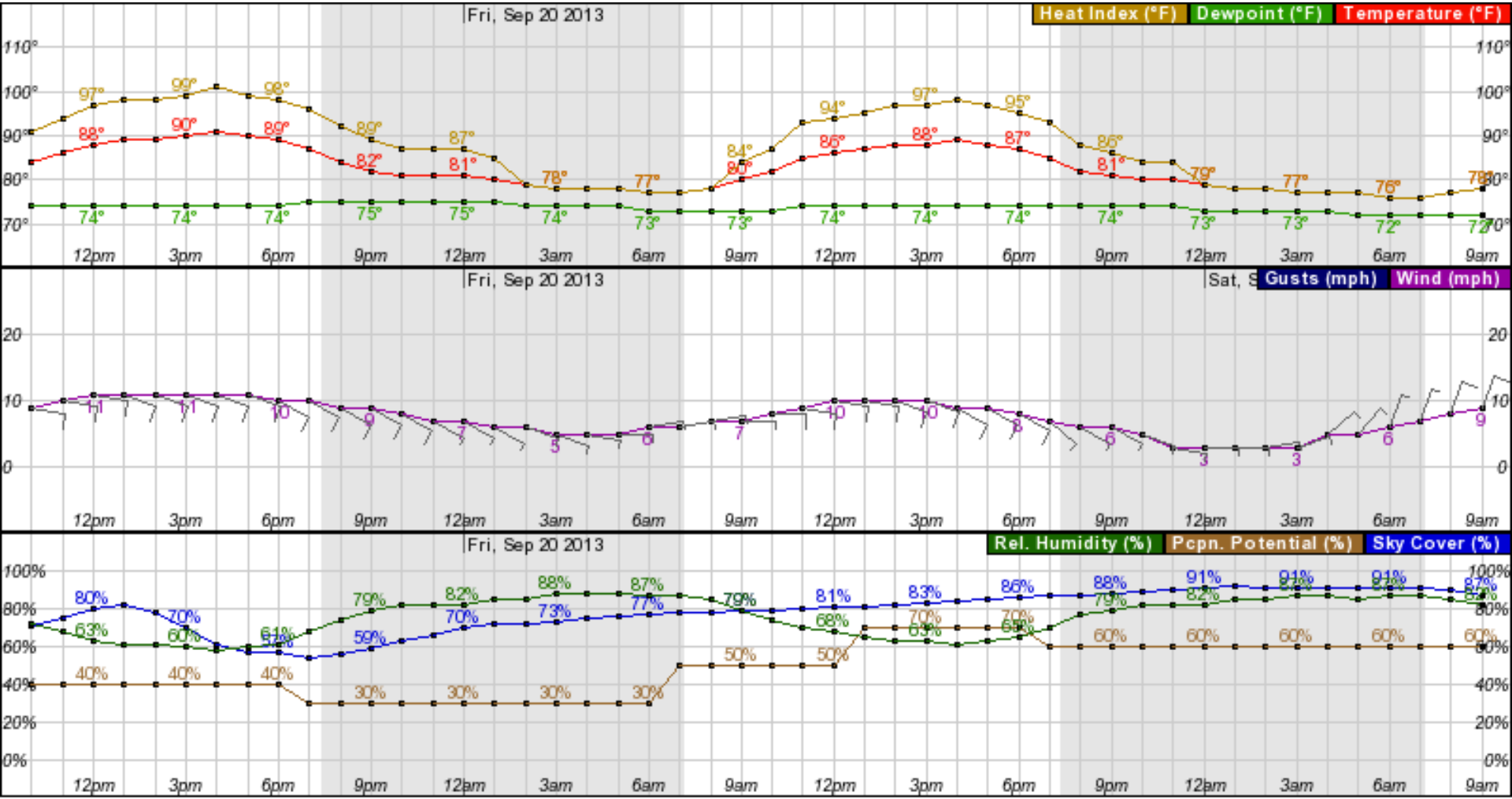
Tomorrow: Mostly cloudy

Today→ **Tomorrow→**



Houston Hobby
Today: Mostly cloudy
Tomorrow: Mostly cloudy

Today→ **Tomorrow→**

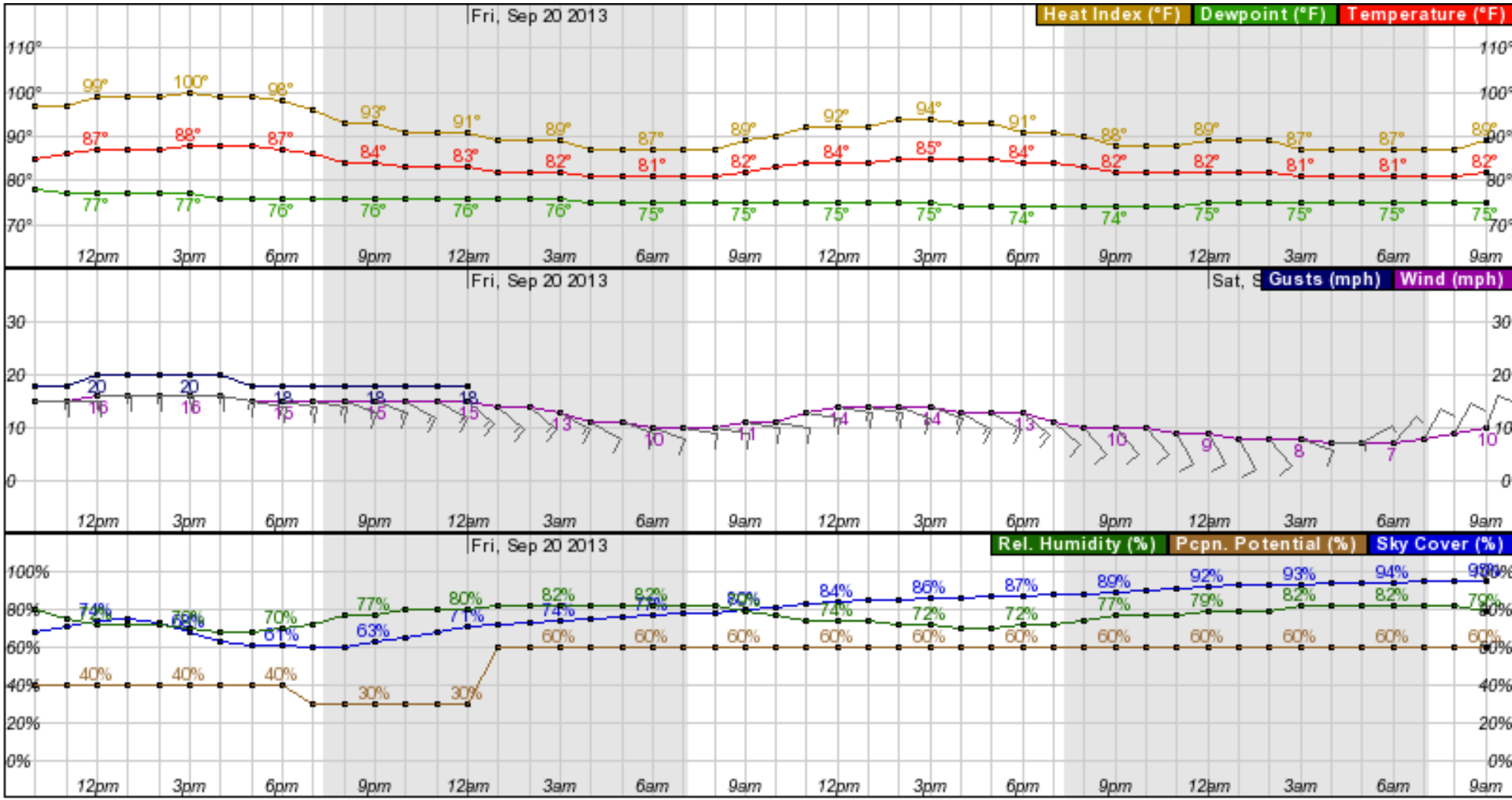


Galveston

Today: Mostly cloudy

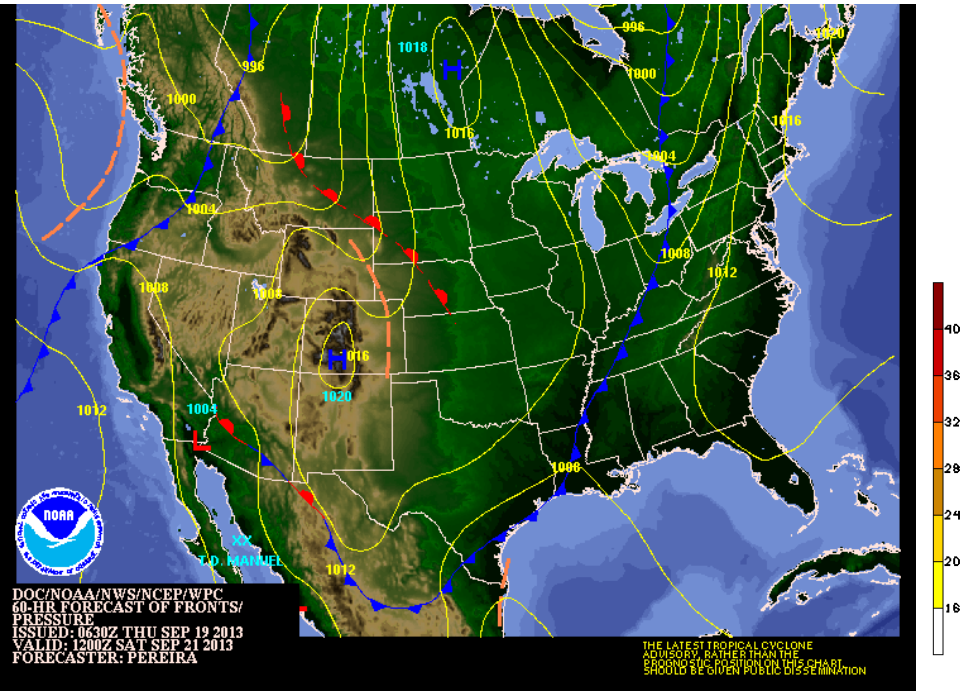
Tomorrow: Mostly cloudy

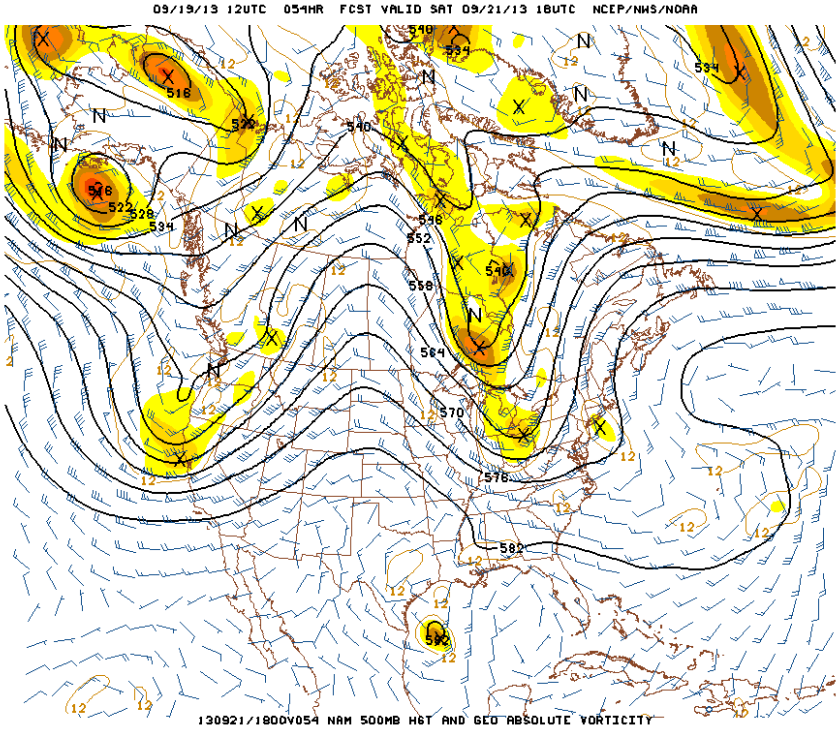
Today→ **Tomorrow→**



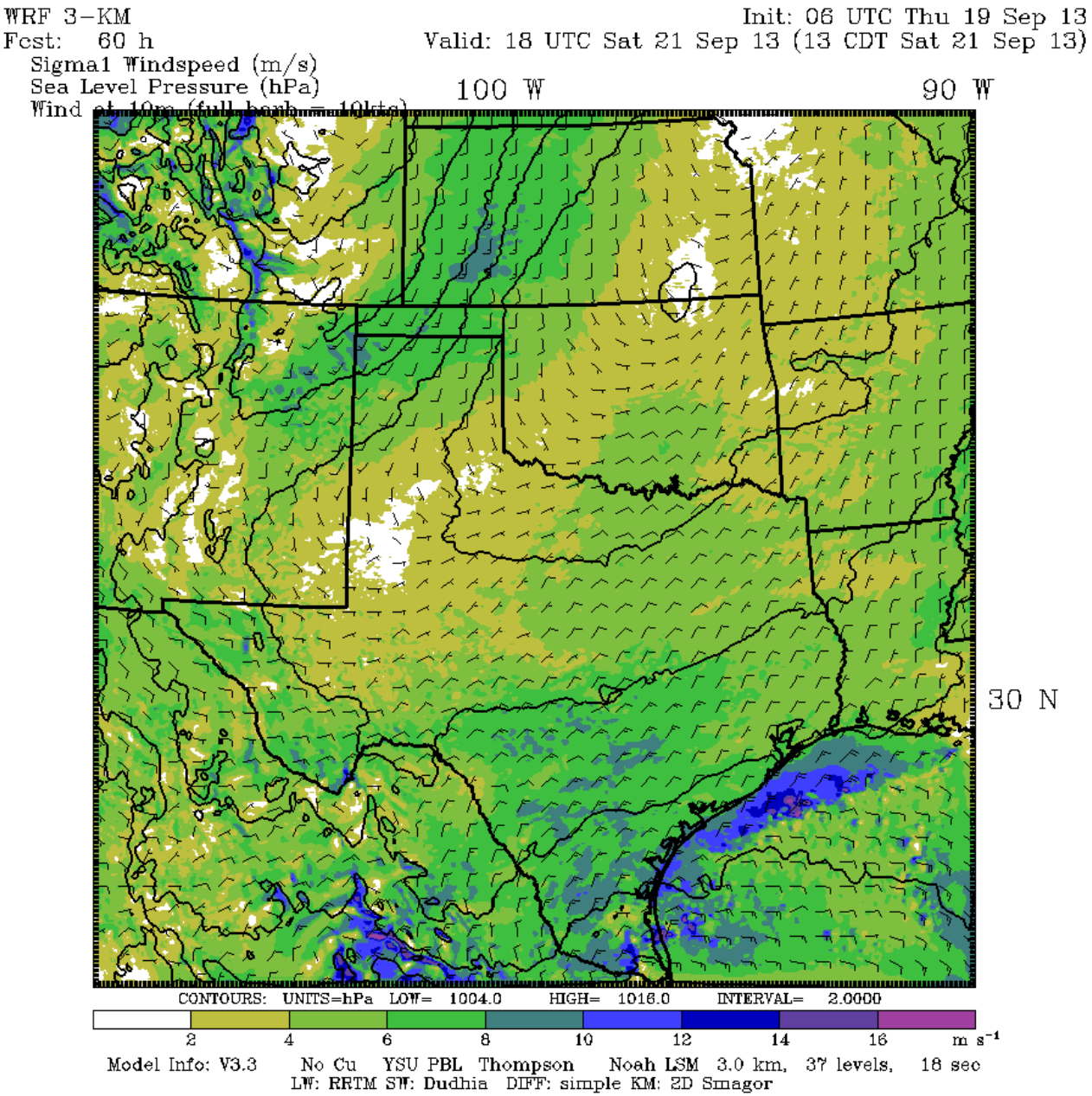
Saturday: Surface cold front passes through region Friday night/Saturday morning as the upper ridge has built over the continental US. Cloud coverage and precipitation should decrease throughout the day. NE flow.

1 PM CDT
500 mb vorticity





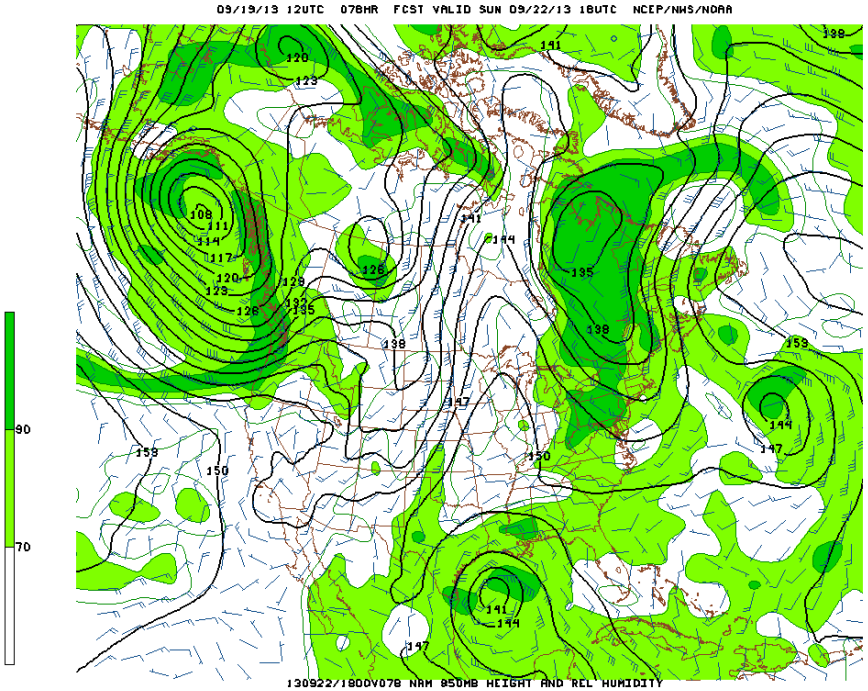
10 m winds at 1 PM Saturday



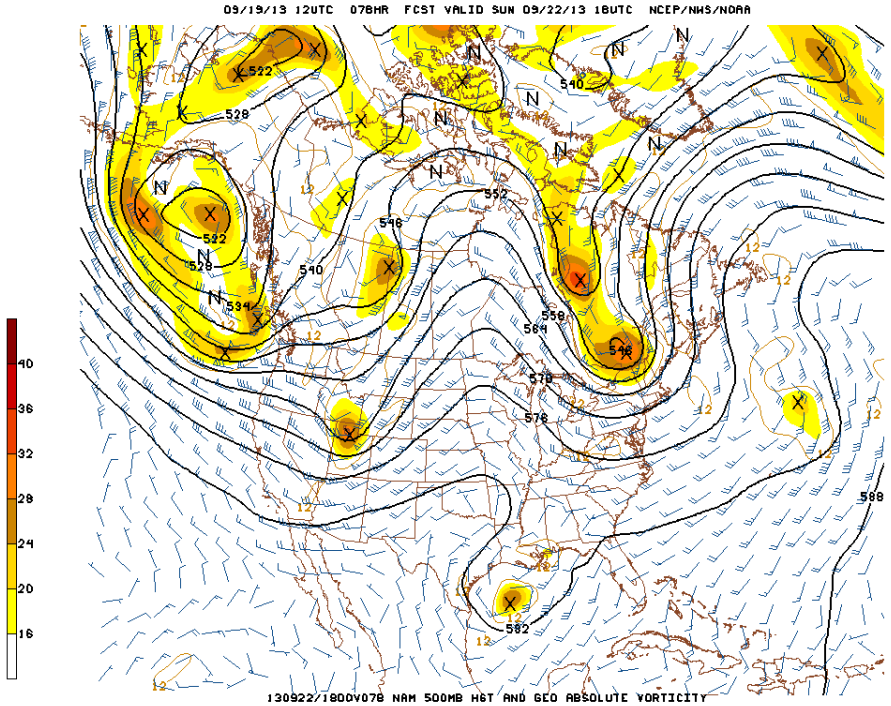
Sunday: Region remains under influence of the upper ridge, which should also prevent some tropical moisture from reaching our area. Partly cloudy→mainly clear conditions.

1 PM CDT

850 mb RH



500 mb vorticity

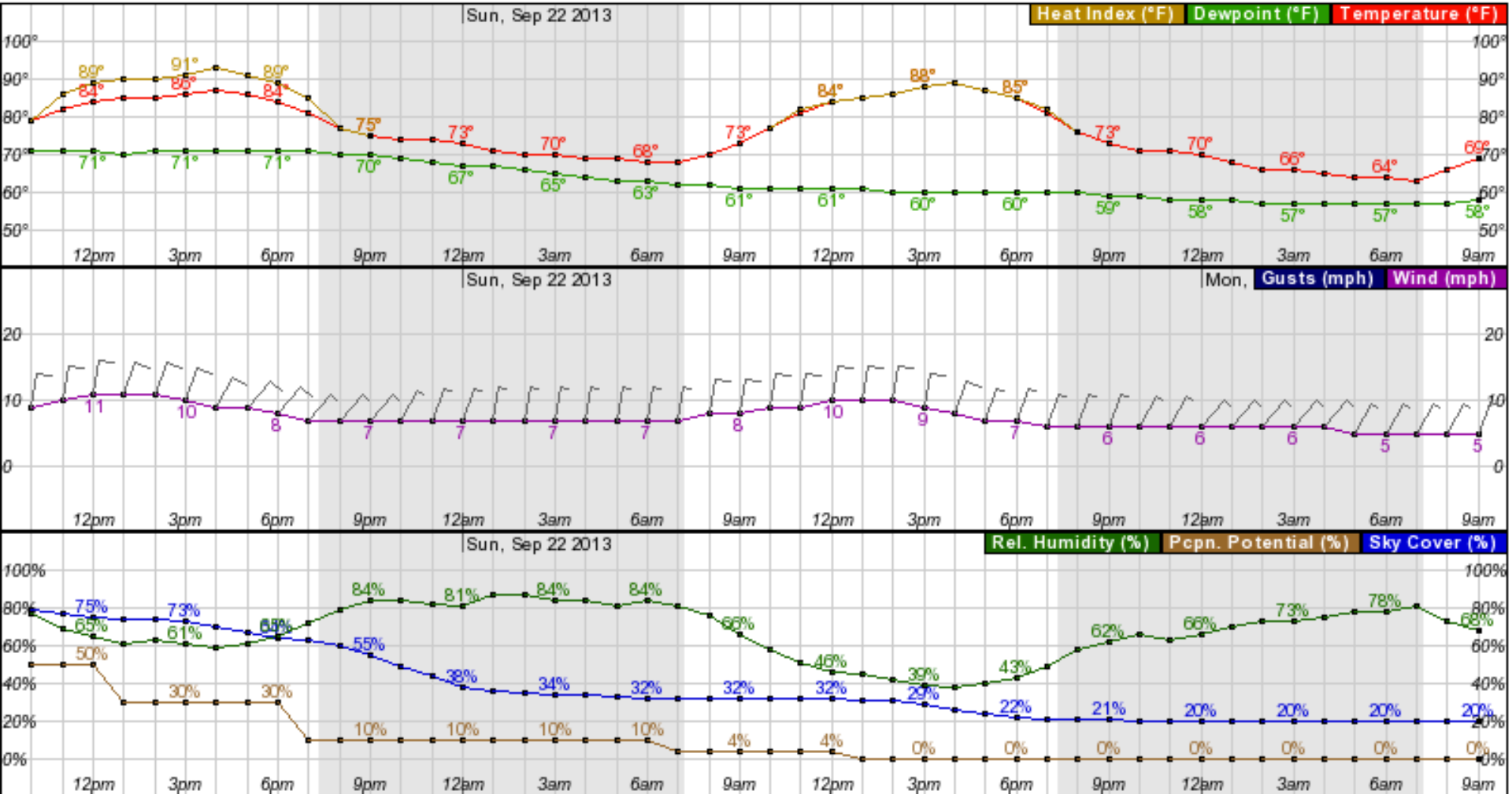


Conroe

Saturday: Mostly cloudy

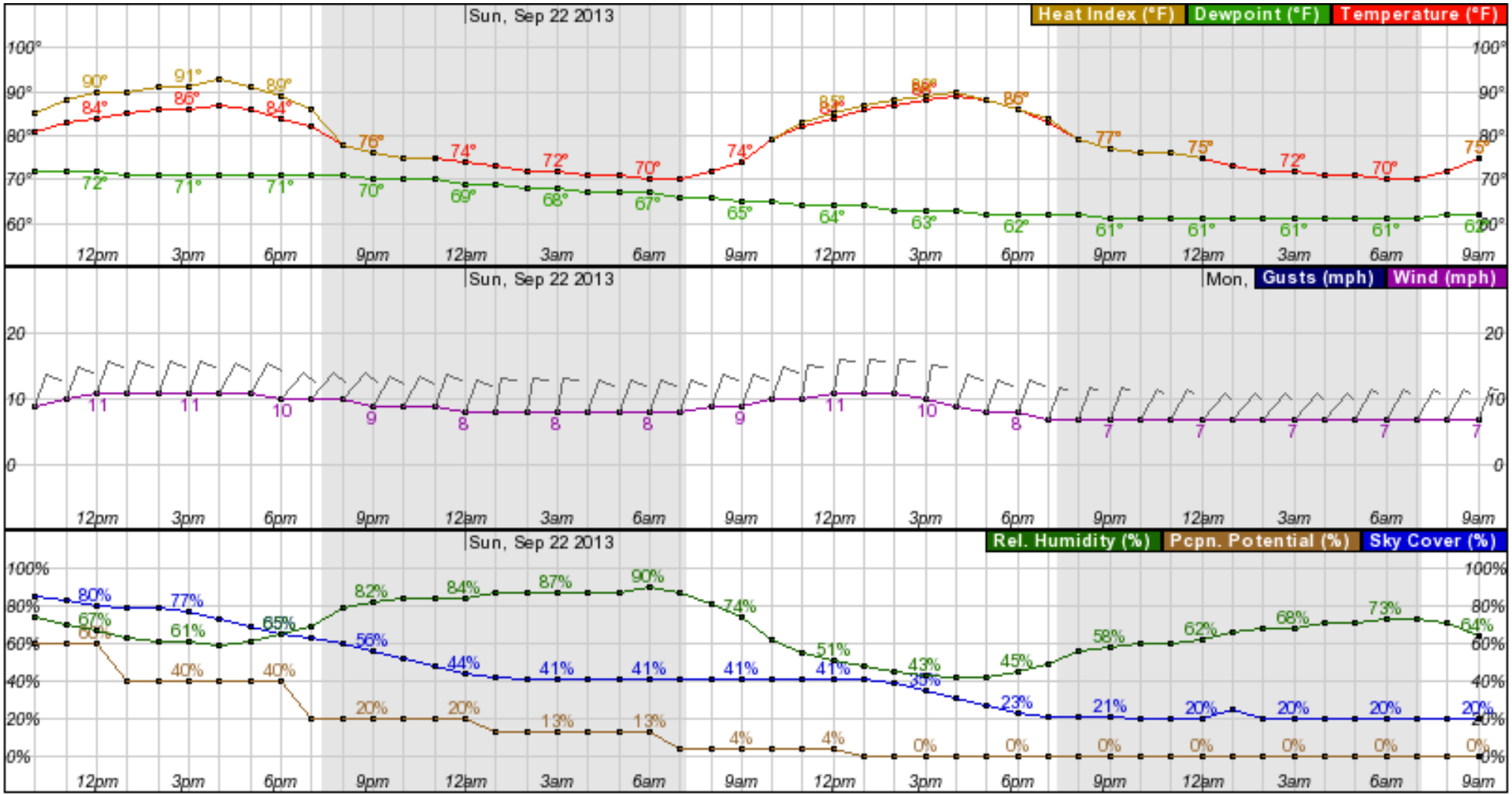
Sunday: Partly cloudy

Saturday→ **Sunday→**



Houston Hobby
Saturday: Mostly cloudy
Sunday: Partly cloudy

Saturday→ **Sunday→**

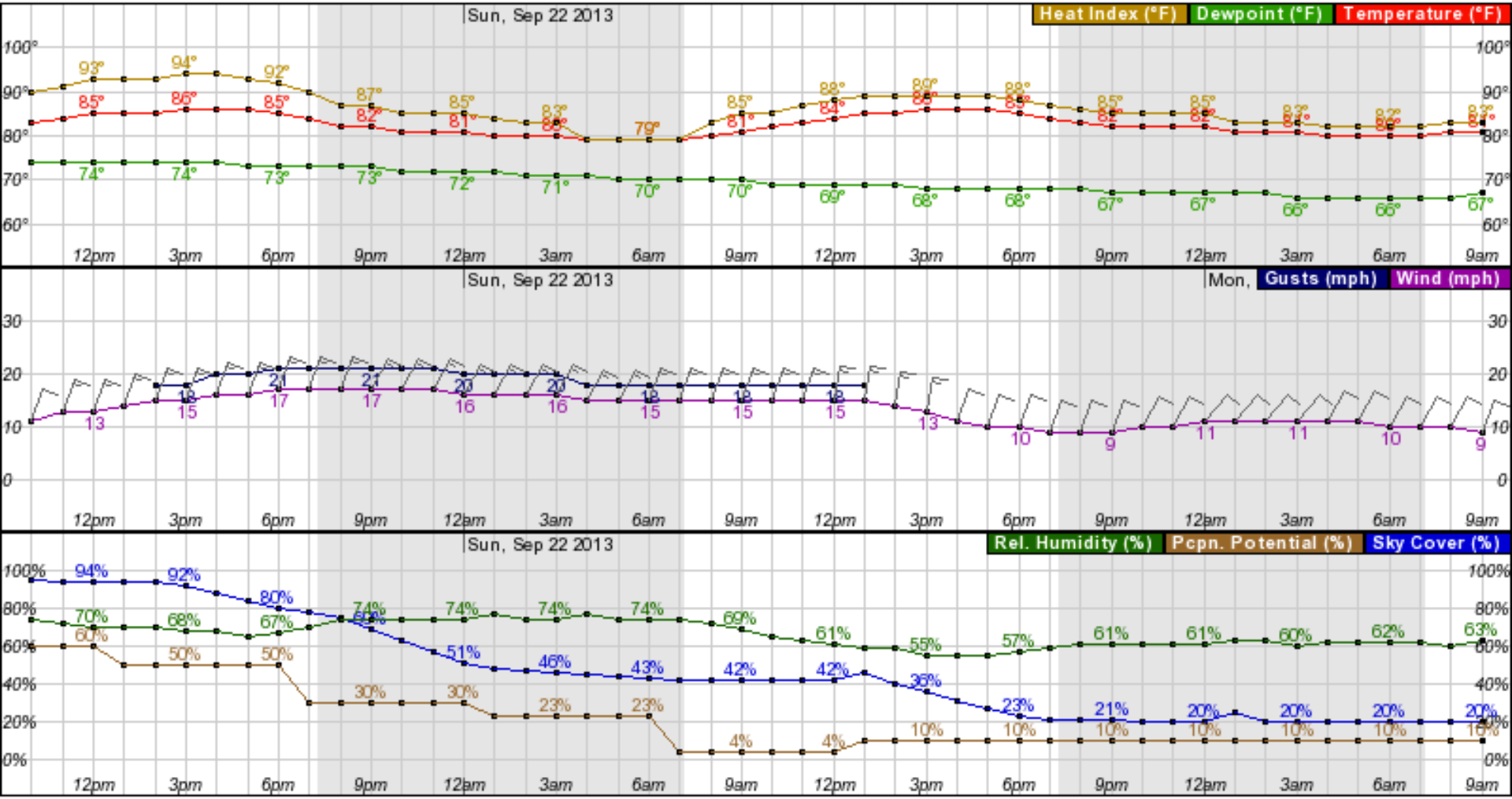


Galveston

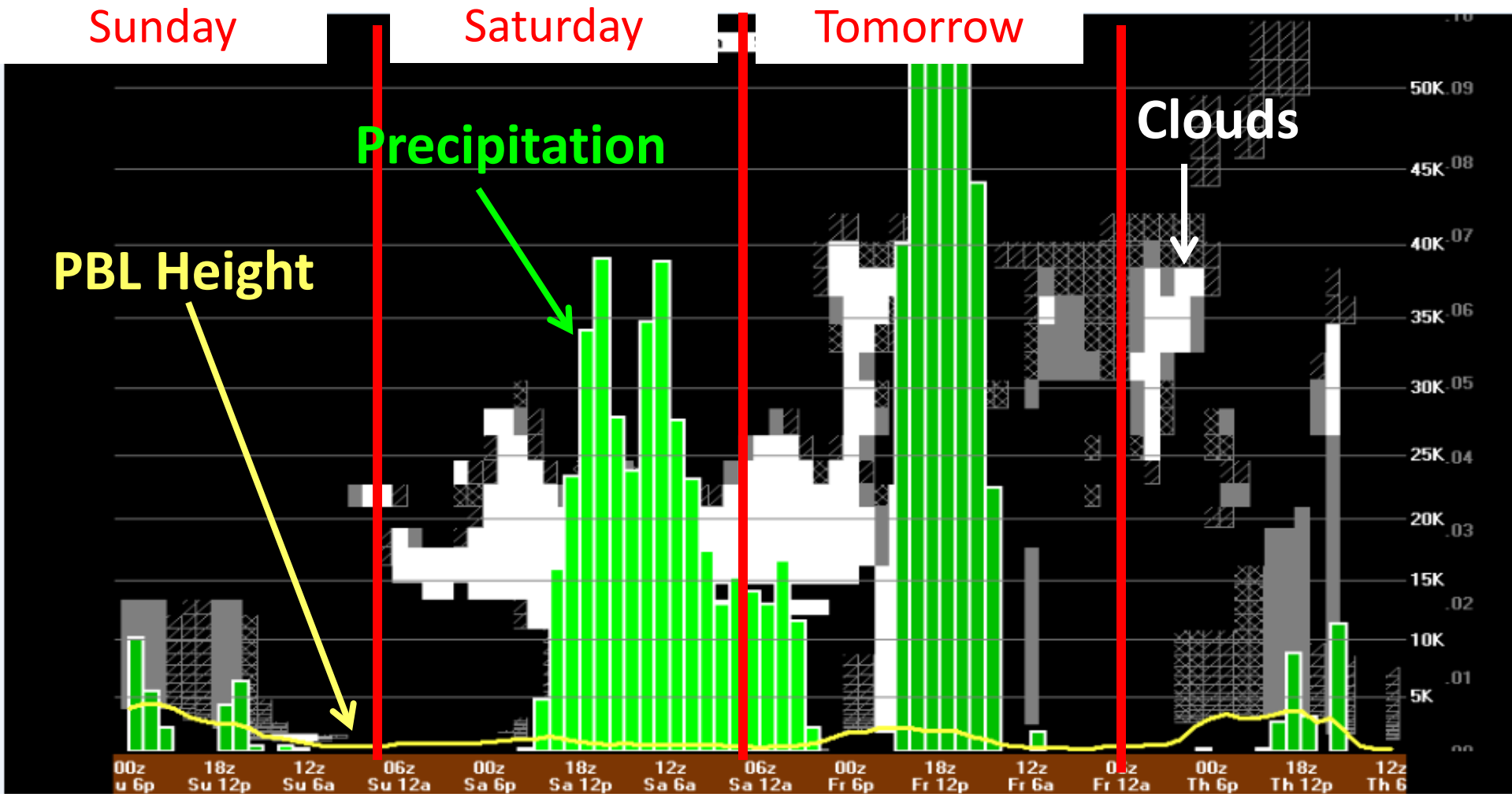
Saturday: Mostly cloudy

Sunday: Partly cloudy

Saturday→ **Sunday→**

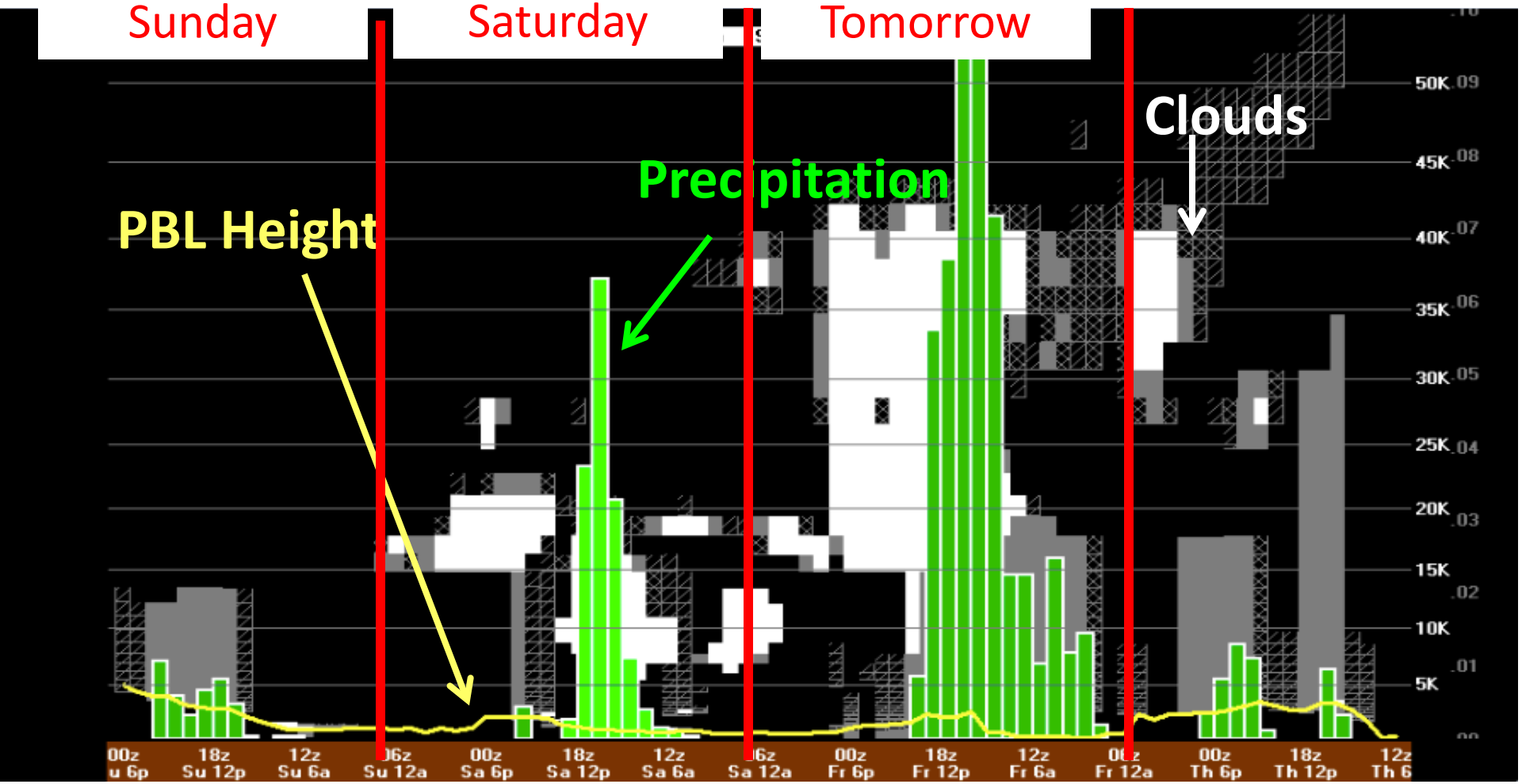


Conroe; BUFKIT – NAM (12 UTC 10 September)



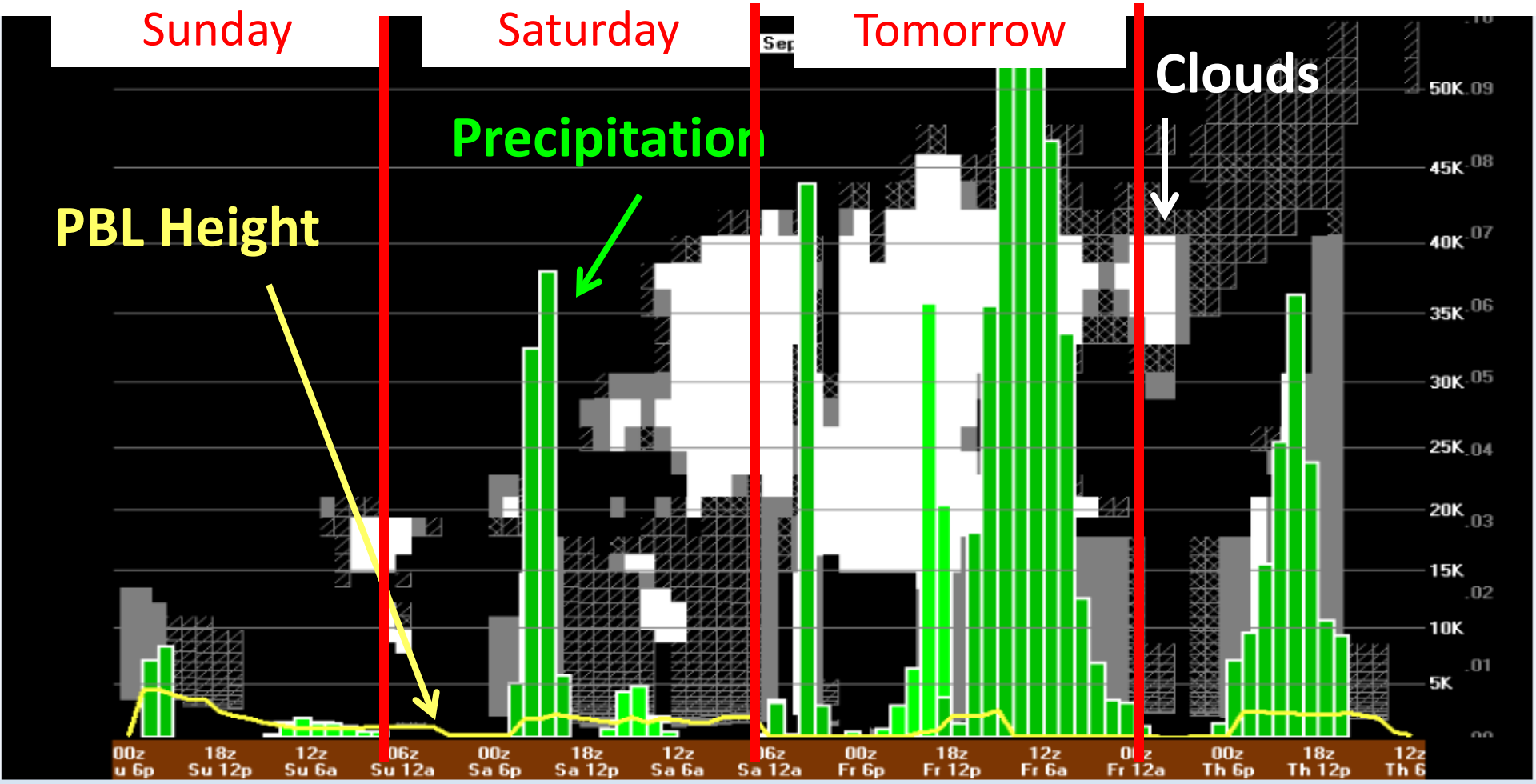
-Tomorrow: Low cloud and precipitation.
-Saturday: Low cloud and precipitation.
-Sunday: Some low cloud and precipitation.

Houston Hobby; BUFKIT – NAM (12 UTC 10 September)



-Tomorrow: Low cloud and precipitation.
-Saturday: Low cloud and precipitation.
-Sunday: Some low cloud and precipitation.

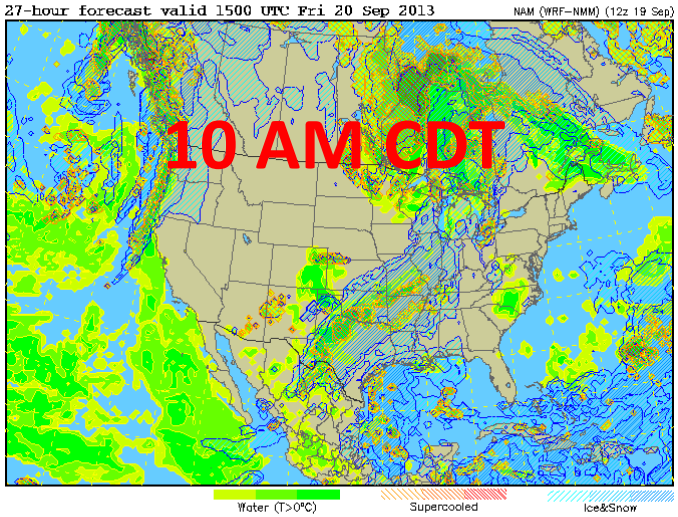
Galveston; BUFKIT – NAM (12 UTC 10 September)



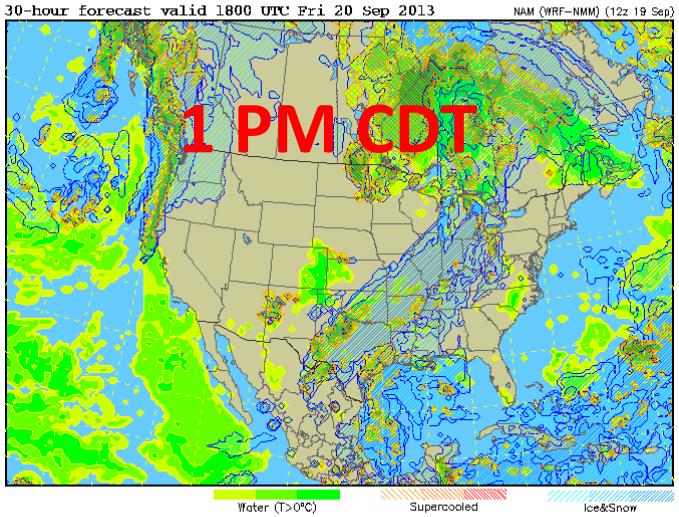
-Tomorrow: Low cloud and precipitation.
-Saturday: Low cloud and precipitation.
-Sunday: Some low cloud and precipitation.

Tomorrow: NAM – Clouds at various levels throughout the day

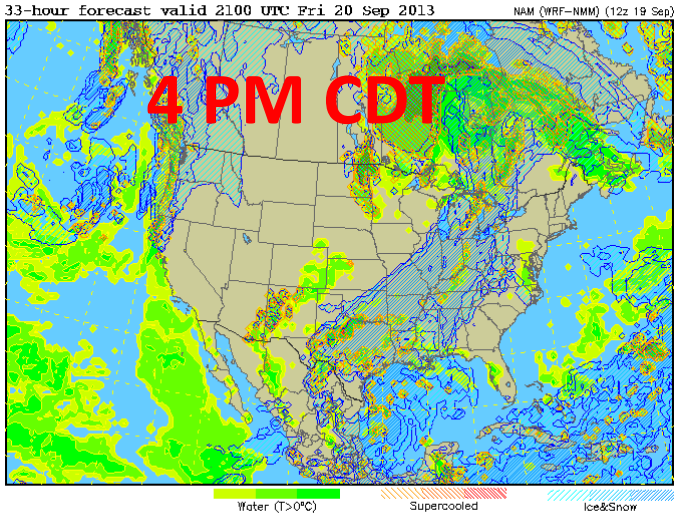
Integrated liquid and frozen hydrometeors (all levels)



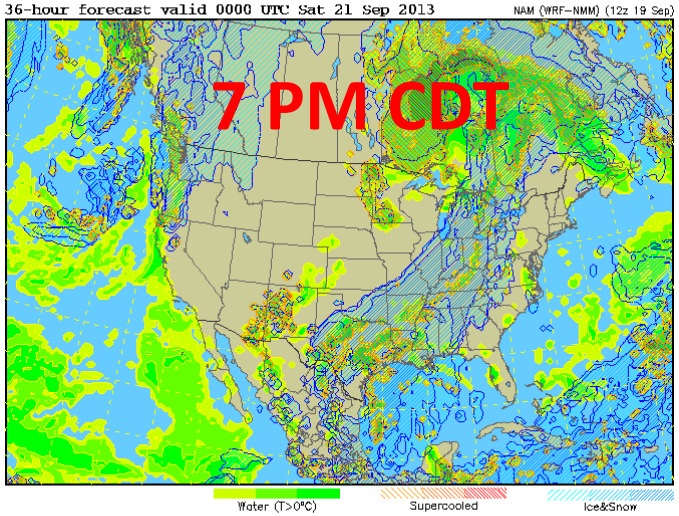
Integrated liquid and frozen hydrometeors (all levels)



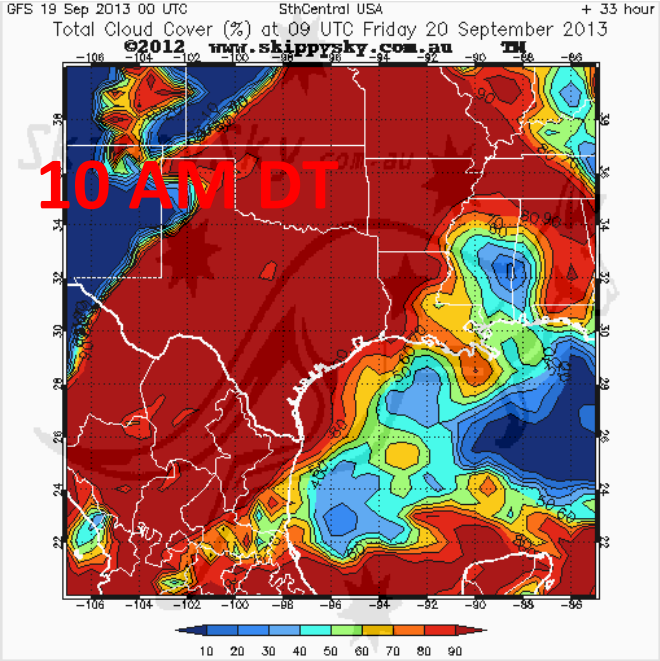
Integrated liquid and frozen hydrometeors (all levels)

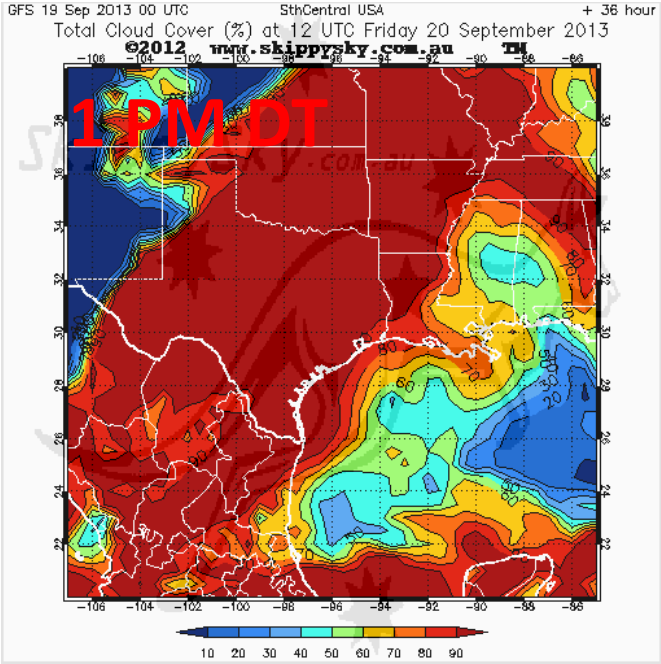


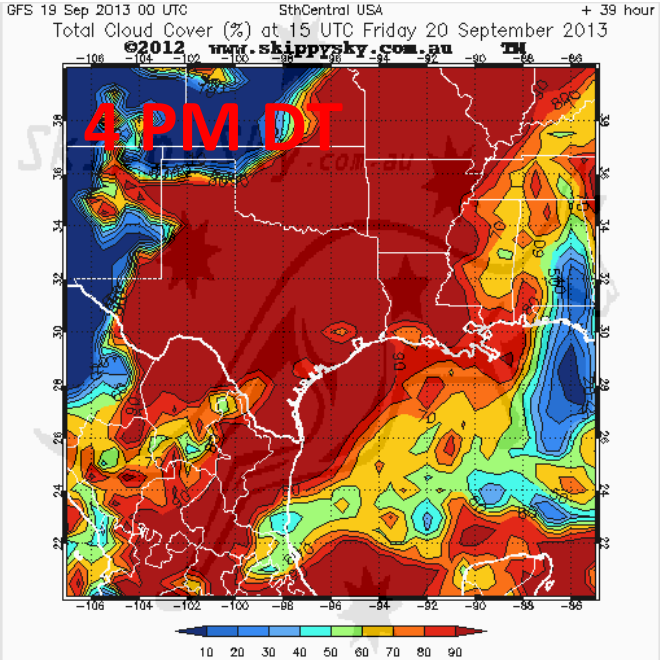
Integrated liquid and frozen hydrometeors (all levels)

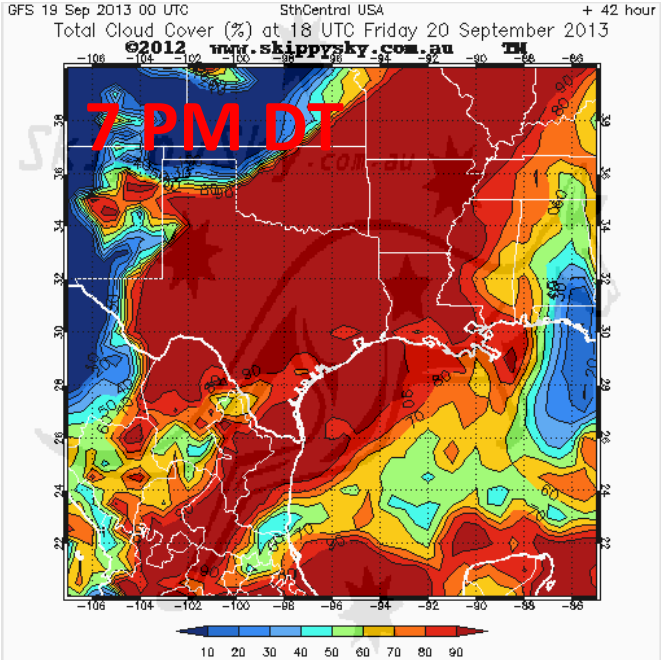


Tomorrow: GFS – Mostly cloudy throughout the day

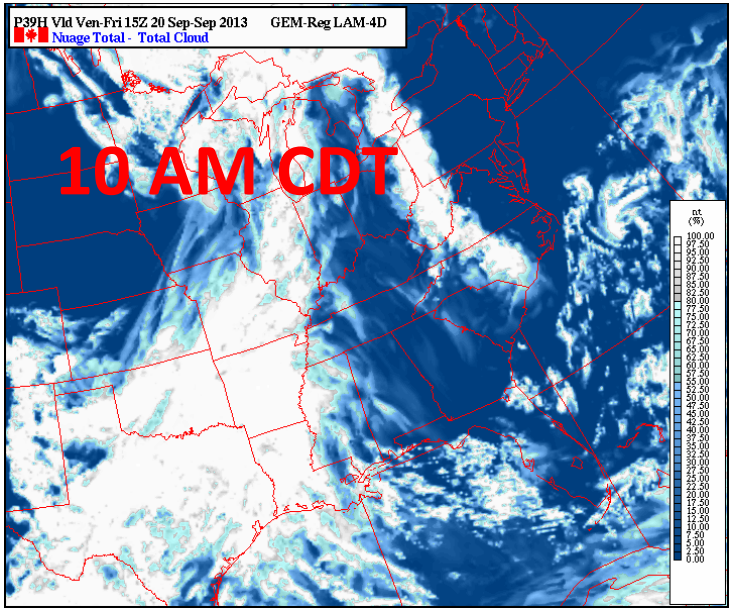


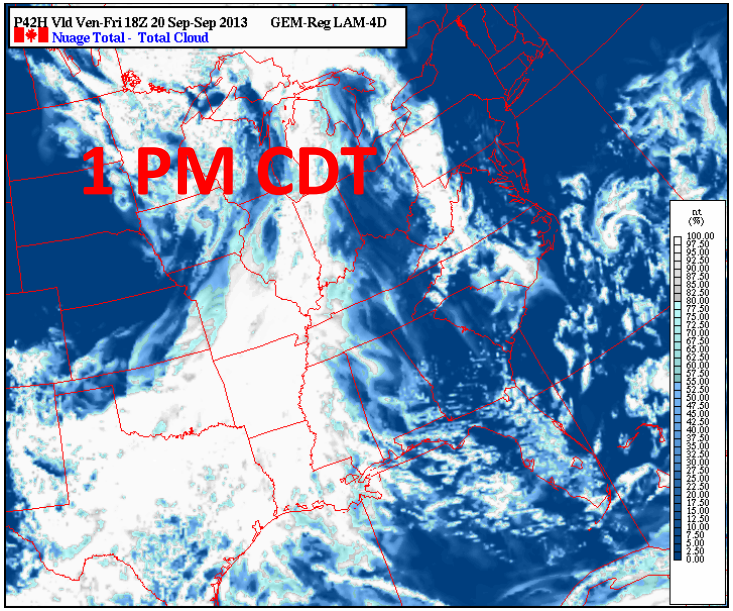


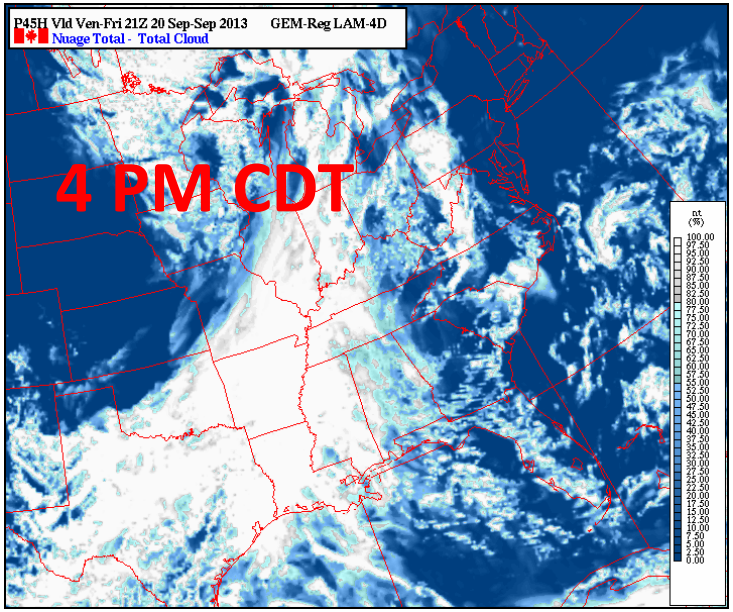


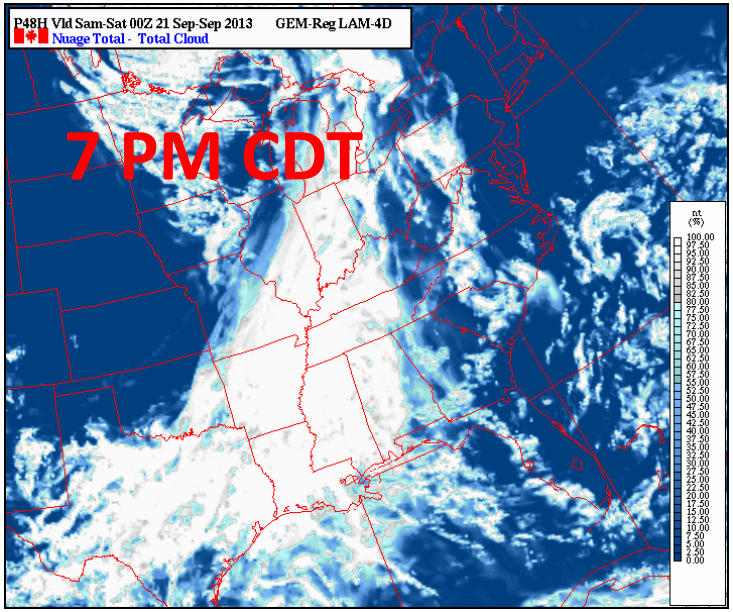


Tomorrow: Canadian – Cloudy all day

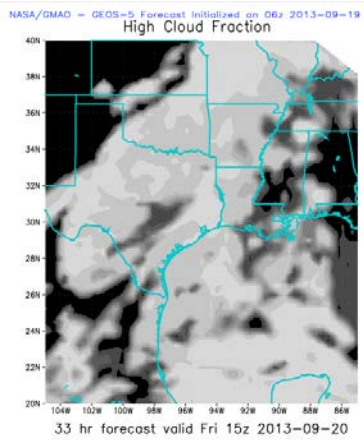
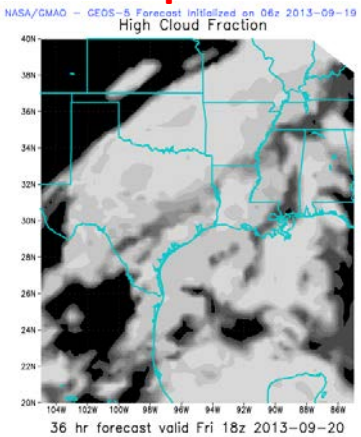
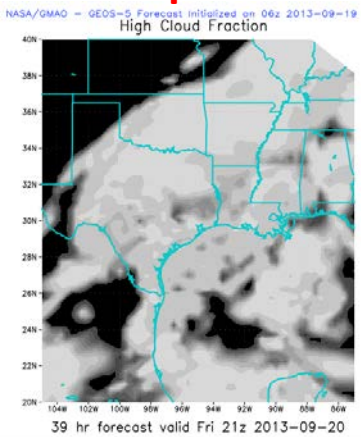
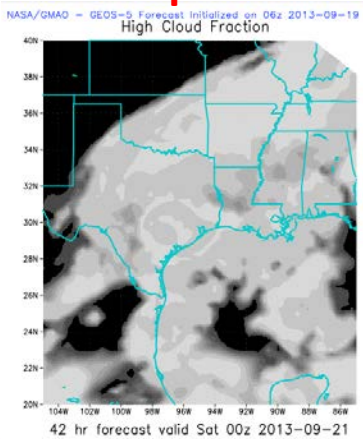
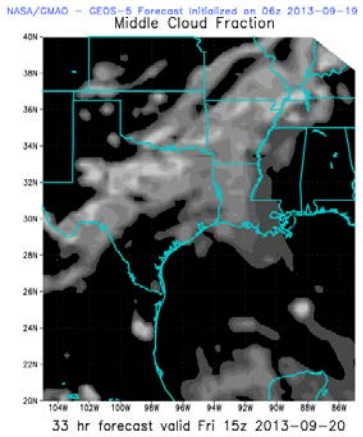
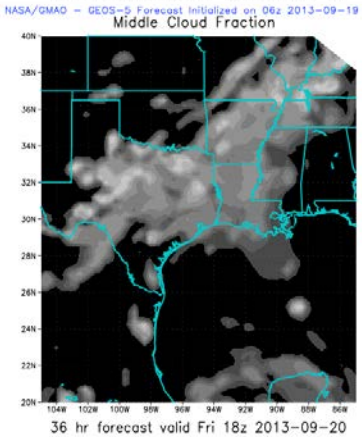
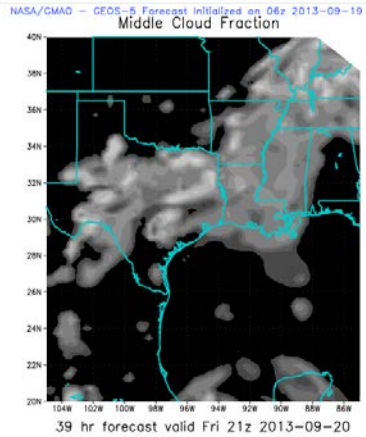
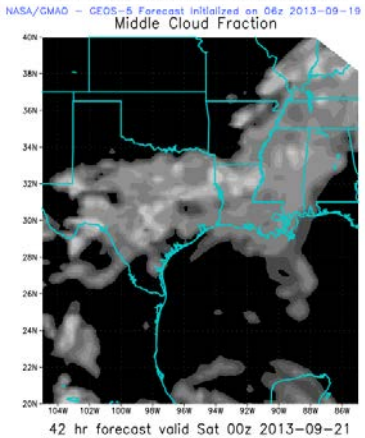
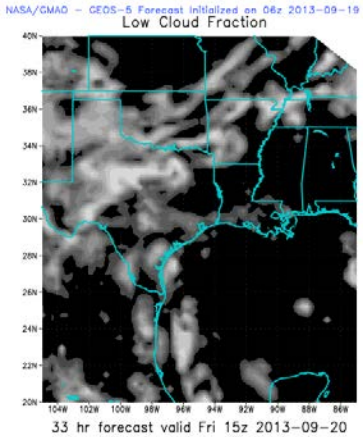
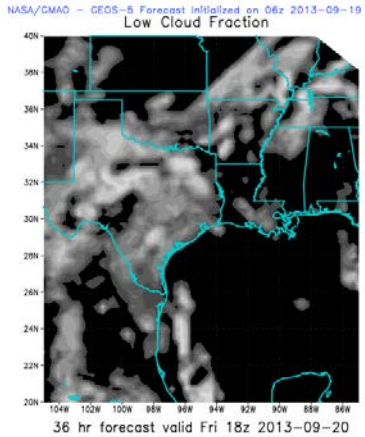
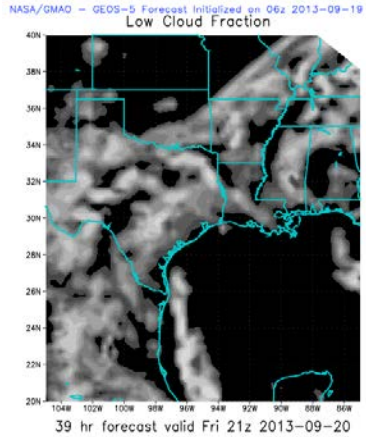
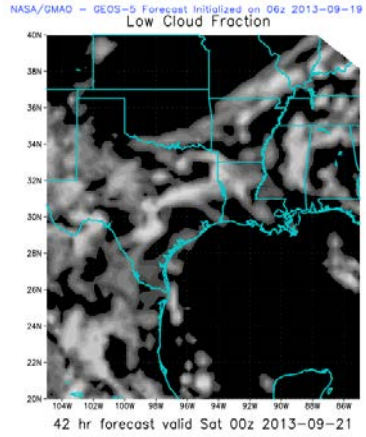






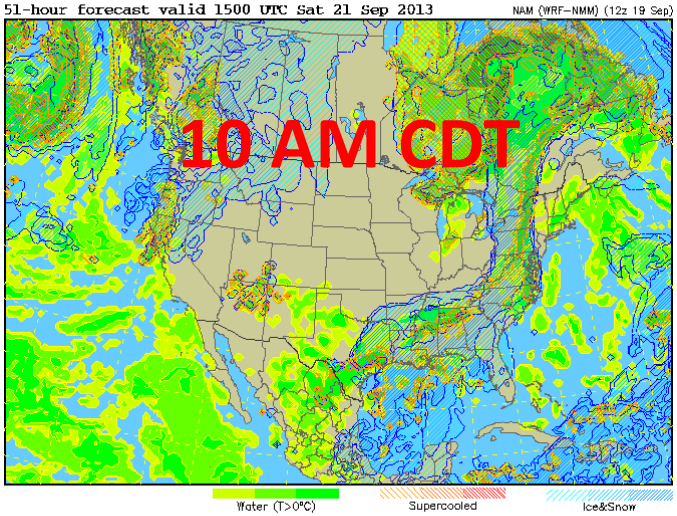


Tomorrow: GEOS-5 – clouds at all levels through the whole day

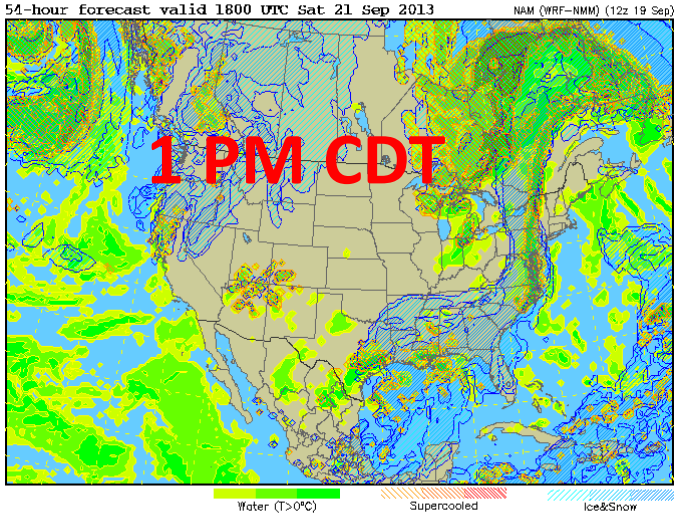
10am		1pm	4pm	7pm
	HIGH			
	MID			
	LOW			

Saturday: NAM – High and low clouds throughout the day

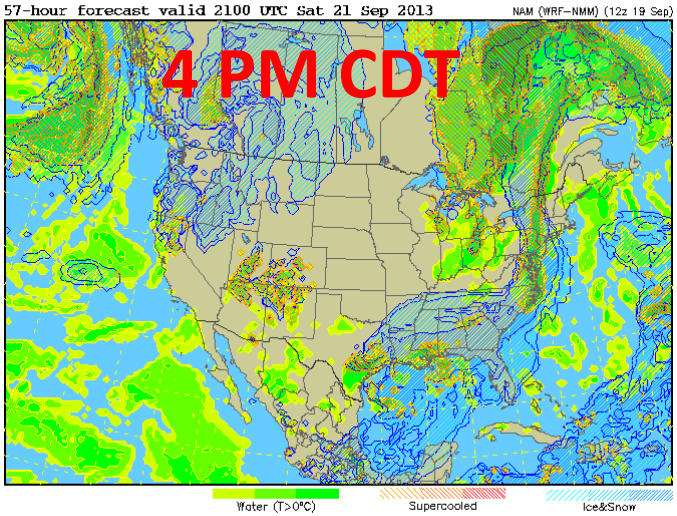
Integrated liquid and frozen hydrometeors (all levels)



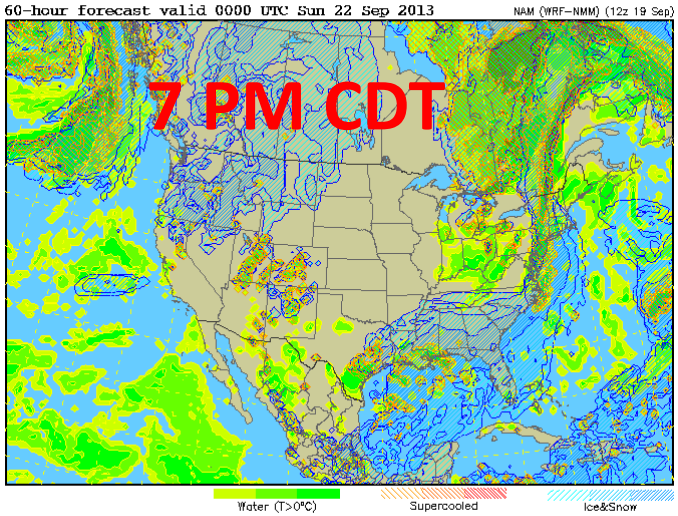
Integrated liquid and frozen hydrometeors (all levels)



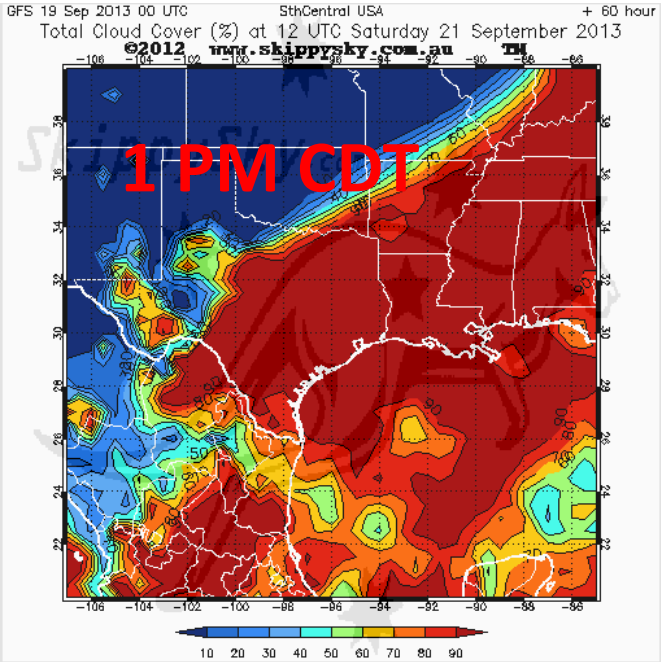
Integrated liquid and frozen hydrometeors (all levels)

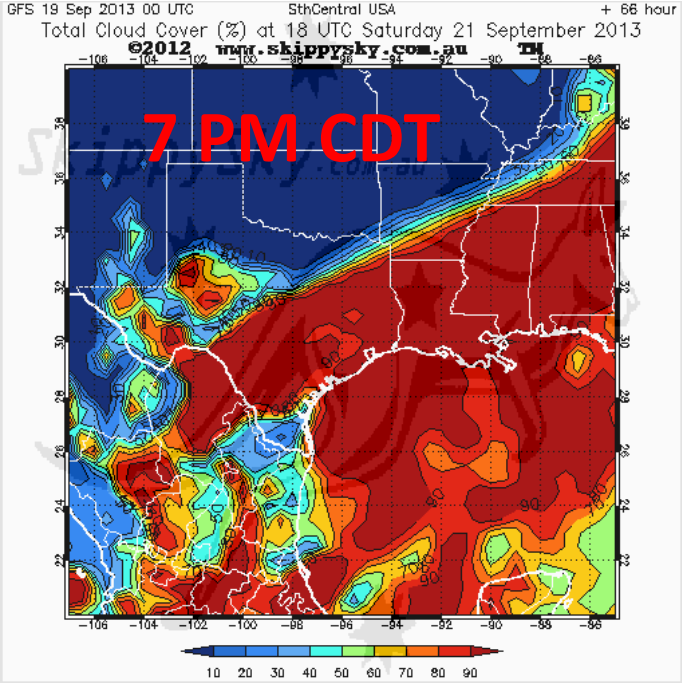


Integrated liquid and frozen hydrometeors (all levels)

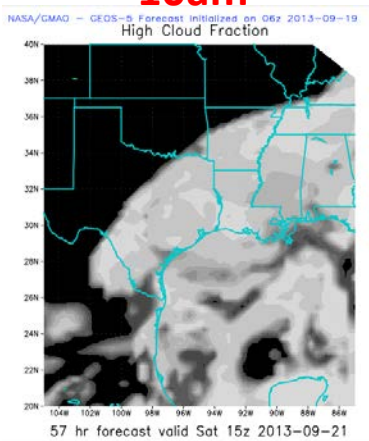
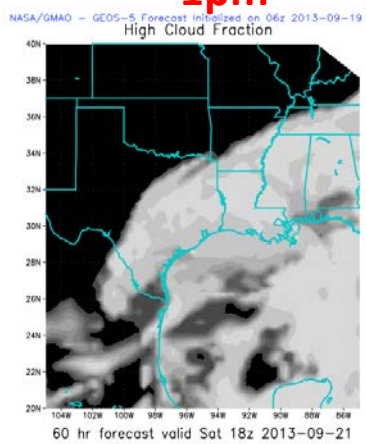
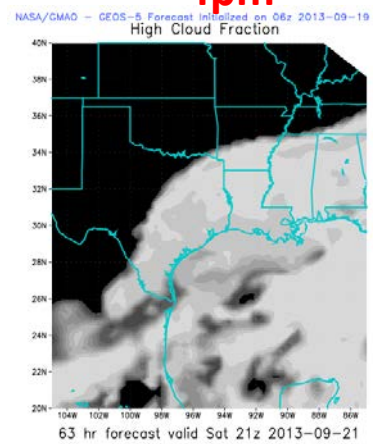
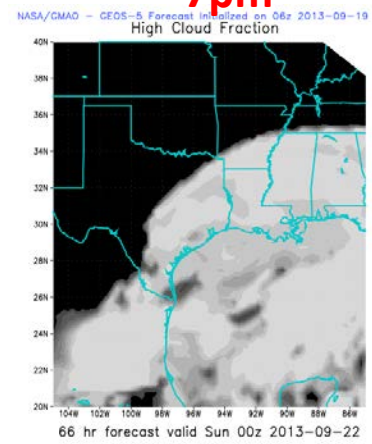
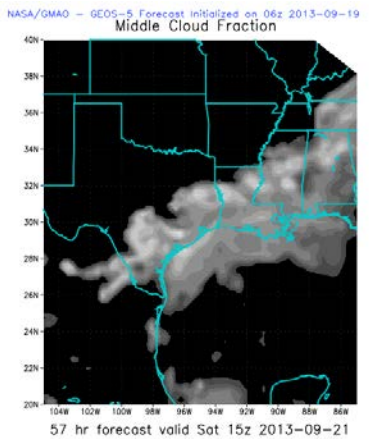
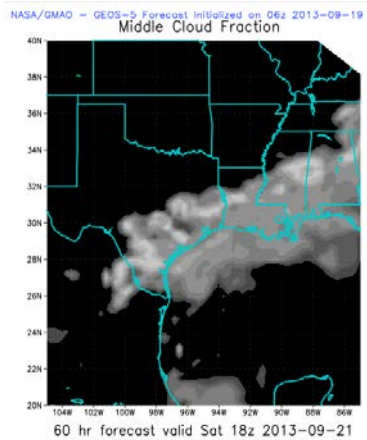
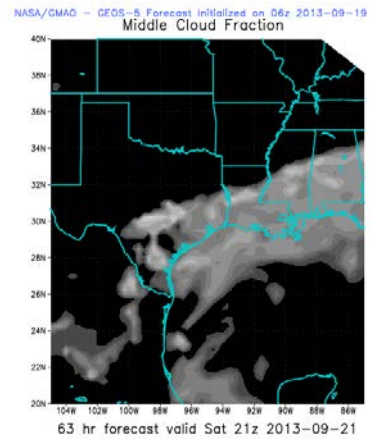
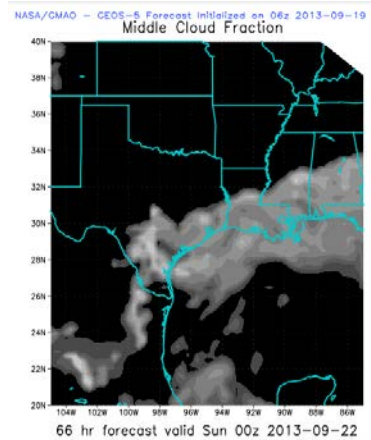
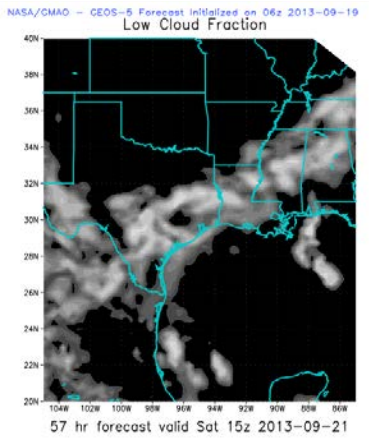
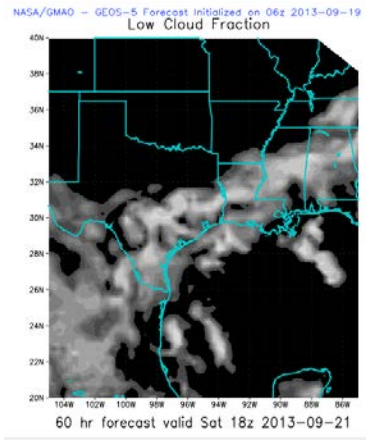
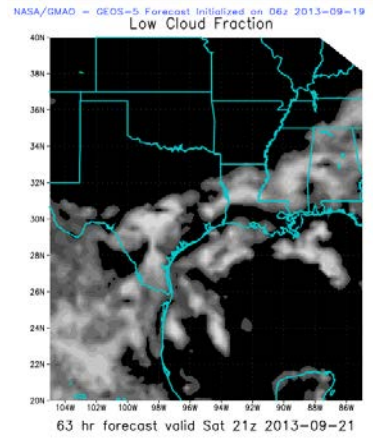
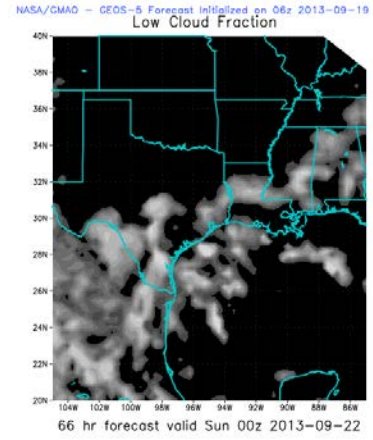


Saturday: GFS – Mostly cloudy



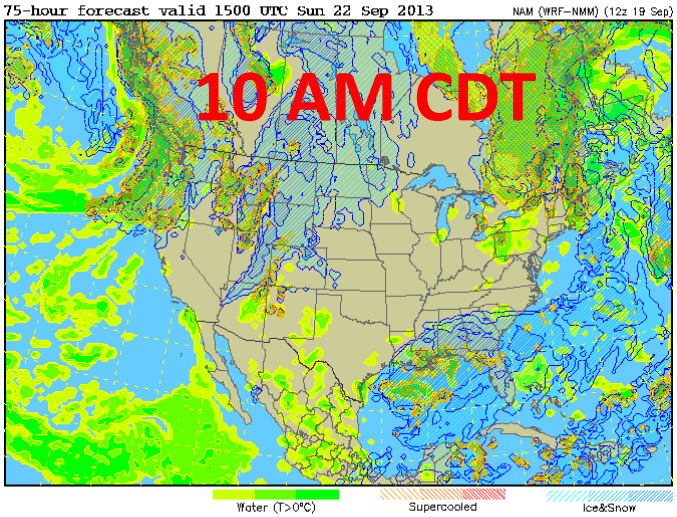


Saturday: GEOS-5 – clouds remain in place at all levels

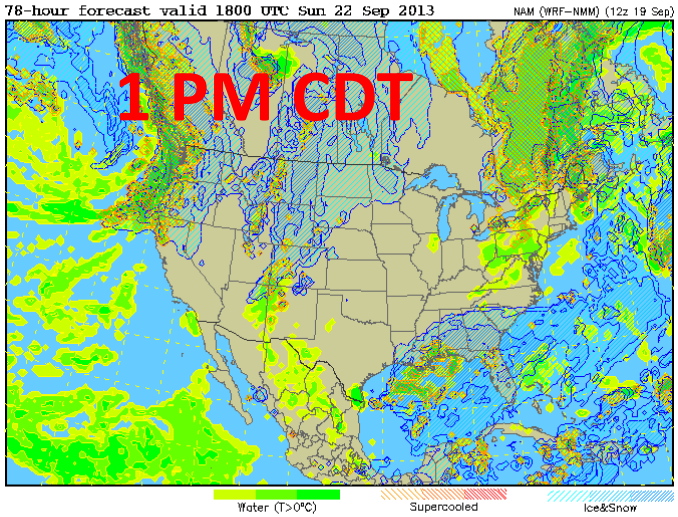
10am		1pm	4pm	7pm
	HIGH			
	MID			
	LOW			

Sunday: NAM – Region clear of clouds

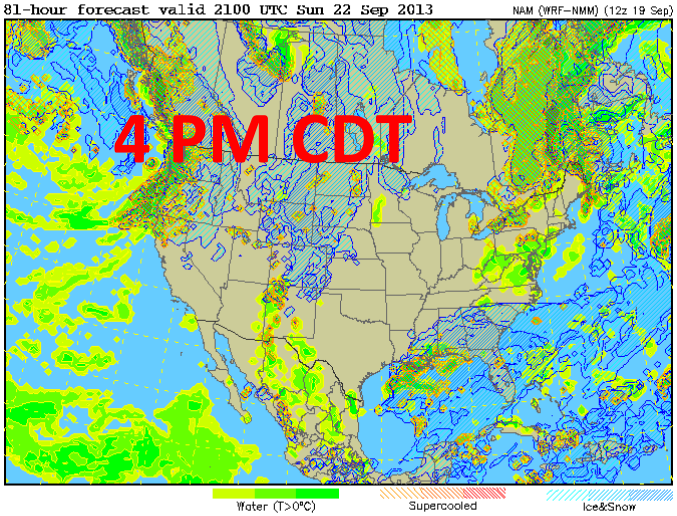
Integrated liquid and frozen hydrometeors (all levels)



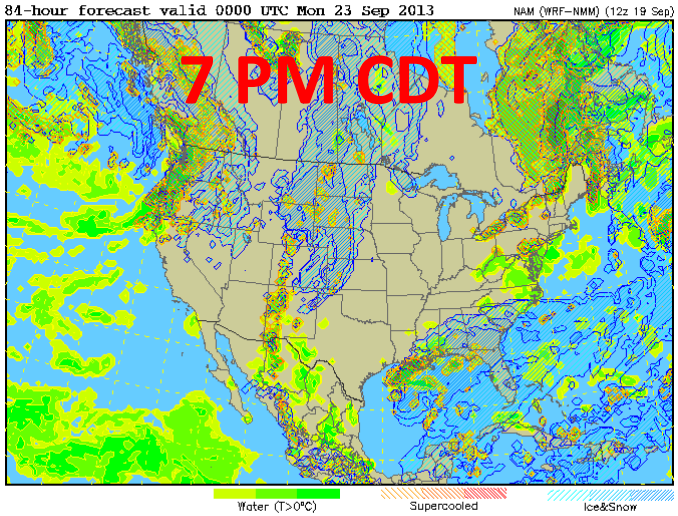
Integrated liquid and frozen hydrometeors (all levels)



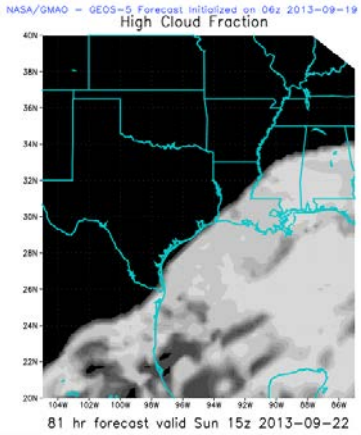
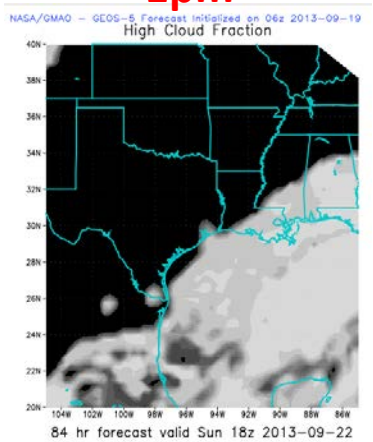
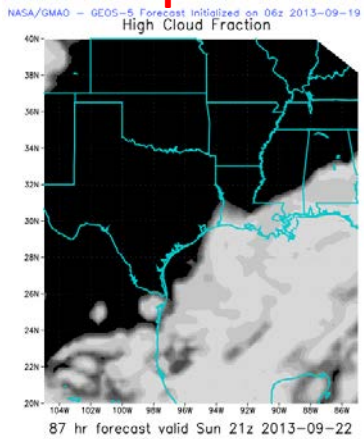
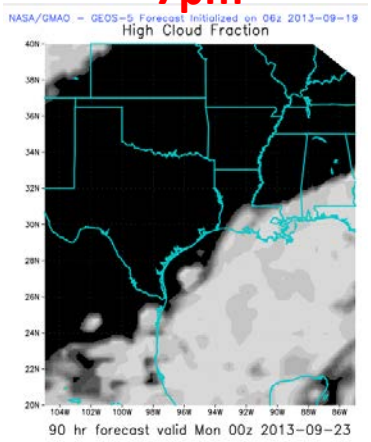
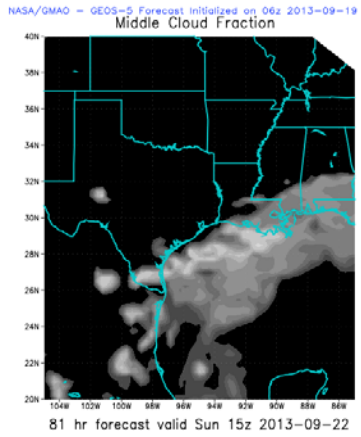
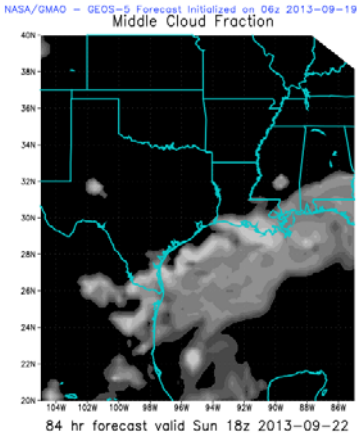
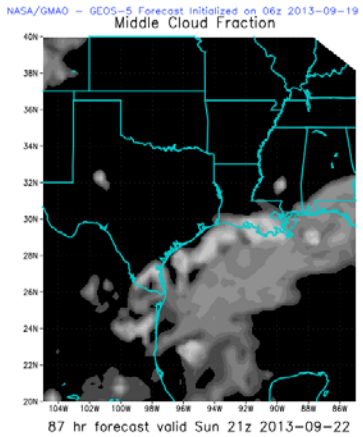
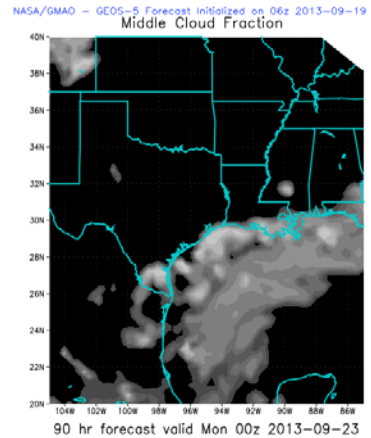
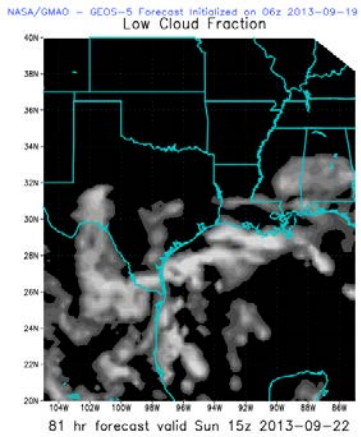
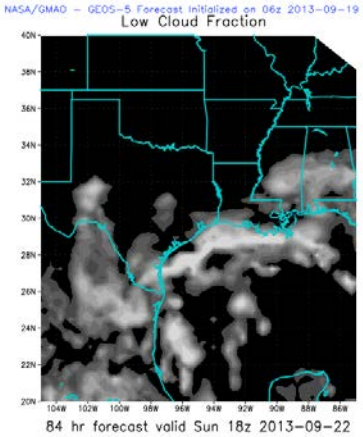
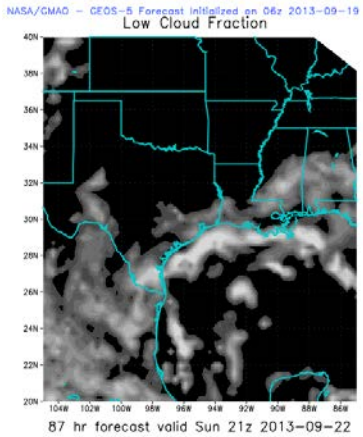
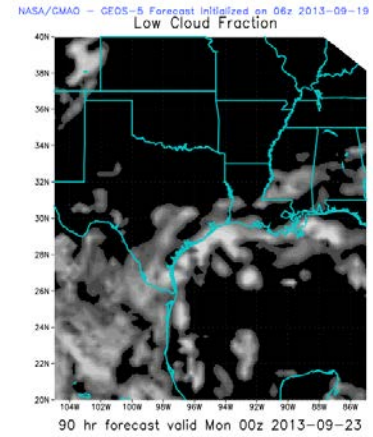
Integrated liquid and frozen hydrometeors (all levels)

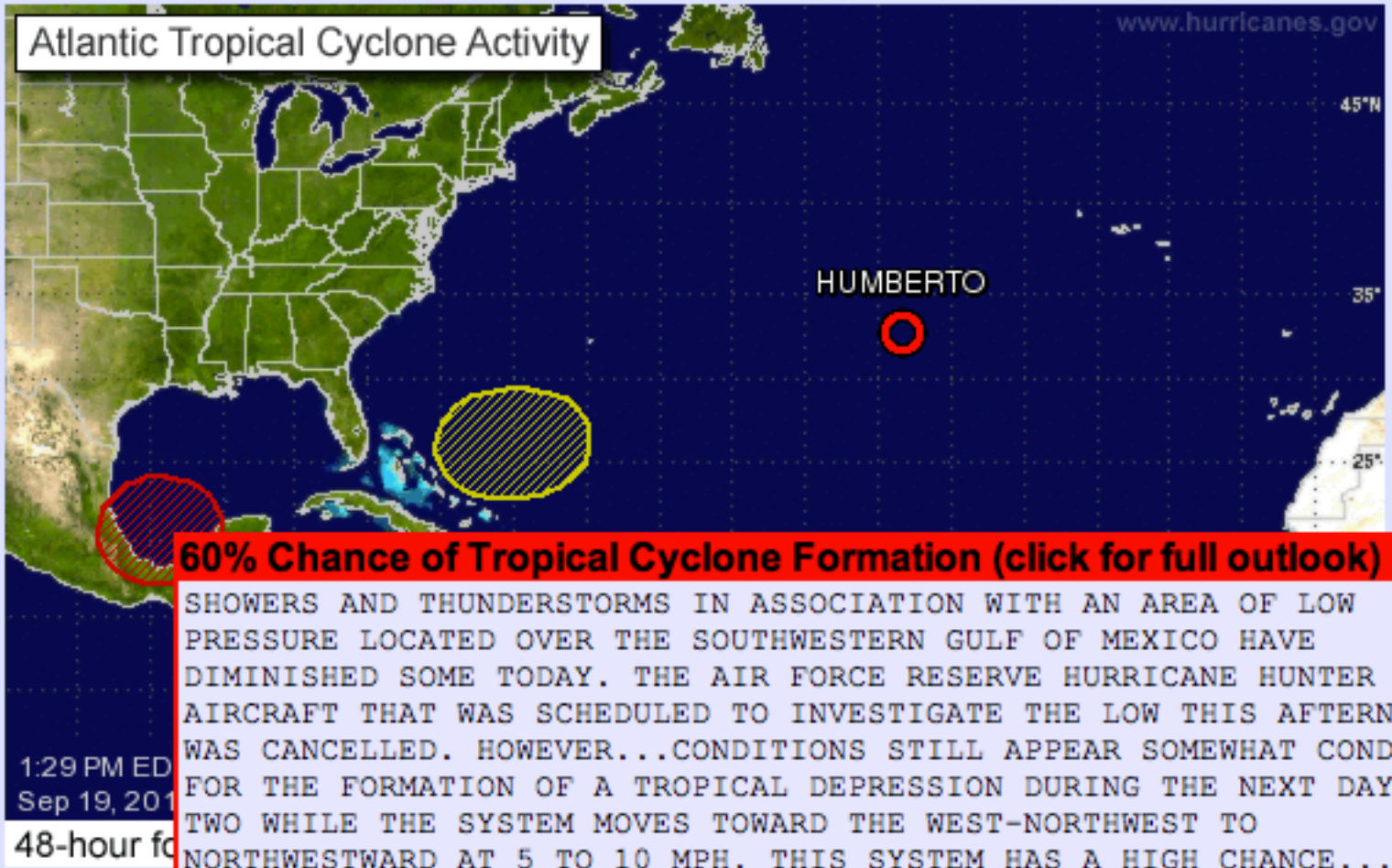


Integrated liquid and frozen hydrometeors (all levels)



Sunday: GEOS-5 – reduced cloud cover, particularly at upper levels

10am		1pm	4pm	7pm
	HIGH			
	MID			
	LOW			



60% Chance of Tropical Cyclone Formation (click for full outlook)

SHOWERS AND THUNDERSTORMS IN ASSOCIATION WITH AN AREA OF LOW PRESSURE LOCATED OVER THE SOUTHWESTERN GULF OF MEXICO HAVE DIMINISHED SOME TODAY. THE AIR FORCE RESERVE HURRICANE HUNTER AIRCRAFT THAT WAS SCHEDULED TO INVESTIGATE THE LOW THIS AFTERNOON WAS CANCELLED. HOWEVER...CONDITIONS STILL APPEAR SOMEWHAT CONDUCIVE FOR THE FORMATION OF A TROPICAL DEPRESSION DURING THE NEXT DAY OR TWO WHILE THE SYSTEM MOVES TOWARD THE WEST-NORTHWEST TO NORTHWESTWARD AT 5 TO 10 MPH. THIS SYSTEM HAS A HIGH CHANCE...60 PERCENT...OF BECOMING A TROPICAL CYCLONE DURING THE NEXT 48 HOURS...AND A HIGH CHANCE...60 PERCENT...OF BECOMING A TROPICAL CYCLONE DURING THE NEXT 5 DAYS. THIS DISTURBANCE COULD SPREAD LOCALLY HEAVY RAINS OVER PORTIONS OF EASTERN AND SOUTHERN MEXICO DURING THE NEXT FEW DAYS.

Atlantic - C

Tropical Weathe

200 PM EDT THU SEP 19 2013

203 PM EDT THU SEP 19 2013

DISCOVER-AQ Air Quality Outlook
September 19, 2013

Bryan Duncan

Mariel Friberg

TCEQ AQ Forecast:

TODAY-SATURDAY: **Code Green – Good** ☹

SUNDAY: **Code Yellow – Moderate (Ozone)** 😐

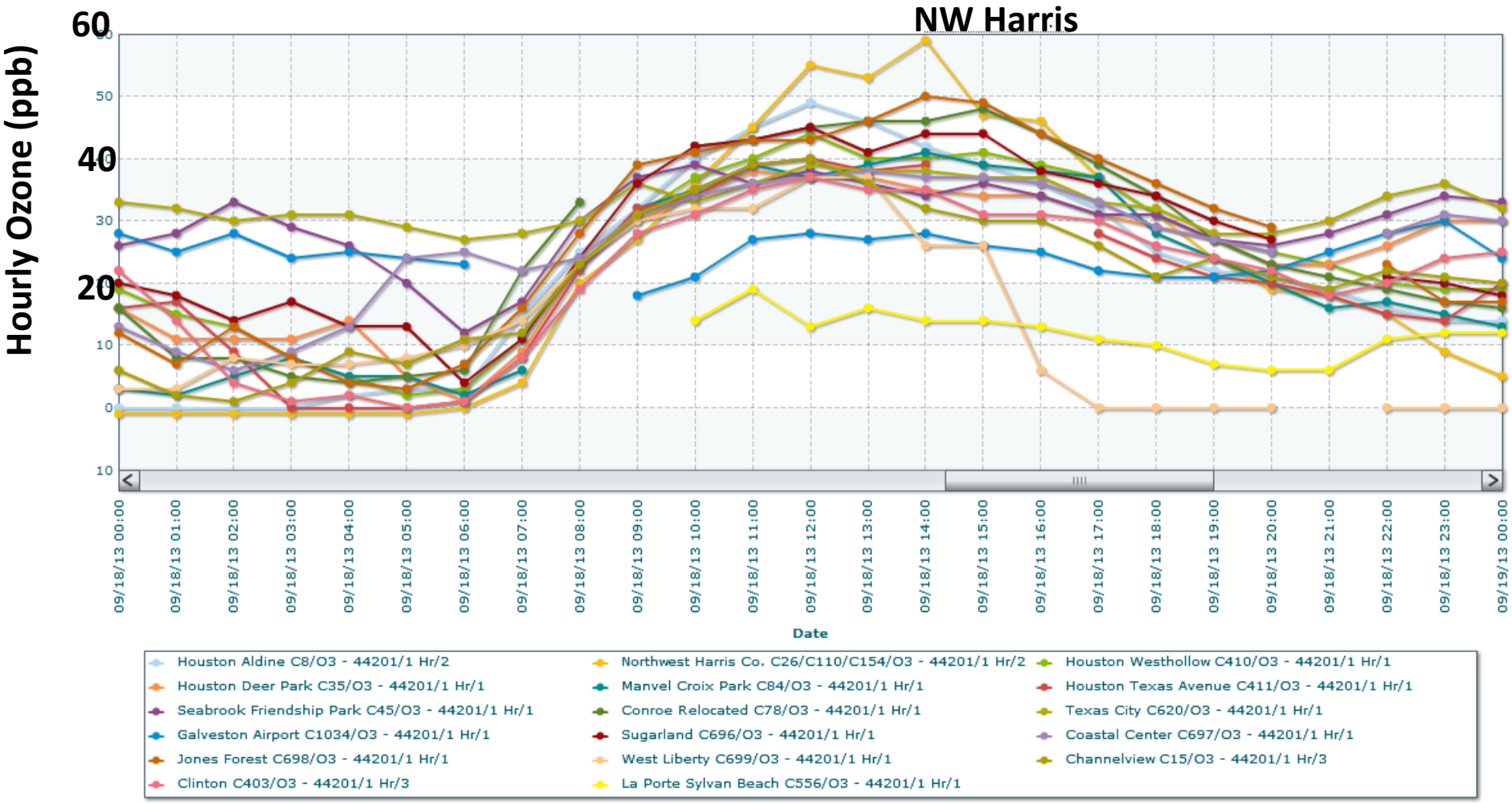
"Decreasing winds and increasing background levels should allow ozone to reach "Moderate" levels on the south and southwest side of the Houston metro area, with highest concentrations in the afternoon and early evening."

Later take-off on Sunday?

Hourly Ozone (airnowtech.org)

September 18th (Yesterday)

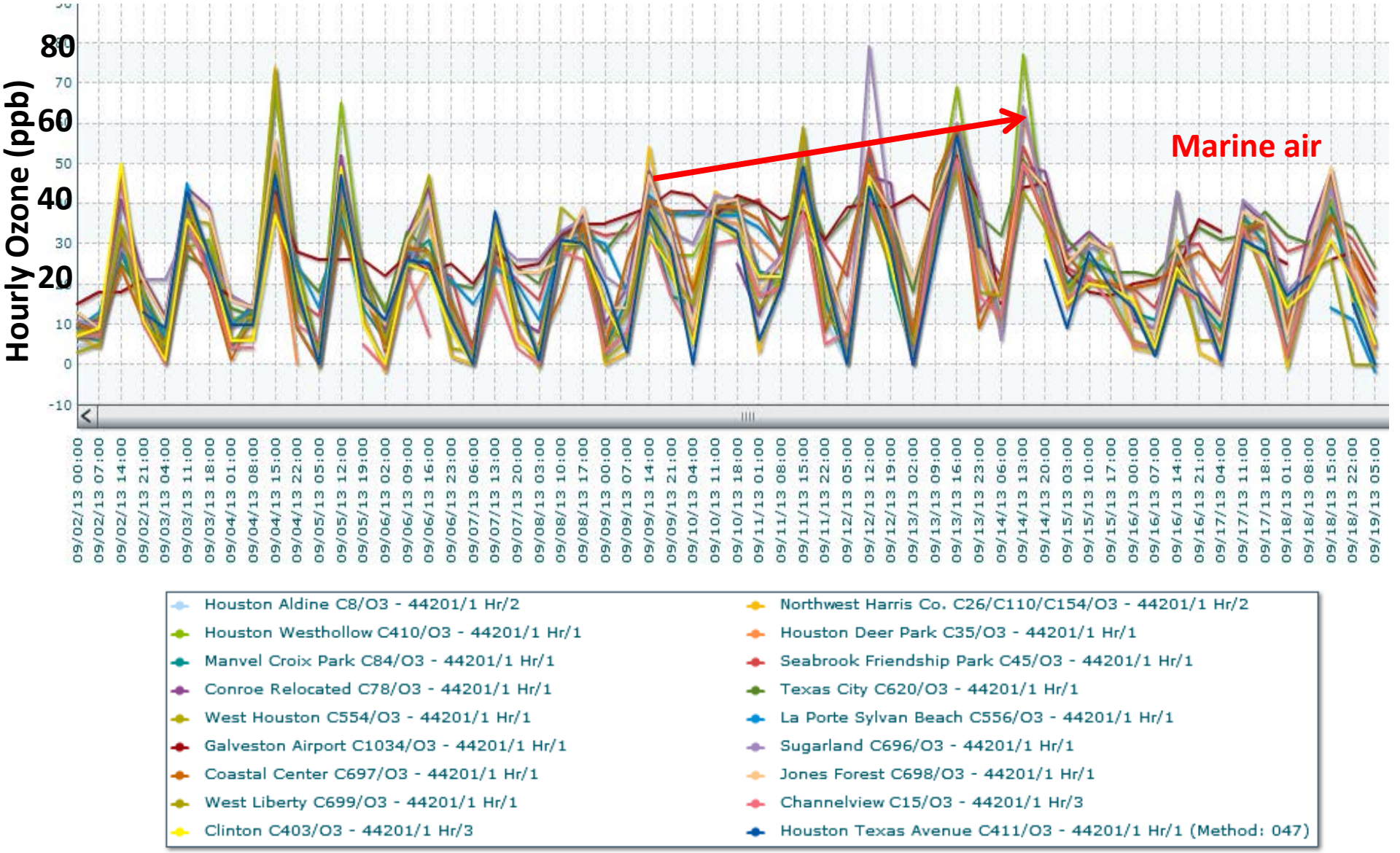
Did we miss out on some great ozone? Not really.



Hourly Ozone (airnowtech.org)**

September 2nd – 18th

** EVERY 7th HOUR PLOTTED!!!!!



Houston - Network of Environmental Towers (H-NET)

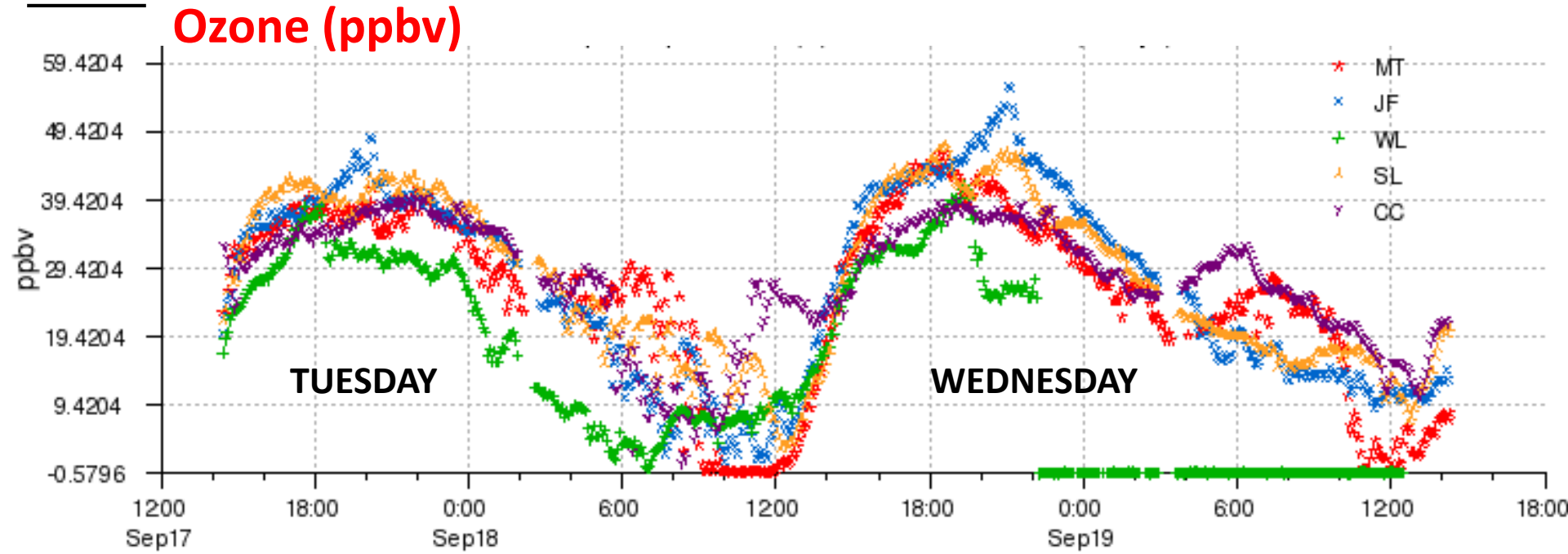
Houston Network of Environmental Towers (H-NET) collect chemistry and meteorological measurements for air quality model applications in Houston Galveston Area. This web site provides real-time update of collected data, as well as historical data.

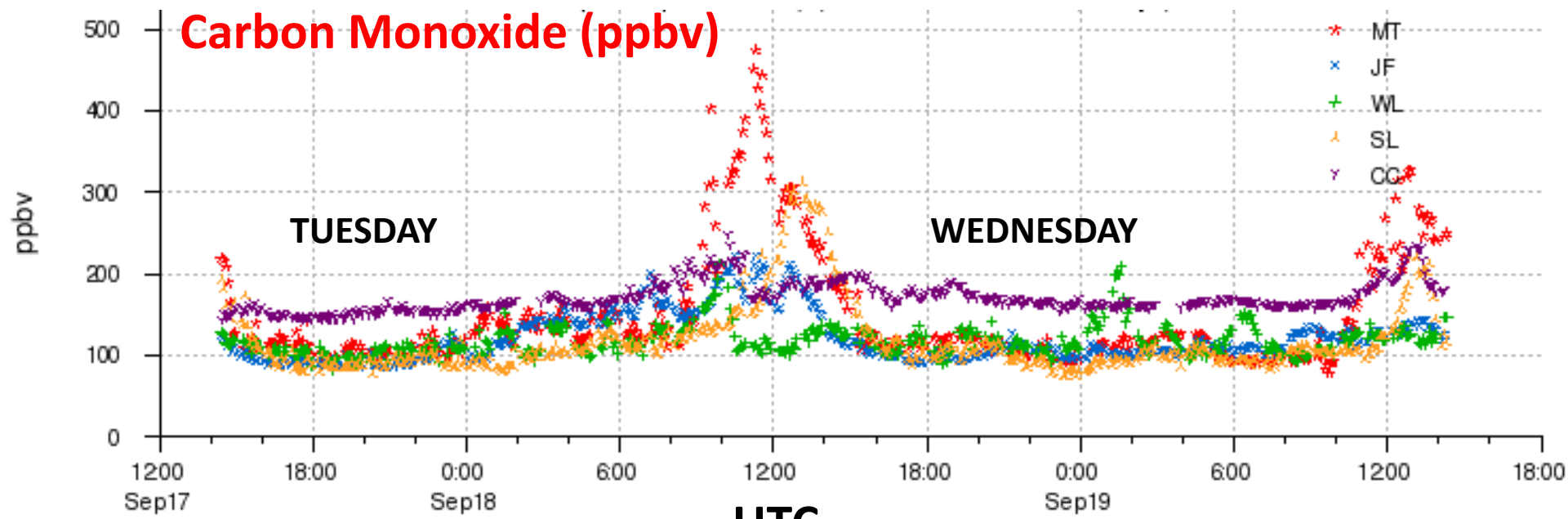
Currently, five sites have been set up in

- UH - Main Campus (695)
- Jones State Forest (698)
- West Liberty Airport (699)
- UH - Sugar Land (696)
- UH - Coastal Center (697)

More about this project.

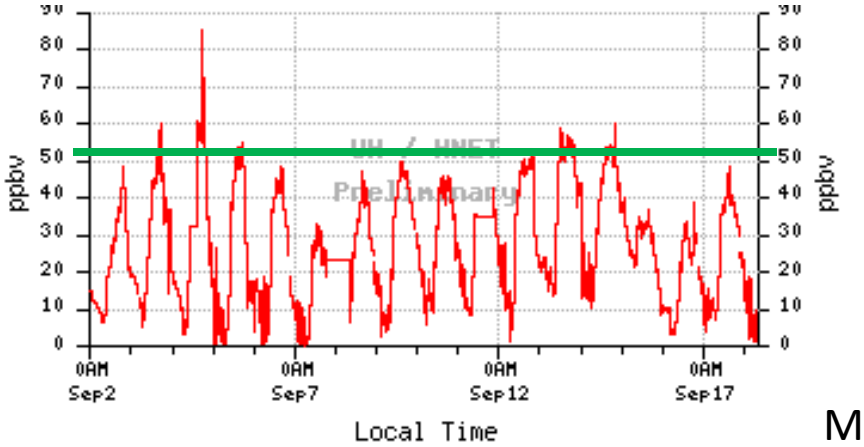
HNET


Ozone (ppbv)
59.4204
49.4204
39.4204
29.4204
19.4204
9.4204
-0.5796
ppbv
MT
JF
WL
SL
CC
TUESDAY
WEDNESDAY
1200
Sep17
18:00
0:00
Sep18
6:00
1200
18:00
0:00
Sep19
6:00
1200
18:00

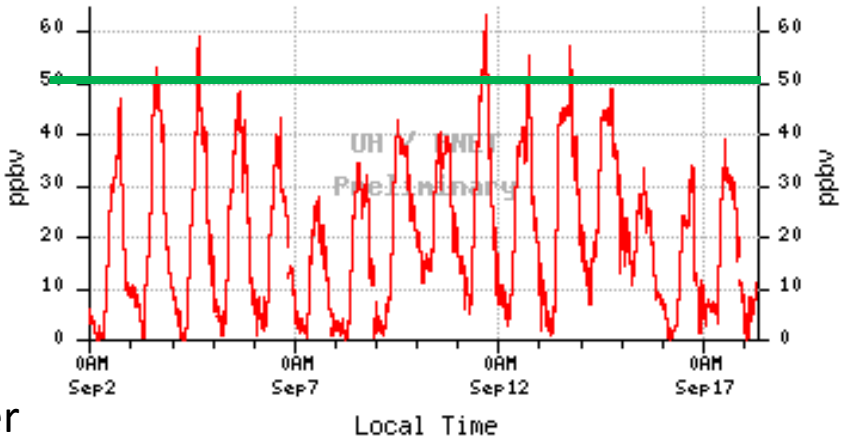

Carbon Monoxide (ppbv)
500
400
300
200
100
0
ppbv
MT
JF
WL
SL
CC
TUESDAY
WEDNESDAY
1200
Sep17
18:00
0:00
Sep18
6:00
1200
18:00
0:00
Sep19
6:00
1200
18:00

UTC

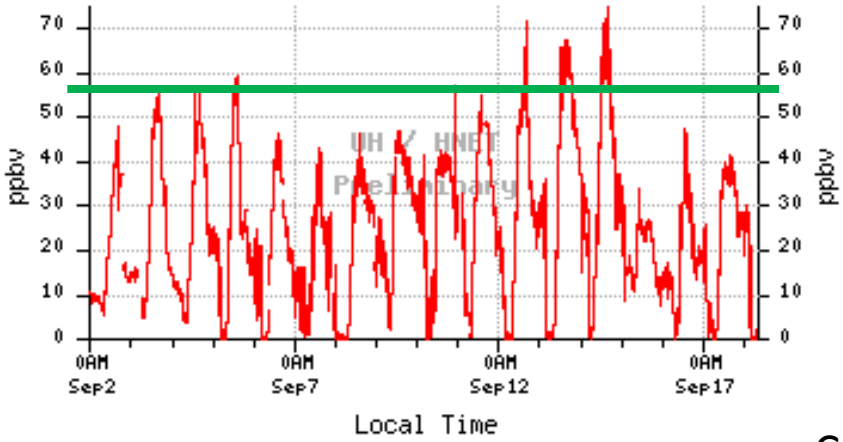
Jones Forest



West Liberty



Moody Tower

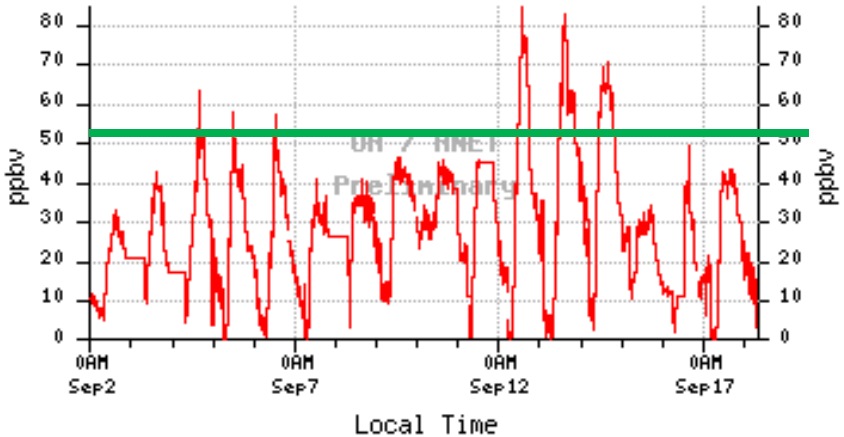


O_3 (ppbv) – 15 min avg
September 2nd – 17th

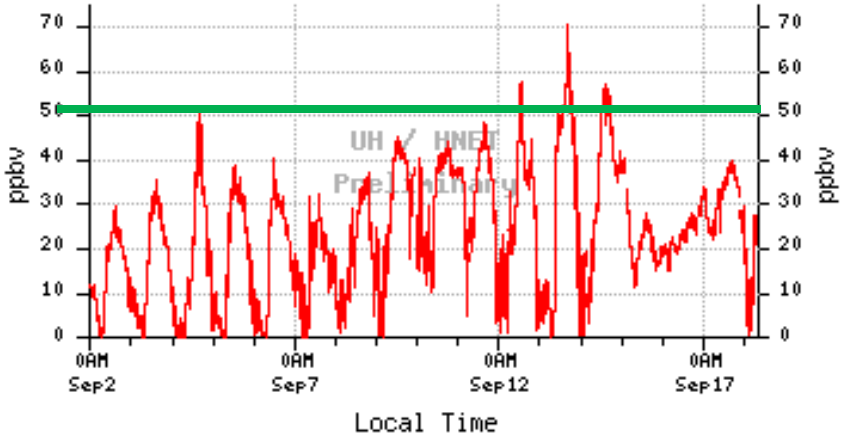
= 50 ppbv

Houston – Network of Environmental Towers (H-NET)

Sugar Land

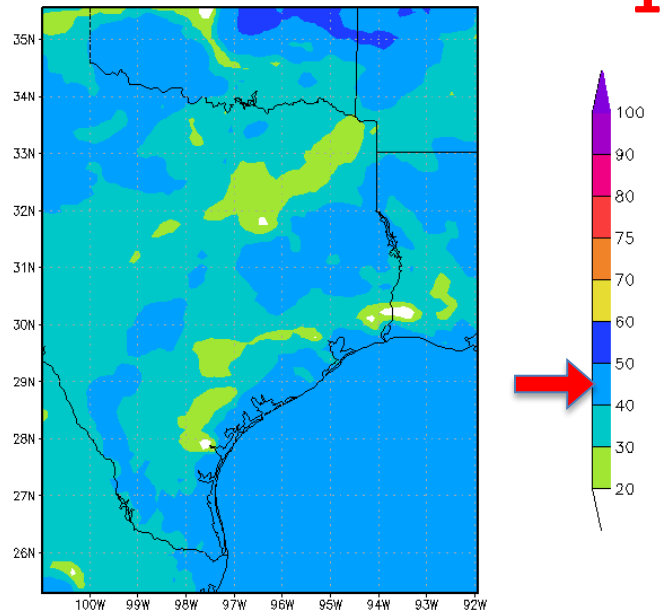


Coastal Center

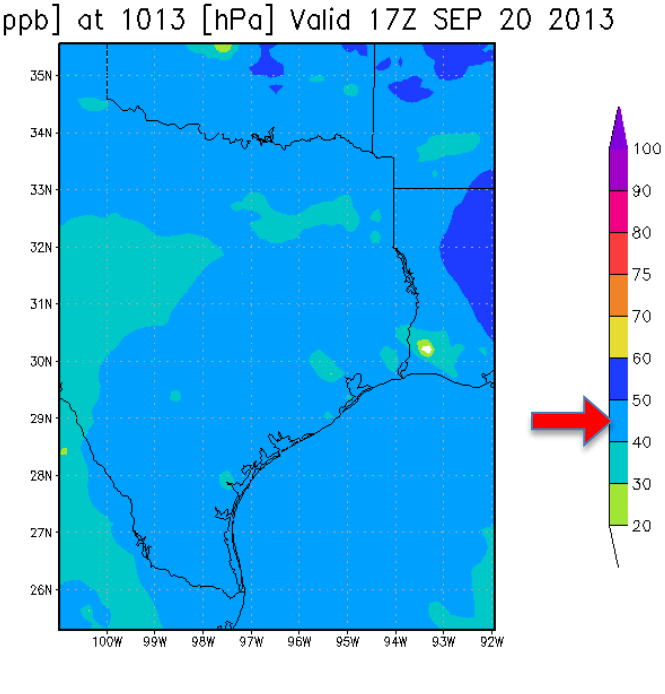


1013 hPa

9 am



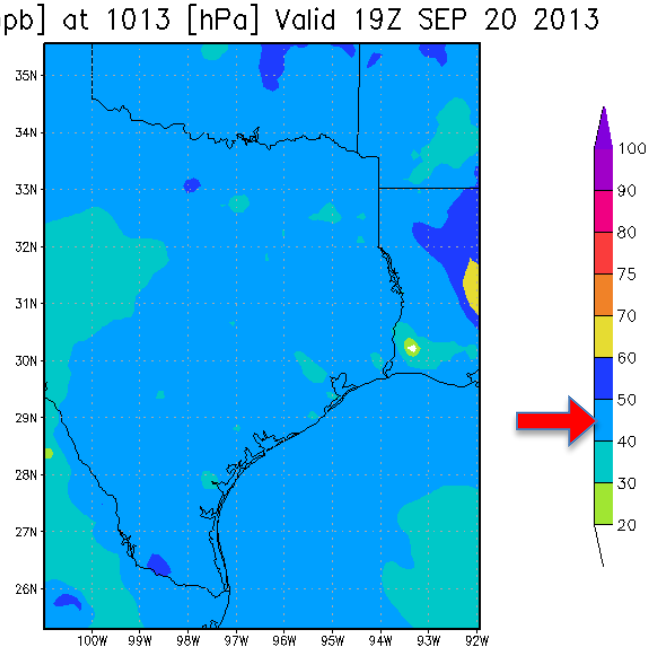
noon



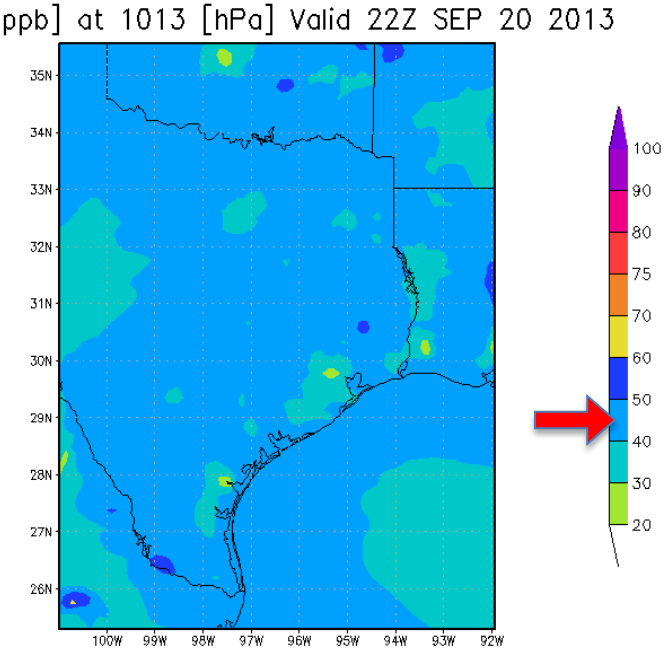
NOAA Experim. CMAQ

Surface Ozone

2 pm



5 pm



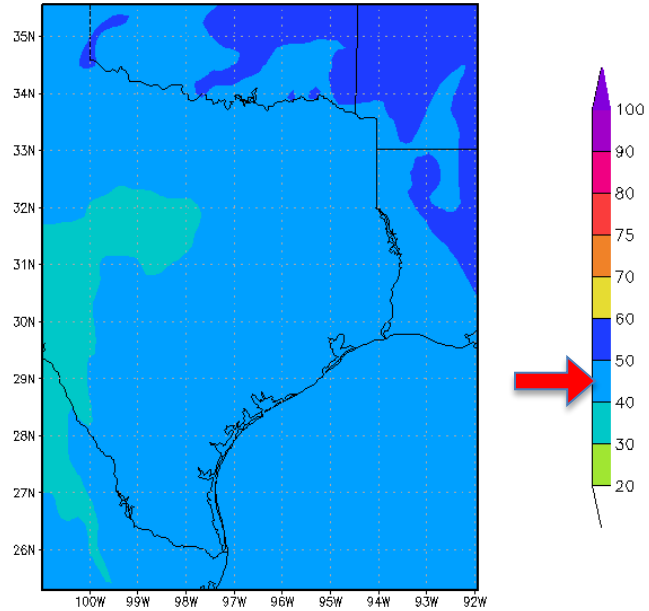
FRIDAY

850 hPa

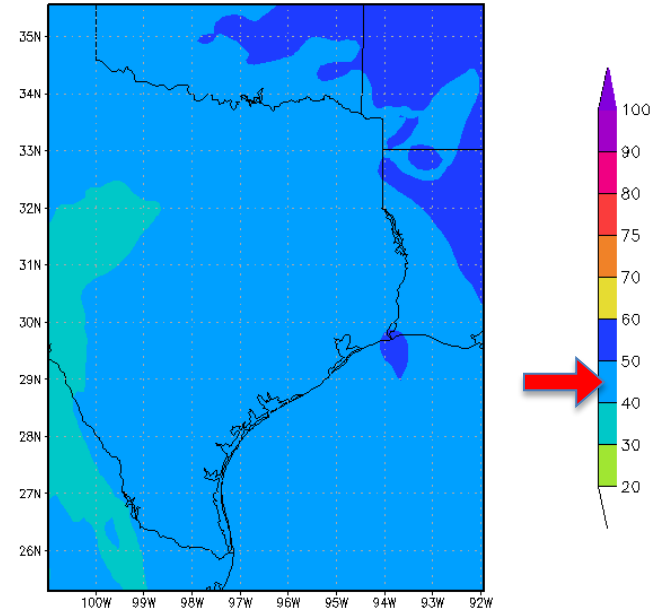
NOAA Experim. CMAQ

1.5 Km Ozone

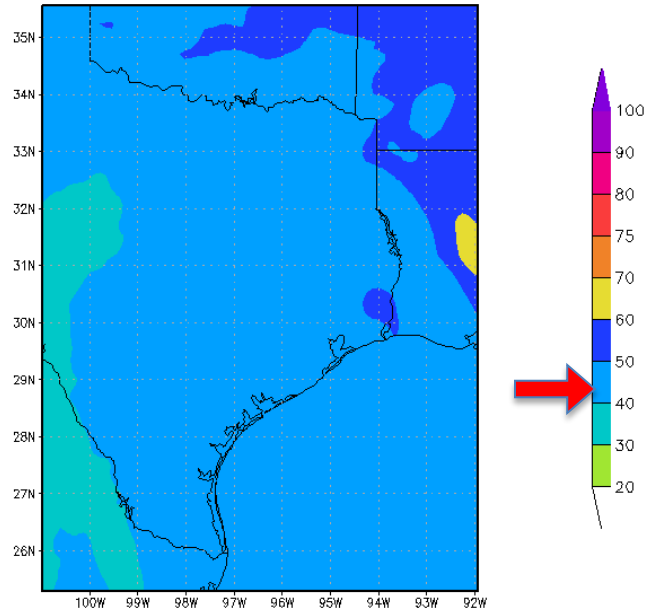
9 am



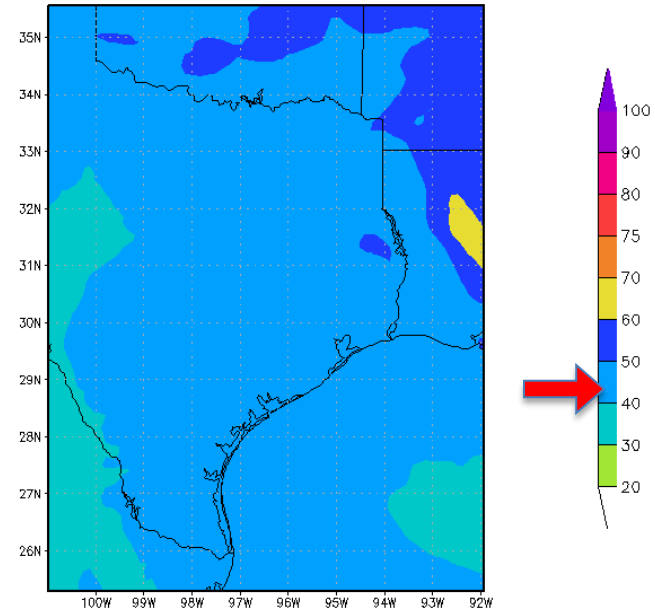
noon



2 pm



5 pm



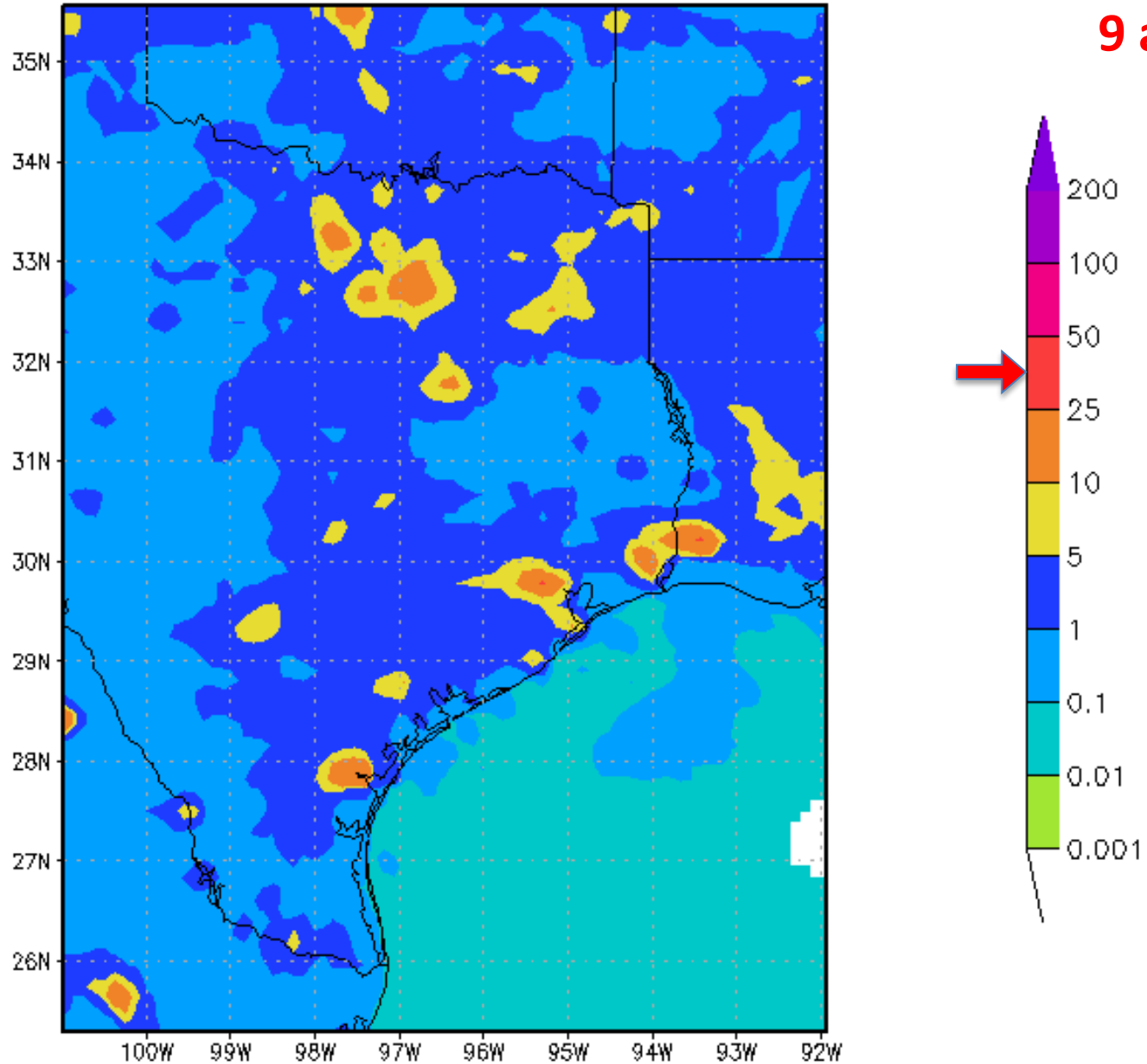
FRIDAY

NO2 [ppb] at 1013 [hPa] Valid 14Z SEP 20 2013

9 am

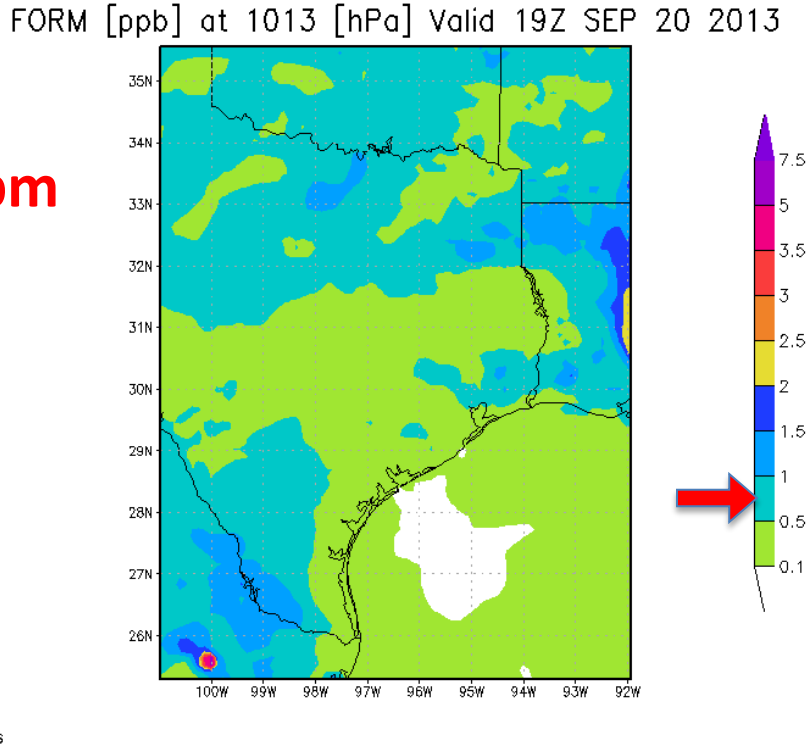
NOAA Experm.
CMAQ Model
Surface NO2

FRIDAY



GrADS: COLA/IGES

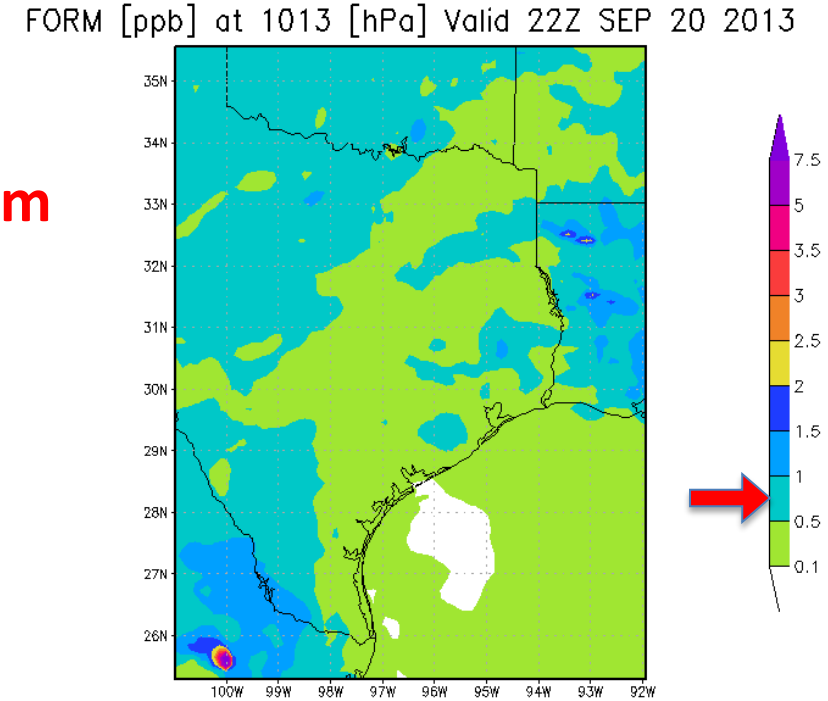
2 pm



FRIDAY

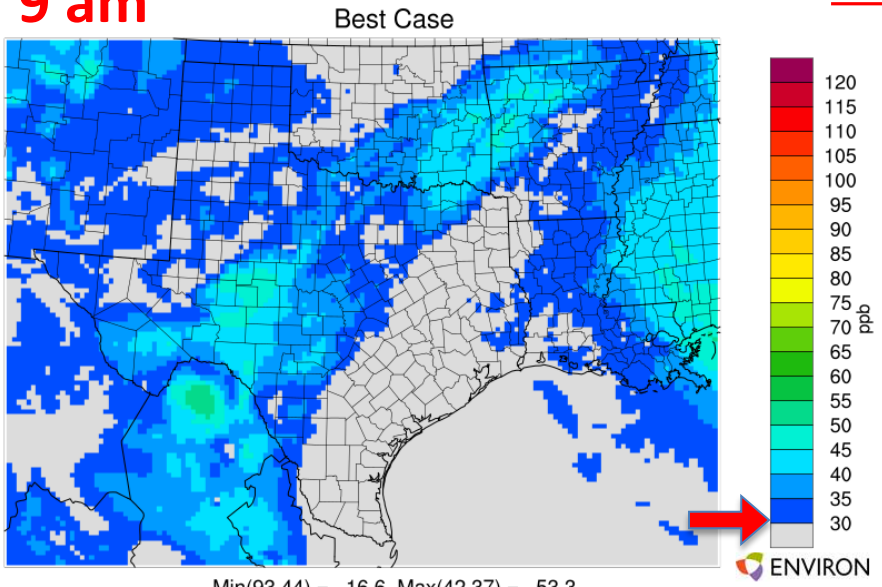
NOAA Experm. CMAQ Model
Surface Formaldehyde

5 pm



FRIDAY

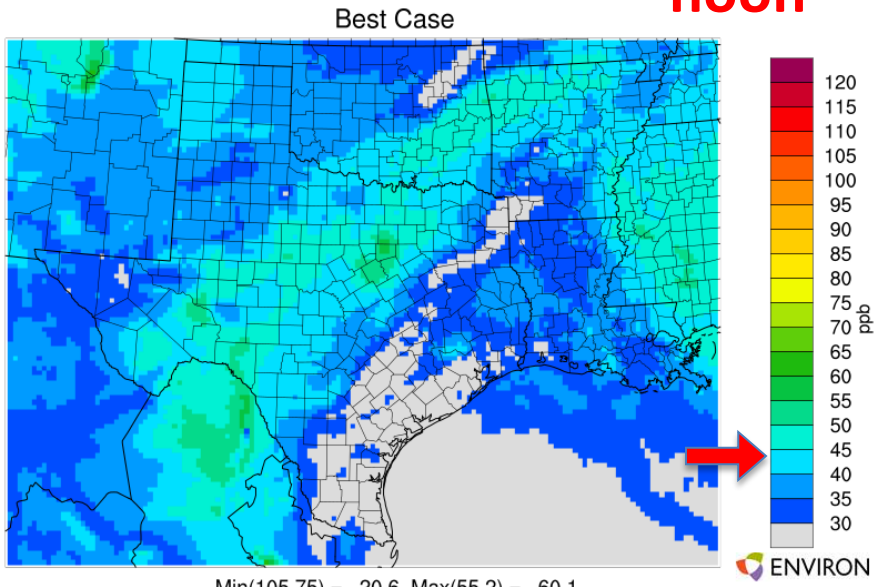
9 am



Min(93,44) = 16.6, Max(42,37) = 53.3

Fri September 20 09:00 CST

noon

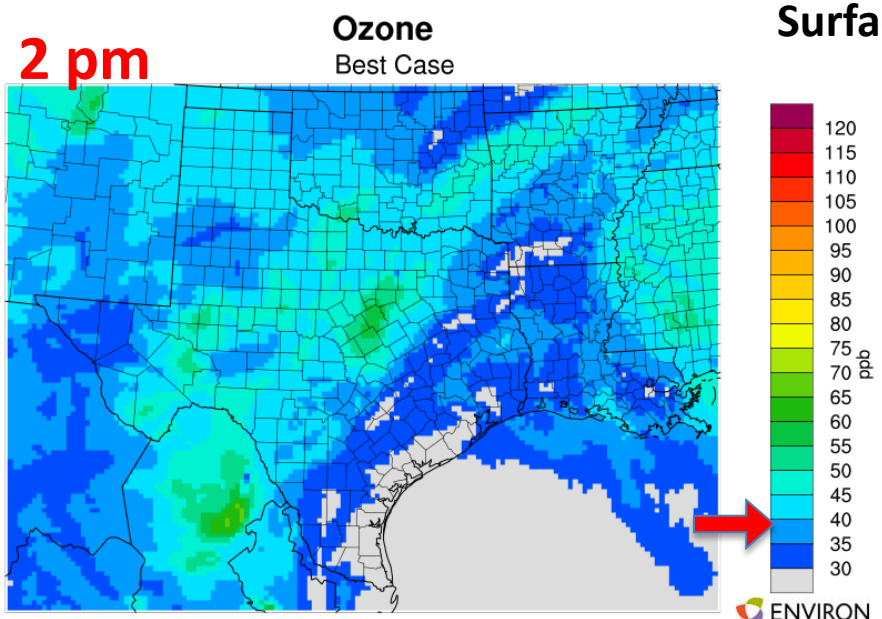


Min(105,75) = 20.6, Max(55,2) = 60.1

Fri September 20 12:00 CST

CAMx Model Surface Ozone

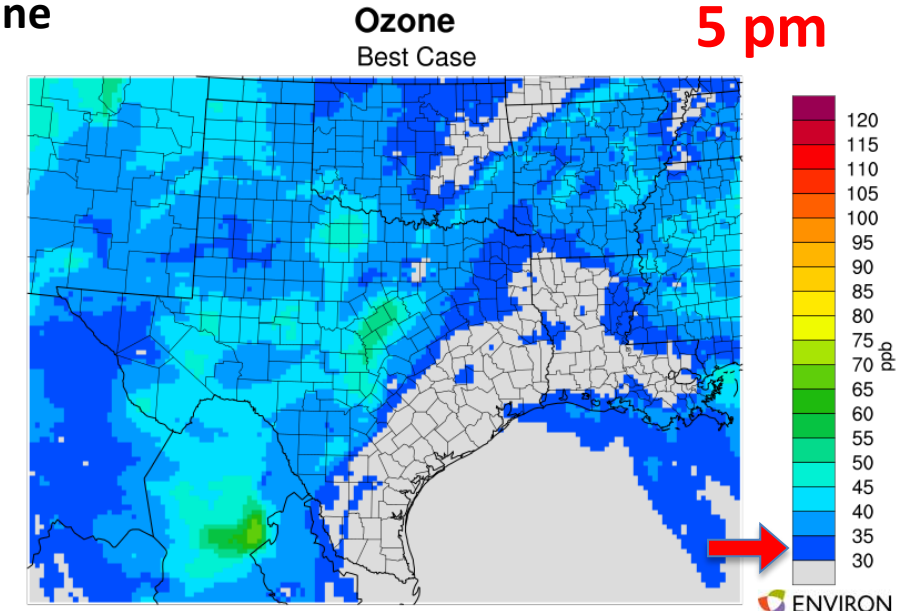
2 pm



Min(78,18) = 22.0, Max(50,21) = 66.8

Fri September 20 14:00 CST

5 pm

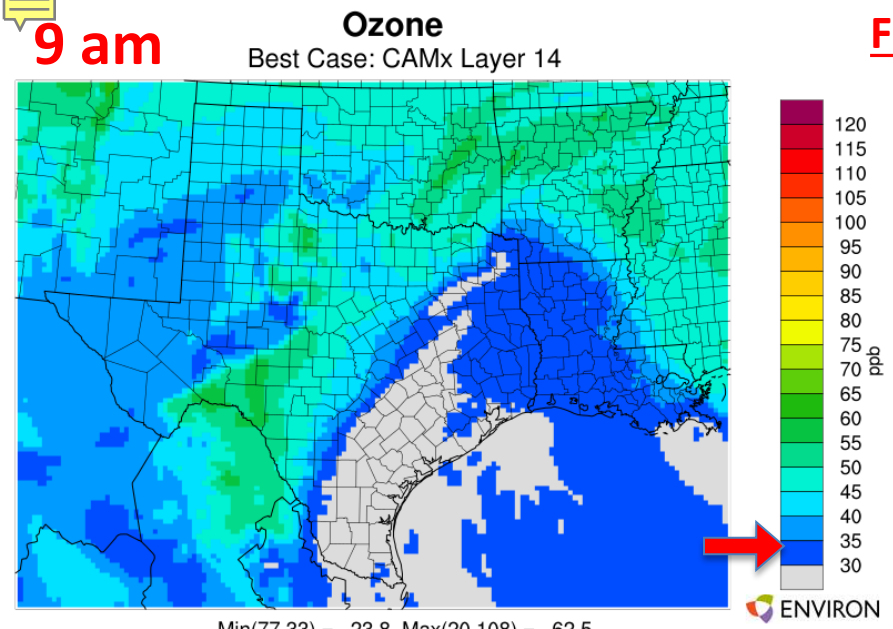


Min(108,68) = 1.5, Max(48,17) = 67.5

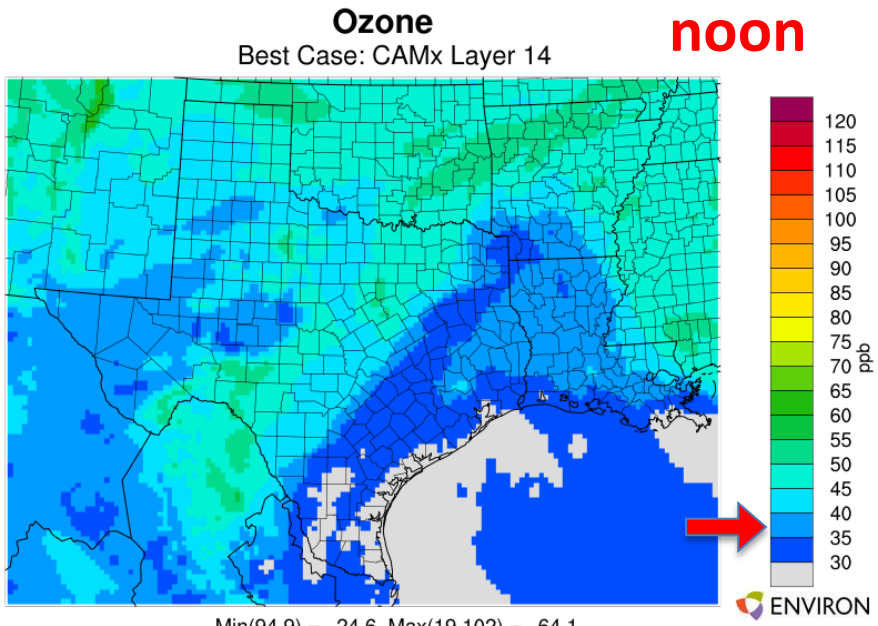
Fri September 20 17:00 CST

FRIDAY

9 am

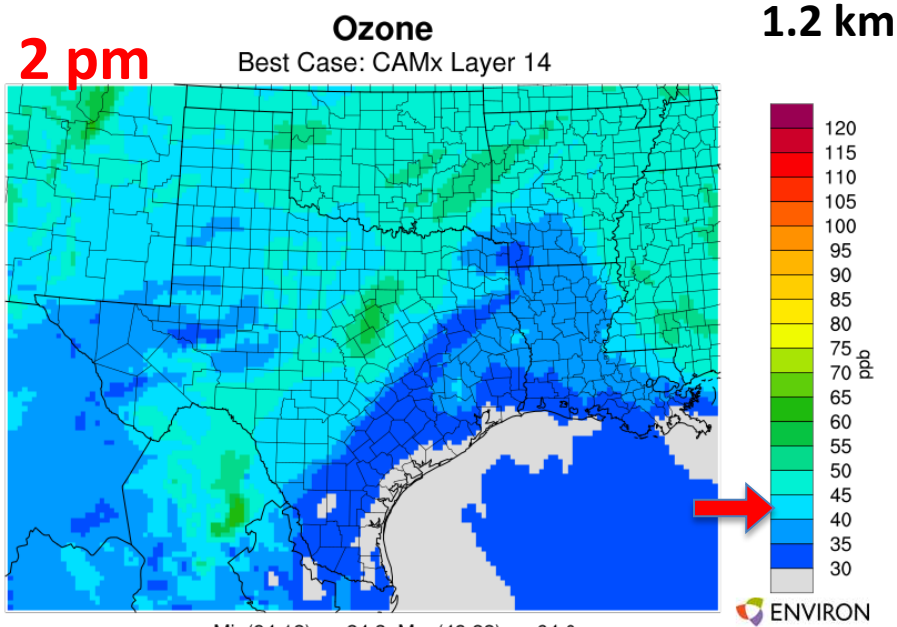


noon

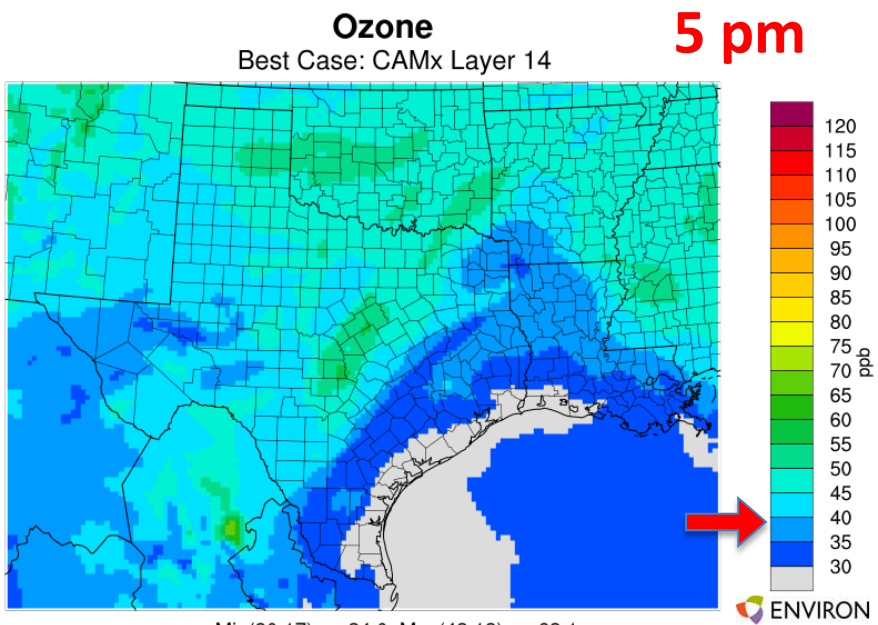


CAMx Model
1.2 km Ozone

2 pm



5 pm

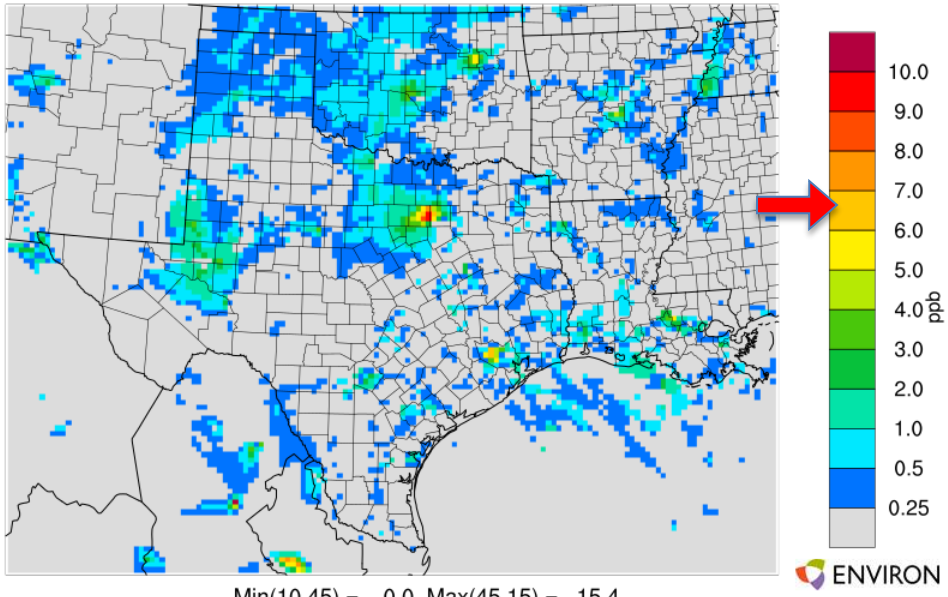


FRIDAY

CAMx Surface NO and NOx

NO 9 am

Best Case

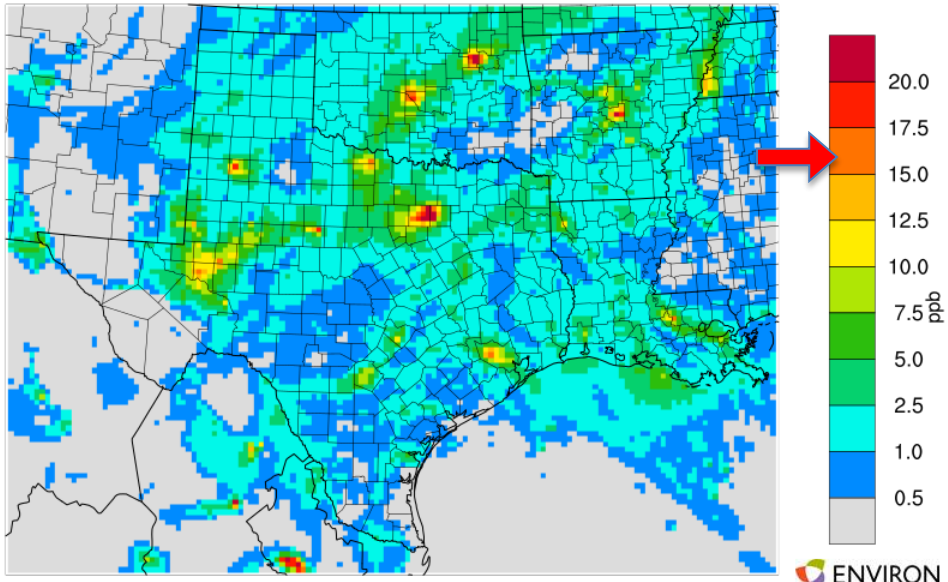


Min(10,45) = 0.0, Max(45,15) = 15.4

Fri September 20 09:00 CST

NOx 9 am

Best Case



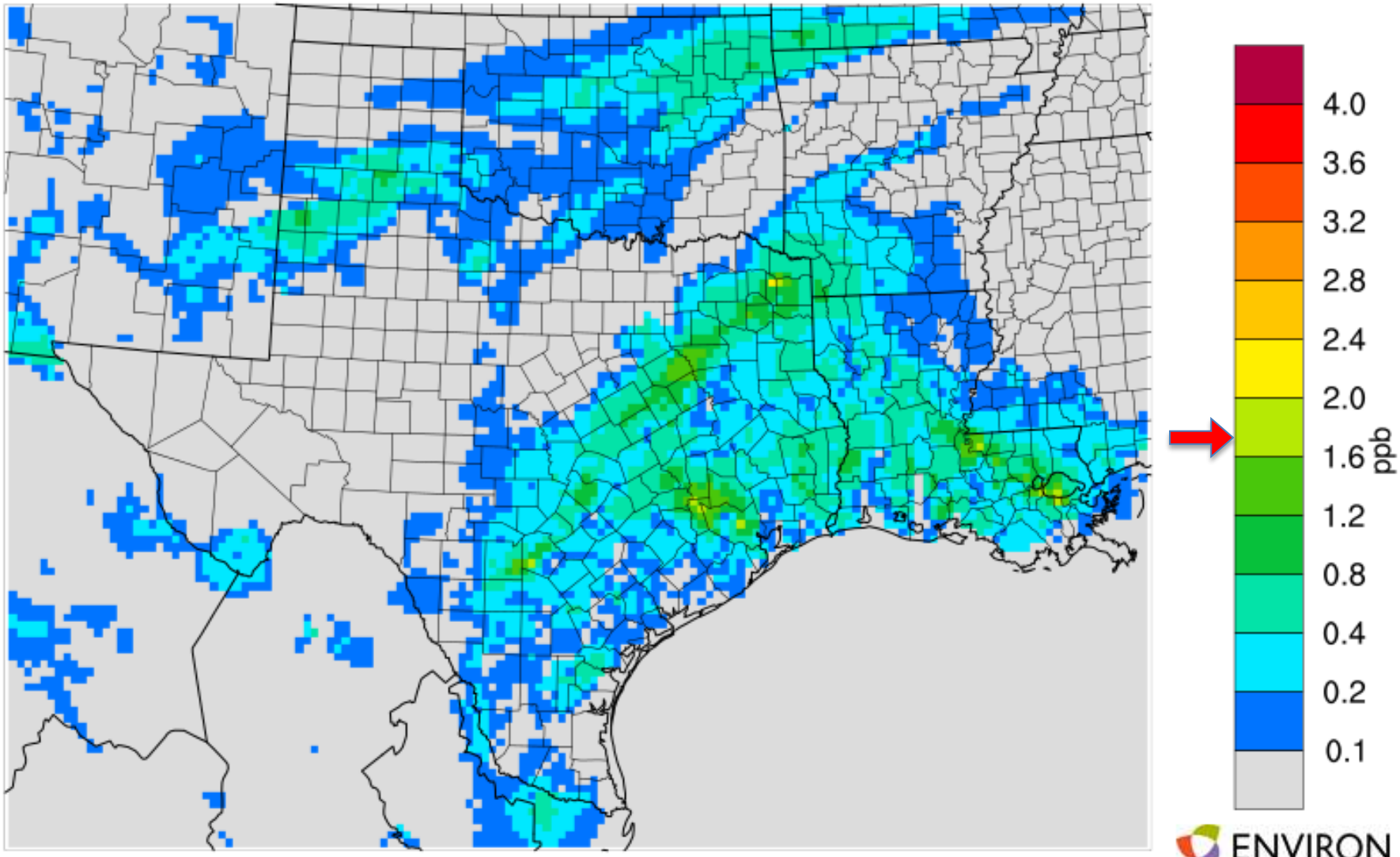
Min(3,10) = 0.0, Max(45,15) = 35.3

Fri September 20 09:00 CST

CAMx Model
1.2 km NO2

NO_2

Best Case: CAMx Layer 14

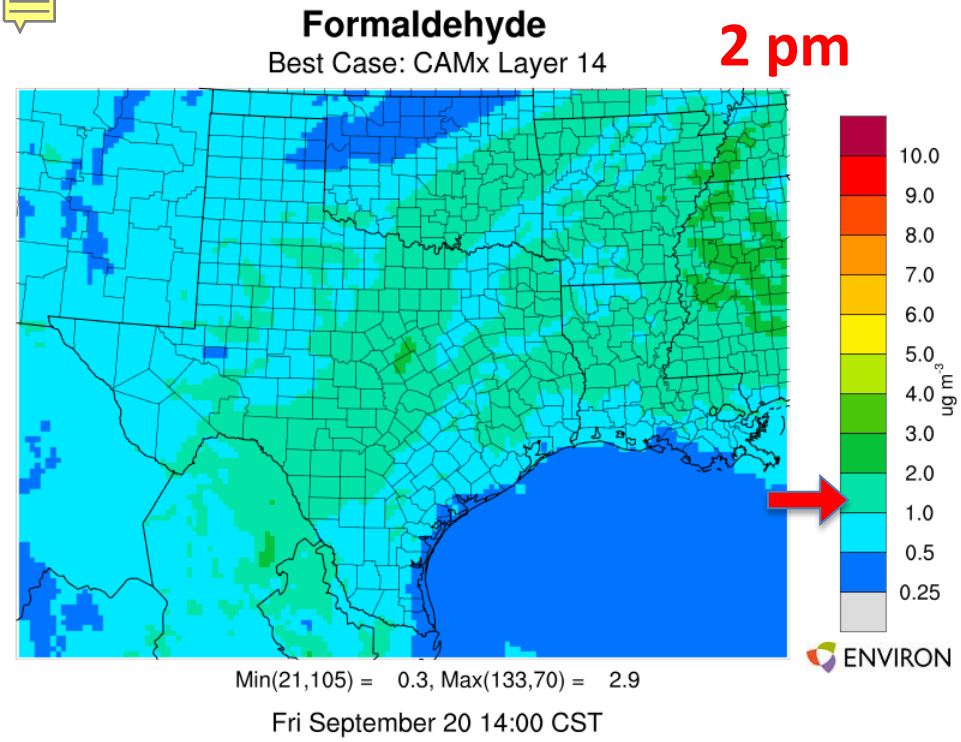


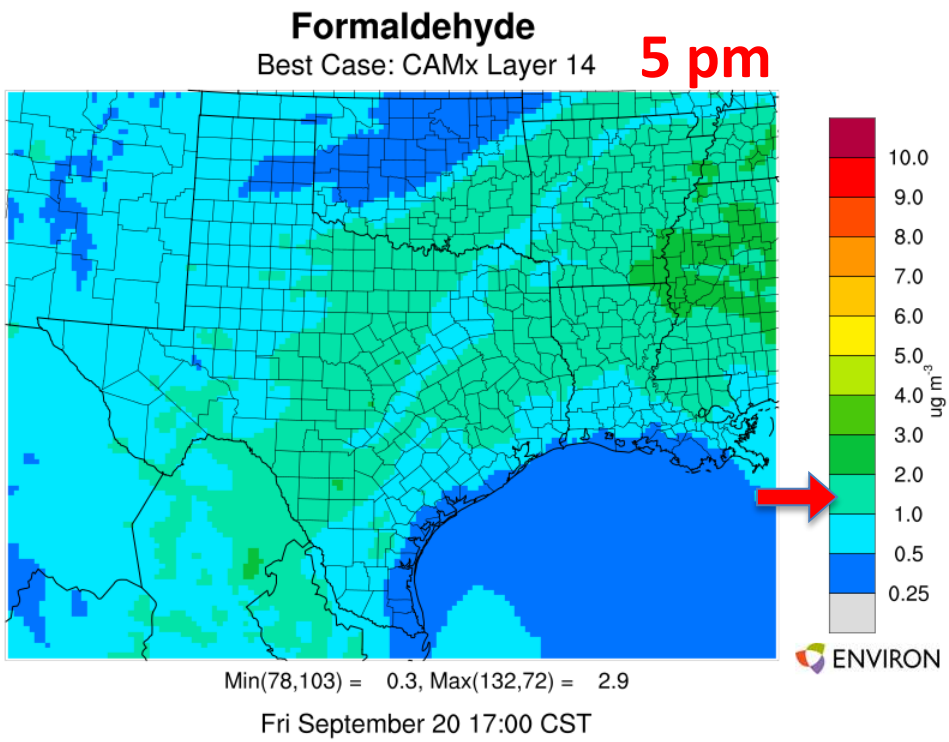
Min(42,28) = 0.0, Max(100,74) = 2.3

Fri September 20 09:00 CST **9 am**

FRIDAY

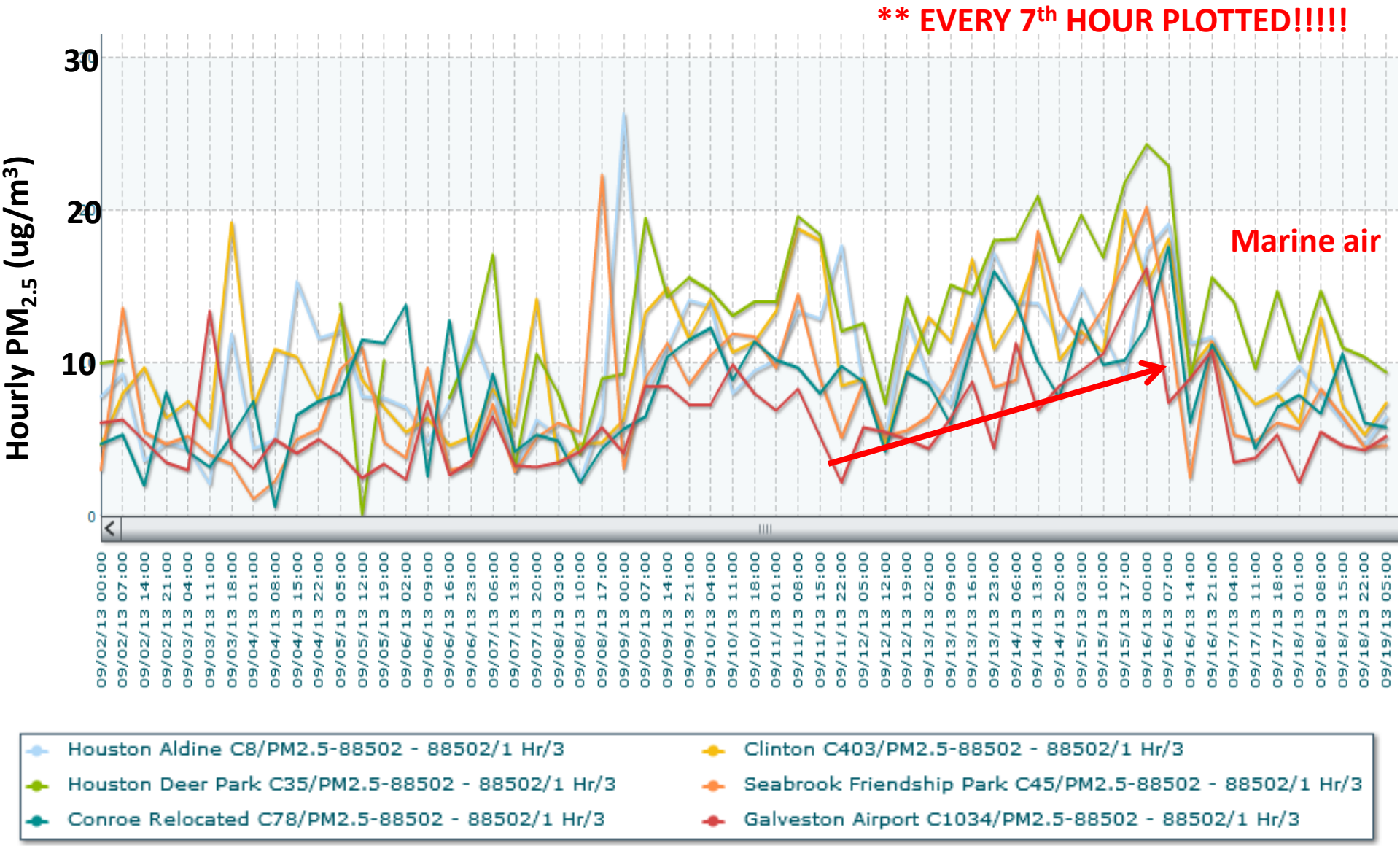
CAMx Model Formaldehyde
1.2 km (Layer 14)





Hourly $PM_{2.5}$ (airnowtech.org)**

September 2nd – 18th

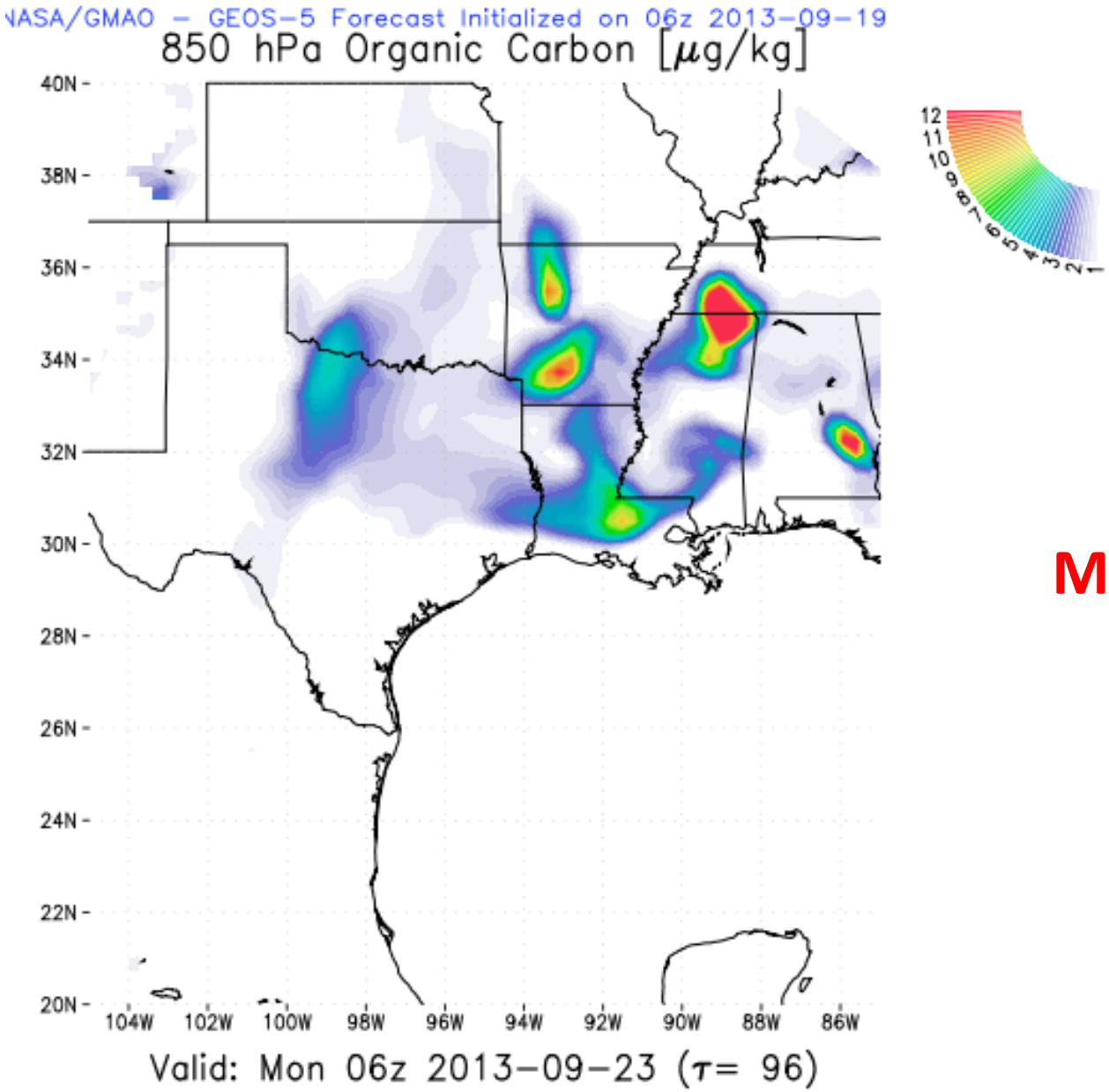


DRAGON : September 19th (Thursday) at Level 1.5

Mississippi Valley agricultural fires

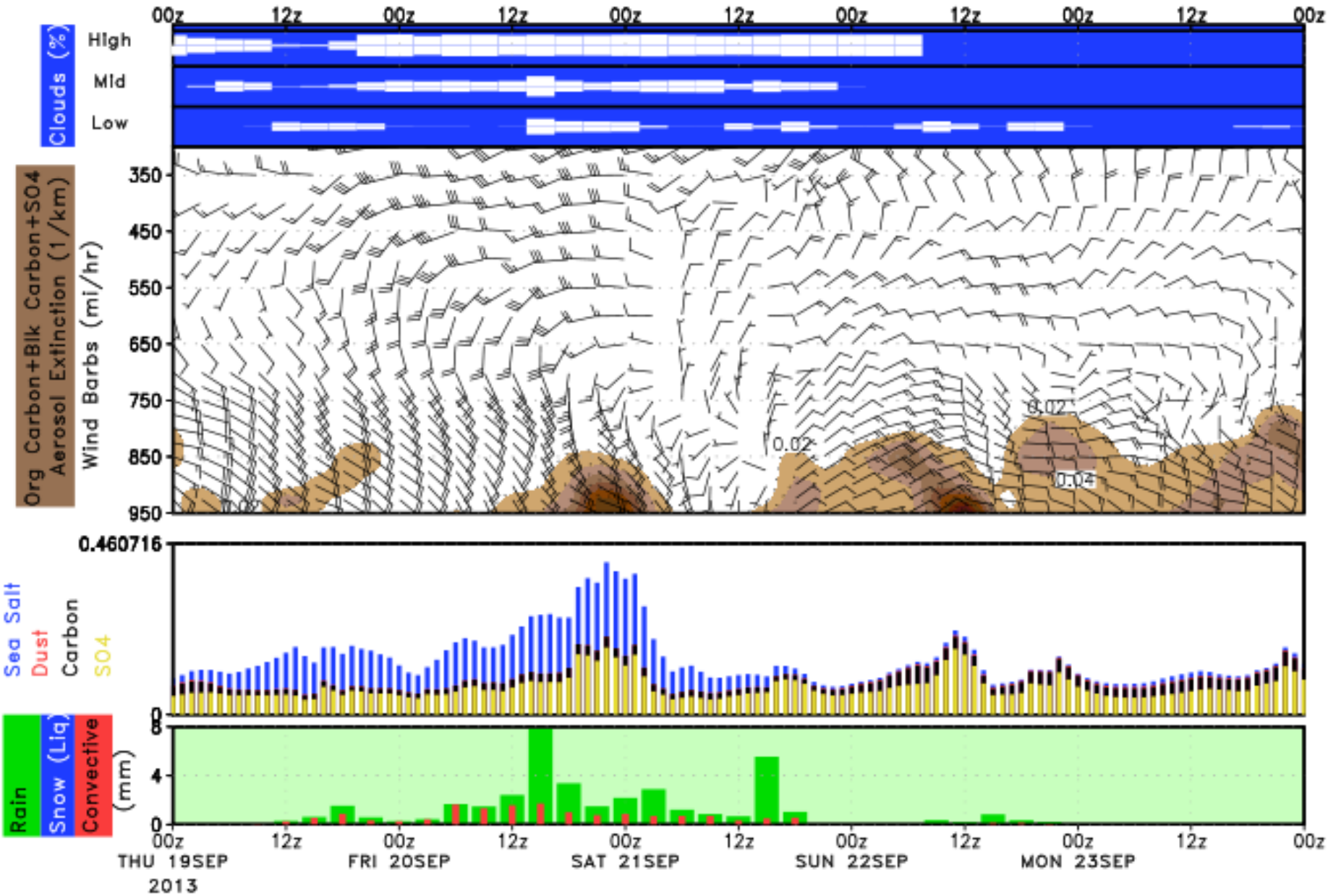
Keep an eye on the aerosols as plumes have been flirting with our area over the last few weeks.

GEOS-5: 850 mb Organic Carbon (ug/kg)

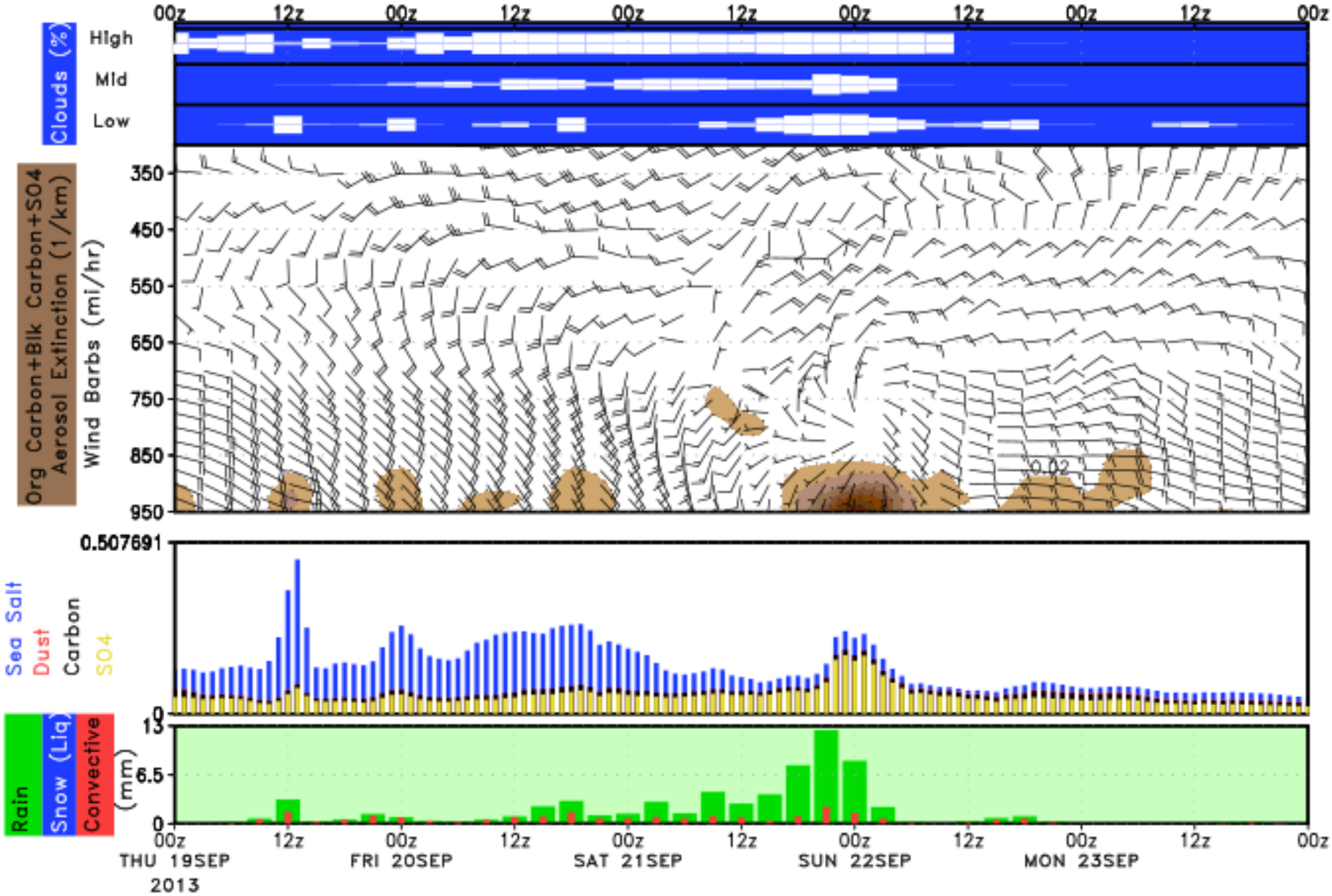


Midnight Monday

CONROE


00z
12z
Clouds (%)
High
Mid
Low
Org Carbon+Blk Carbon+SO4
Aerosol Extinction (1/km)
Wind Barbs (mi/hr)
350
450
550
650
750
850
950
0.02
0.04
0.460716
0
Sea Salt
Dust
Carbon
SO4
Rain
Snow (Liq)
Convective
(mm)
8
4
THU 19SEP
2013
FRI 20SEP
SAT 21SEP
SUN 22SEP
MON 23SEP

GALVESTON


00z
12z
00z
12z
00z
12z
00z
12z
00z
12z
00z
Clouds (%)
High
Mid
Low
Org Carbon+Blk Carbon+SO4
Aerosol Extinction (1/km)
Wind Barbs (mi/hr)
350
450
550
650
750
850
950
0.02
0.507691
0
Sea Salt
Dust
Carbon
SO4
Rain
Snow (Liq)
Convective
(mm)
13
6.5
0
THU 19SEP
2013
FRI 20SEP
SAT 21SEP
SUN 22SEP
MON 23SEP

(dev) aot 32H VALID 14Z 20 SEP2013 [dimensionless]

FRIDAY

2 pm

NOAA Experimental CMAQ AOT

Entire Grid Undefined

(dev) aot 40H VALID 22Z 20 SEP2013 [dimensionless]

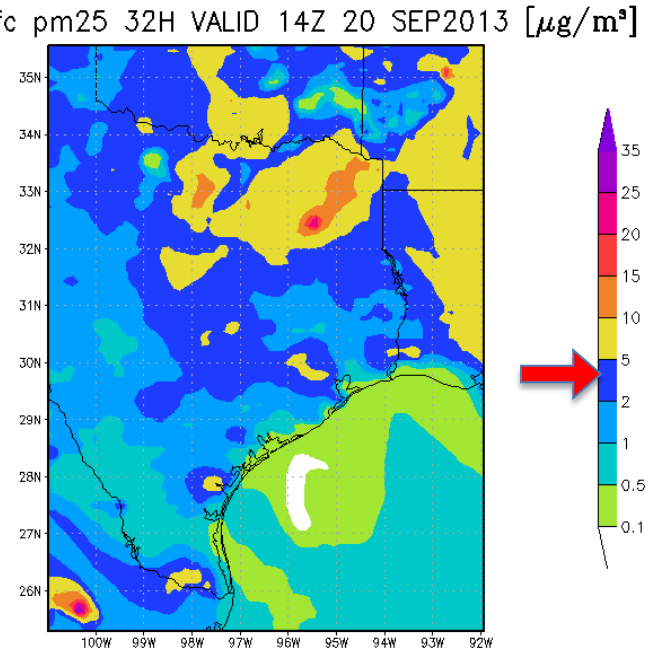
5 pm

Entire Grid Undefined

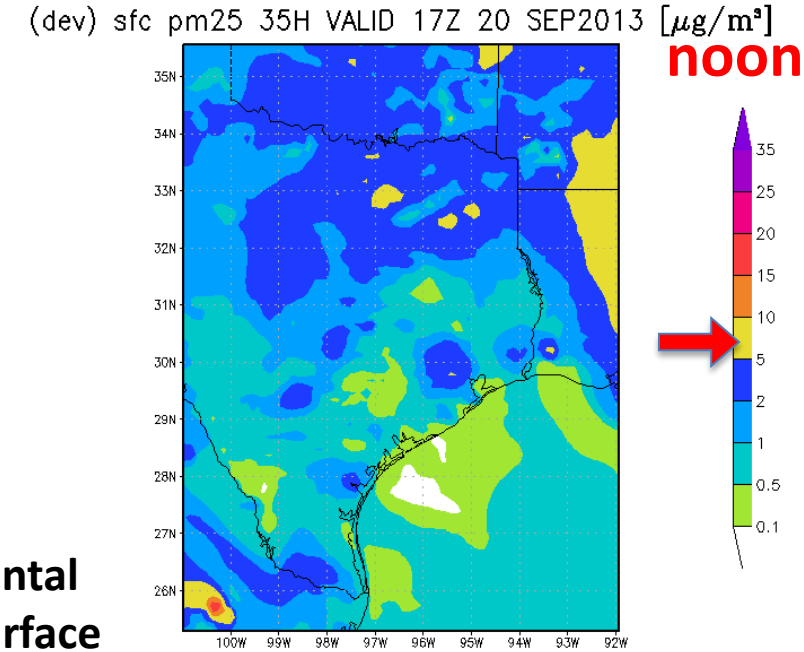
FRIDAY

NOAA Experimental CMAQ Surface Pm 2.5

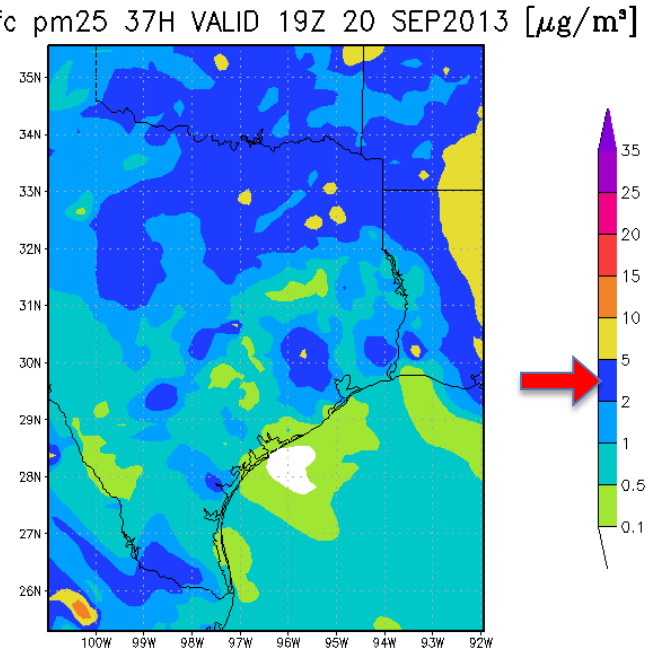
9 am



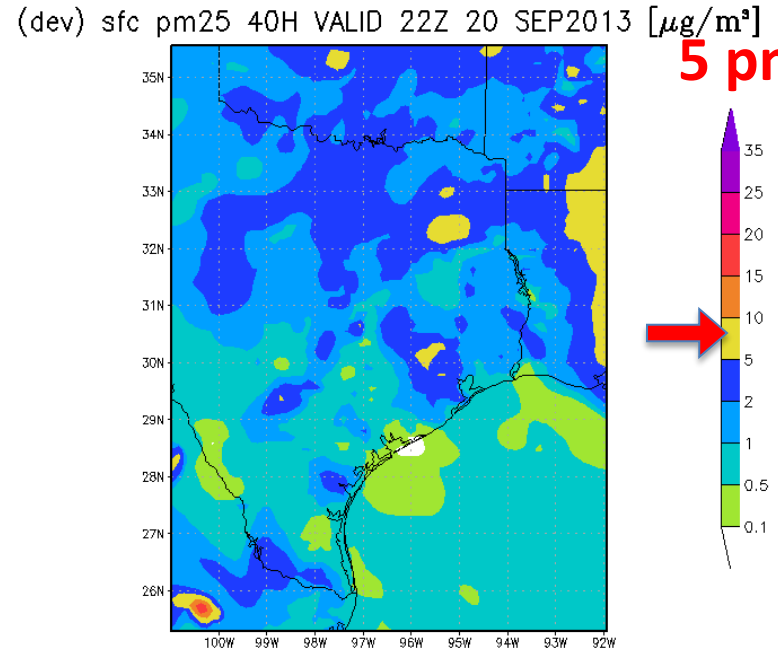
noon



2 pm

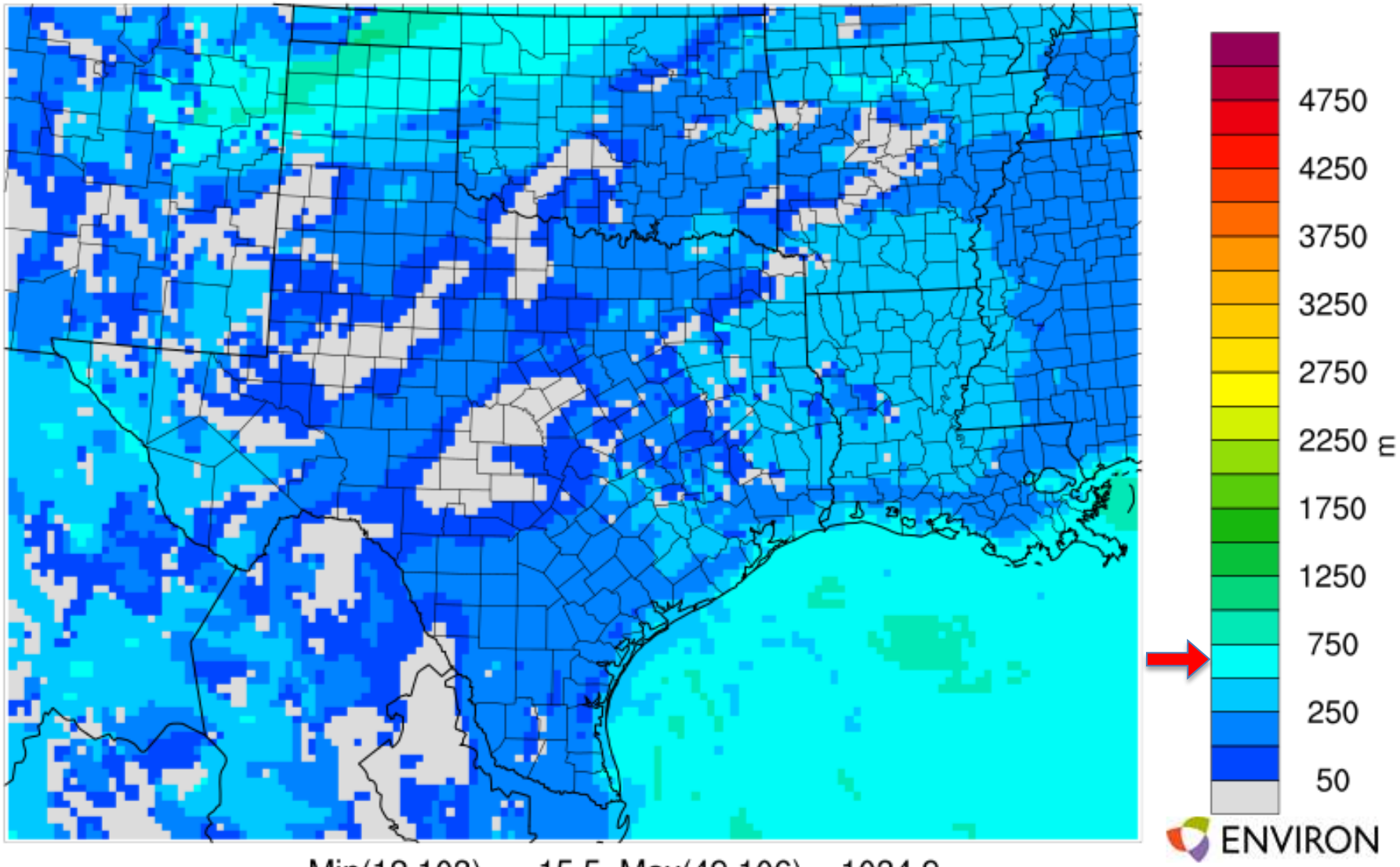


5 pm



PBL Height

Texas 12km

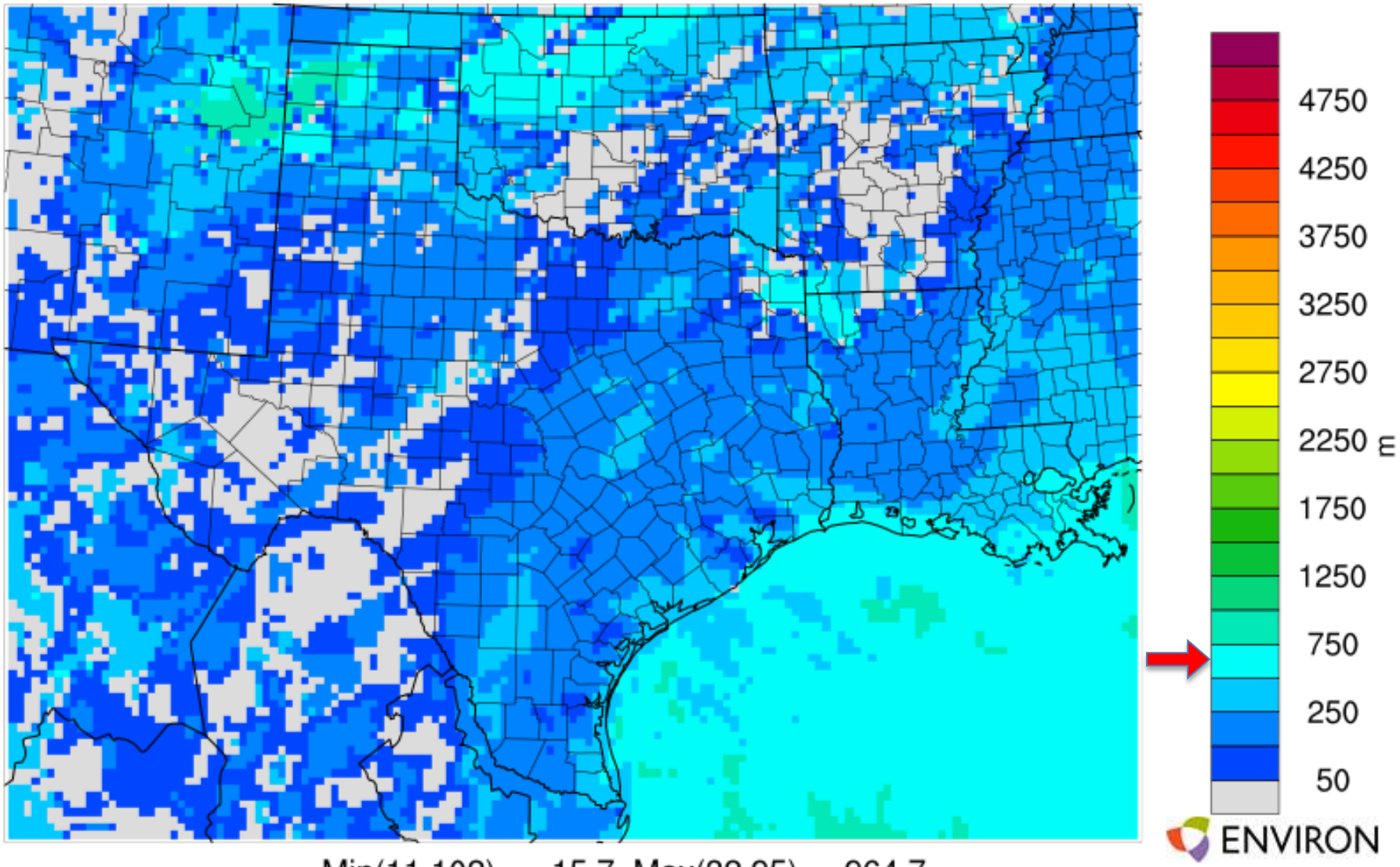


Min(12,103) = 15.5, Max(49,106) = 1034.9

Fri September 20 06:00 CST

PBL Height

Texas 12km

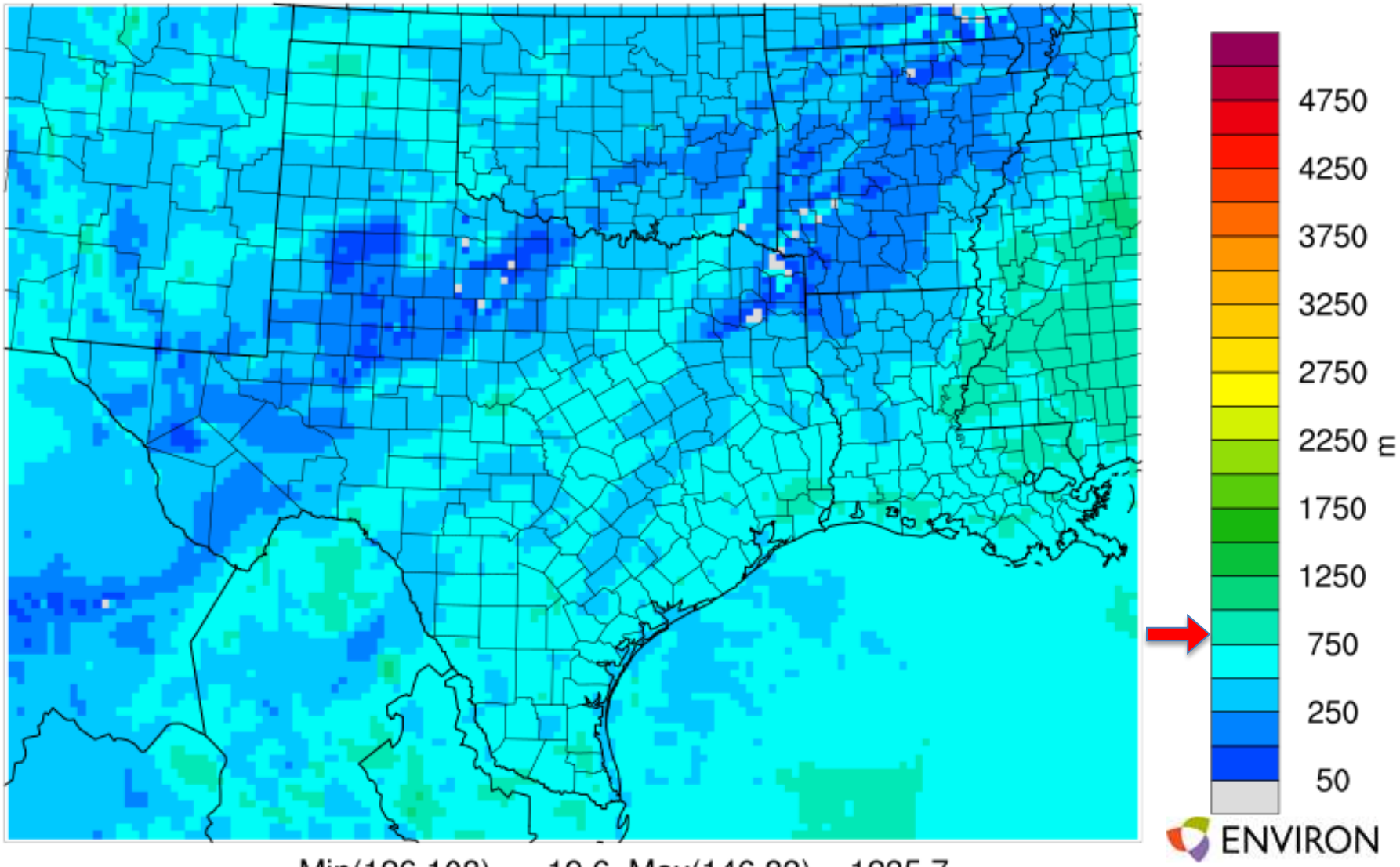


Min(11,102) = 15.7, Max(32,95) = 964.7

Fri September 20 08:00 CST

PBL Height

Texas 12km

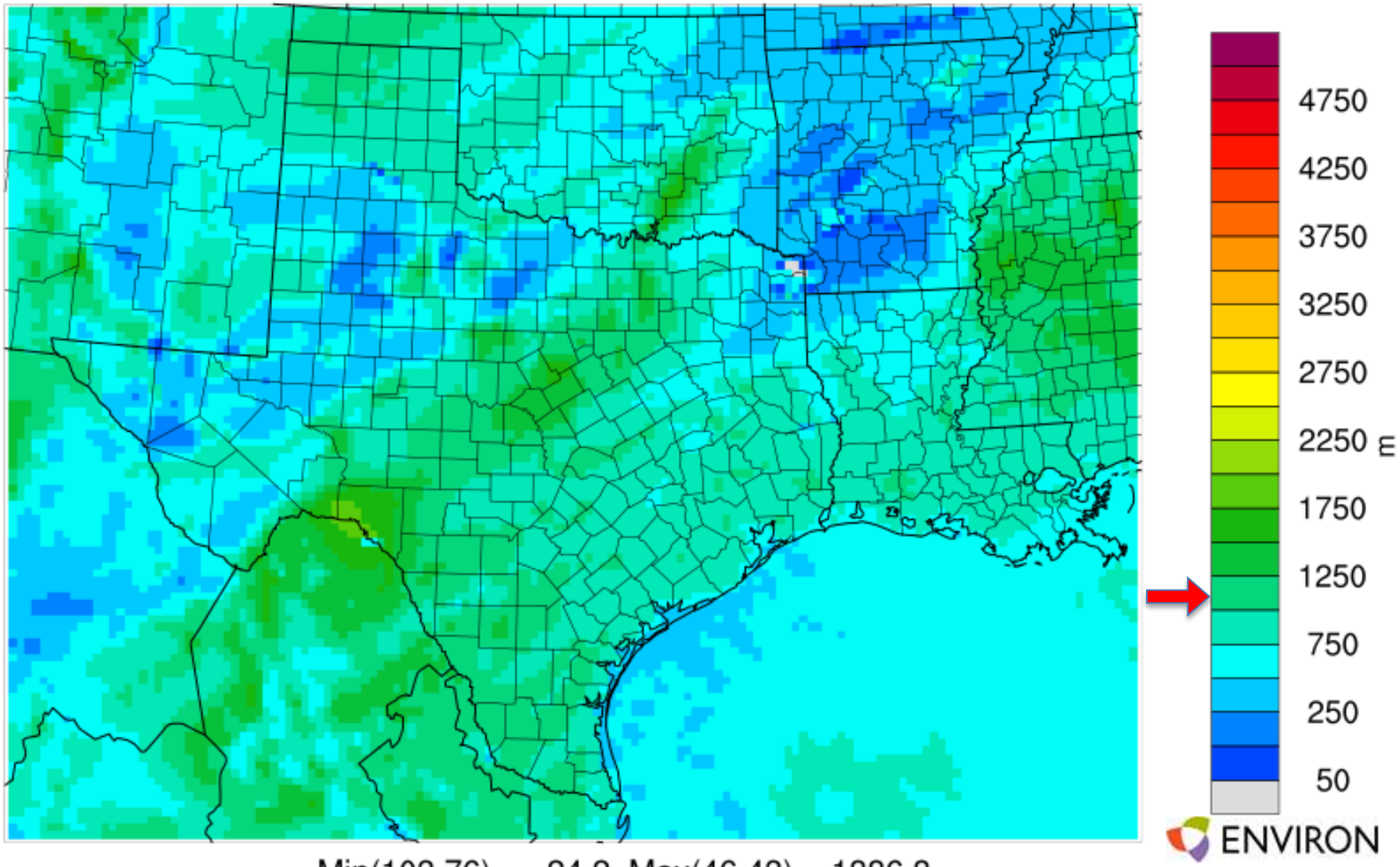


Min(126,108) = 19.6, Max(146,83) = 1235.7

Fri September 20 10:00 CST

PBL Height

Texas 12km

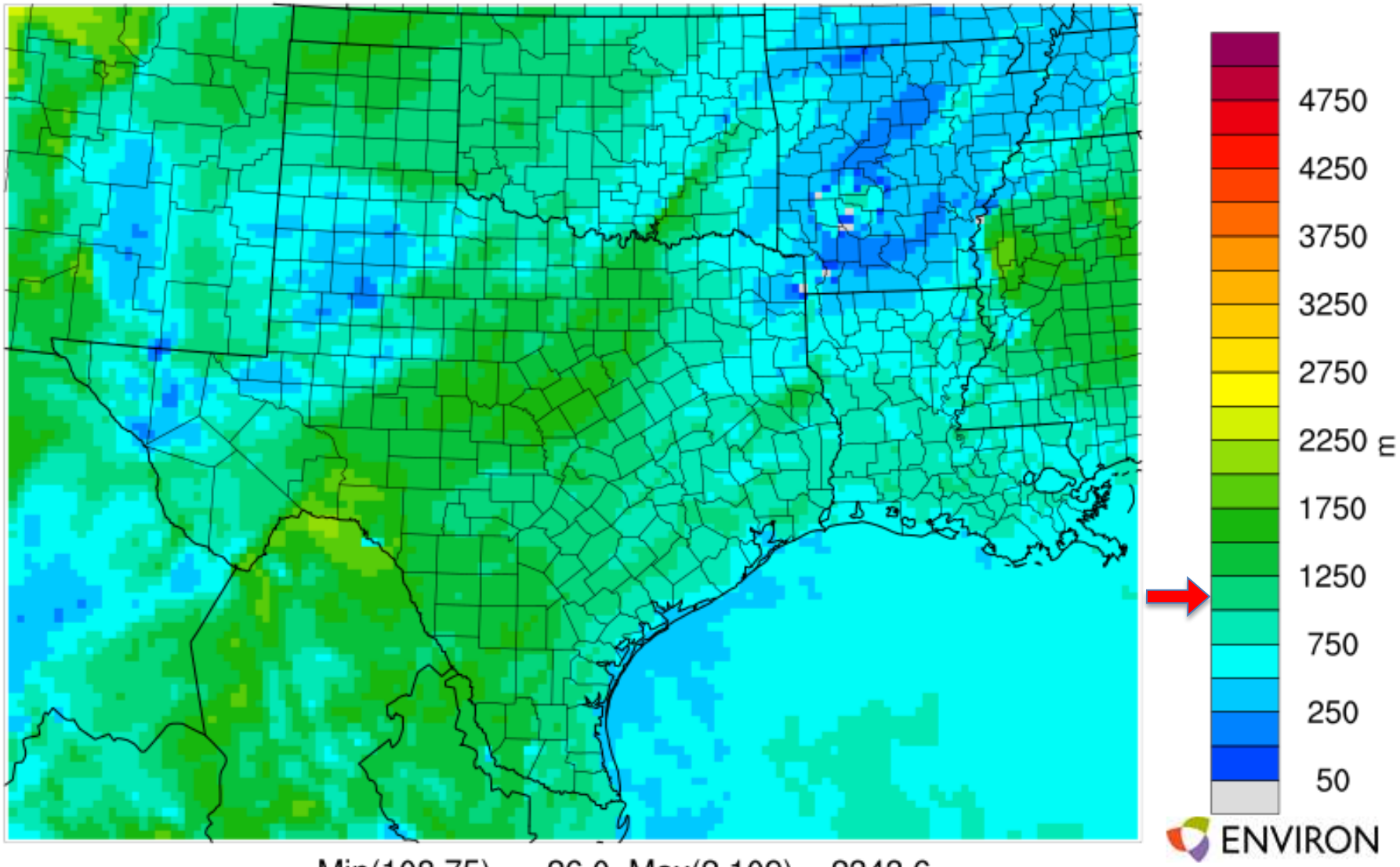


Min(103,76) = 24.2, Max(46,43) = 1886.8

Fri September 20 12:00 CST

PBL Height

Texas 12km

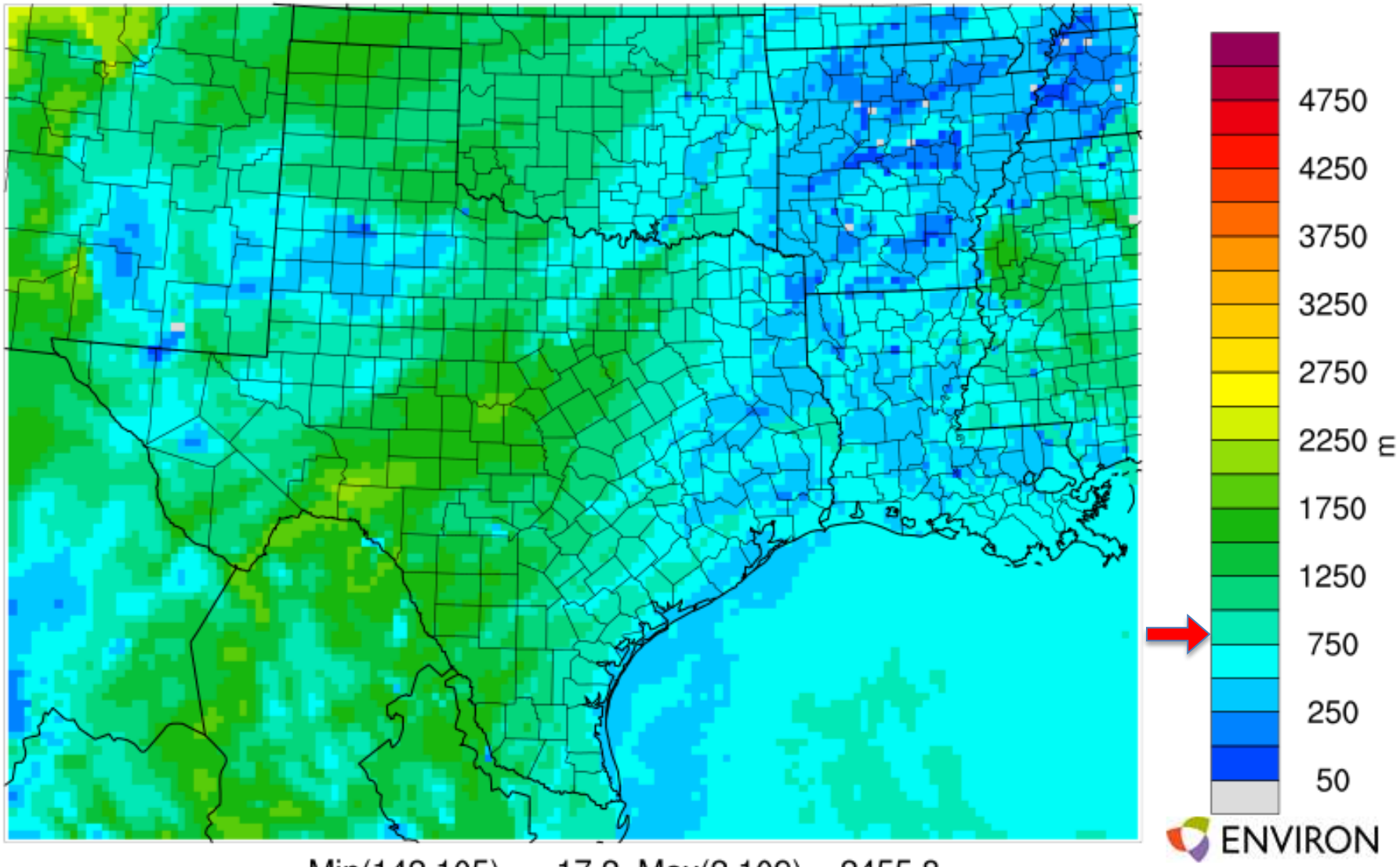


Min(108,75) = 26.0, Max(2,109) = 2343.6

Fri September 20 14:00 CST

PBL Height

Texas 12km

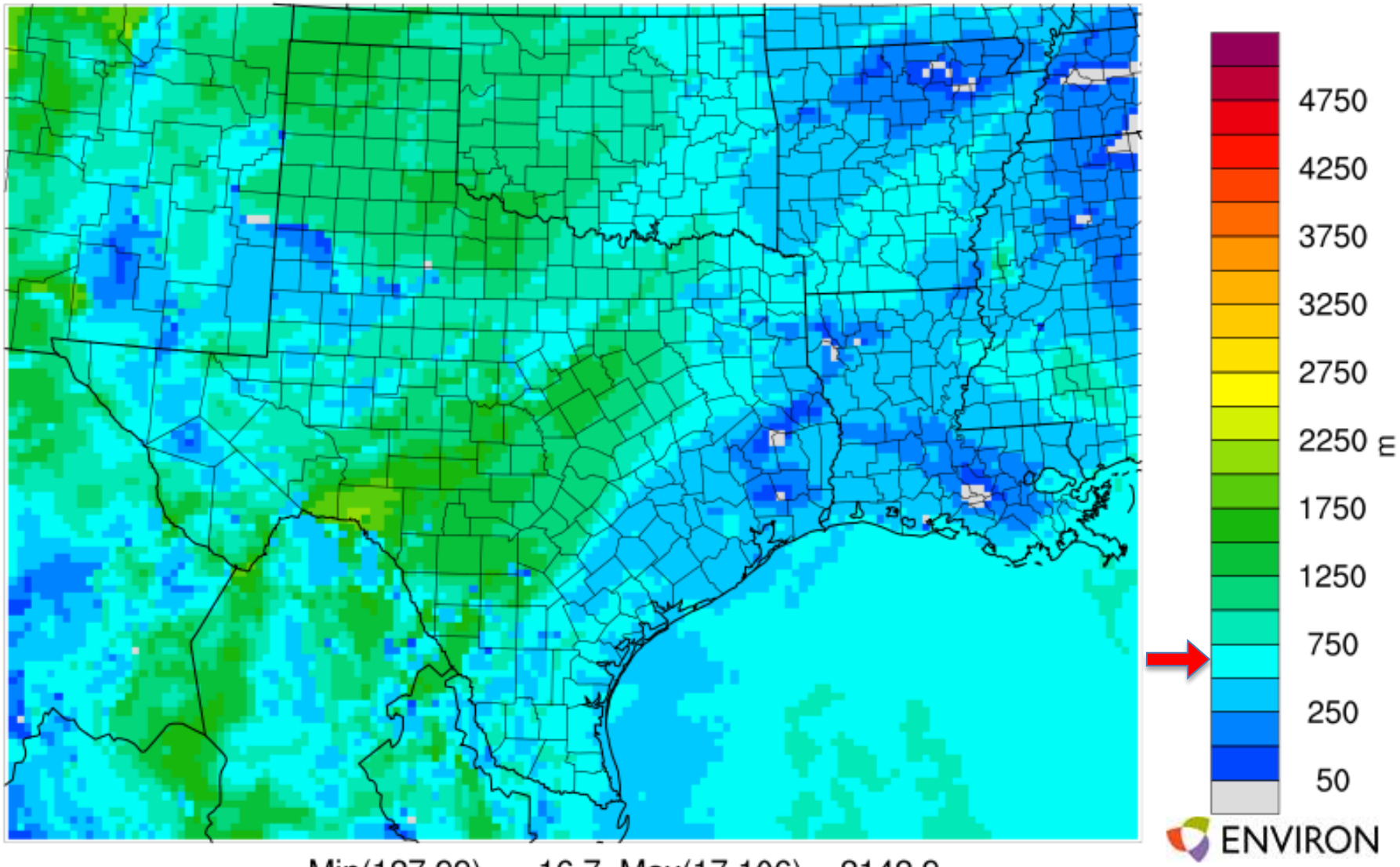


Min(142,105) = 17.2, Max(2,109) = 2455.8

Fri September 20 16:00 CST

PBL Height

Texas 12km



Min(127,99) = 16.7, Max(17,106) = 2142.9

Fri September 20 18:00 CST