

DISCOVER-AQ OUTLOOK -- September 16, 2013

Today (Monday): **No fly day.** Region under an easterly flow regime and under the influence of an upper level ridge. Moisture and convective outflow from now TS Ingrid has impacted the area; a cirrus cloud deck covers much of southern Texas, while some lower level clouds are also present.

Tomorrow (Tuesday): **Cloudy conditions remain,** though it should be somewhat less cloudy than Monday. As Ingrid moves SW, the moisture and convective outflow should also shift SW; less moisture and cirrus should thus impact the region though not enough to dissipate the cirrus deck significantly.

Wednesday: **May be OK to fly.** However, the forecast is very uncertain. The upper level ridge weakens and moves E, while an upper trough builds over the continental US. This should bring some instability to the region.

Thursday: **Not looking good** for a flight. Instability from the trough and moisture inflow from the Gulf should allow for convection and precipitation.

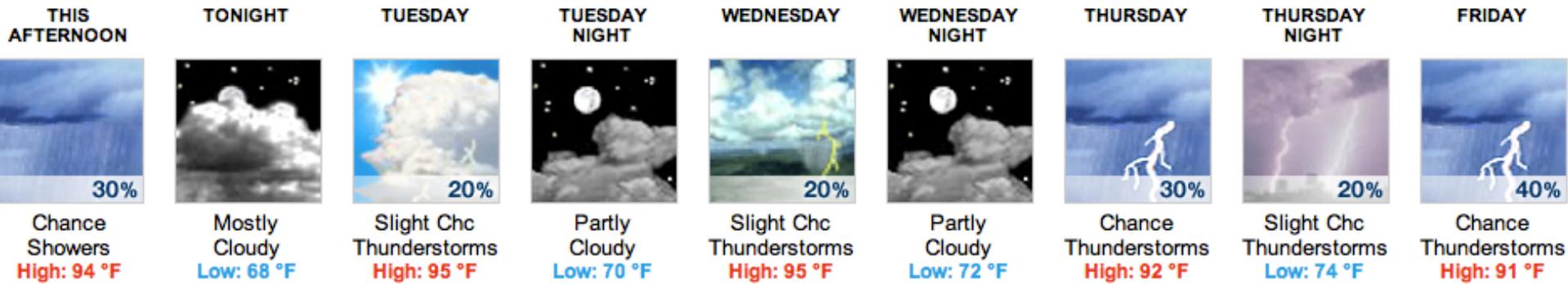
9/16/2013 Weather Briefing

Clare Flynn

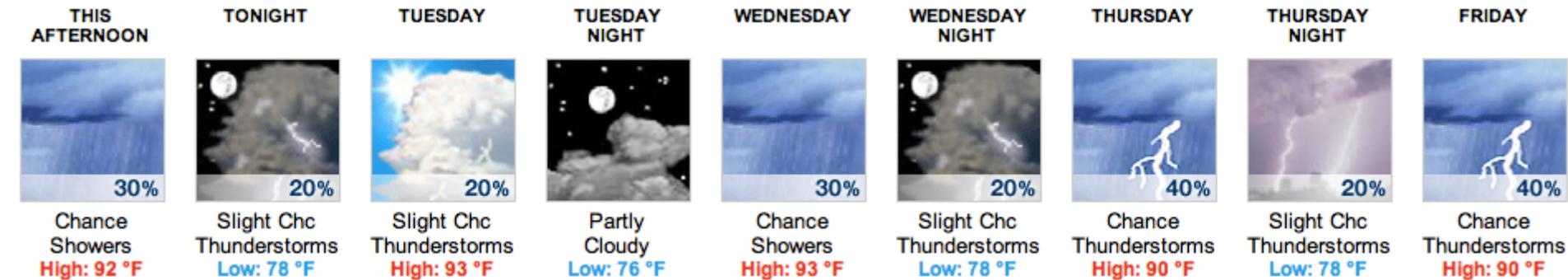
Recommendations

- Tuesday: **No fly day**. Cirrus deck remains over study region, though coverage should be less than today (scattered rather than broken). However, NWS forecaster thinks tomorrow afternoon might be best conditions for flight all week.
- Wednesday: **Possibly a fly day**; cloud coverage decreases on this day. However, forecast is uncertain due to remaining moisture and developing upper trough.

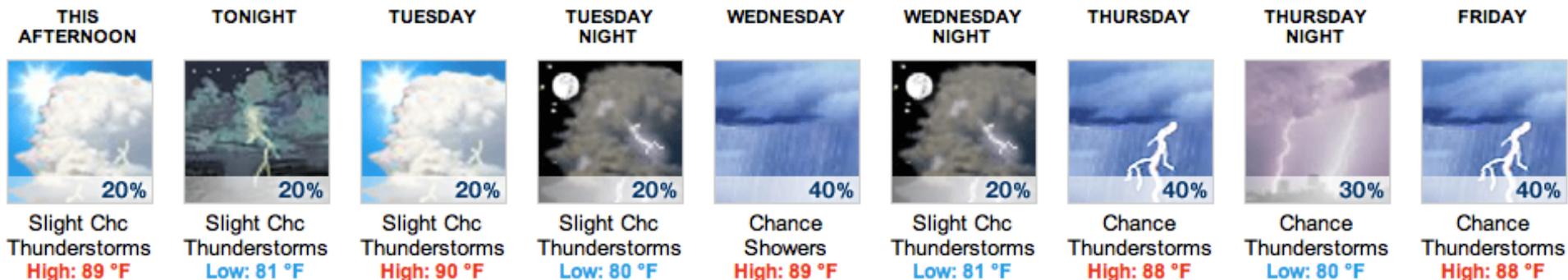
Conroe:



Houston Hobby:



Galveston:



Current Conditions

Conroe:



A Few Clouds
86°F
 30°C

Humidity 65%
 Wind Speed E 5 mph
 Barometer 30.06 in (1017.6 mb)
 Dewpoint 73°F (23°C)
 Visibility 10.00 mi
 Heat Index 93°F (34°C)
 Last Update on 16 Sep 11:53 am CDT

Houston Hobby:

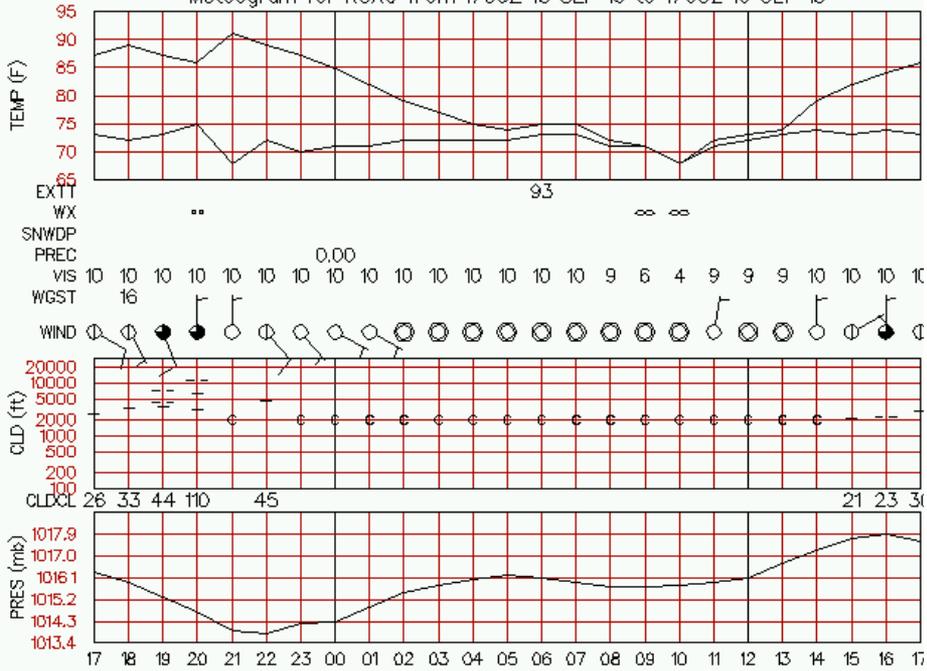


Overcast
89°F
 32°C

Humidity 63%
 Wind Speed NE 9 mph
 Barometer 30.02 in (1017.0 mb)
 Dewpoint 75°F (24°C)
 Visibility 10.00 mi
 Heat Index 99°F (37°C)
 Last Update on 16 Sep 11:53 am CDT

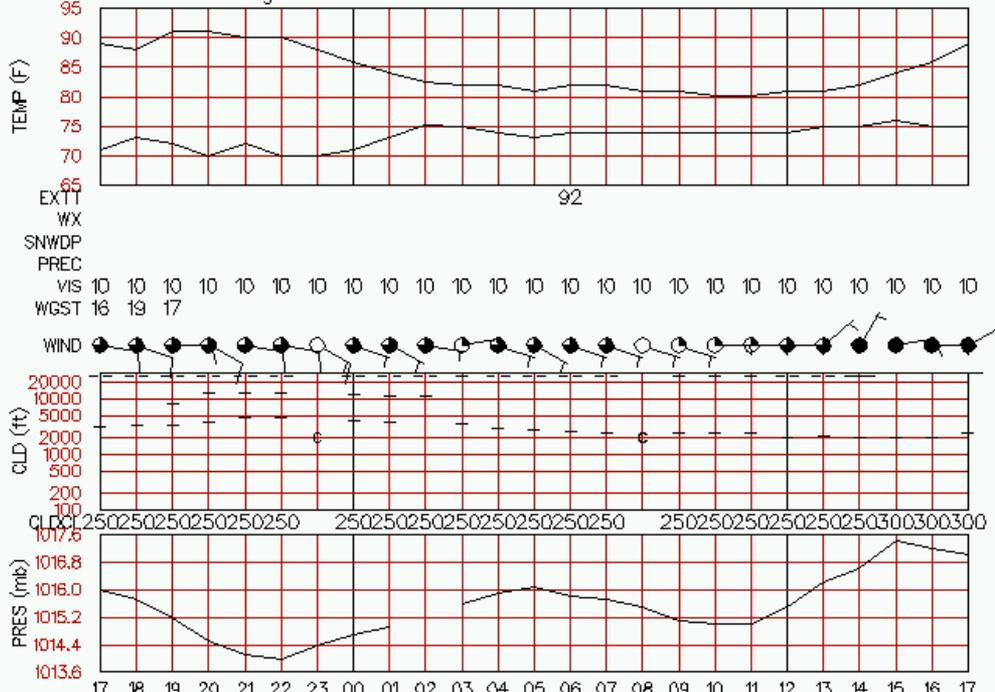
▼ Plymouth State Weather Center ▼

Meteogram for KCXO from 1700Z 15 SEP 13 to 1700Z 16 SEP 13



▼ Plymouth State Weather Center ▼

Meteogram for KHOU from 1700Z 15 SEP 13 to 1700Z 16 SEP 13



Current Conditions

Galveston:



Partly Cloudy

86°F

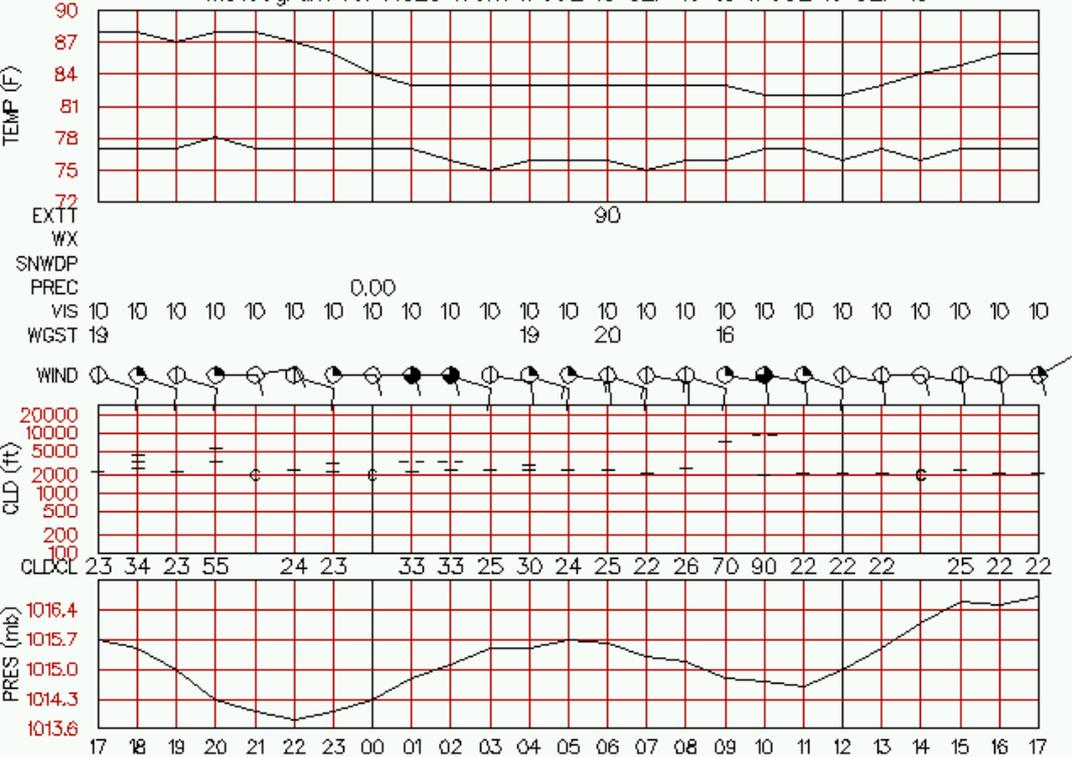
30°C

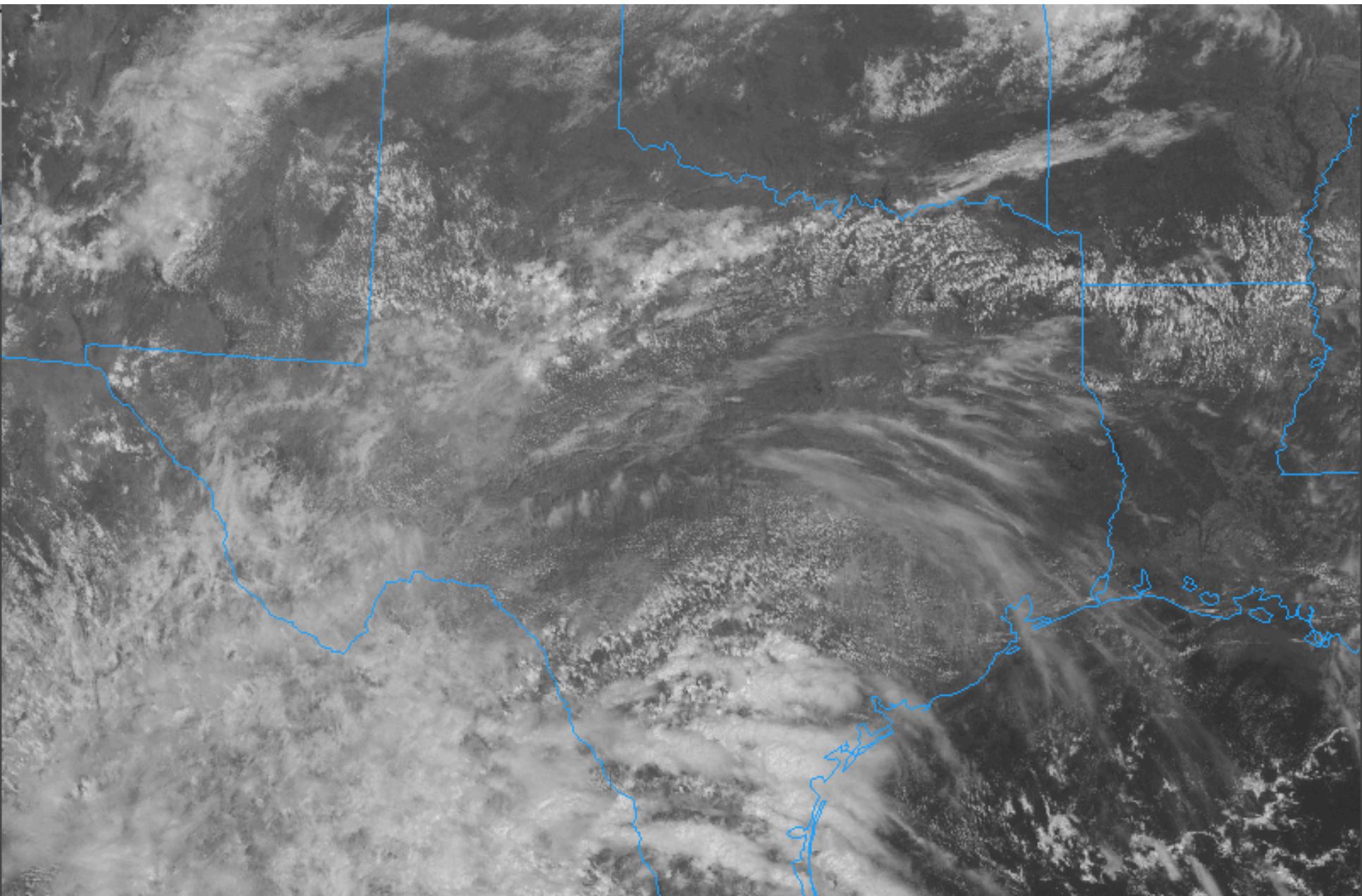
Humidity 75%
Wind Speed NE 12 mph
Barometer 30.03 in (1016.7 mb)
Dewpoint 77°F (25°C)
Visibility 10.00 mi
Heat Index 97°F (36°C)

Last Update on 16 Sep 11:52 am CDT

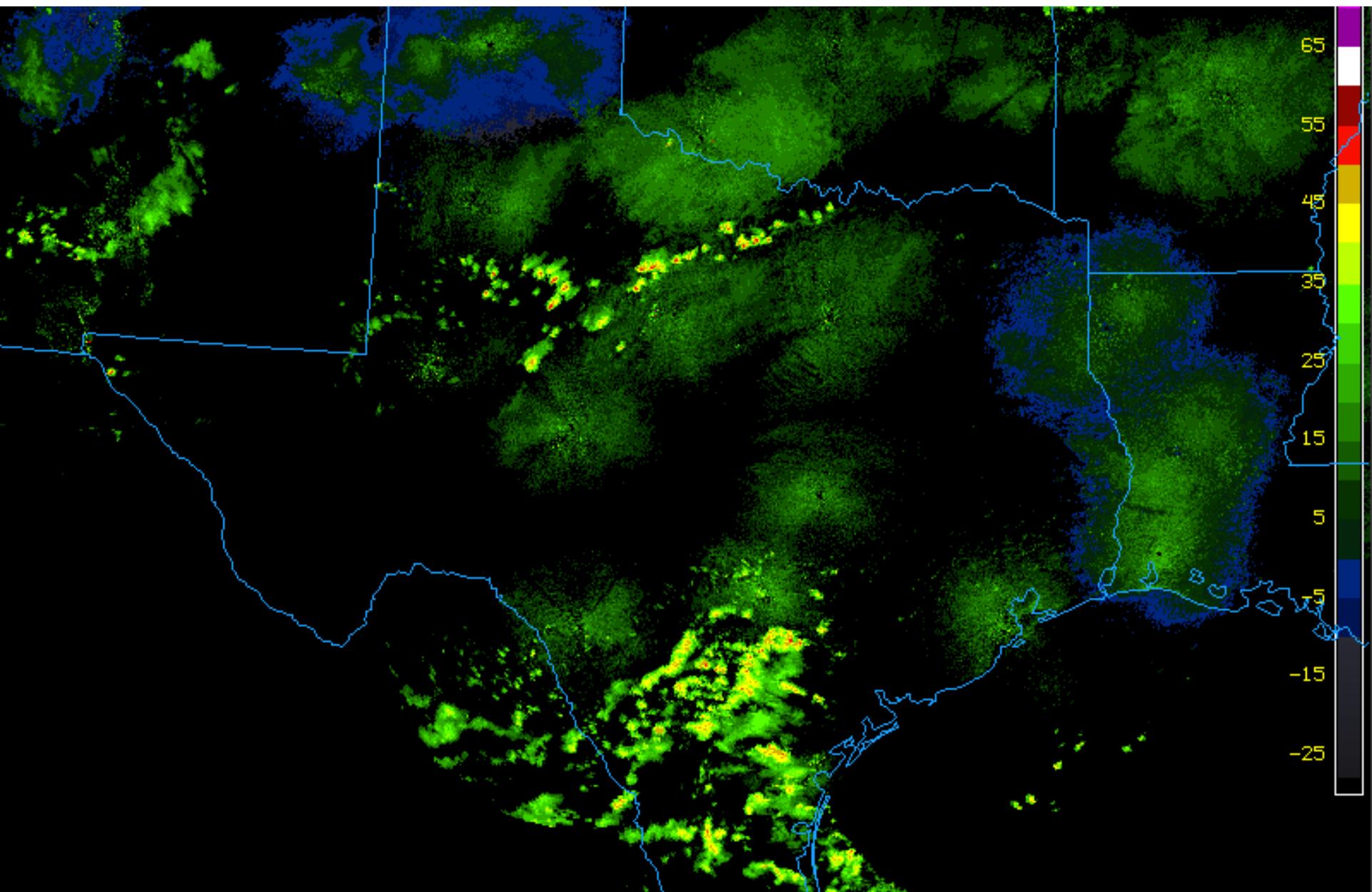
▼ Plymouth State Weather Center ▼

Meteogram for KGLS from 1700Z 15 SEP 13 to 1700Z 16 SEP 13





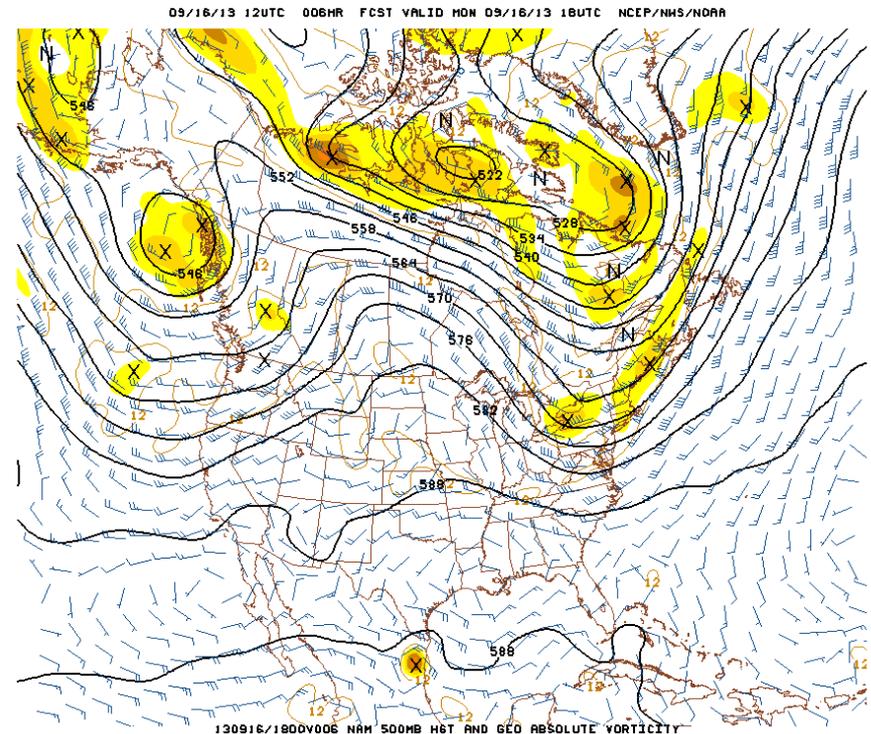
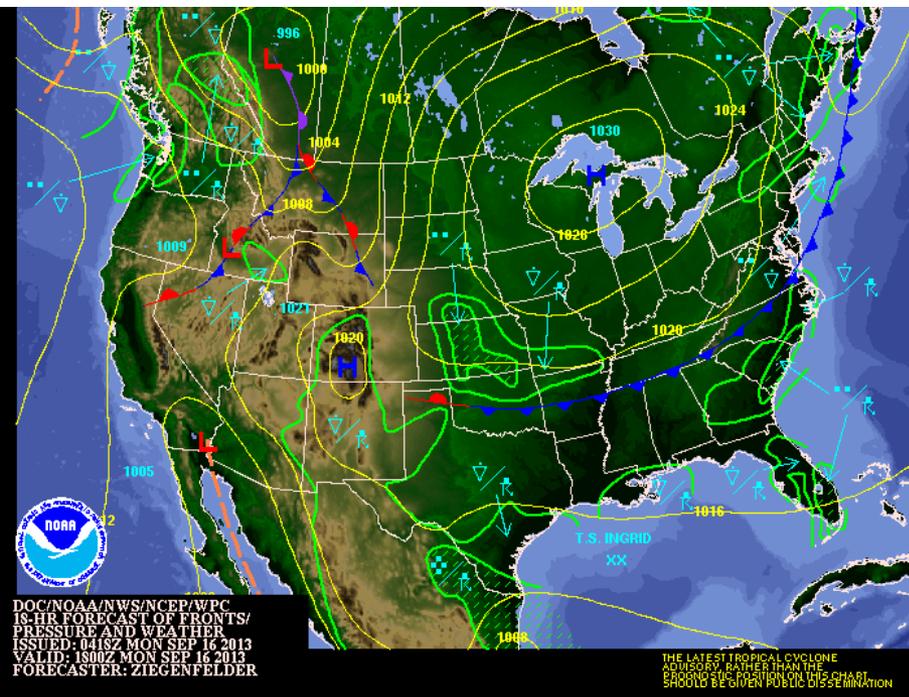
GOES VISIBLE SATELLITE 16 SEP 13 17:15



NEXRAD 1KM MOSAIC 16 SEP 13 17:22

Today: Easterly flow. Region remains under influence of the upper ridge. Moisture will continue to stream into region from Ingrid; will have to fight the subsidence for any convection to occur. Thick cirrus deck likely, as well as lower level clouds.

1 PM CDT
500 mb vorticity



10 m winds at 1 PM today

WRF 3-KM
Fest: 12 h

Init: 06 UTC Mon 16 Sep 13
Valid: 18 UTC Mon 16 Sep 13 (13 CDT Mon 16 Sep 13)

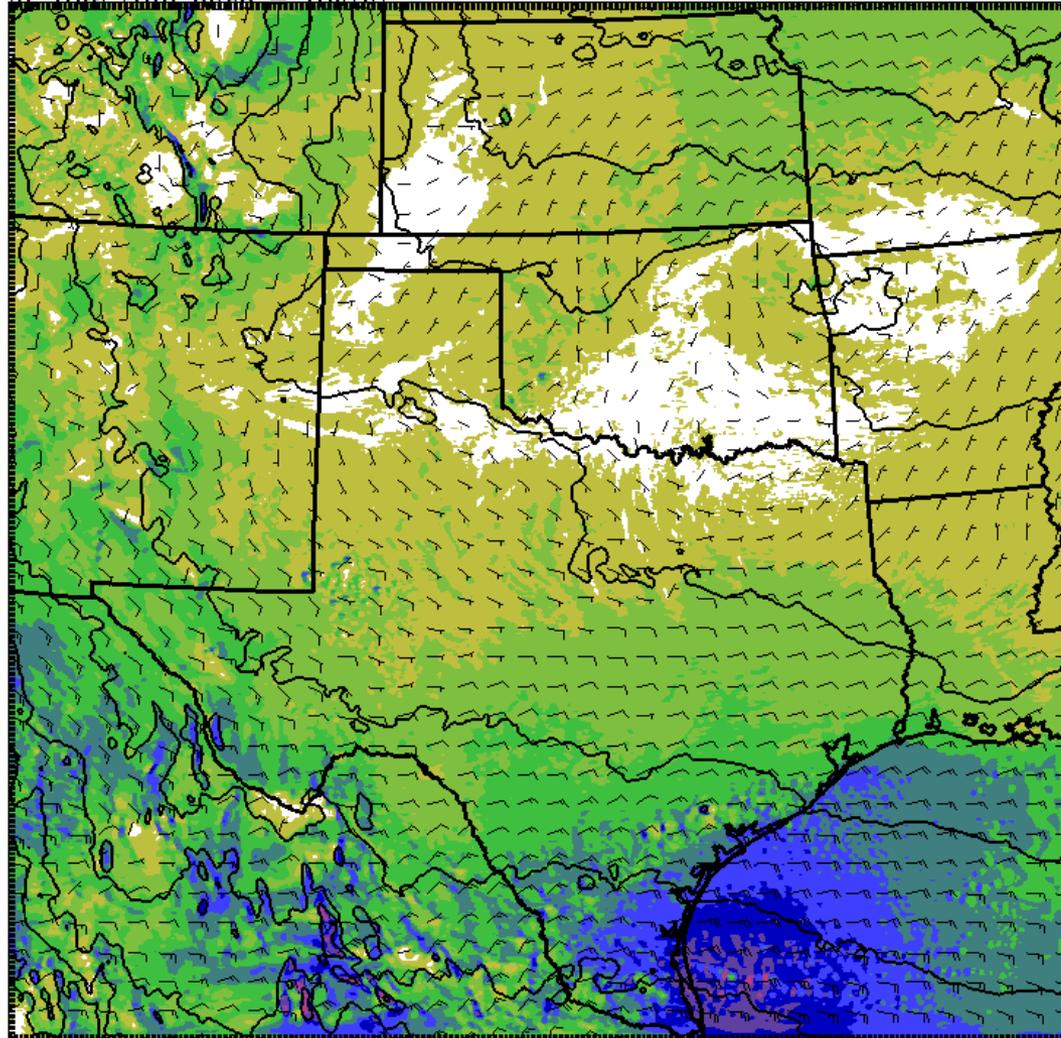
Sigma1 Windspeed (m/s)

Sea Level Pressure (hPa)

Wind at 10m (full barb, 10kts)

100 W

90 W



30 N

CONTOURS: UNITS=hPa LOW= 1008.0 HIGH= 1024.0 INTERVAL= 2.0000

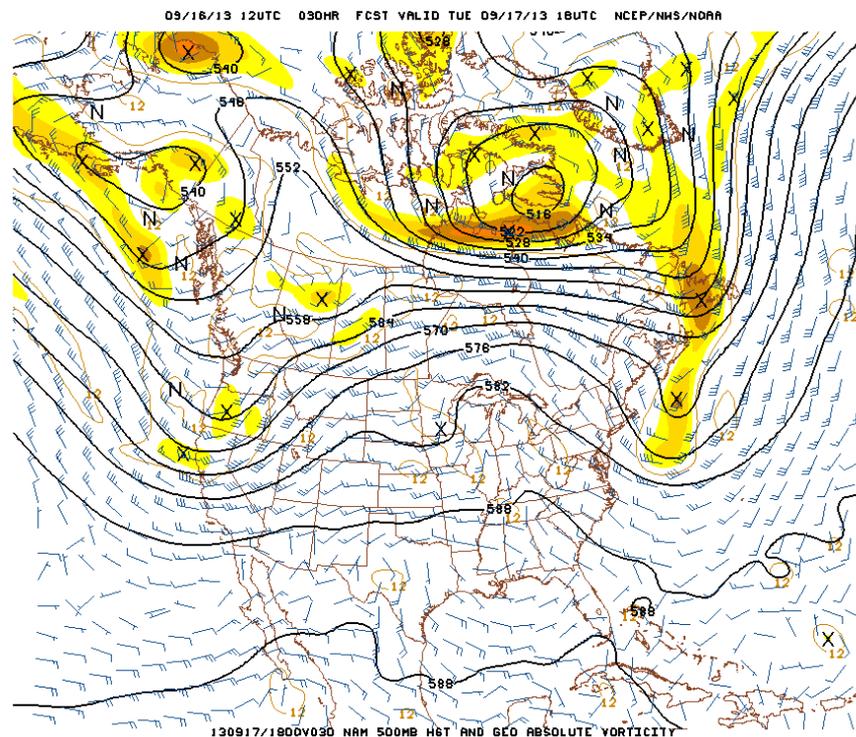
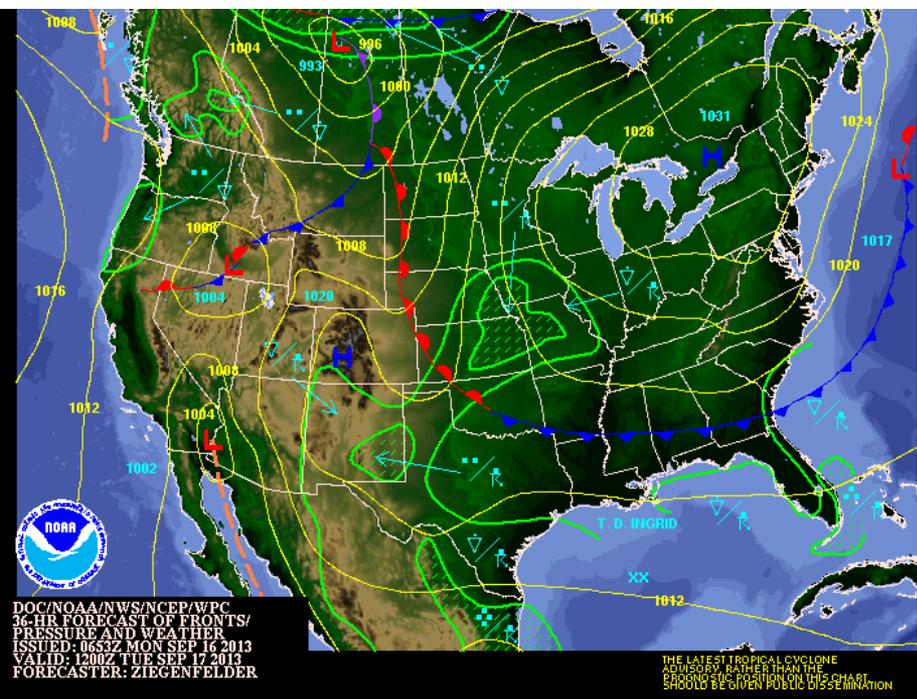
2 4 6 8 10 12 14 16 18 20 m s⁻¹

Model Info: V3.3

No Cu YSU PBL Thompson Noah LSM 3.0 km, 37 levels, 18 sec
LW: RRTM SW: Dudhia DIFF: simple KM: 2D Smagor

Tomorrow: Similar situation to Monday; perhaps less moisture in SE Texas. As TS Ingrid moves SW, the moisture and upper level outflow should also move SW.

1 PM CDT
500 mb vorticity



10 m winds at 1 PM tomorrow

WRF 3-KM
Fcst: 36 h

Init: 06 UTC Mon 16 Sep 13

Valid: 18 UTC Tue 17 Sep 13 (13 CDT Tue 17 Sep 13)

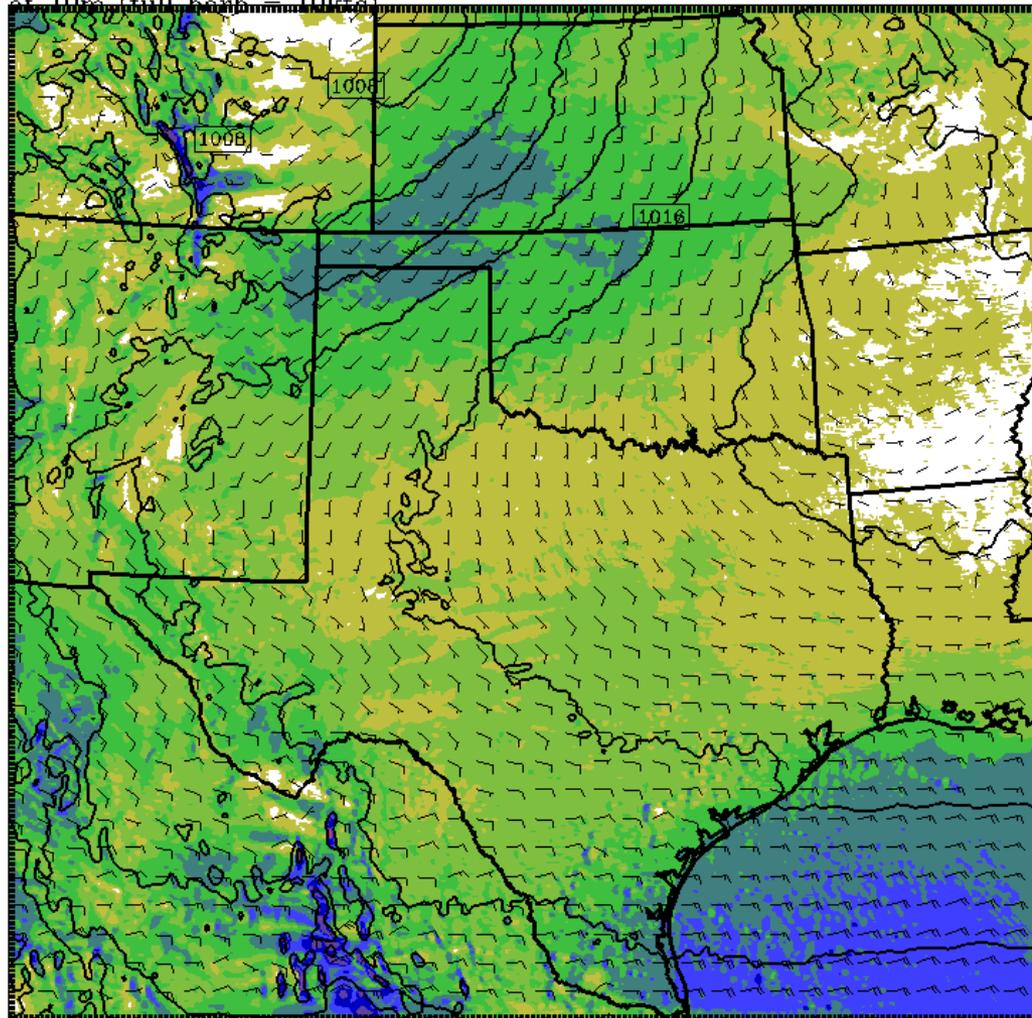
Sigma1 Windspeed (m/s)

Sea Level Pressure (hPa)

Wind at 10m (full barb = 10kts)

100 W

90 W



30 N

CONTOURS: UNITS=hPa LOW= 1008.0 HIGH= 1020.0 INTERVAL= 2.0000



Model Info: V3.3 No Cu YSU PBL Thompson Noah LSM 3.0 km, 37 levels, 18 sec
LW: RRTM SW: Dudhia DIFF: simple KM: 2D Smagor

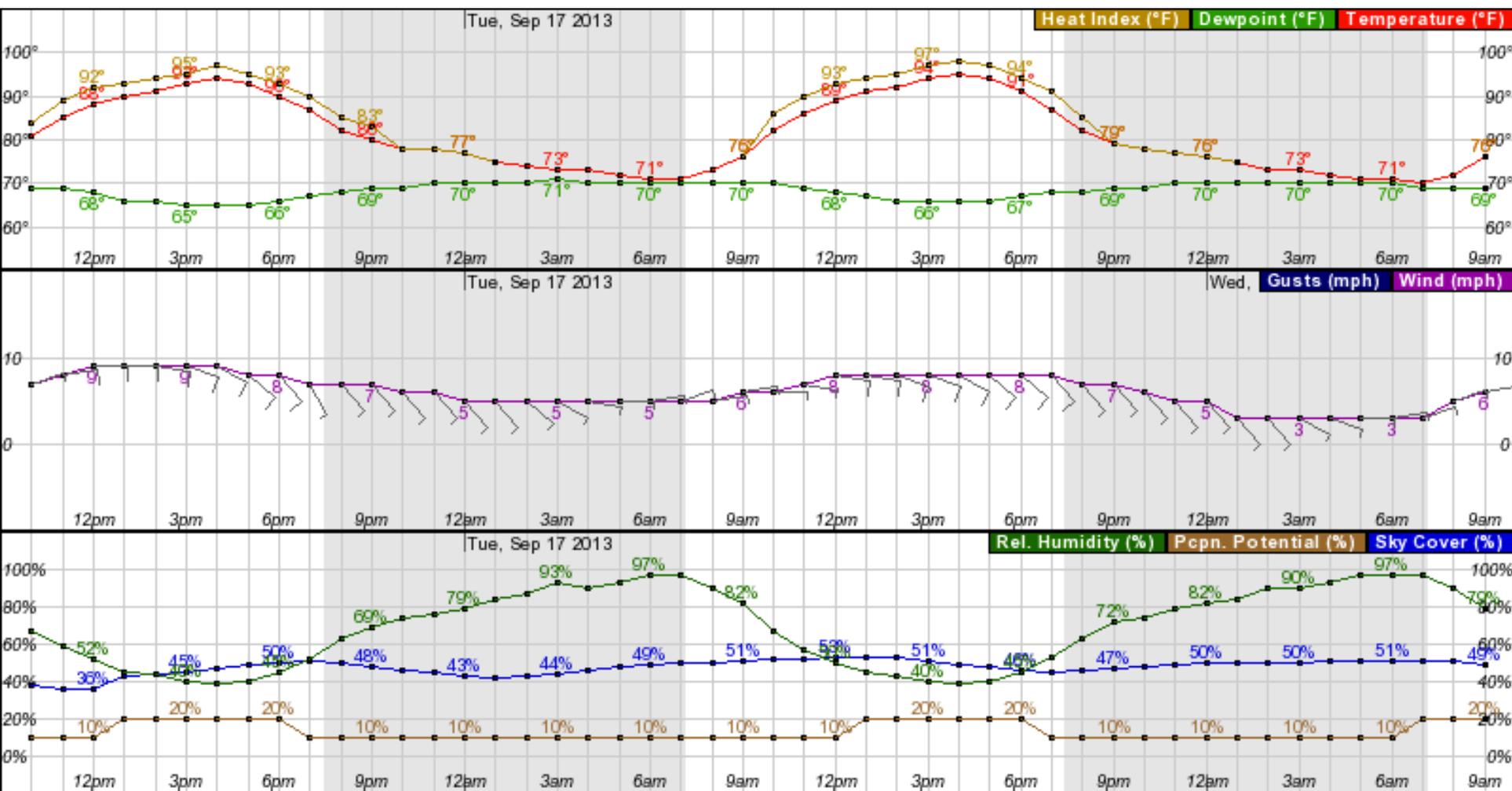
Conroe

Today: Partly cloudy

Tomorrow: Partly cloudy

Today →

Tomorrow →



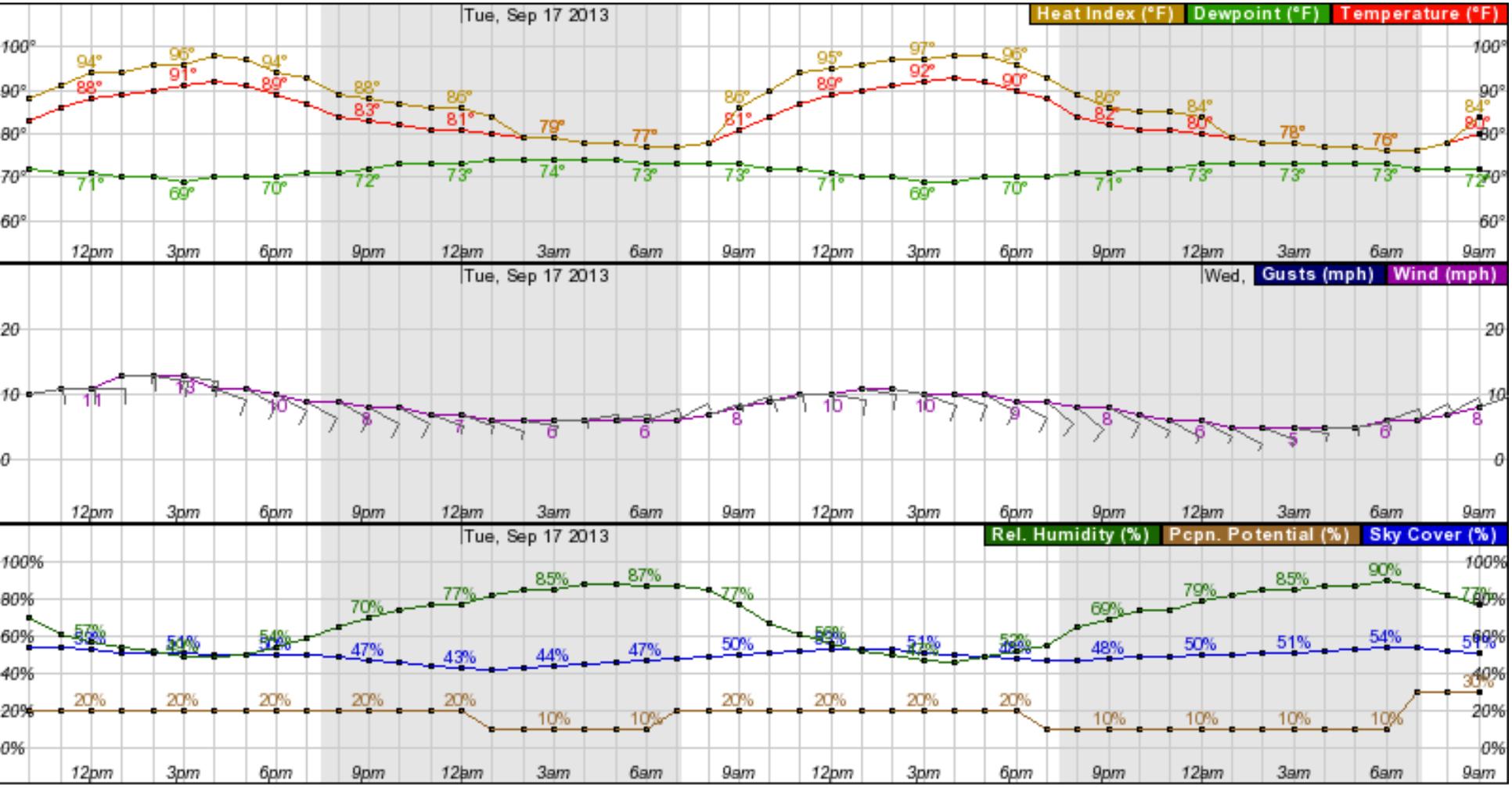
Houston Hobby

Today: Partly cloudy

Tomorrow: Partly cloudy

Today →

Tomorrow →



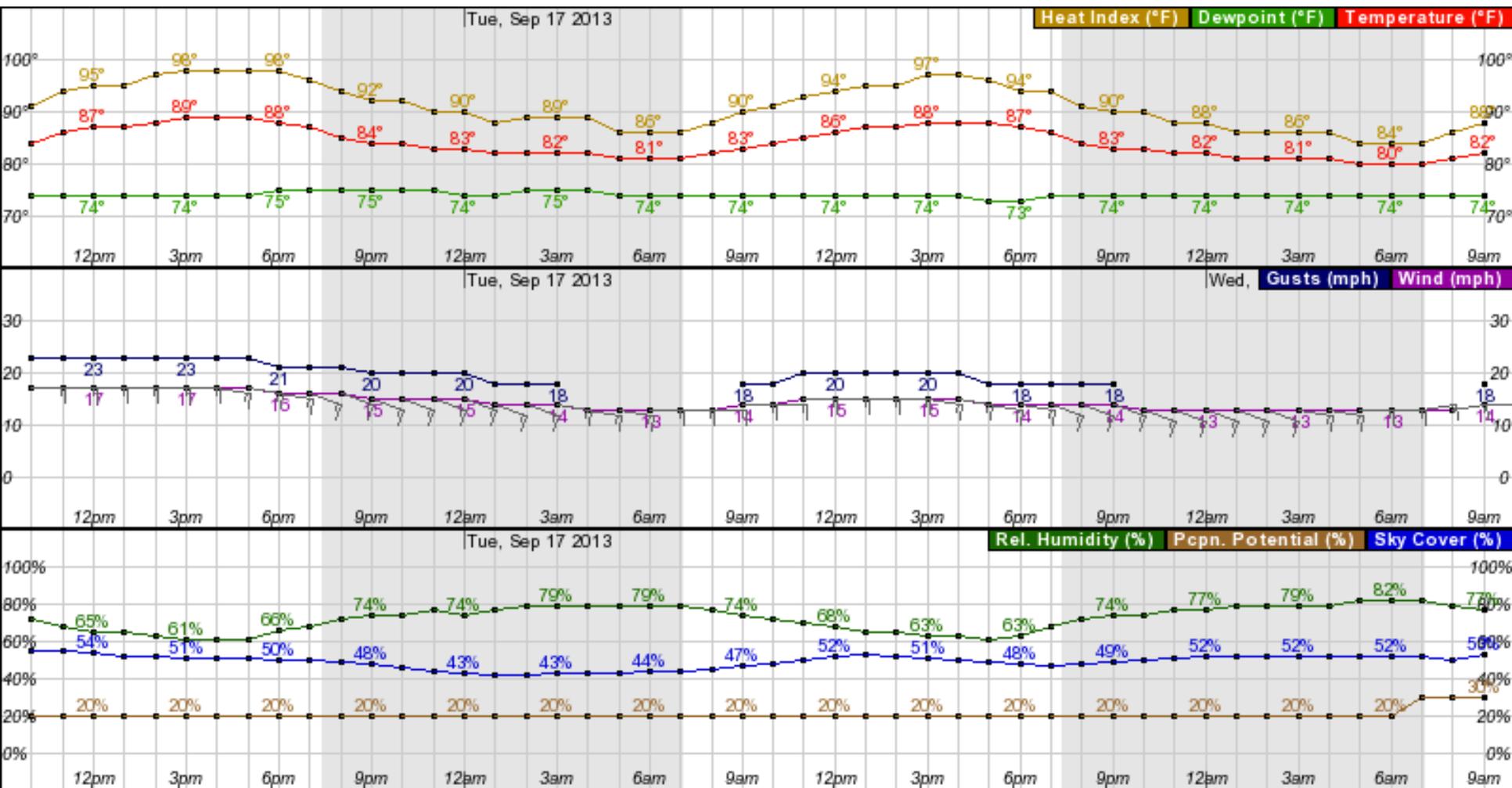
Galveston

Today: Partly cloudy

Tomorrow: Partly cloudy

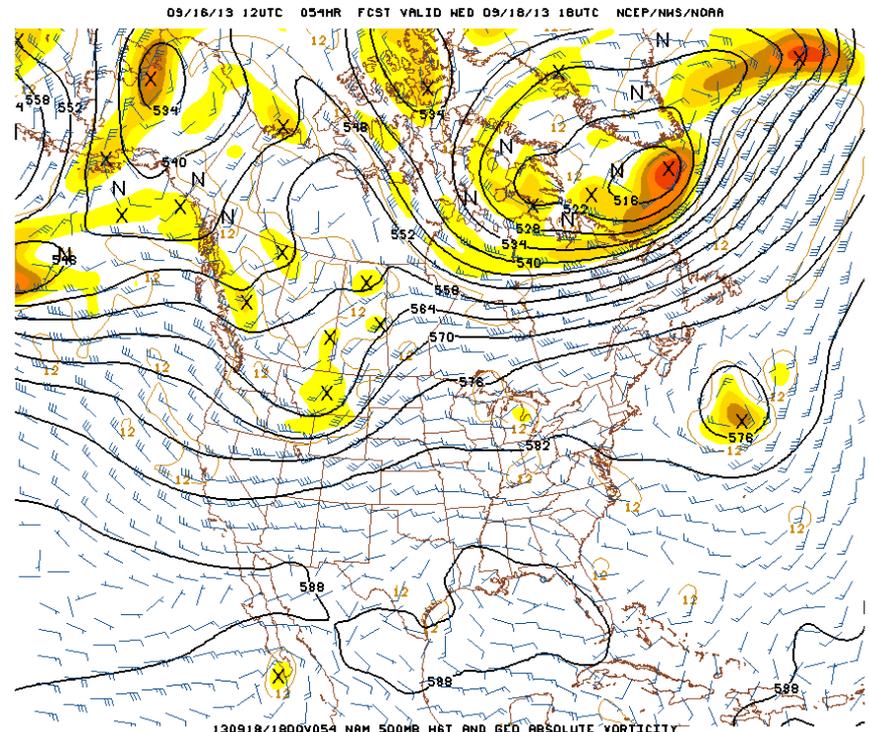
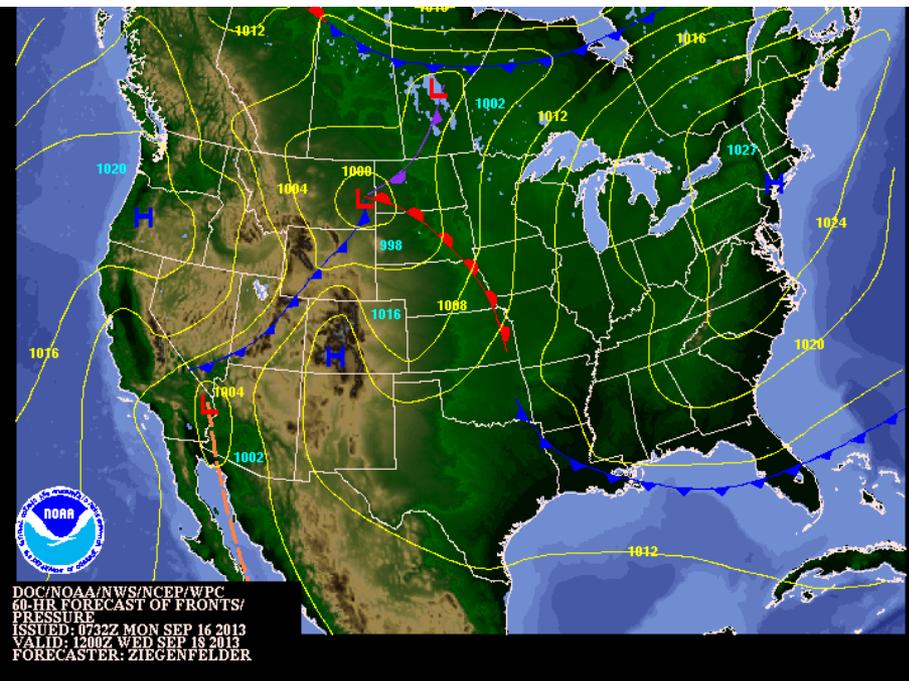
Today →

Tomorrow →



Wednesday: Upper ridge weakens and moves E as an upper trough builds over the continental US. Cold front passes to the E of the study region. Easterly flow.

1 PM CDT
500 mb vorticity



10 m winds at 1 PM Wednesday

WRF 3-KM

Fest: 60 h

Sigma1 Windspeed (m/s)

Sea Level Pressure (hPa)

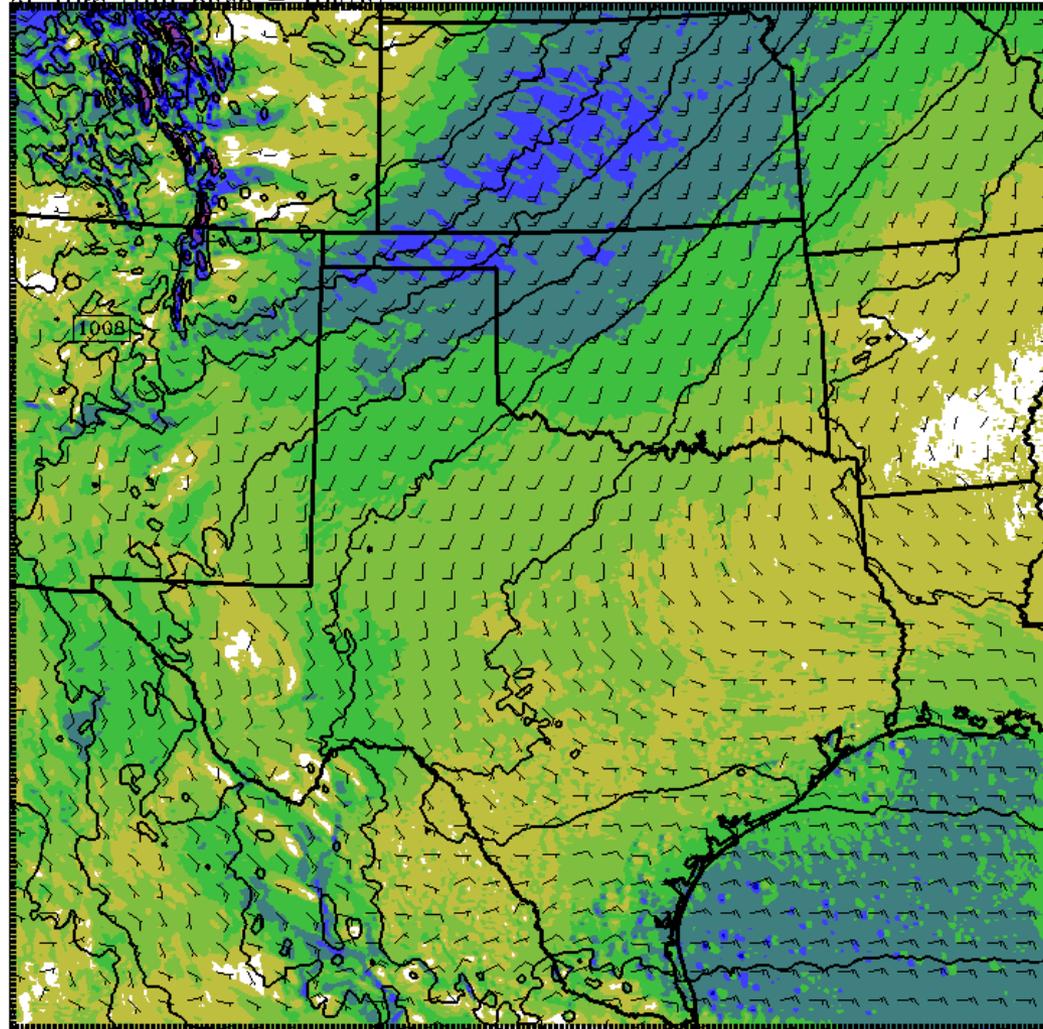
Wind at 10m (full barb = 10kts)

Valid: 18 UTC Wed 18 Sep 13 (13 CDT Wed 18 Sep 13)

Init: 06 UTC Mon 16 Sep 13

100 W

90 W



30 N

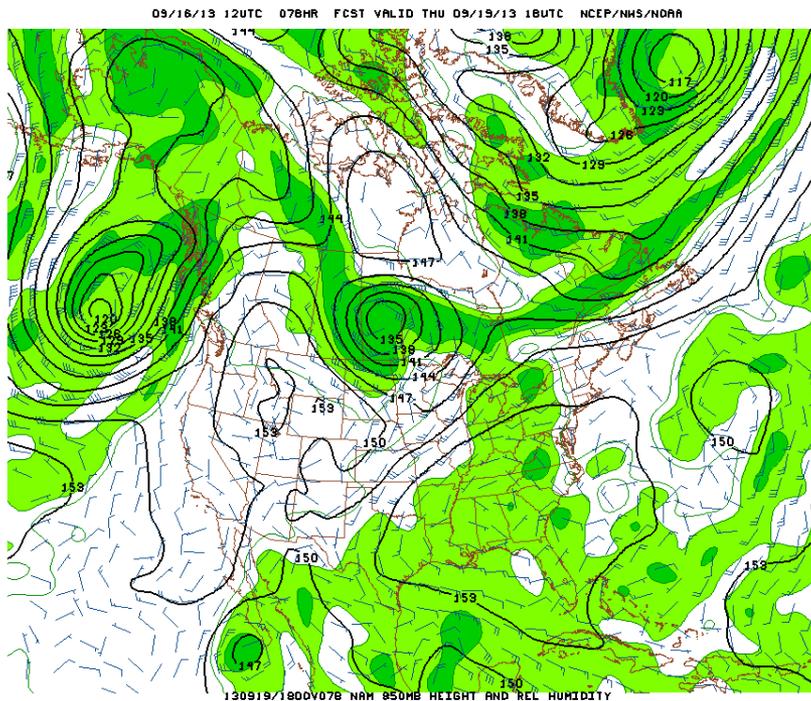
CONTOURS: UNITS=hPa LOW= 1000.0 HIGH= 1016.0 INTERVAL= 2.0000



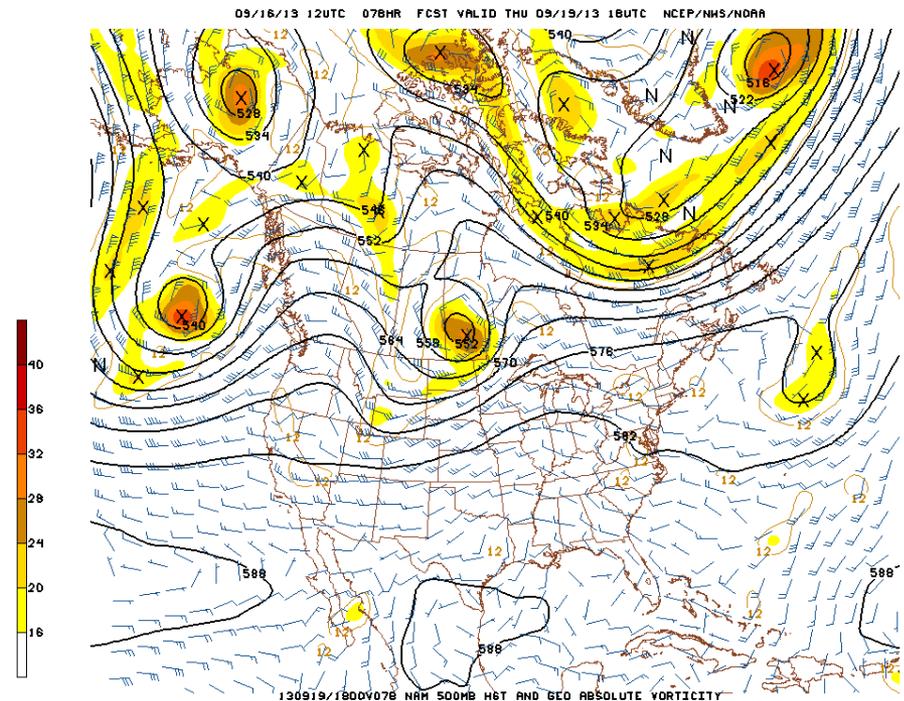
Model Info: V3.3 No Cu YSU PBL Thompson Noah LSM 3.0 km, 37 levels, 18 sec
LW: RRTM SW: Dudhia DIFF: simple KM: 2D Smagor

Thursday: Upper trough continues to dominate the region. Moisture inflow from the Gulf combined with instability associated with the trough will make conditions favorable for clouds and precipitation.

1 PM CDT
850 mb RH



500 mb vorticity



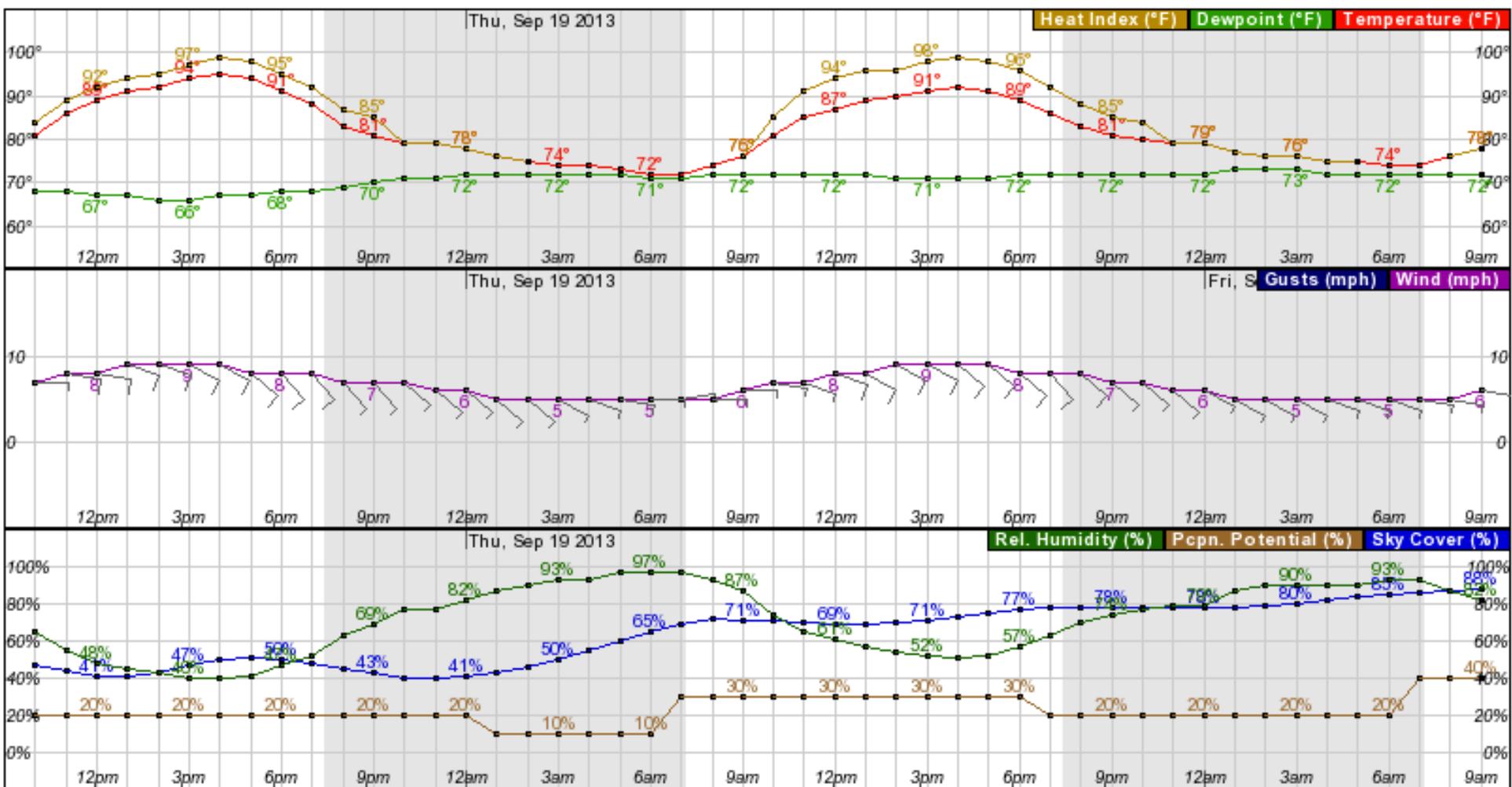
Conroe

Wednesday: Partly cloudy

Thursday: Mostly cloudy

Wednesday →

Thursday →



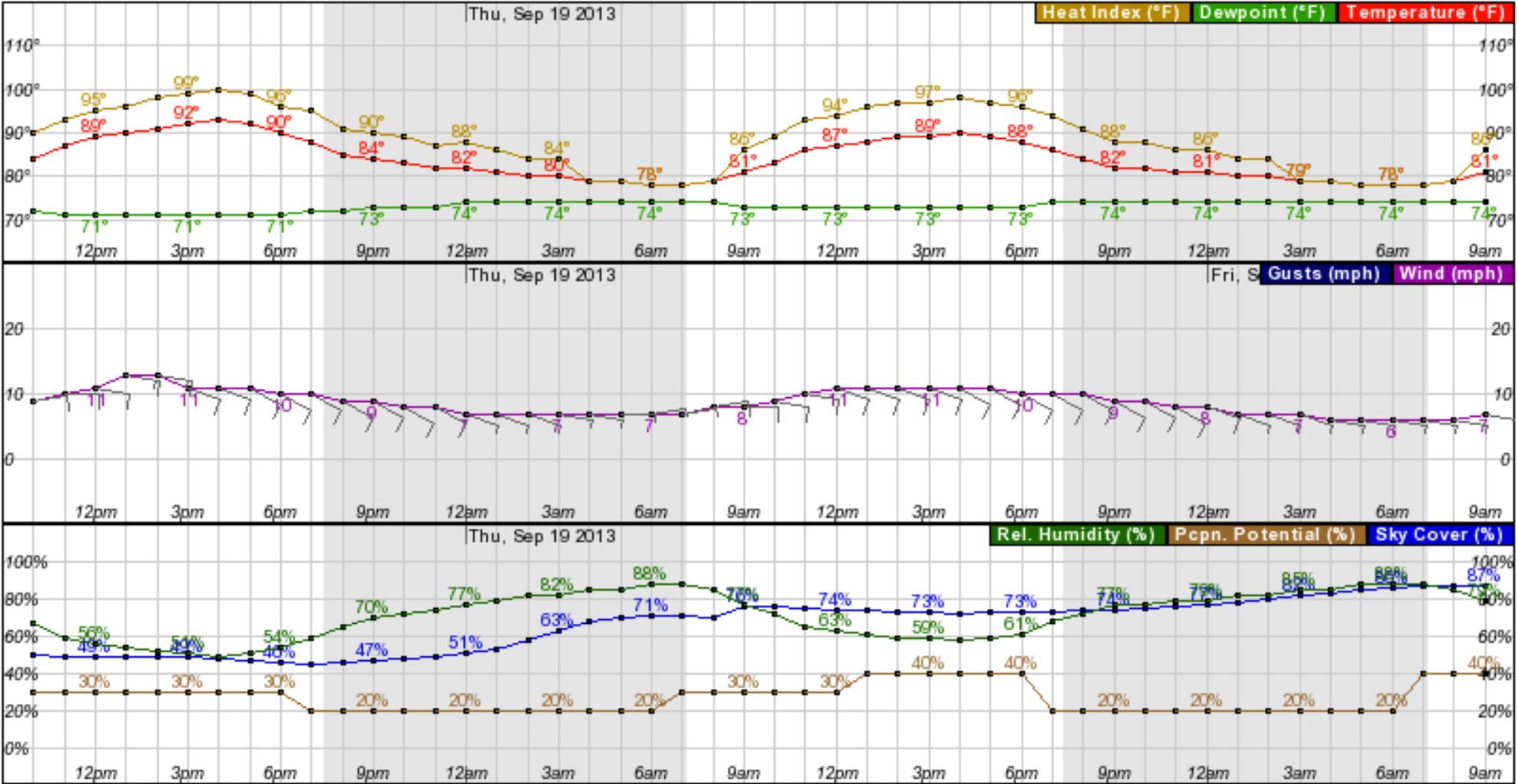
Houston Hobby

Wednesday: Partly cloudy

Thursday: Mostly cloudy

Wednesday →

Thursday →



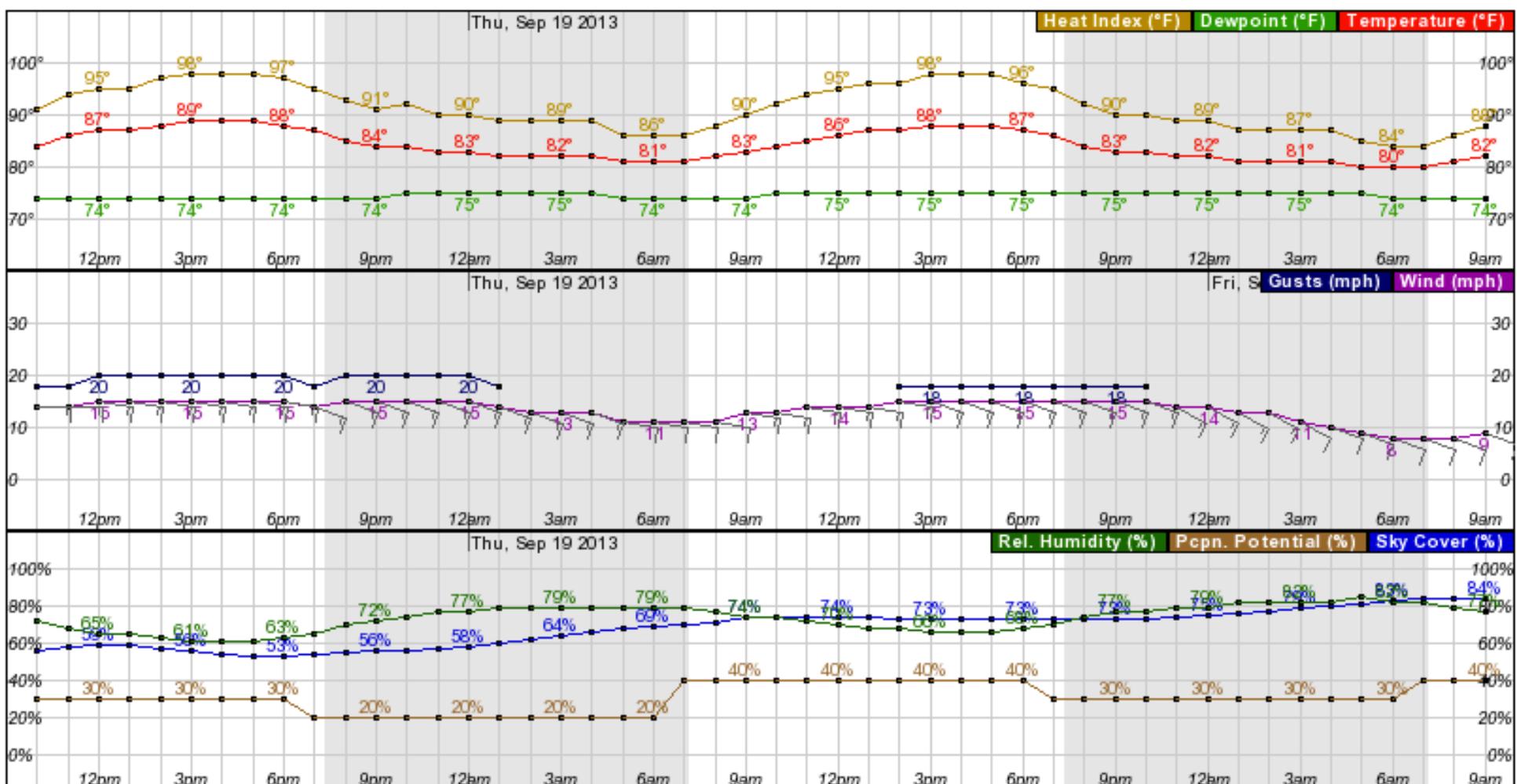
Galveston

Wednesday: Partly cloudy

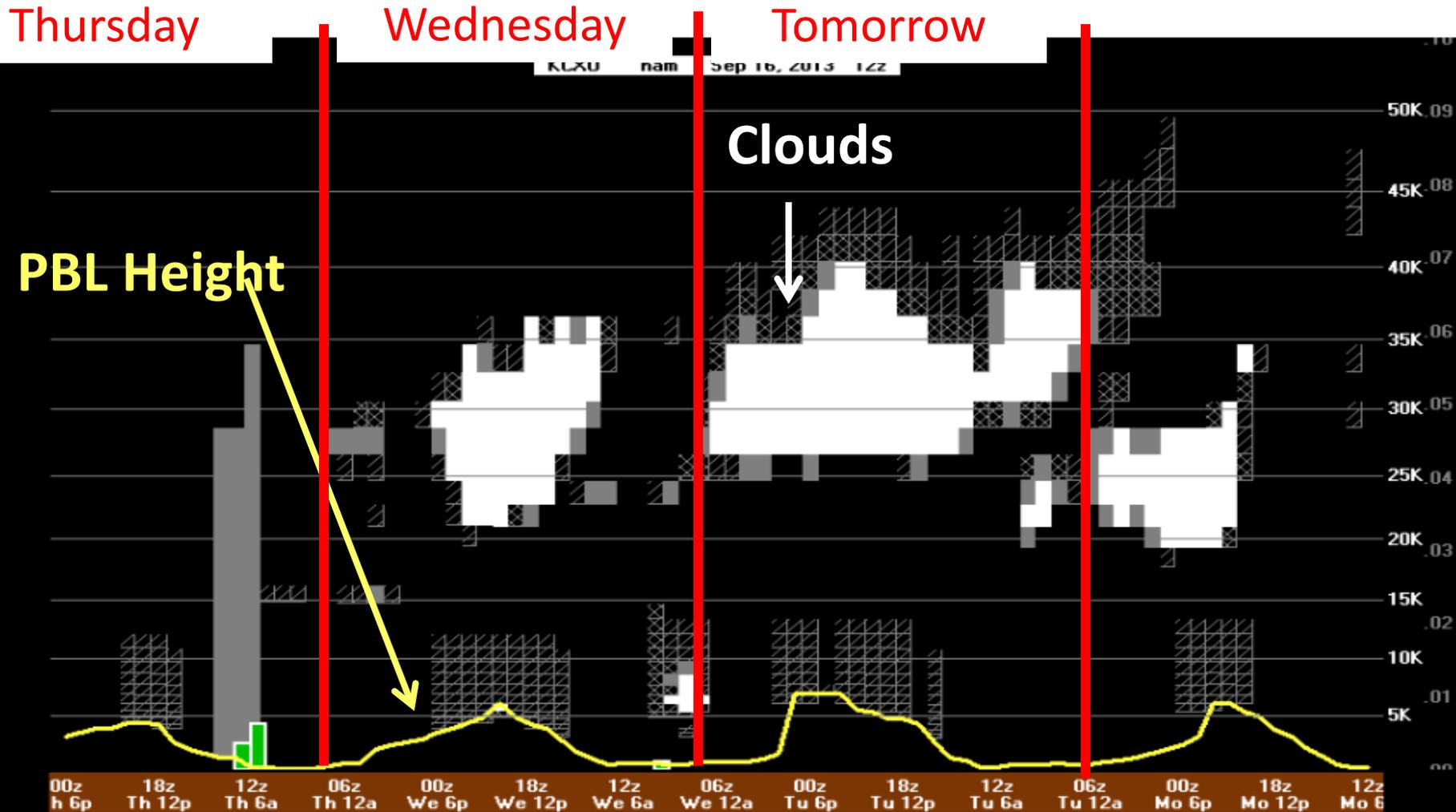
Thursday: Mostly cloudy

Wednesday →

Thursday →

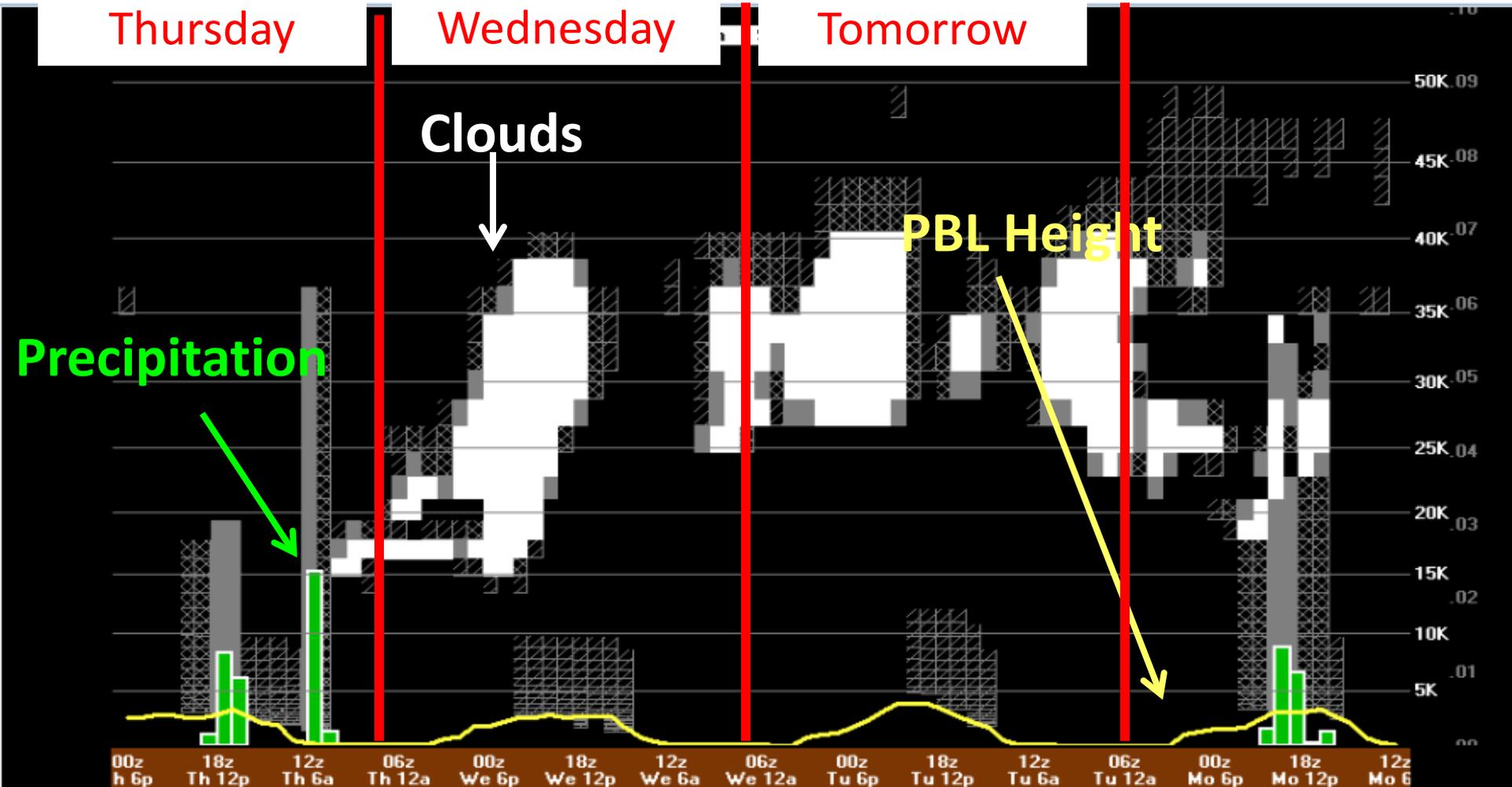


Conroe; BUFKIT – NAM (12 UTC 10 September)



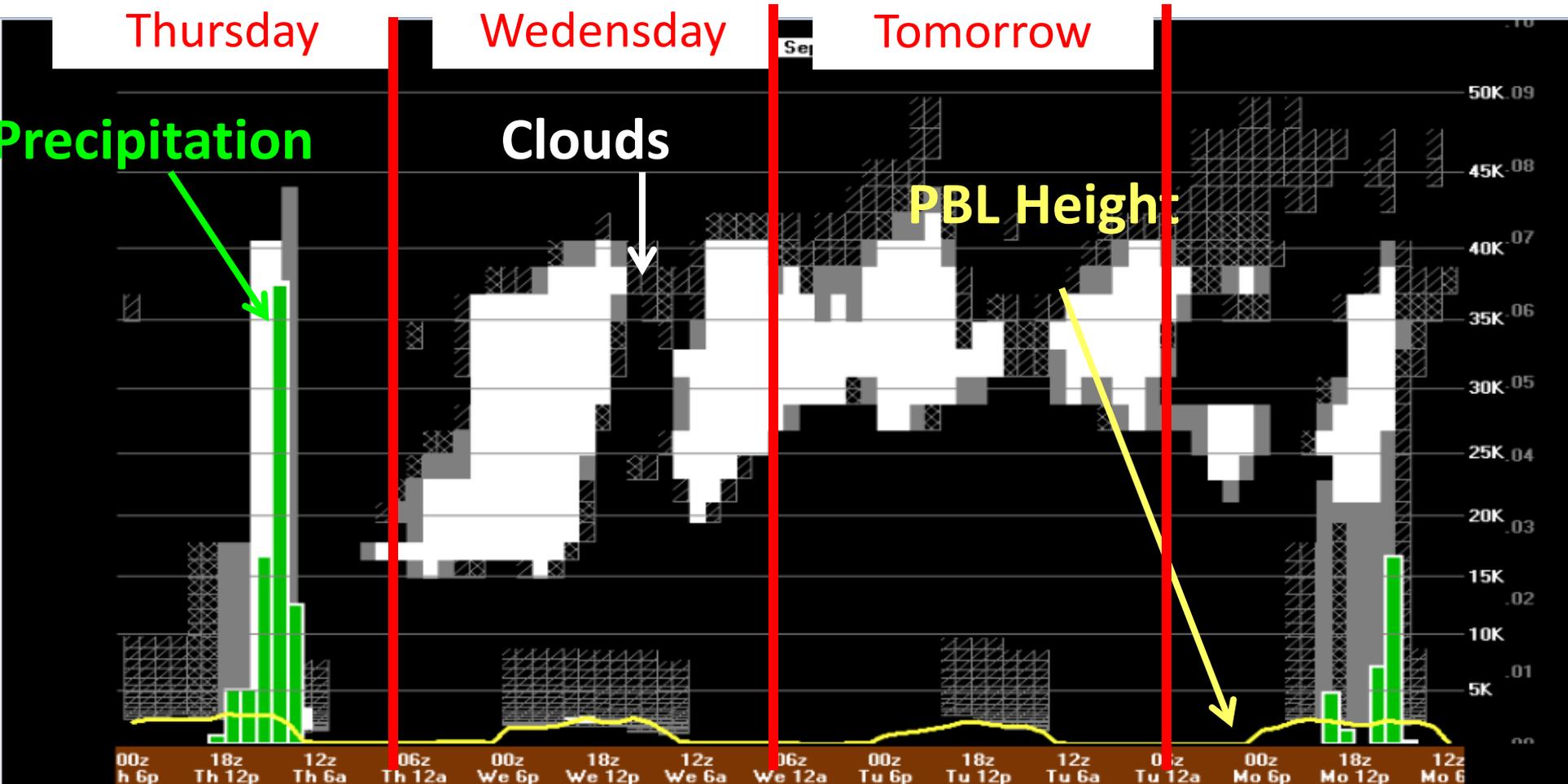
- Tomorrow: Scattered Cu and high cloud.
- Wednesday: Scattered Cu and high cloud
- Thursday: Low clouds and precipitation.

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



- Tomorrow: Scattered Cu and high cloud.
- Wednesday: Scattered Cu and high cloud.
- Thursday: Low clouds and precipitation.

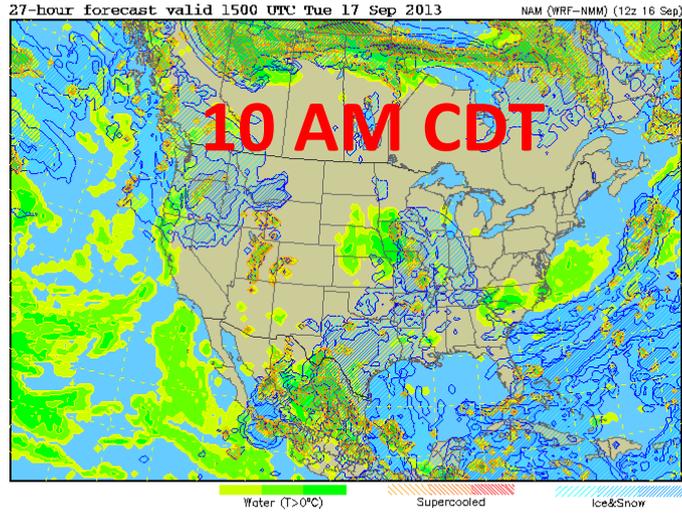
Galveston; BUFKIT – NAM (12 UTC 10 September)



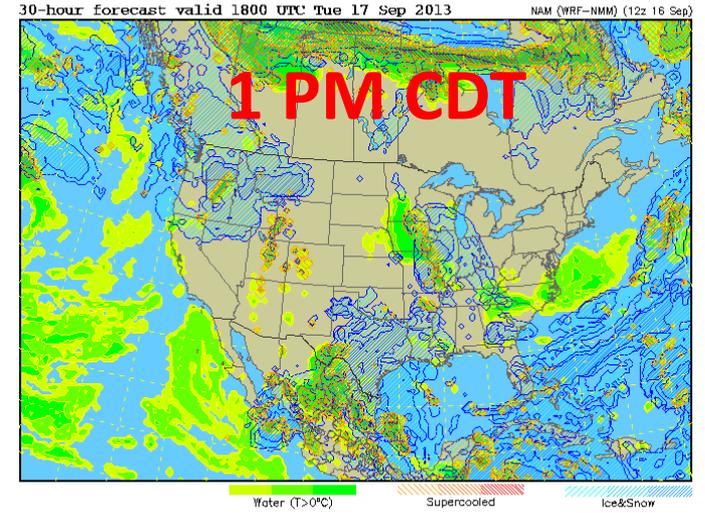
- Tomorrow: Scattered Cu during afternoon; high cloud during afternoon/evening.
- Wednesday: Clouds at low and high levels throughout day.
- Thursday: Low clouds/convective clouds and precipitation.

Tomorrow: NAM – Cirrus all day; some low cloud to west of region.

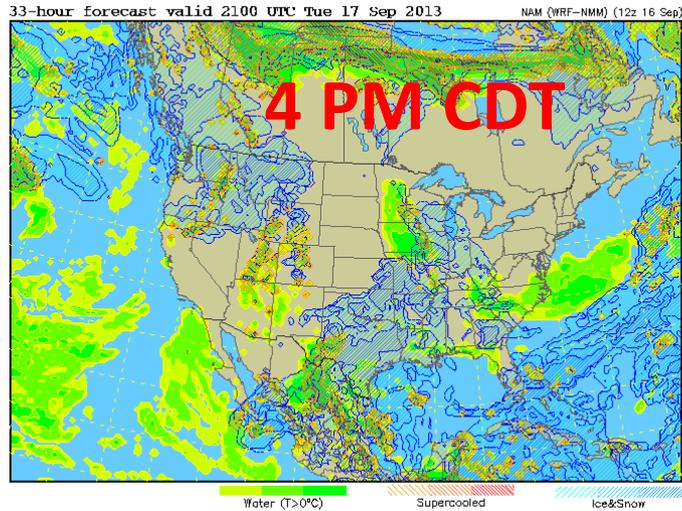
Integrated liquid and frozen hydrometeors (all levels)



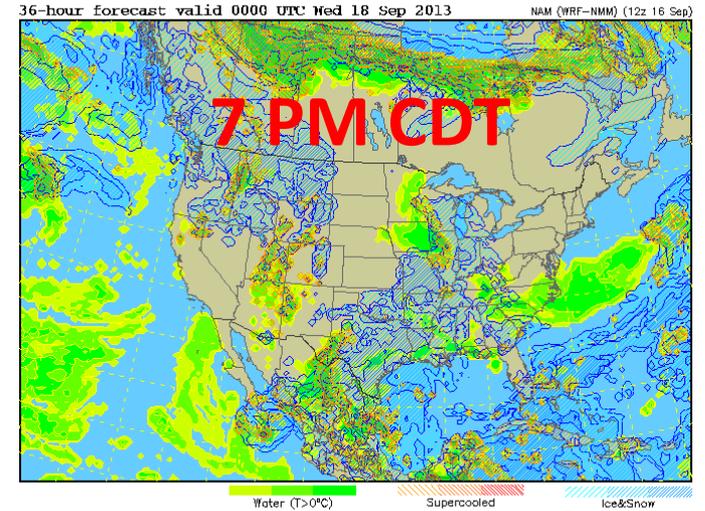
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)

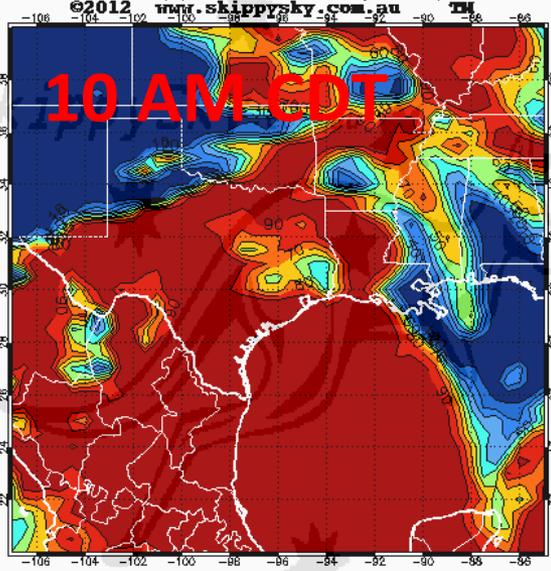


Integrated liquid and frozen hydrometeors (all levels)

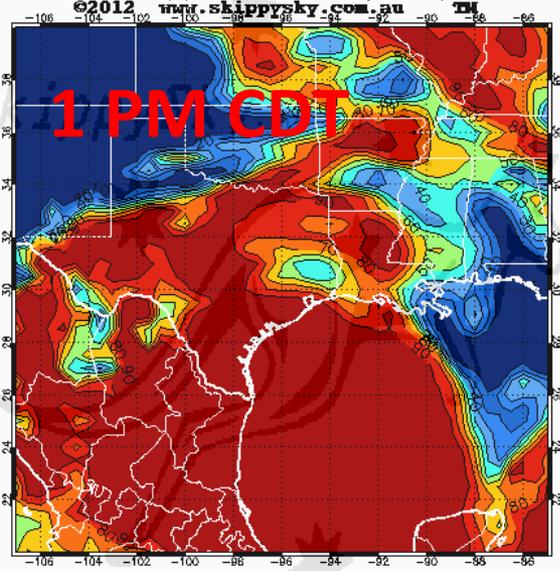


Tomorrow: GFS – Cloudy all day

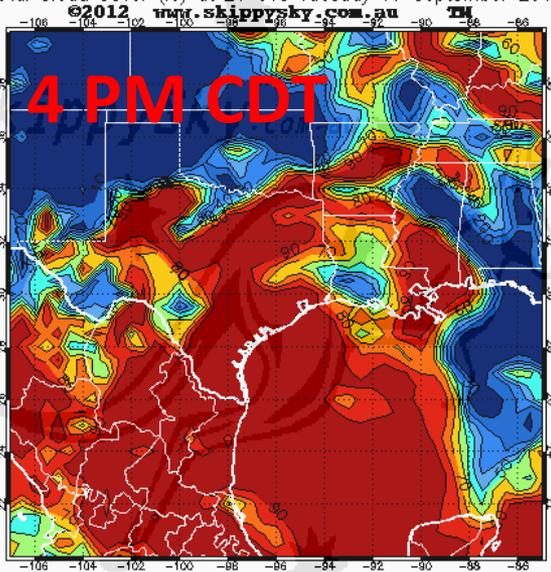
GFS 16 Sep 2013 06 UTC SthCentral USA + 33 hour
Total Cloud Cover (%) at 15 UTC Tuesday 17 September 2013



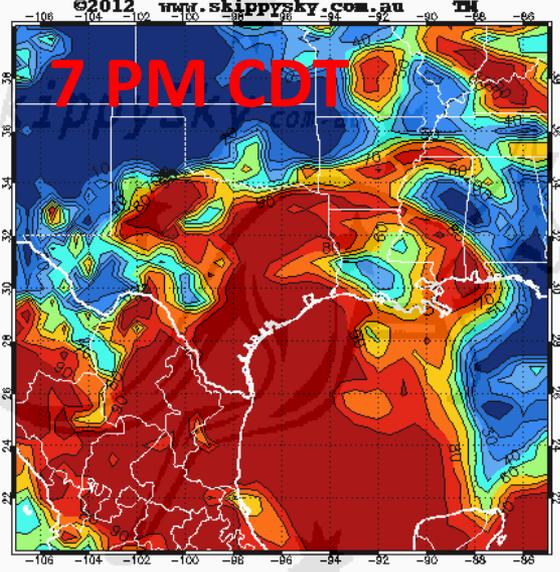
GFS 16 Sep 2013 06 UTC SthCentral USA + 36 hour
Total Cloud Cover (%) at 18 UTC Tuesday 17 September 2013



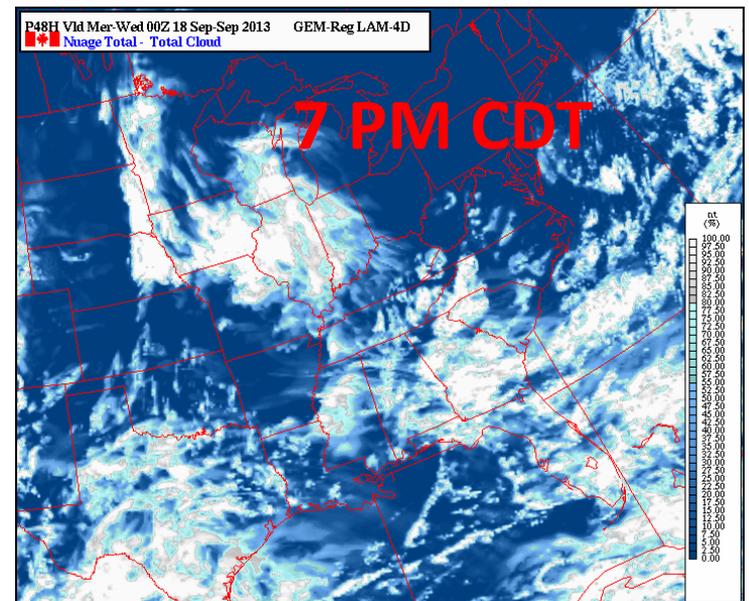
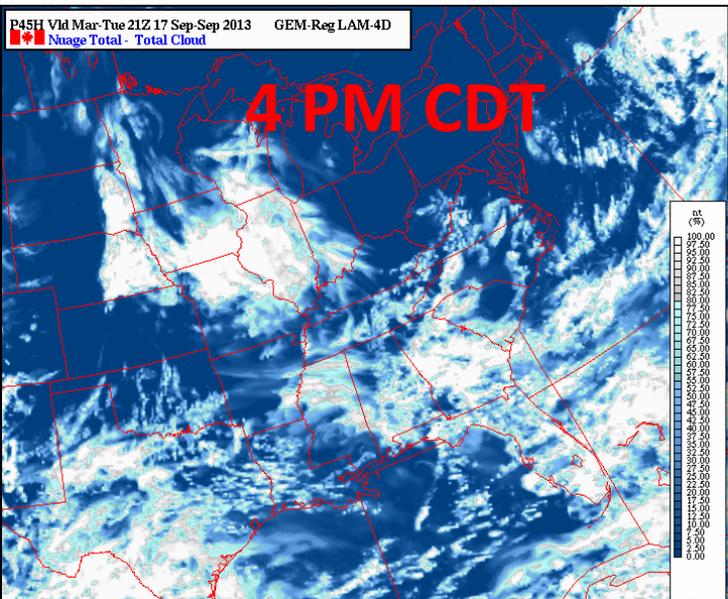
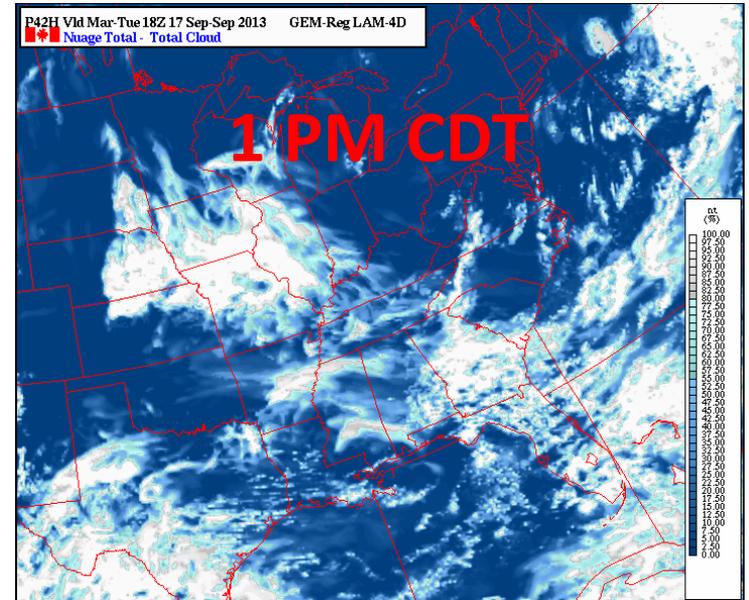
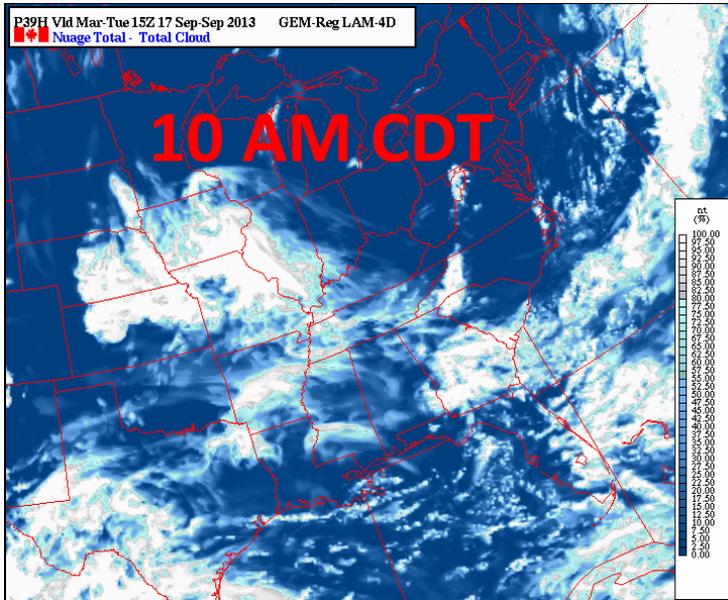
GFS 16 Sep 2013 06 UTC SthCentral USA + 39 hour
Total Cloud Cover (%) at 21 UTC Tuesday 17 September 2013



GFS 16 Sep 2013 06 UTC SthCentral USA + 42 hour
Total Cloud Cover (%) at 00 UTC Wednesday 18 September 2013



Tomorrow: Canadian – Cloudy all day



Tomorrow: GEOS-5 –High clouds all day, some low clouds by afternoon

10 am

1 pm

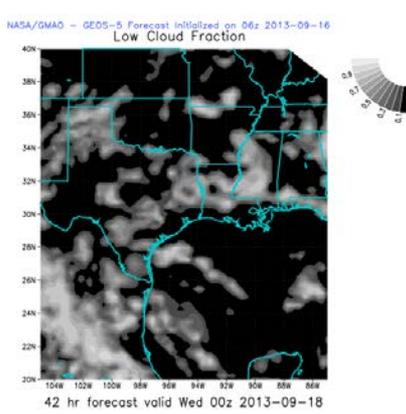
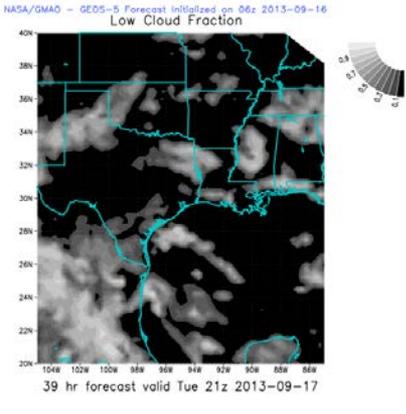
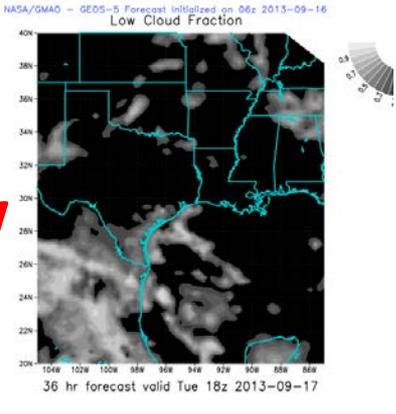
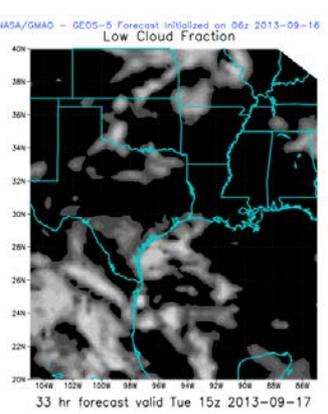
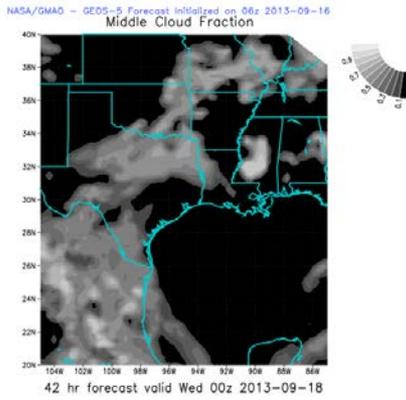
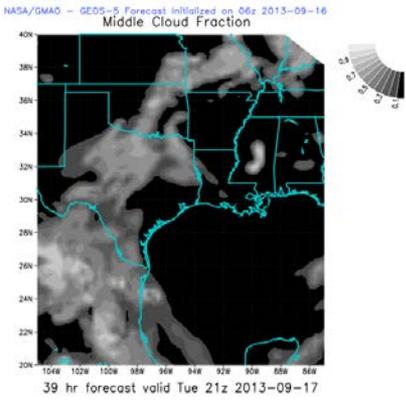
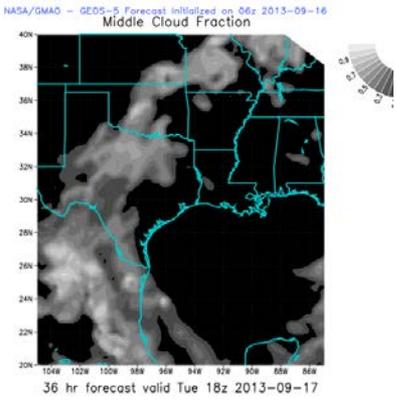
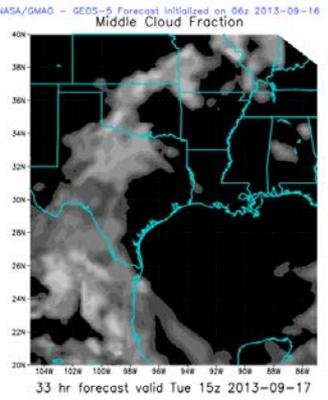
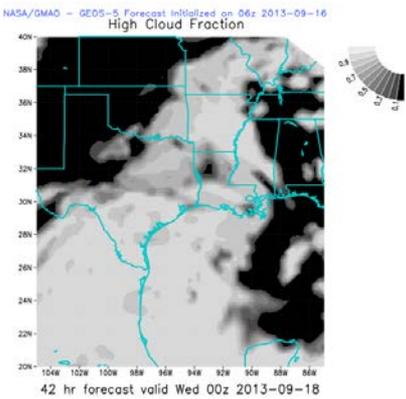
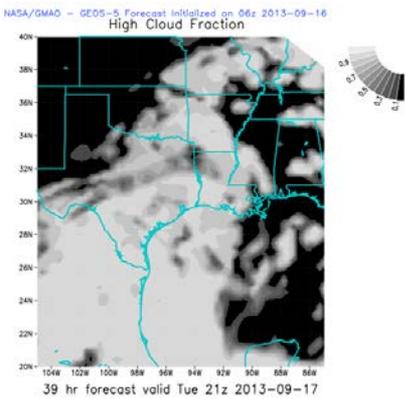
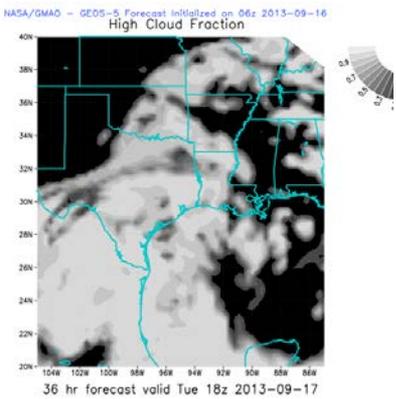
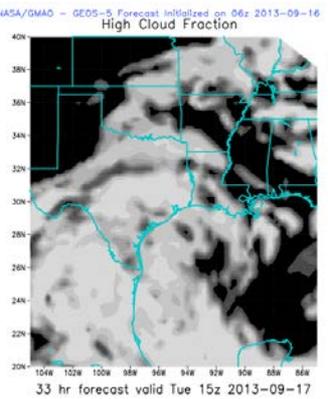
4 pm

7 pm

High

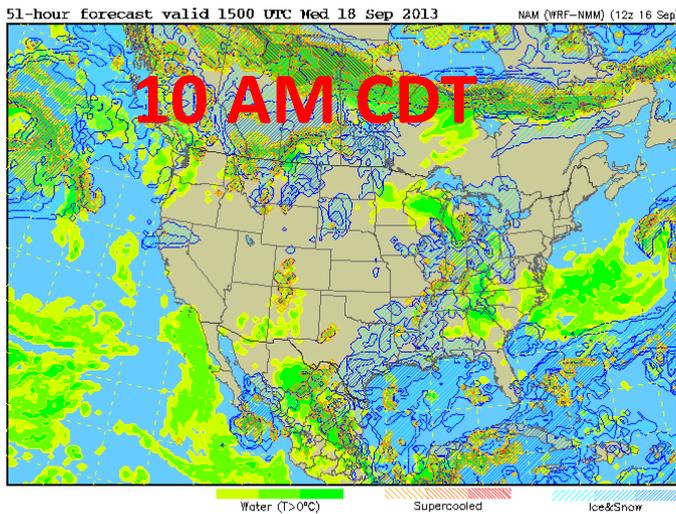
Mid

Low

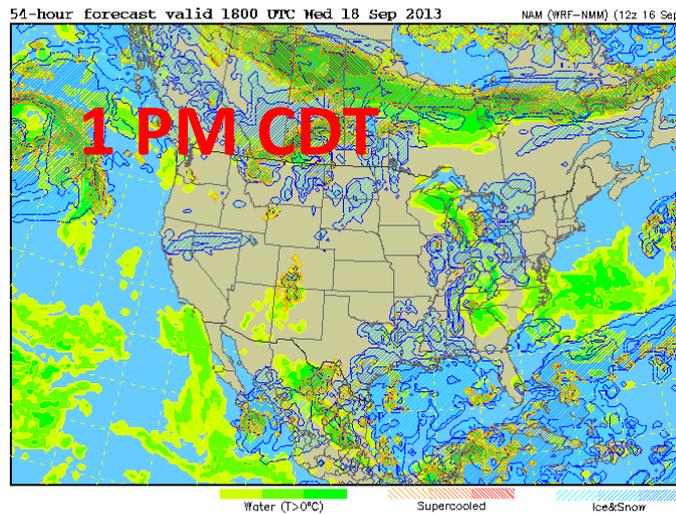


Wednesday: NAM – high level clouds through most of day

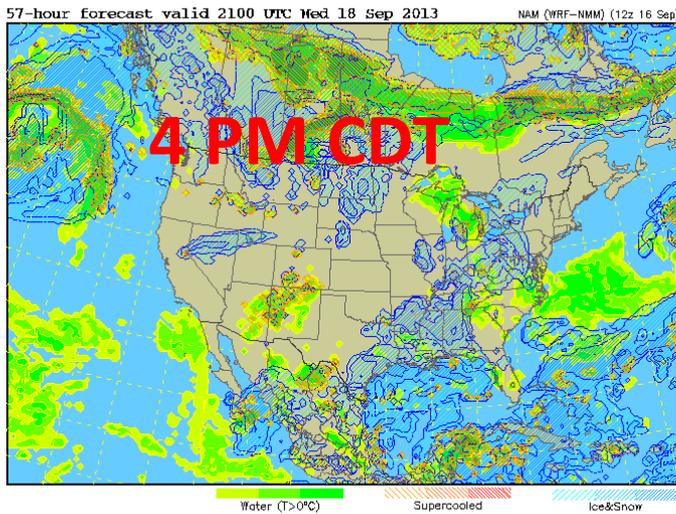
Integrated liquid and frozen hydrometeors (all levels)



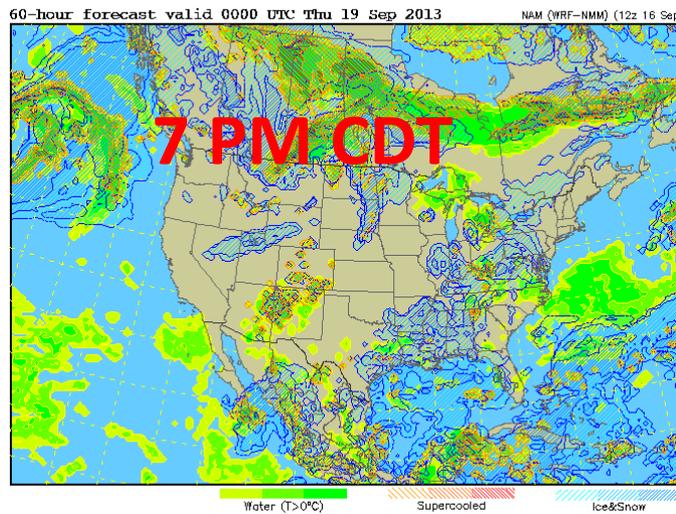
Integrated liquid and frozen hydrometeors (all levels)



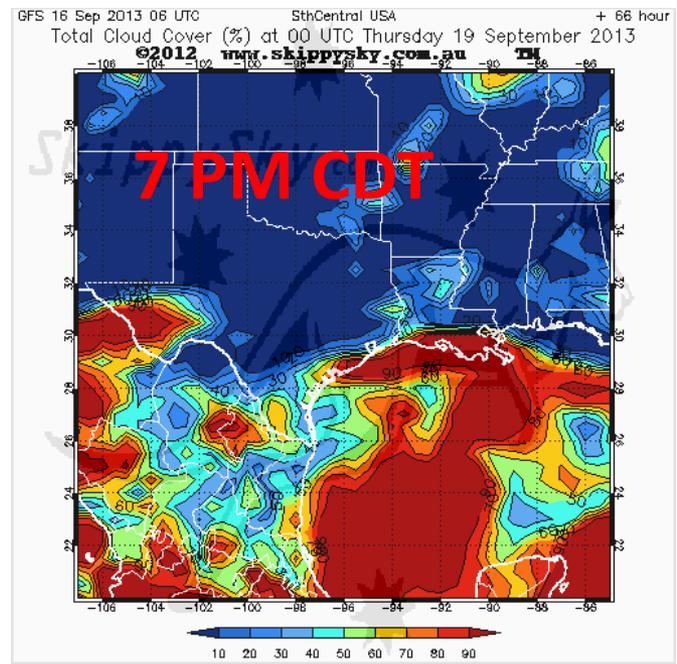
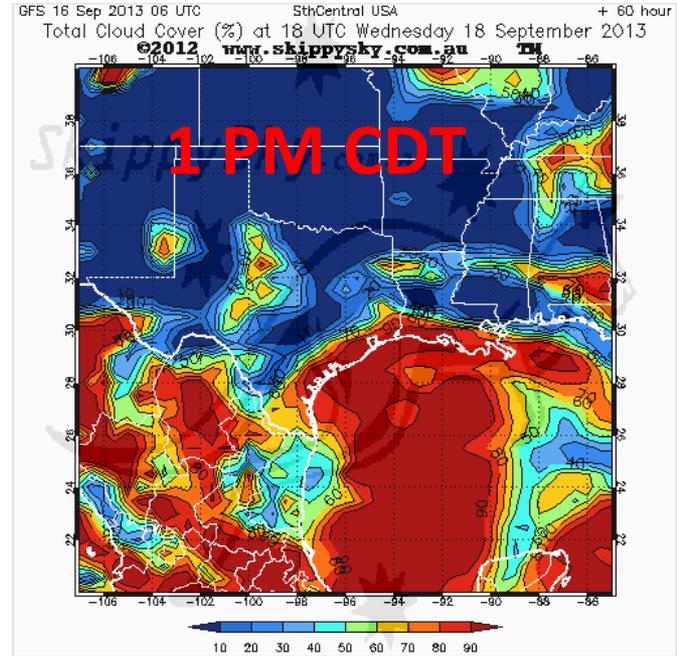
Integrated liquid and frozen hydrometeors (all levels)



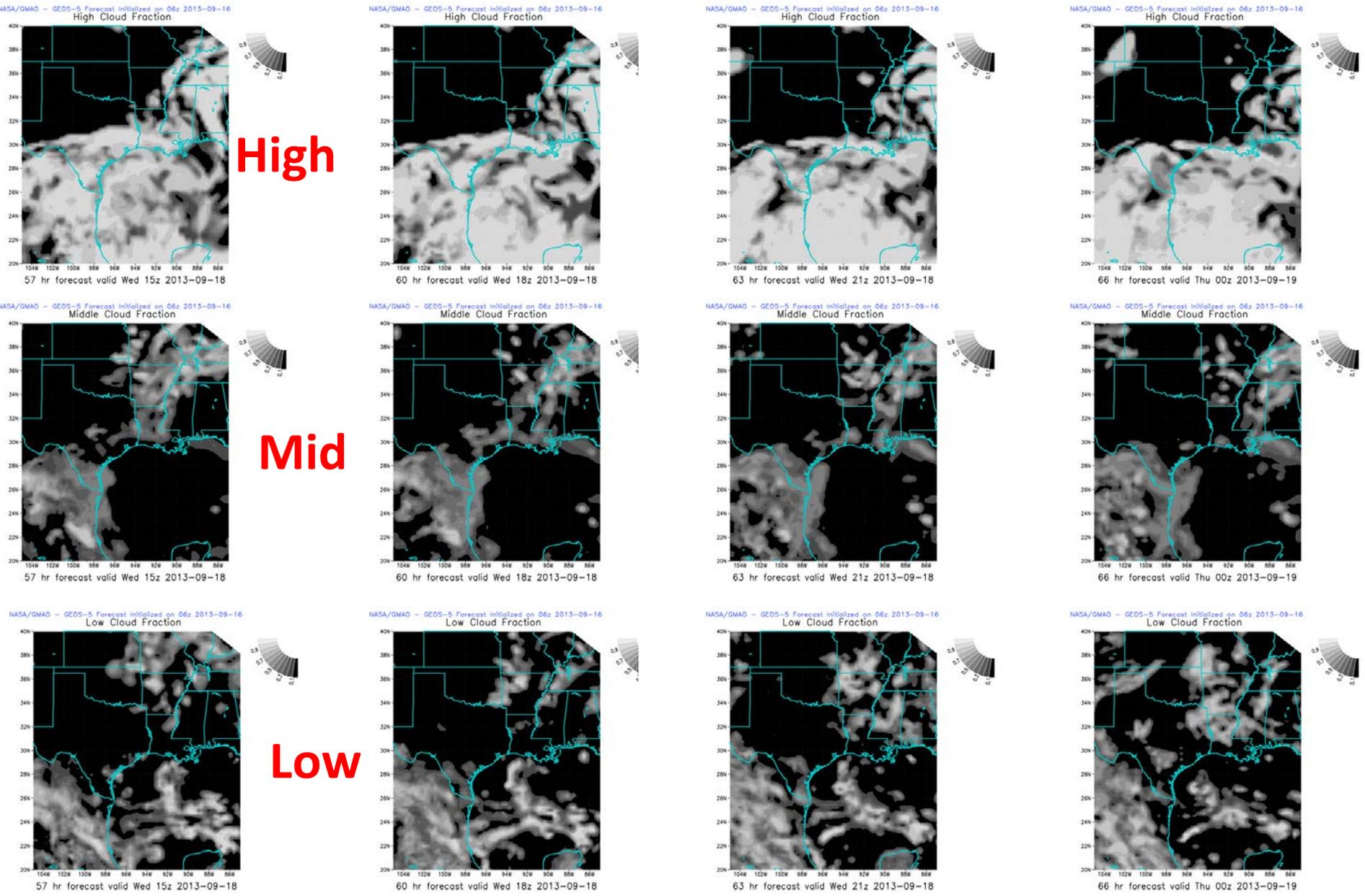
Integrated liquid and frozen hydrometeors (all levels)



Wednesday: GFS – Clouds through the afternoon

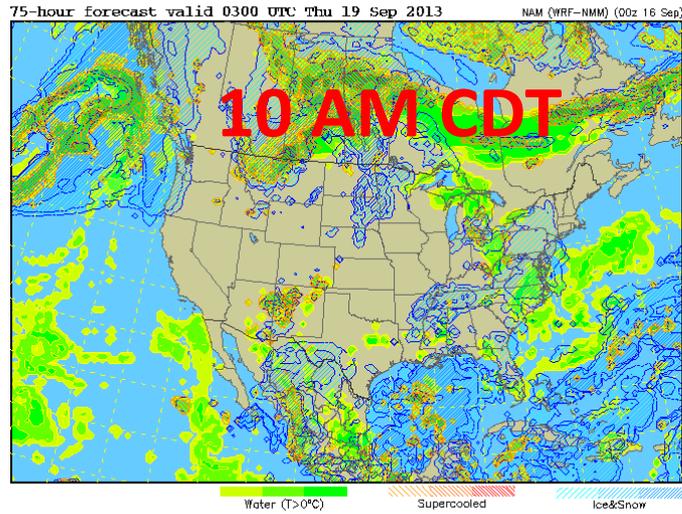


Wednesday: GEOS-5 –high throughout the day, some mid level cloud during afternoon

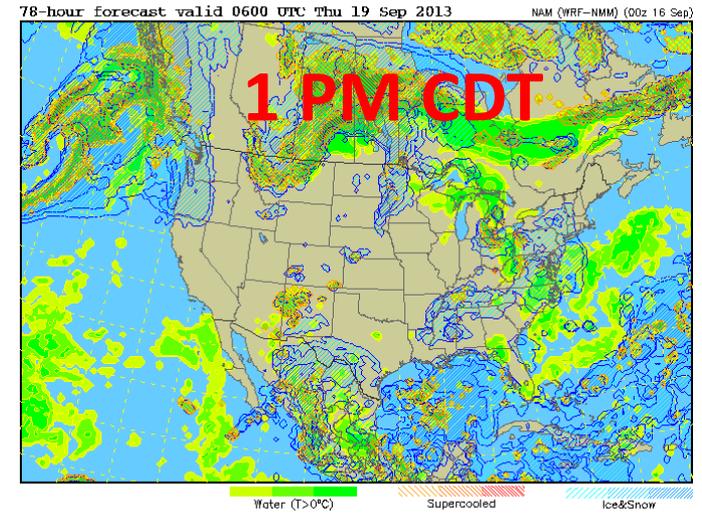


Thursday: NAM – Clear throughout the day

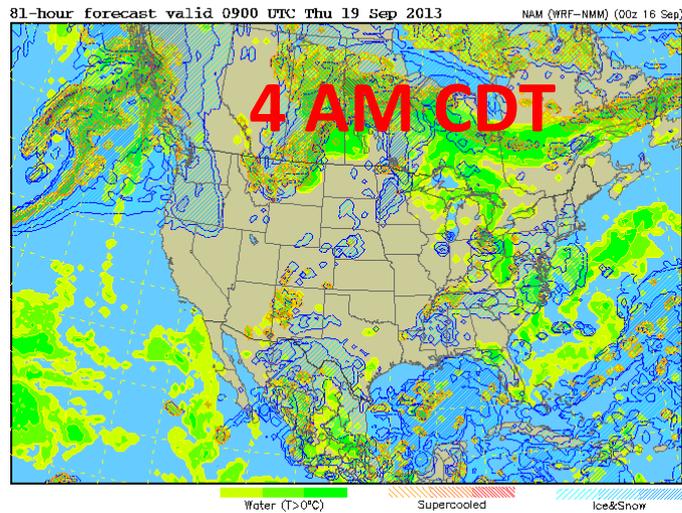
Integrated liquid and frozen hydrometeors (all levels)



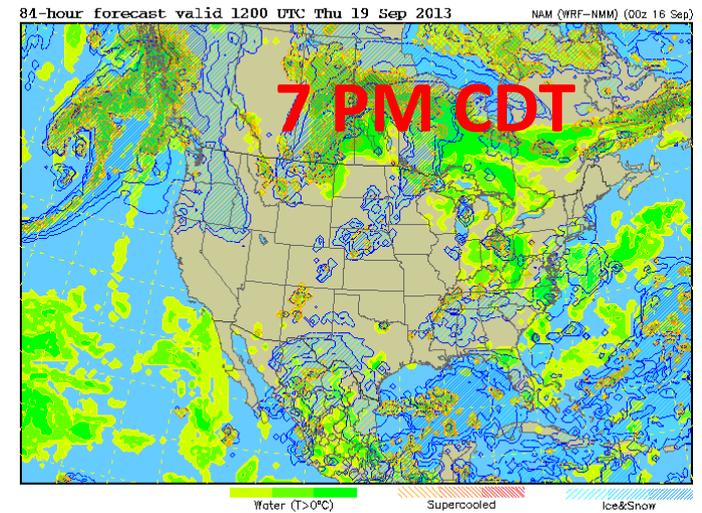
Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



Integrated liquid and frozen hydrometeors (all levels)



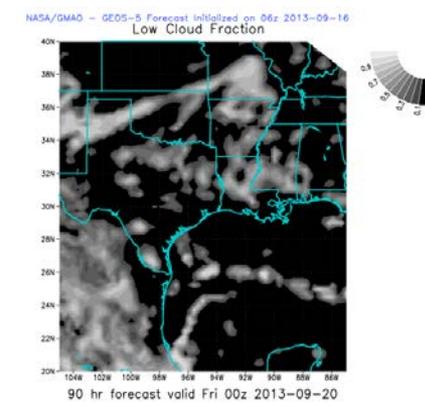
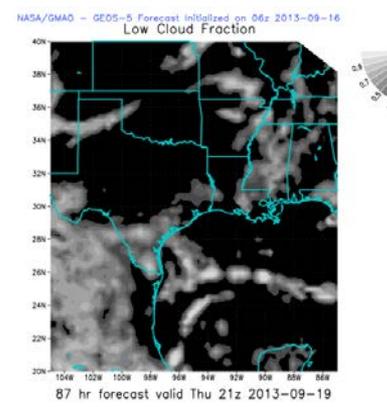
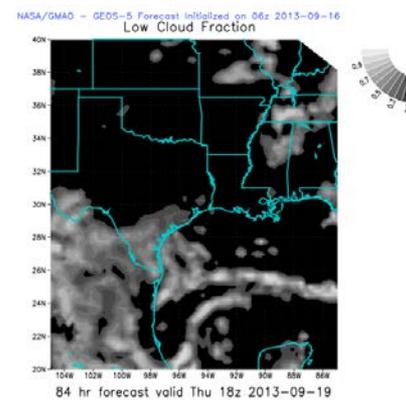
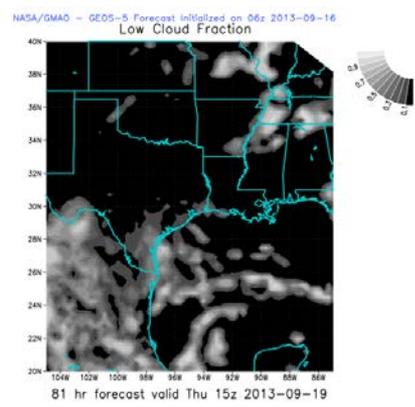
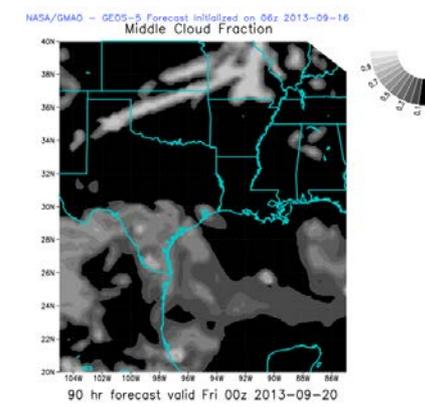
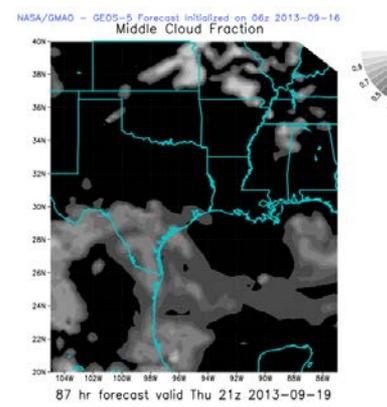
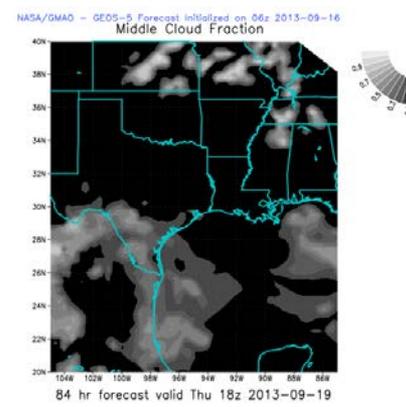
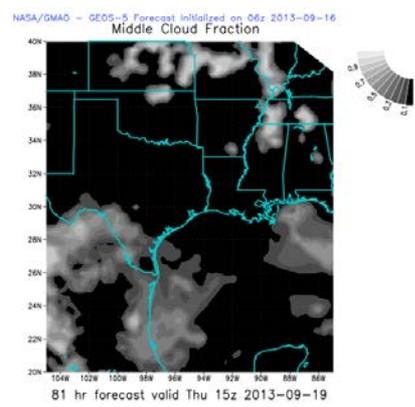
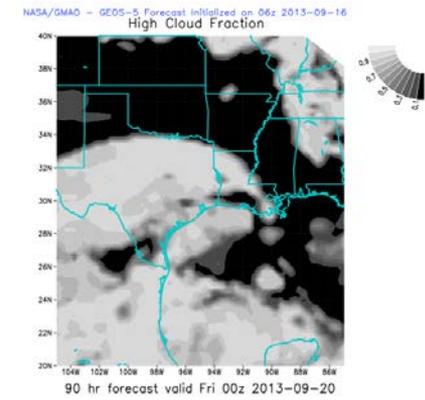
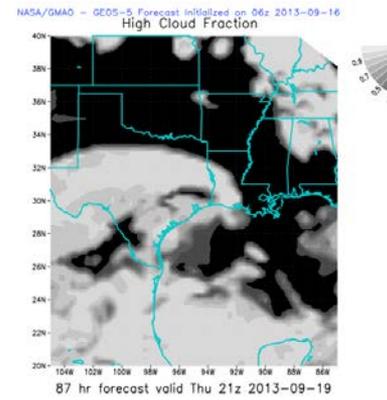
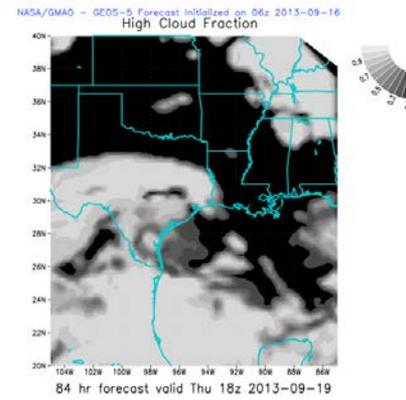
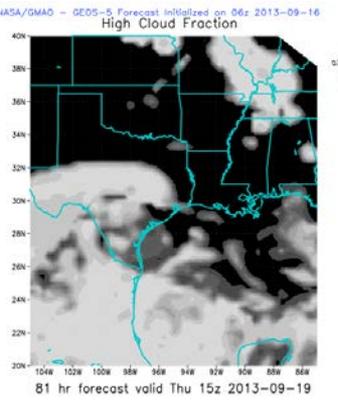
Thursday: GEOS-5 – high cloud throughout the day; mid level during afternoon

10 am

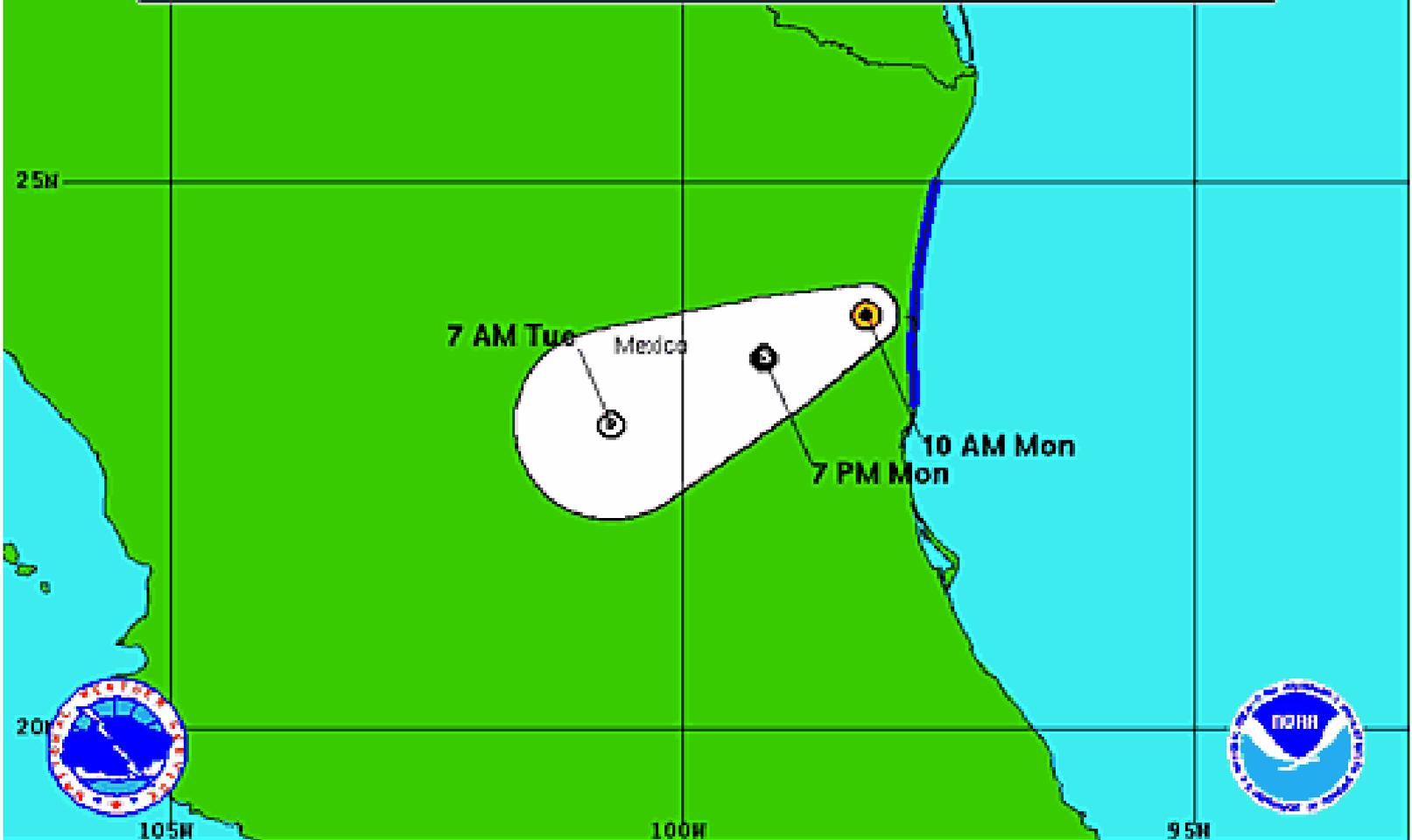
1 pm

4 pm

7 pm



Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.



<p>Tropical Storm Ingrid <i>Manday September 16, 2013</i> <i>10 AM CDT Advisory 17</i> NWS National Hurricane Center</p>	<p>Current Information: ● Center Location 23.8 N 98.2 W Max Sustained Wind 60 mph Movement WNW at 8 mph</p>	<p>Forecast Positions: ● Tropical Cyclone ○ Post-Tropical Sustained Winds: D < 30 mph S 39-73 mph H 74-110 mph M > 110mph</p>
<p>Potential Track Area:  Day 1-3  Day 4-5</p>	<p>Watches:  Hurricane  Trop.Storm</p>	<p>Warnings:  Hurricane  Trop.Storm</p>

DISCOVER-AQ Air Quality Outlook

September 16, 2013

Bryan Duncan

Mariel Friberg

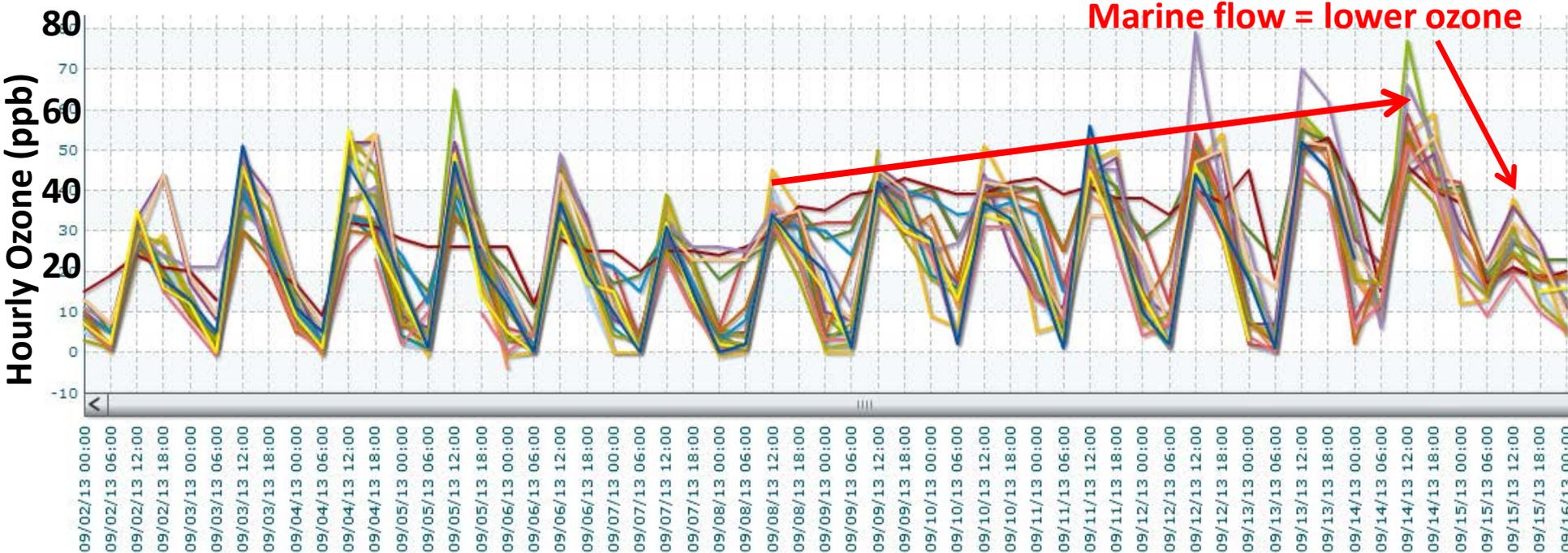
TCEQ AQ Forecast:

TODAY-THURSDAY: Code Green - Good

Enough said.

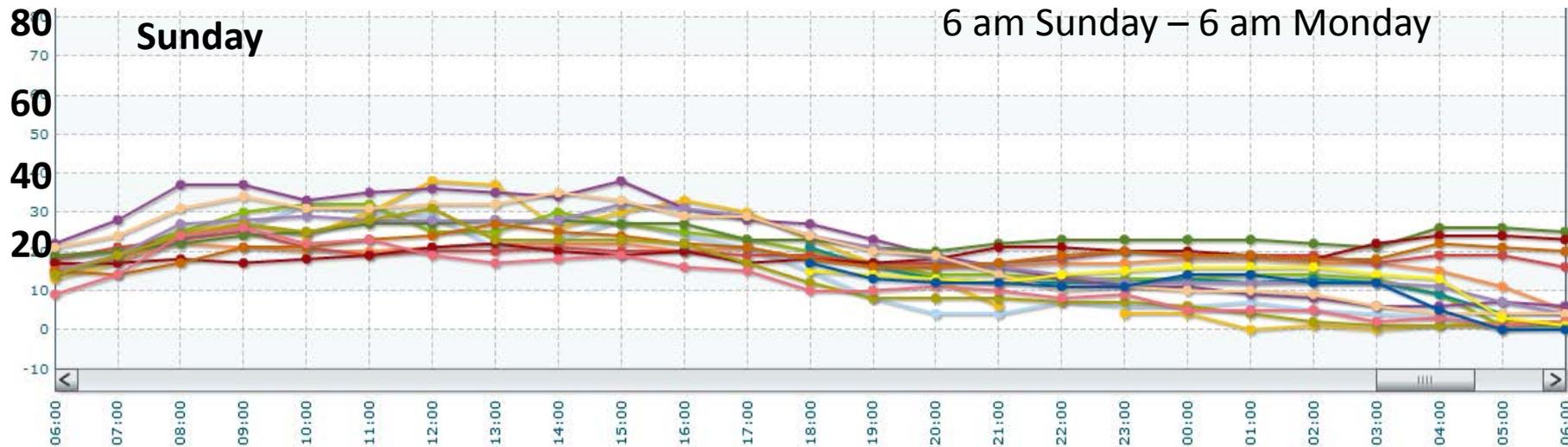
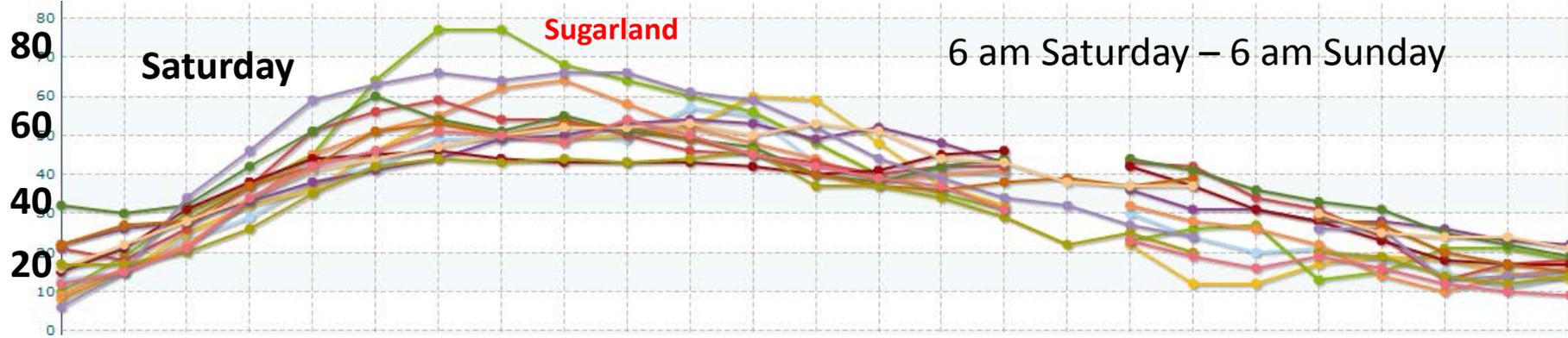
Hourly Ozone (airnowtech.org)**

September 2nd – 15th ** EVERY 6th HOUR PLOTTED!!!!



- | | |
|---|---|
| ◆ Houston Aldine C8/O3 - 44201/1 Hr/2 | ◆ Northwest Harris Co. C26/C110/C154/O3 - 44201/1 Hr/2 |
| ◆ Houston Westhollow C410/O3 - 44201/1 Hr/1 | ◆ Houston Deer Park C35/O3 - 44201/1 Hr/1 |
| ◆ Manvel Croix Park C84/O3 - 44201/1 Hr/1 | ◆ Seabrook Friendship Park C45/O3 - 44201/1 Hr/1 |
| ◆ Conroe Relocated C78/O3 - 44201/1 Hr/1 | ◆ Texas City C620/O3 - 44201/1 Hr/1 |
| ◆ West Houston C554/O3 - 44201/1 Hr/1 | ◆ La Porte Sylvan Beach C556/O3 - 44201/1 Hr/1 |
| ◆ Galveston Airport C1034/O3 - 44201/1 Hr/1 | ◆ Sugarland C696/O3 - 44201/1 Hr/1 |
| ◆ Coastal Center C697/O3 - 44201/1 Hr/1 | ◆ Jones Forest C698/O3 - 44201/1 Hr/1 |
| ◆ West Liberty C699/O3 - 44201/1 Hr/1 | ◆ Channelview C15/O3 - 44201/1 Hr/3 |
| ◆ Clinton C403/O3 - 44201/1 Hr/3 | ◆ Houston Texas Avenue C411/O3 - 44201/1 Hr/1 (Method: 047) |

Hourly Ozone (airnowtech.org)



- Houston Aldine C8/O3 - 44201/1 Hr/2
- Houston Westhollow C410/O3 - 44201/1 Hr/1
- Manvel Croix Park C84/O3 - 44201/1 Hr/1
- Conroe Relocated C78/O3 - 44201/1 Hr/1
- West Houston C554/O3 - 44201/1 Hr/1
- Galveston Airport C1034/O3 - 44201/1 Hr/1
- Coastal Center C697/O3 - 44201/1 Hr/1
- West Liberty C699/O3 - 44201/1 Hr/1
- Clinton C403/O3 - 44201/1 Hr/3
- Northwest Harris Co. C26/C110/C154/O3 - 44201/1 Hr/2
- Houston Deer Park C35/O3 - 44201/1 Hr/1
- Seabrook Friendship Park C45/O3 - 44201/1 Hr/1
- Texas City C620/O3 - 44201/1 Hr/1
- La Porte Sylvan Beach C556/O3 - 44201/1 Hr/1
- Sugarland C696/O3 - 44201/1 Hr/1
- Jones Forest C698/O3 - 44201/1 Hr/1
- Channelview C15/O3 - 44201/1 Hr/3
- Houston Texas Avenue C411/O3 - 44201/1 Hr/1 (Method: 047)

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

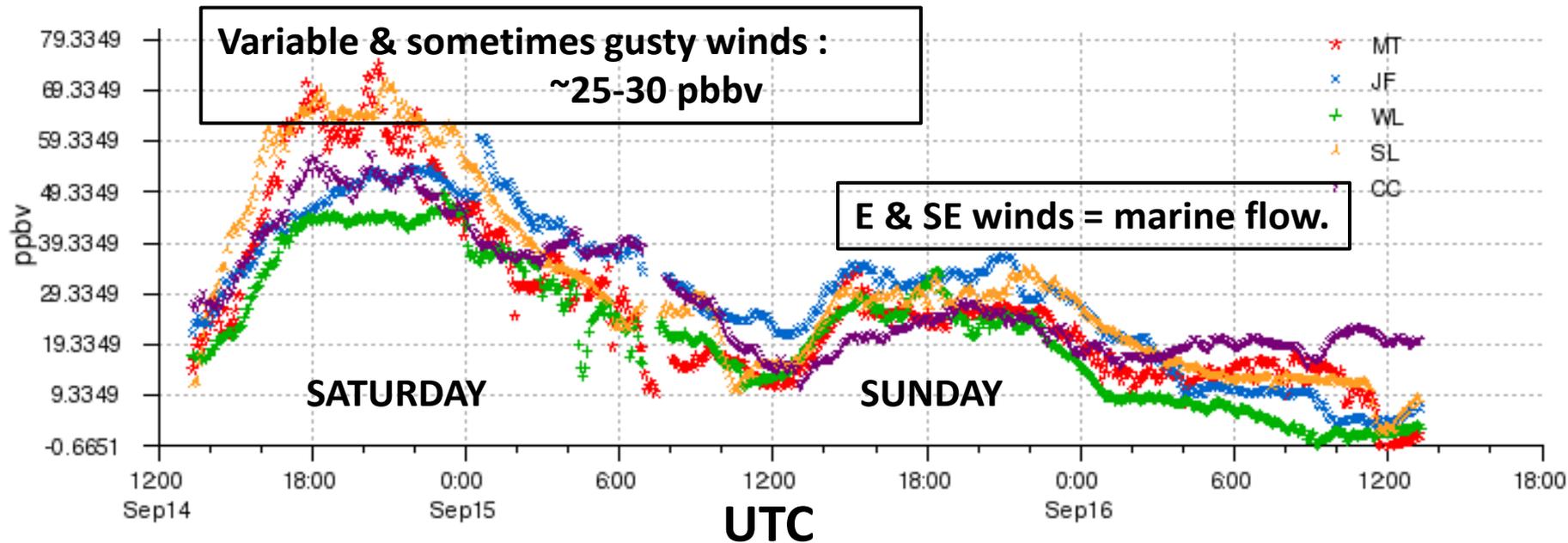
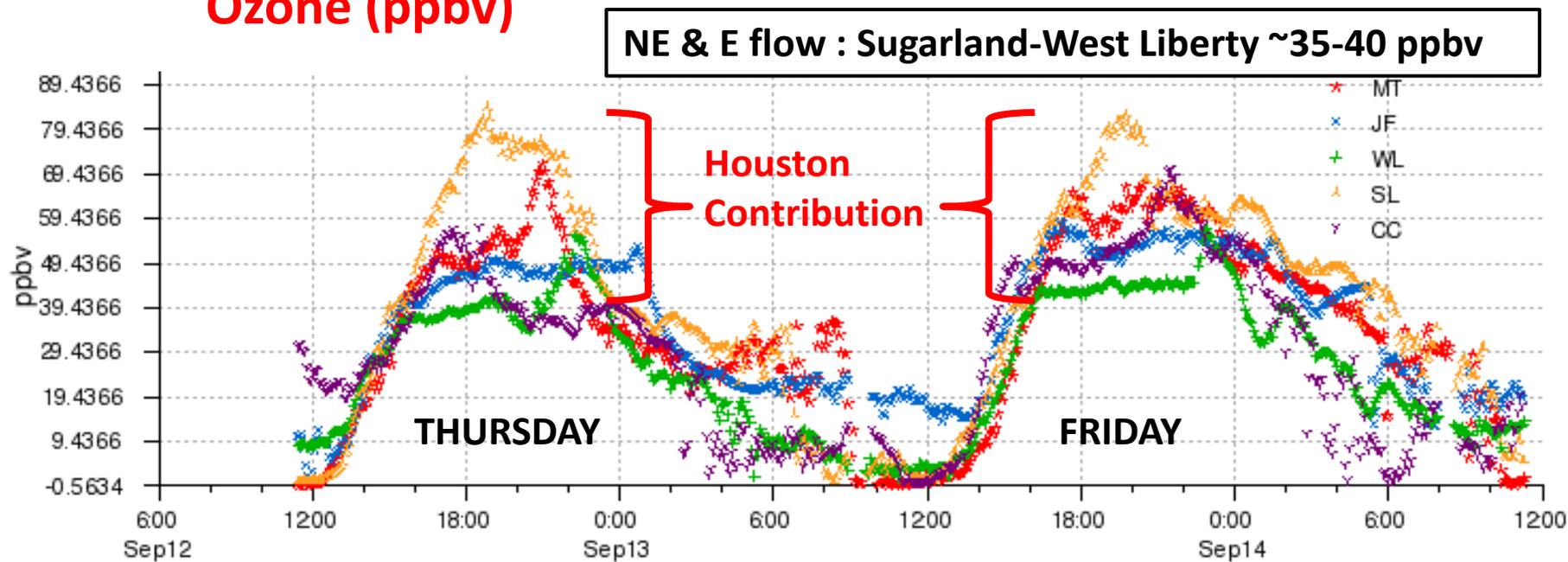
- UH - Main Campus (695)
- Jones State Forest (698)
- West Liberty Airport (699)
- UH - Sugar Land (696)
- UH - Coastal Center (697)

[More about this project.](#)

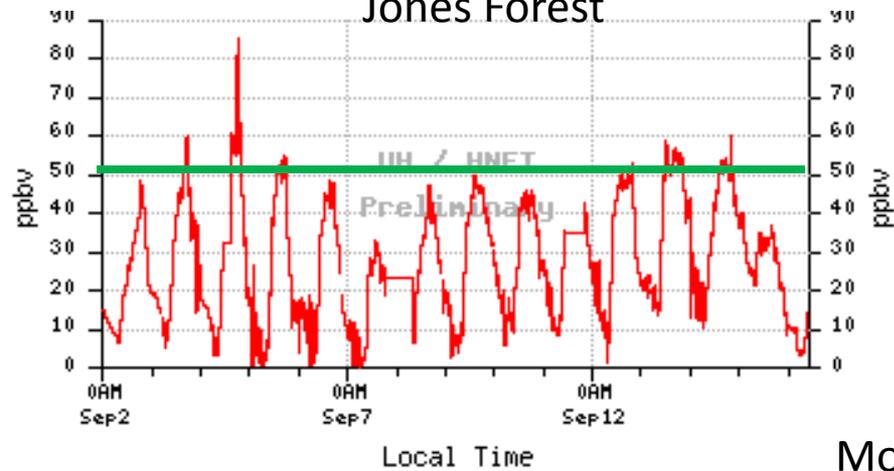


HNET

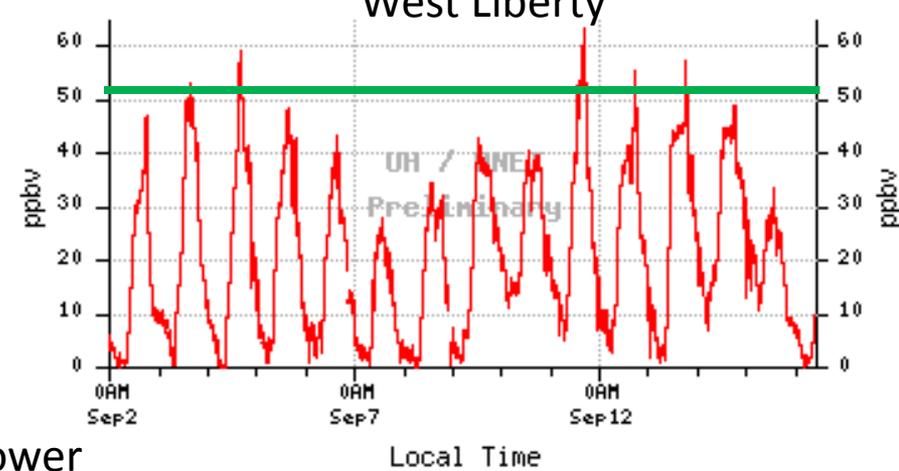
Ozone (ppbv)



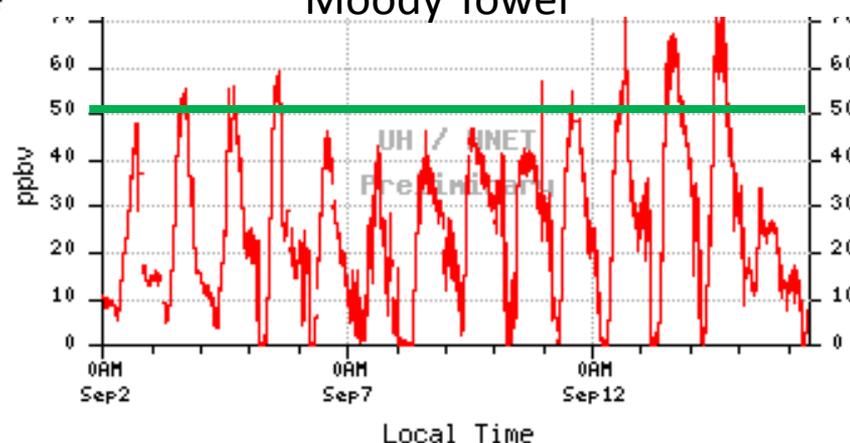
Jones Forest



West Liberty



Moody Tower

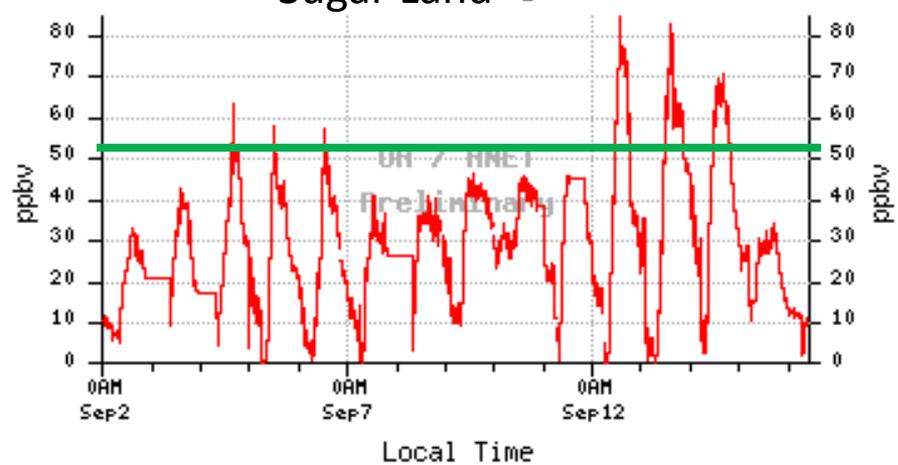


O₃ (ppbv) – 15 min avg
September 2nd – 15th

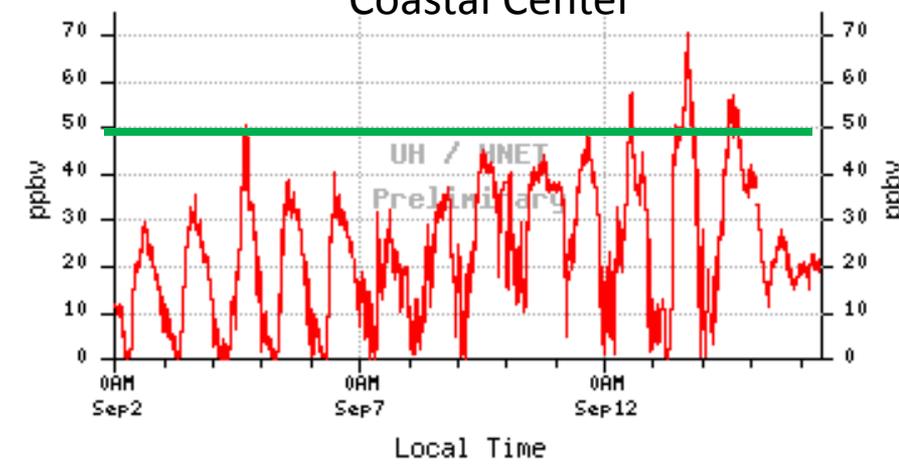
———— = 50 ppbv

Houston – Network of Environmental Towers (H-NET)

Sugar Land



Coastal Center

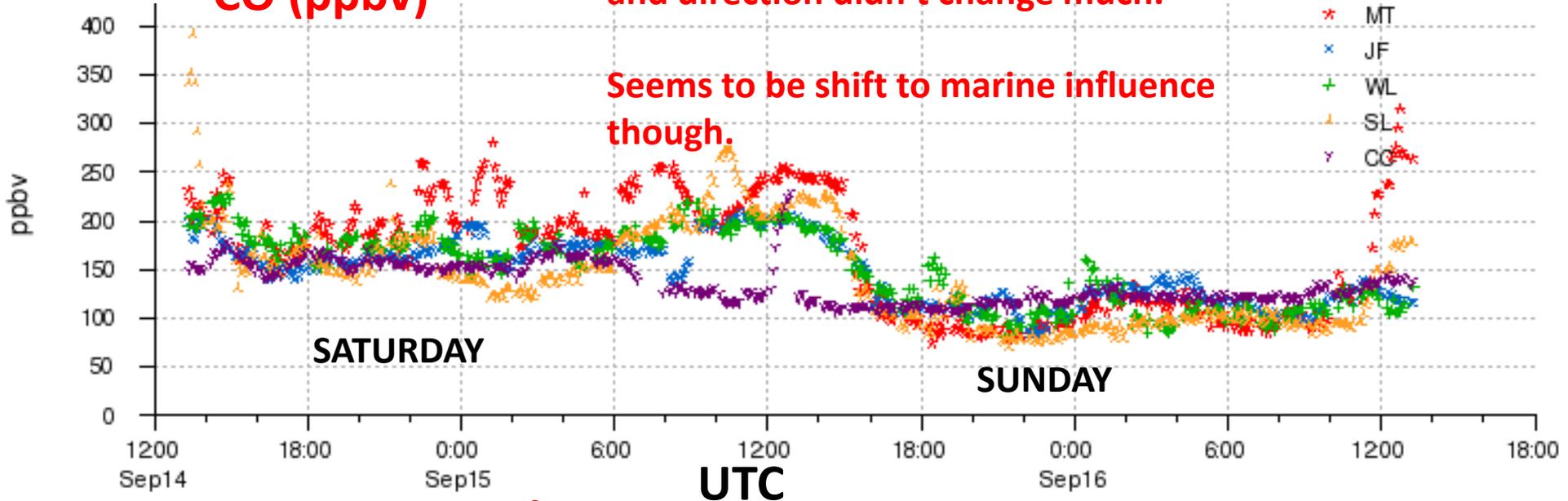


HNET

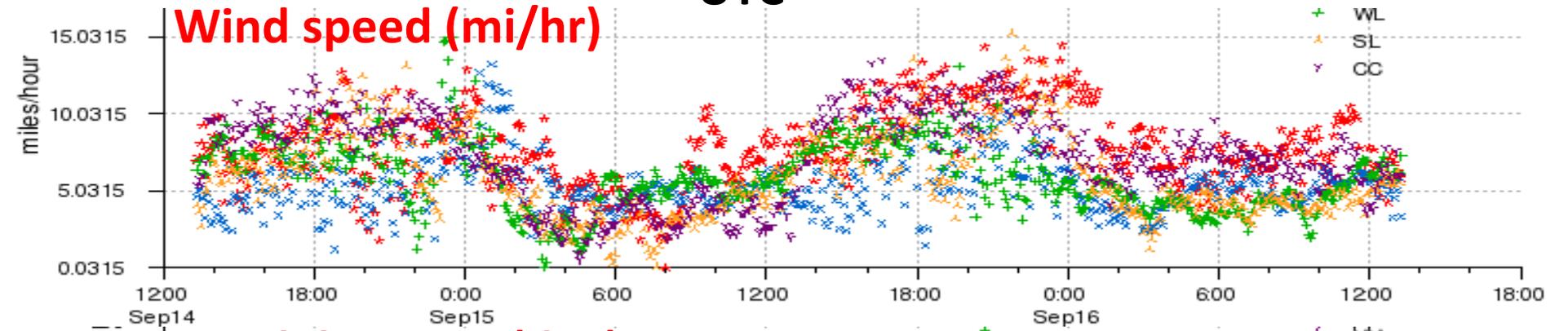
CO (ppbv)

Not sure what happened as wind speed and direction didn't change much.

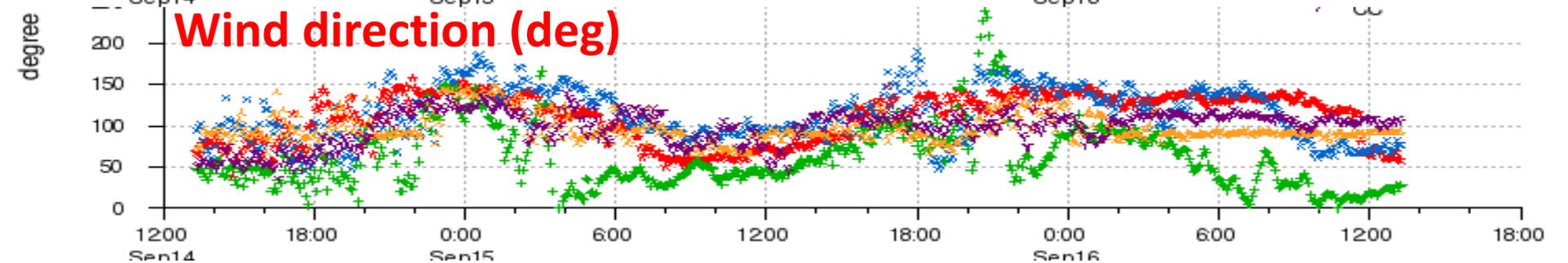
Seems to be shift to marine influence though.



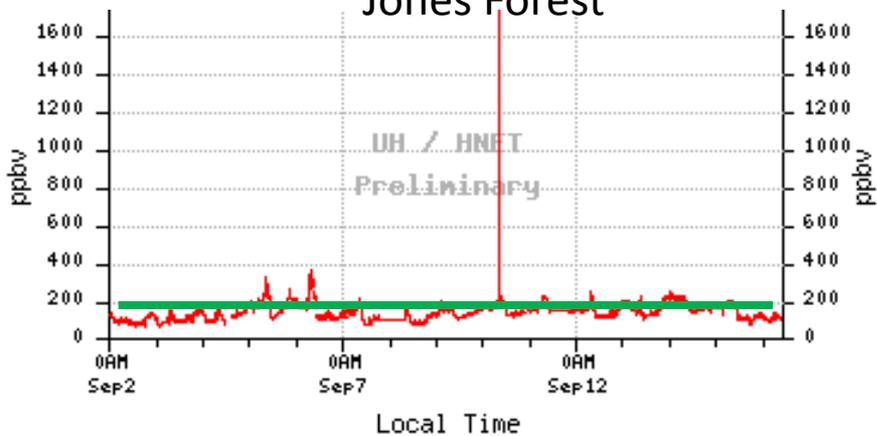
Wind speed (mi/hr)



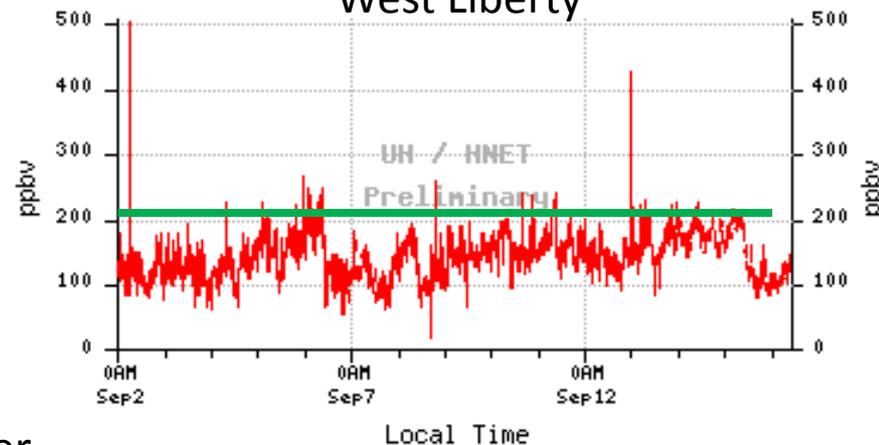
Wind direction (deg)



Jones Forest



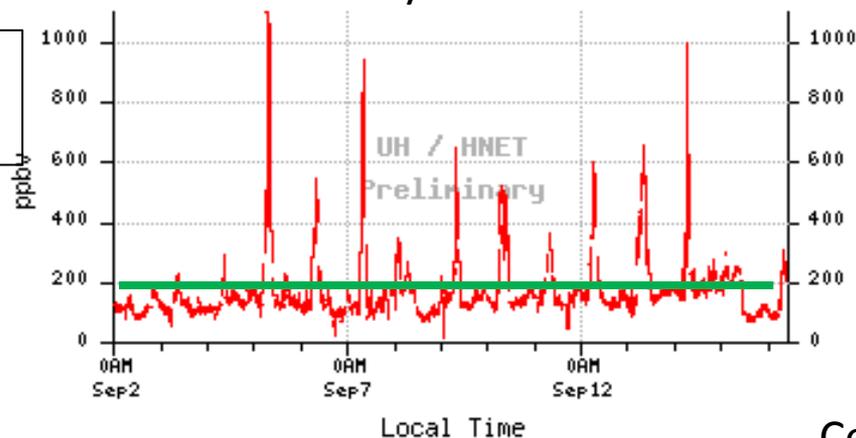
West Liberty



Moody Tower

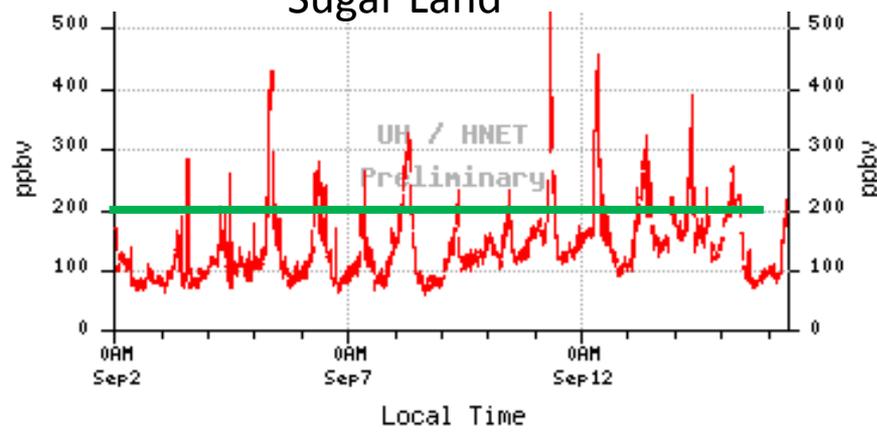
CO (ppbv) – 15 min avg
September 2nd – 15th

———— = 200 ppbv

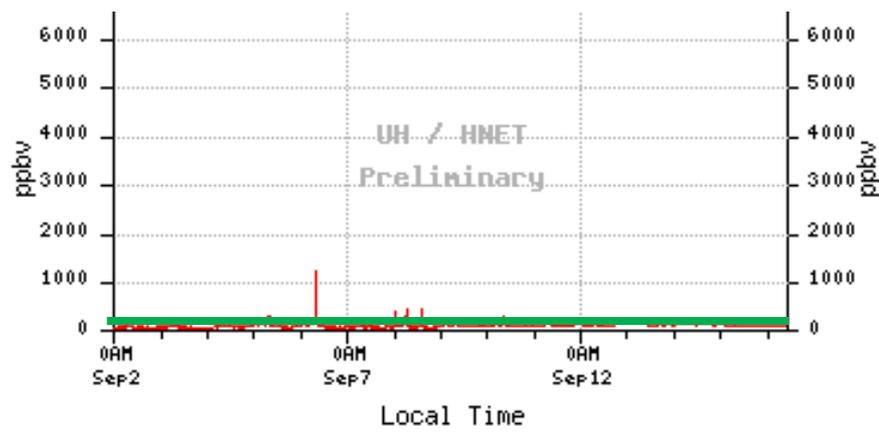


**Houston – Network of
Environmental Towers
(H-NET)**

Sugar Land



Coastal Center



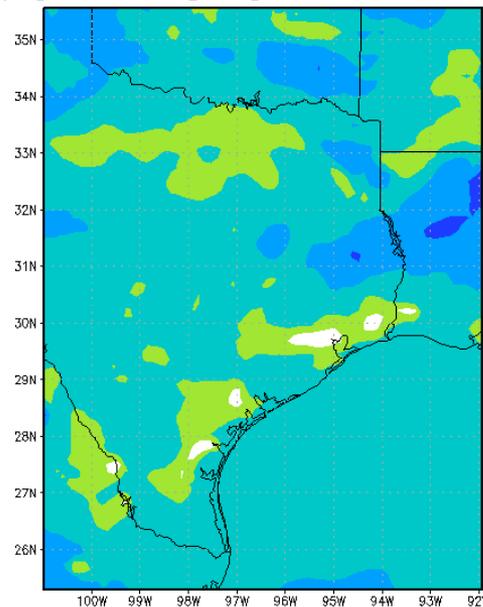


O3 [ppb] at 1013 [hPa] Valid 14Z SEP 17 2013

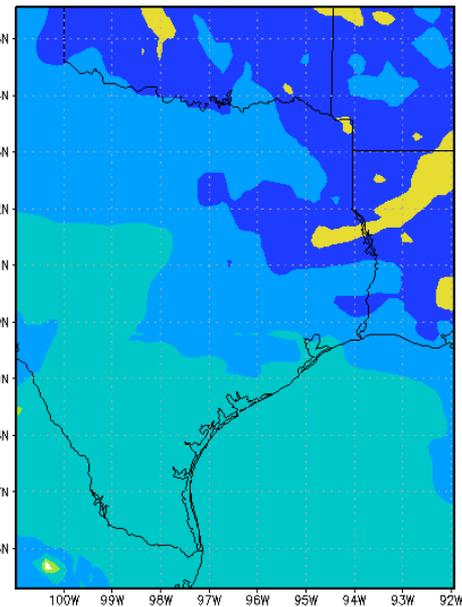
1013 hPa

O3 [ppb] at 1013 [hPa] Valid 17Z SEP 17 2013

9 am



noon



**NOAA
Experim.
CMAQ**

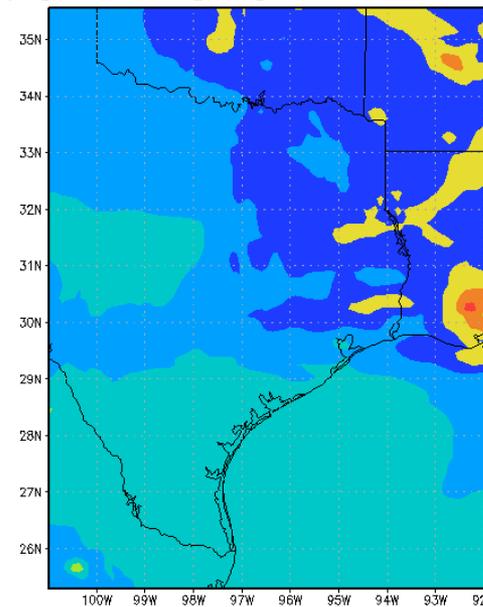
**Surface
Ozone**

GrADS: COLA/IGES

GrADS: COLA/IGES

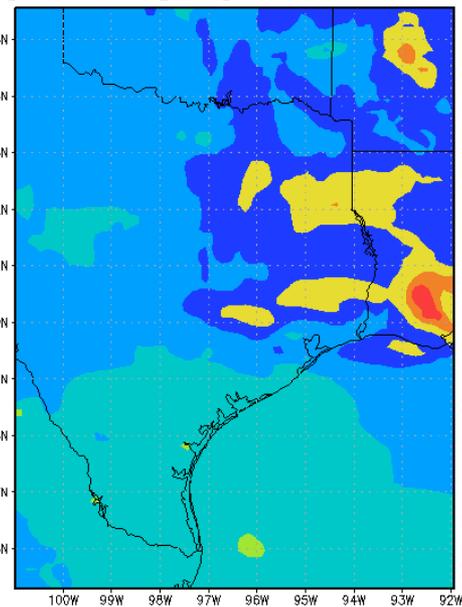
O3 [ppb] at 1013 [hPa] Valid 19Z SEP 17 2013

2 pm



O3 [ppb] at 1013 [hPa] Valid 22Z SEP 17 2013

5 pm



TUESDAY

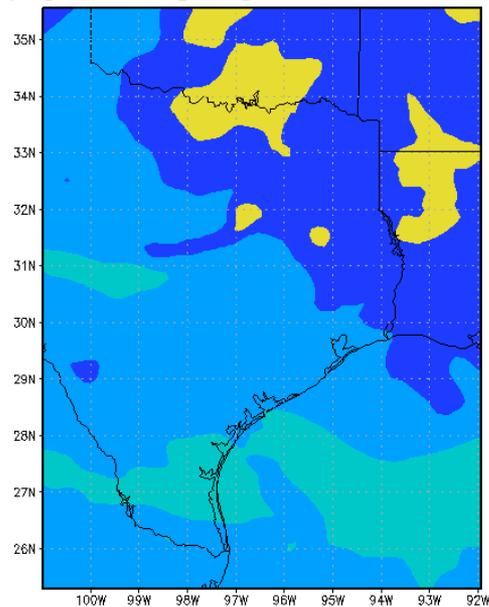
GrADS: COLA/IGES

GrADS: COLA/IGES



O3 [ppb] at 850 [hPa] Valid 14Z SEP 17 2013

9 am



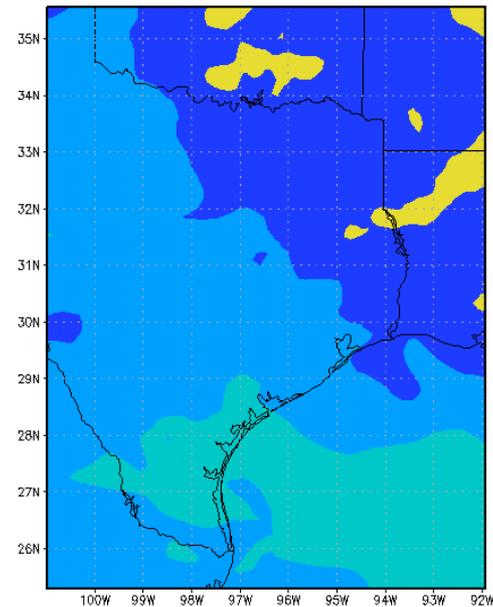
GRADS: COLA/IGES

850 hPa

O3 [ppb] at 850 [hPa] Valid 17Z SEP 17 2013

noon

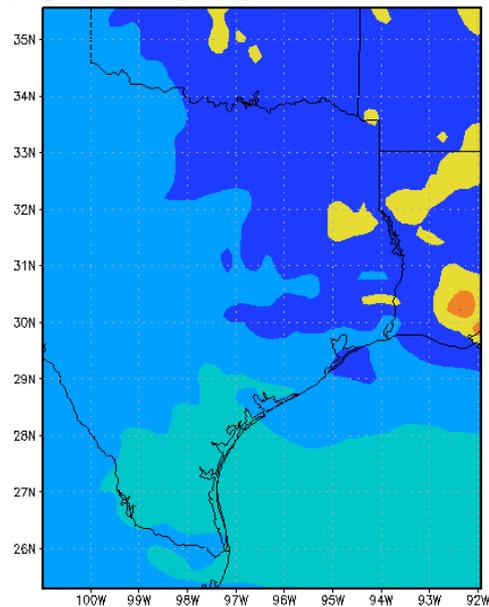
NOAA
Experim.
CMAQ
1.5 Km
Ozone



GRADS: COLA/IGES

O3 [ppb] at 850 [hPa] Valid 19Z SEP 17 2013

2 pm

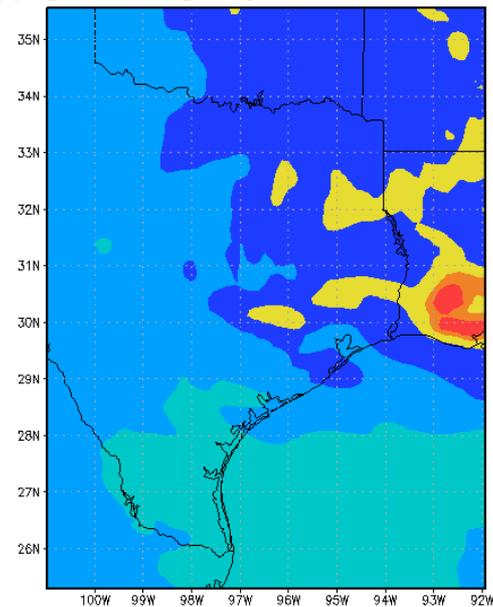


GRADS: COLA/IGES

O3 [ppb] at 850 [hPa] Valid 22Z SEP 17 2013

5 pm

TUESDAY

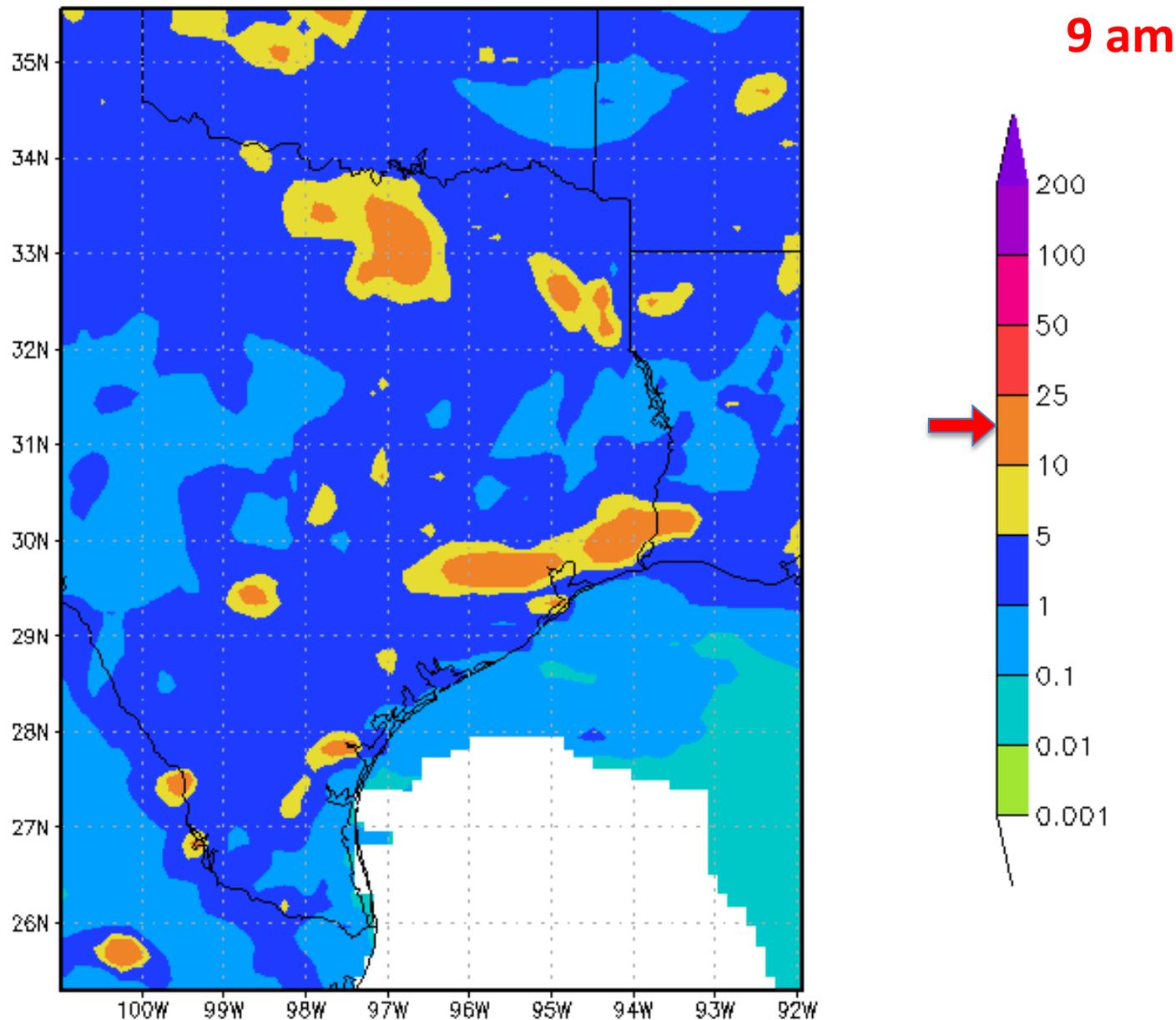


GRADS: COLA/IGES

NO2 [ppb] at 1013 [hPa] Valid 14Z SEP 17 2013

NOAA Experm.
CMAQ Model
Surface NO2

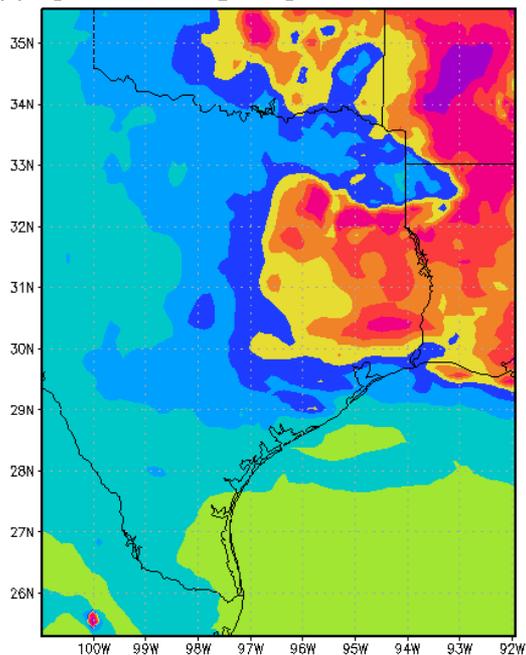
TUESDAY





FORM [ppb] at 1013 [hPa] Valid 19Z SEP 17 2013

2 pm



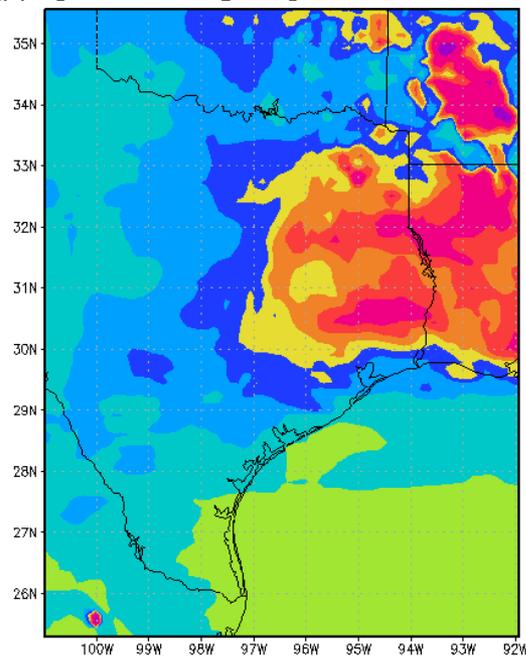
TUESDAY

NOAA Experm. CMAQ Model
Surface Formaldehyde

GRADS: COLA/IGES

FORM [ppb] at 1013 [hPa] Valid 22Z SEP 17 2013

5 pm



GRADS: COLA/IGES

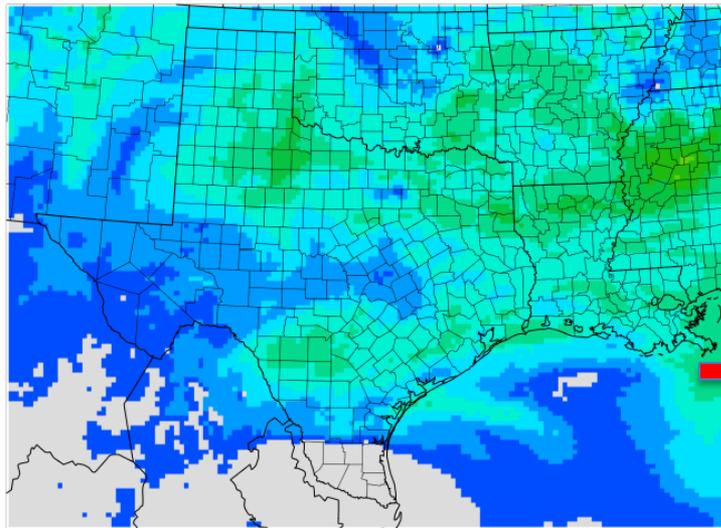
9 am

Ozone
Best Case

TUESDAY

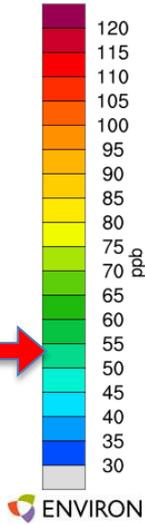
Ozone
Best Case

noon

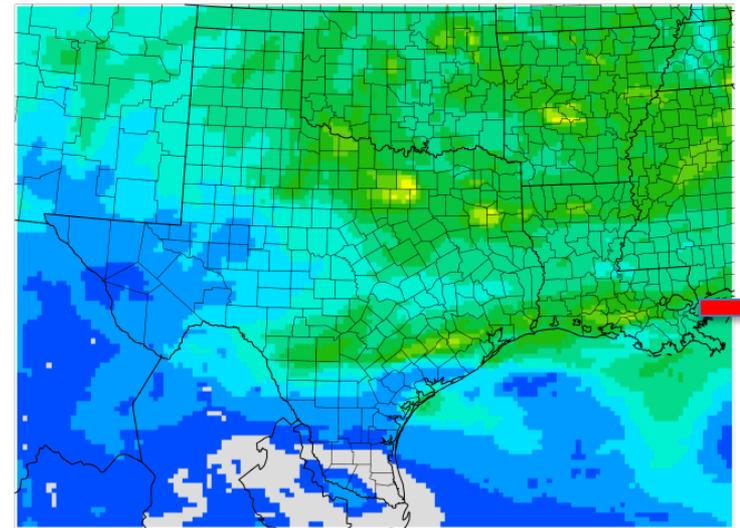


Min(54,4) = 4.0, Max(142,78) = 66.0

Tue September 17 09:00 CST

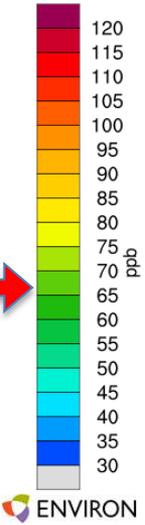


ENVIRON



Min(45,16) = 23.8, Max(113,86) = 77.6

Tue September 17 12:00 CST



ENVIRON

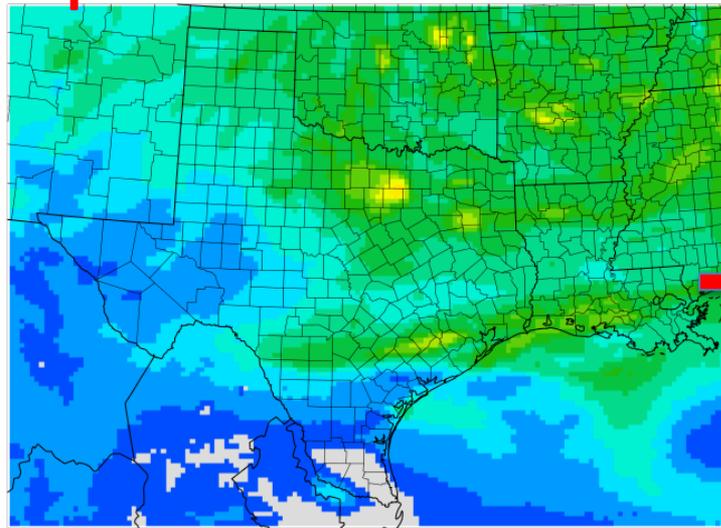
CAMx Model Surface Ozone

2 pm

Ozone
Best Case

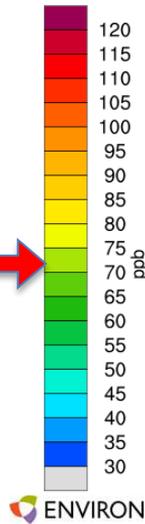
Ozone
Best Case

5 pm

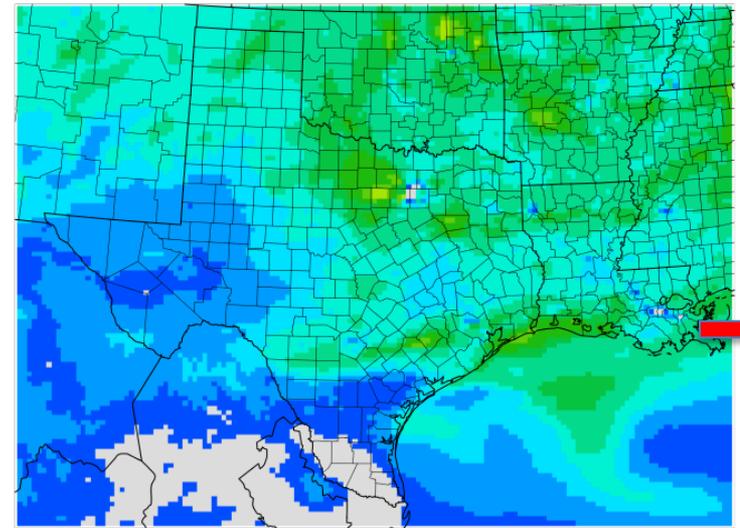


Min(71,14) = 25.7, Max(81,71) = 83.5

Tue September 17 14:00 CST

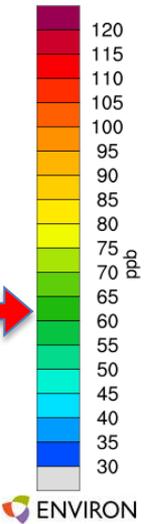


ENVIRON



Min(55,4) = 1.1, Max(89,104) = 74.2

Tue September 17 17:00 CST



ENVIRON

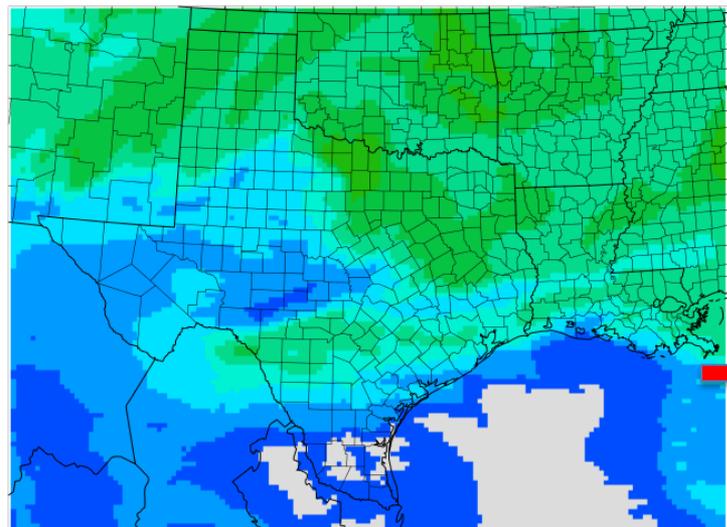
9 am

Ozone
Best Case: CAMx Layer 14

TUESDAY

Ozone
Best Case: CAMx Layer 14

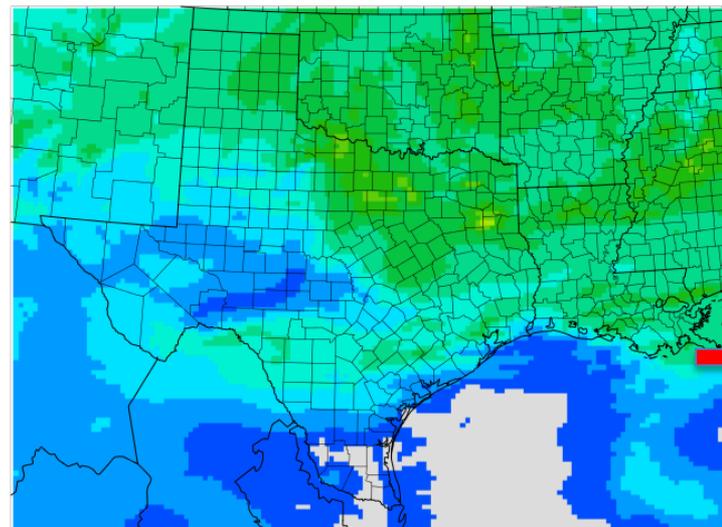
noon



Min(113,25) = 24.6, Max(94,99) = 64.4

Tue September 17 09:00 CST

ENVIRON



Min(106,25) = 24.5, Max(99,65) = 71.9

Tue September 17 12:00 CST

ENVIRON

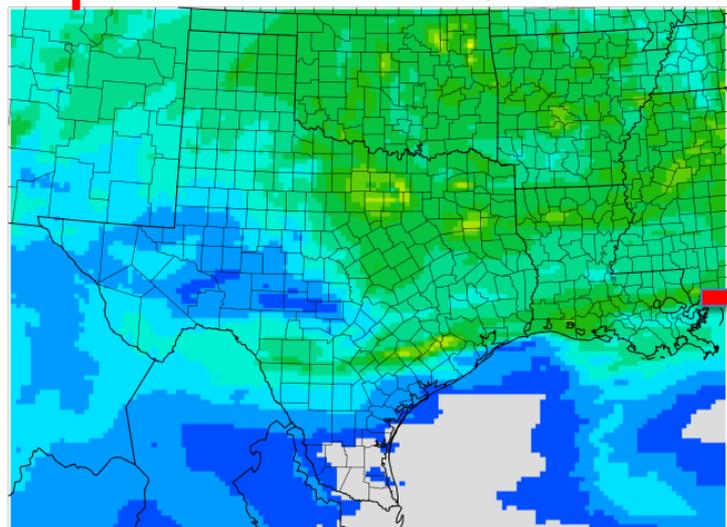
CAMx Model 1.2 km Ozone

2 pm

Ozone
Best Case: CAMx Layer 14

Ozone
Best Case: CAMx Layer 14

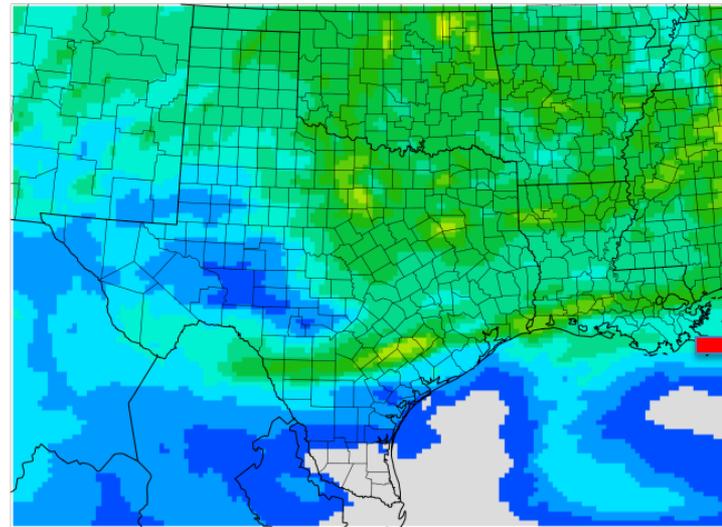
5 pm



Min(98,25) = 24.7, Max(96,102) = 79.1

Tue September 17 14:00 CST

ENVIRON



Min(88,2) = 25.5, Max(90,105) = 77.1

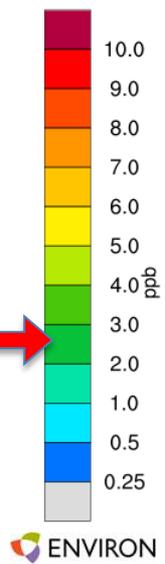
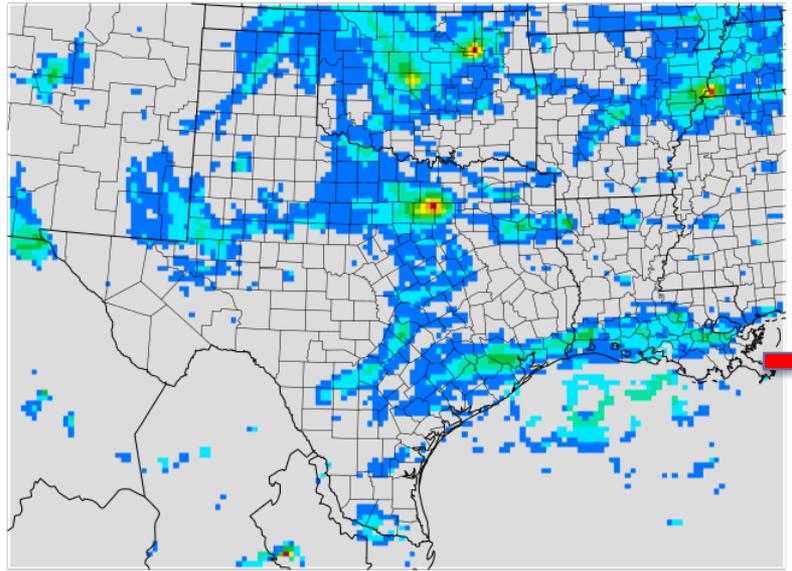
Tue September 17 17:00 CST

ENVIRON



NO **9 am**
Best Case

TUESDAY

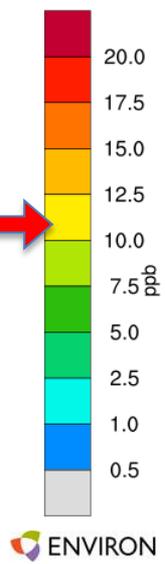
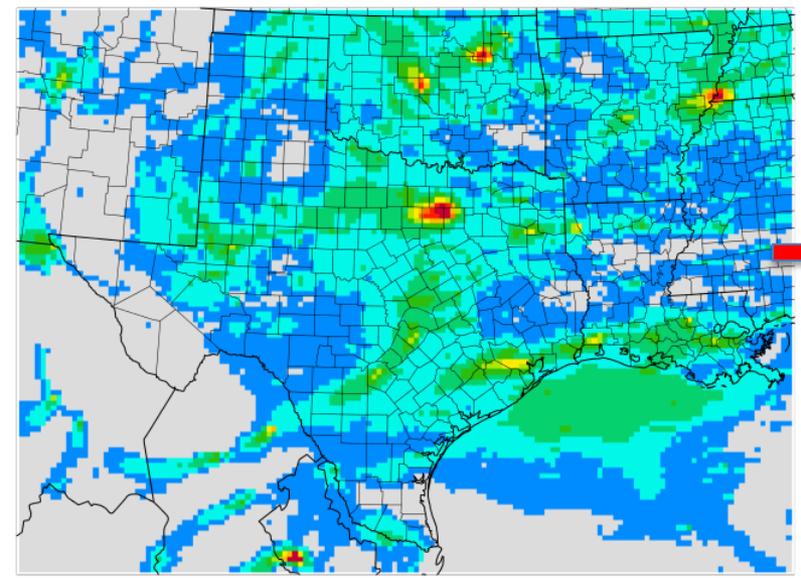


Min(50,8) = 0.0, Max(82,71) = 11.4
Tue September 17 09:00 CST



CAMx Surface NO and NOx

NOx **9 am**
Best Case



Min(15,72) = 0.1, Max(54,4) = 36.8
Tue September 17 09:00 CST

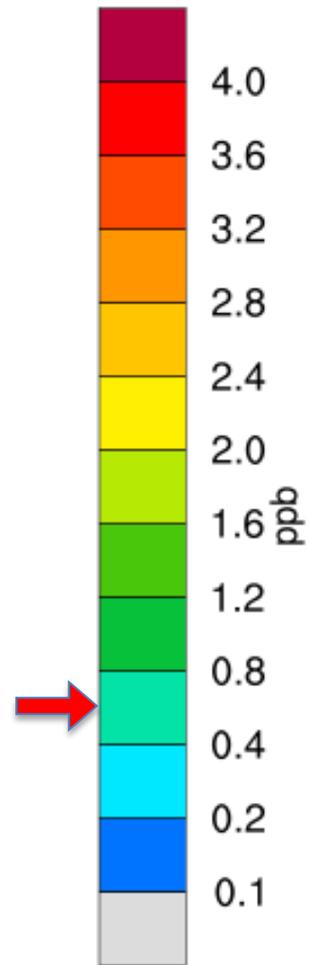
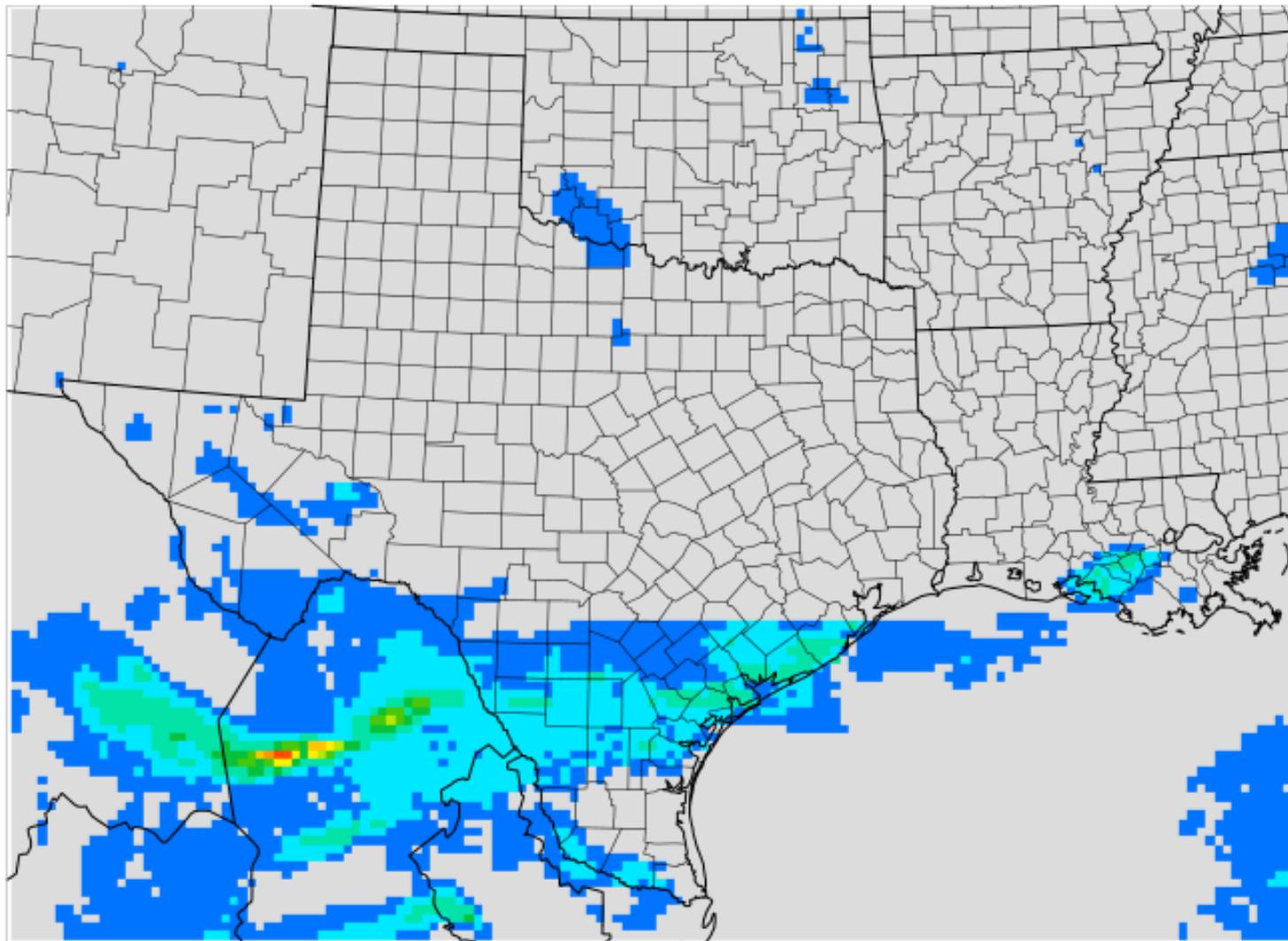




CAMx Model
1.2 km NO₂

NO₂

Best Case: CAMx Layer 14



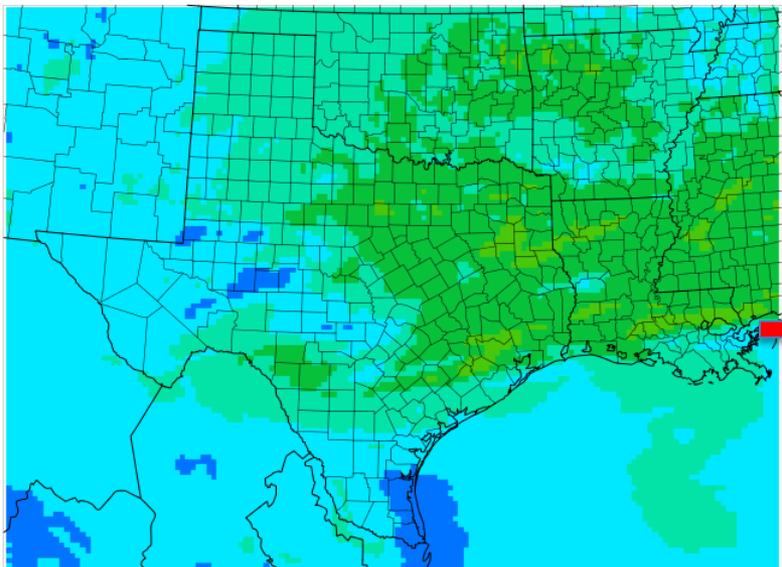
Min(103,5) = 0.0, Max(33,23) = 3.5

Tue September 17 09:00 CST **9 am**

Formaldehyde

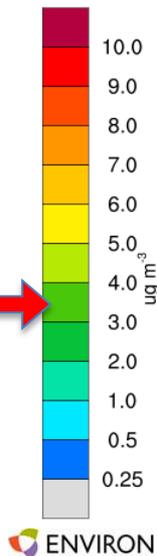
Best Case: CAMx Layer 14

2 pm



Min(50,59) = 0.4, Max(137,50) = 3.9

Tue September 17 14:00 CST



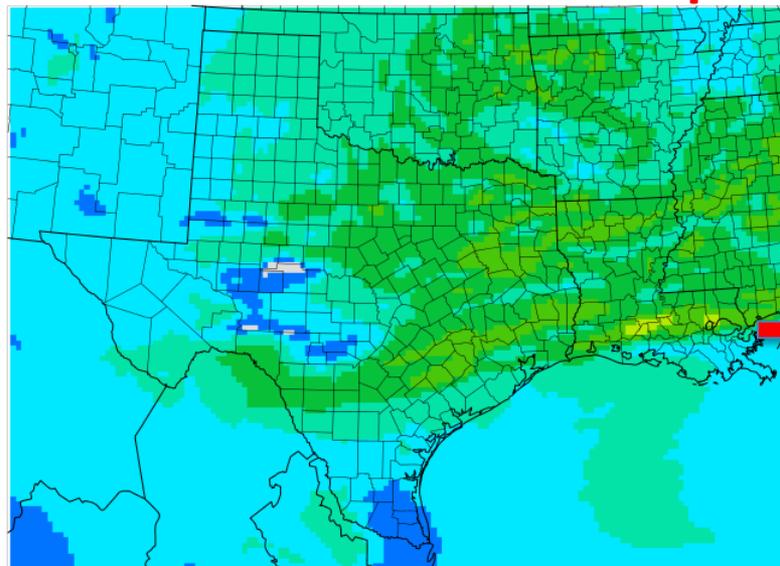
TUESDAY

CAMx Model Formaldehyde 1.2 km (Layer 14)

Formaldehyde

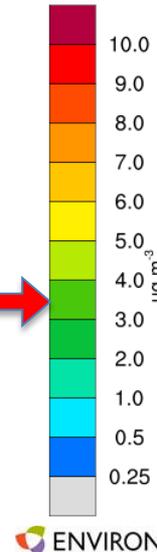
Best Case: CAMx Layer 14

5 pm

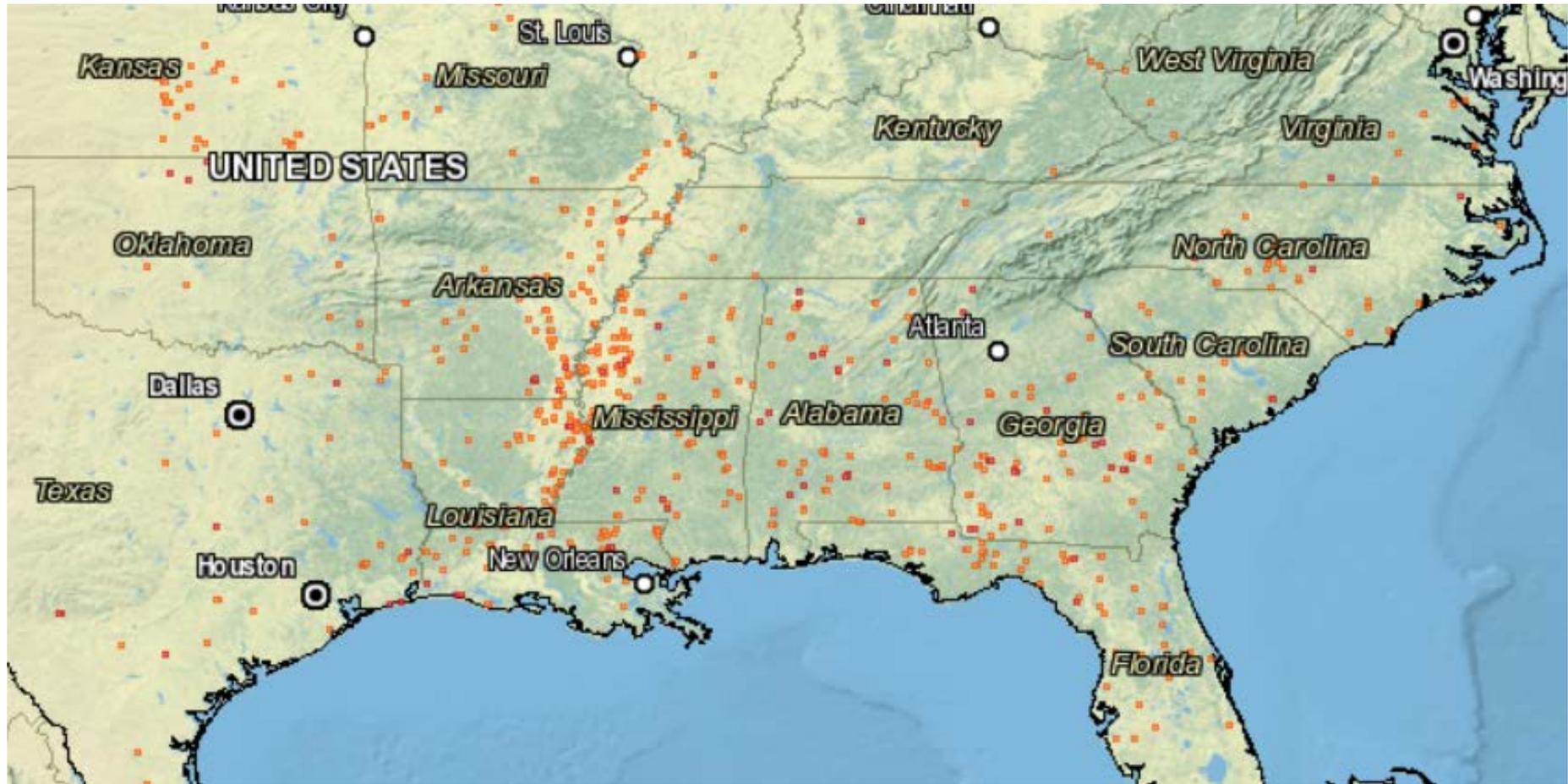


Min(52,59) = 0.1, Max(122,48) = 4.5

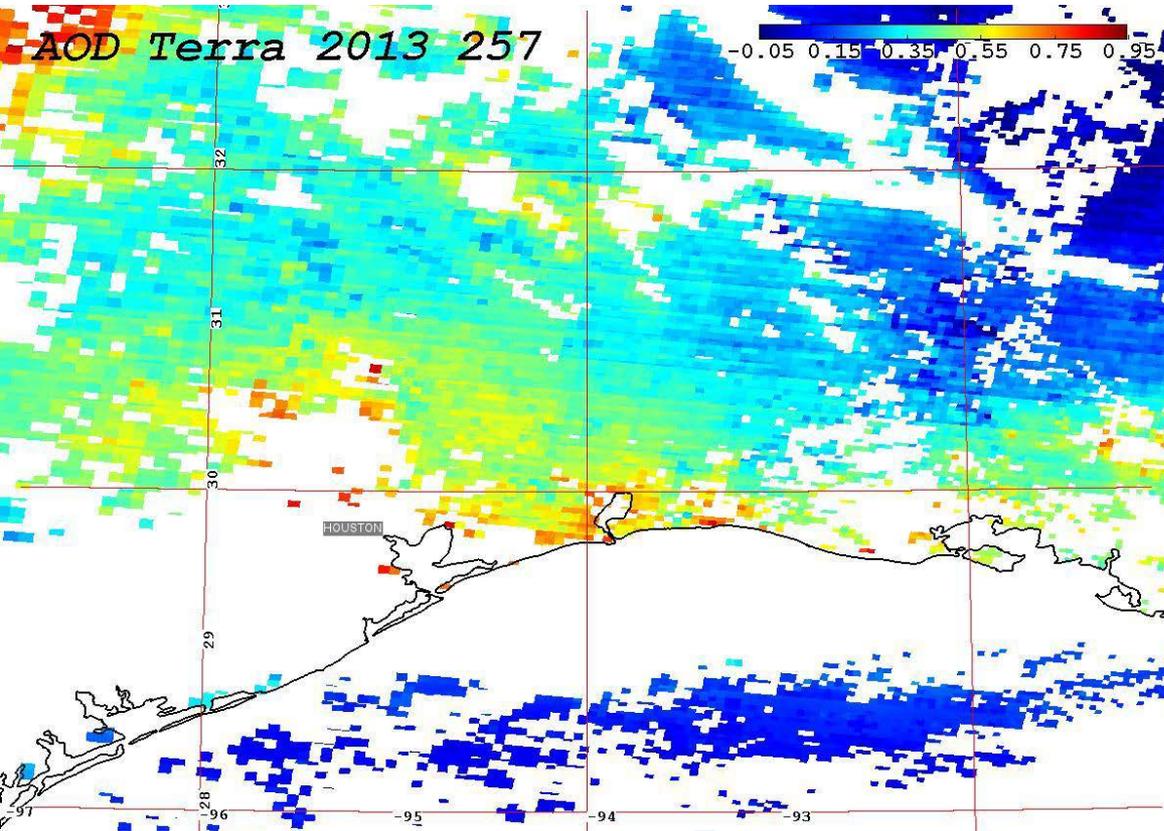
Tue September 17 17:00 CST



Fire-counts over last week.



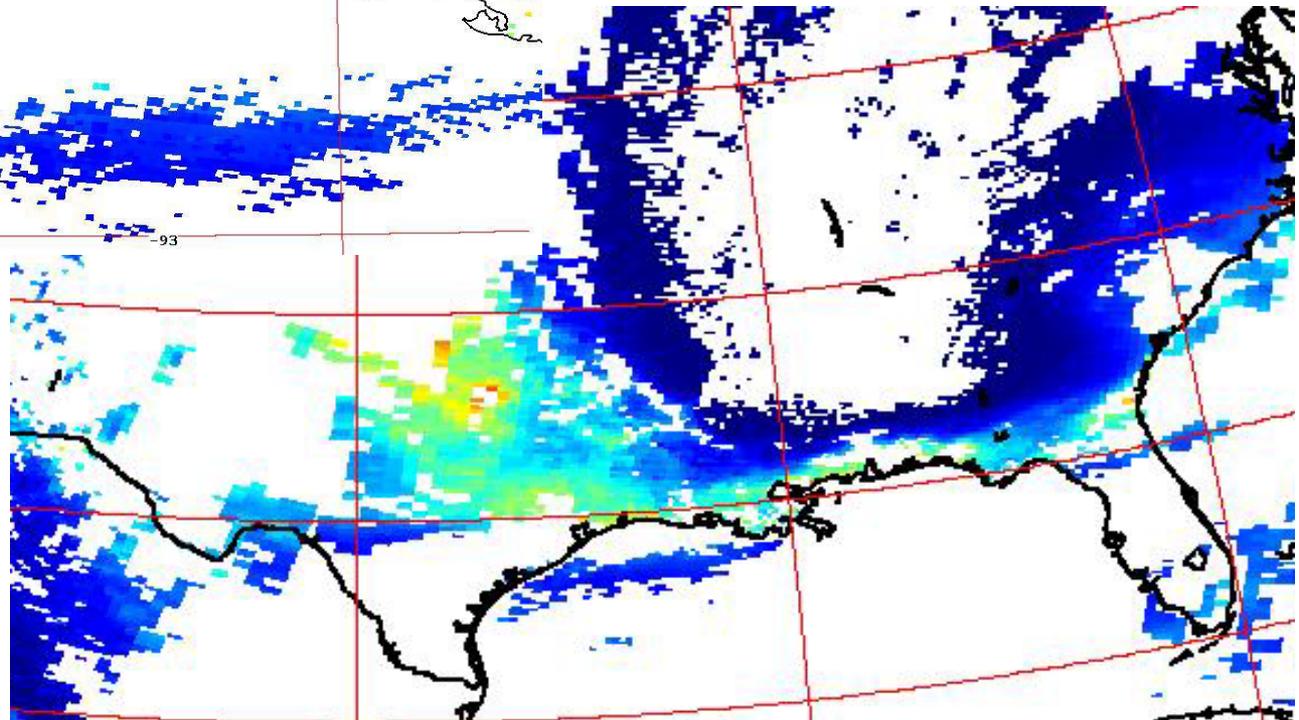
Terra AOD - Saturday



High AOD associated with agricultural fire plume.

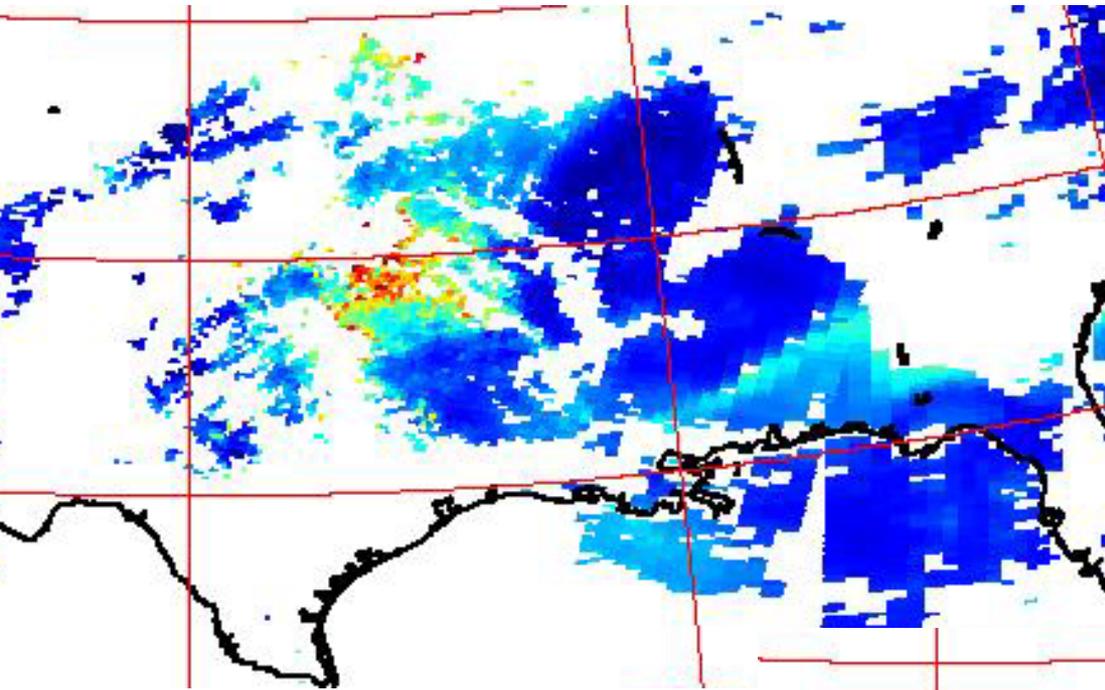
Backdoor cold front pushed smoke over Houston.

Terra AOD - Saturday



Aqua AOD - Too many clouds

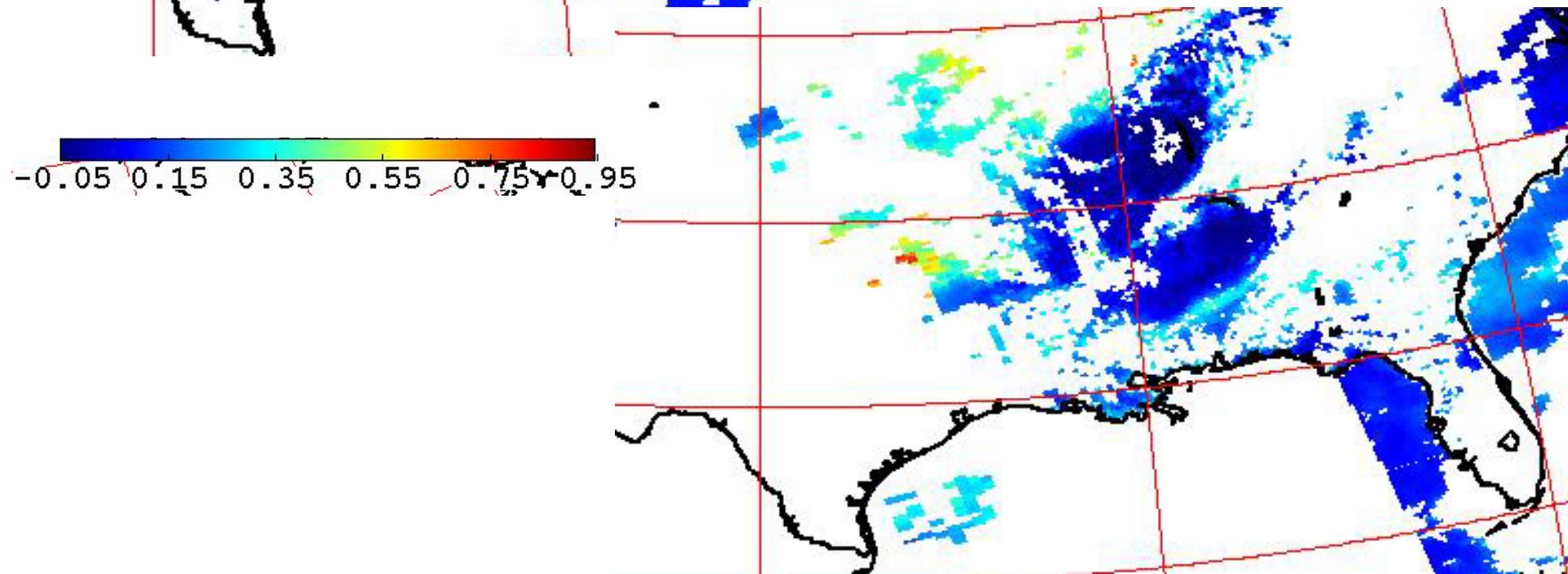
Terra AOD - Yesterday



High AOD associated with agricultural fire plume.

Pushed north of us.

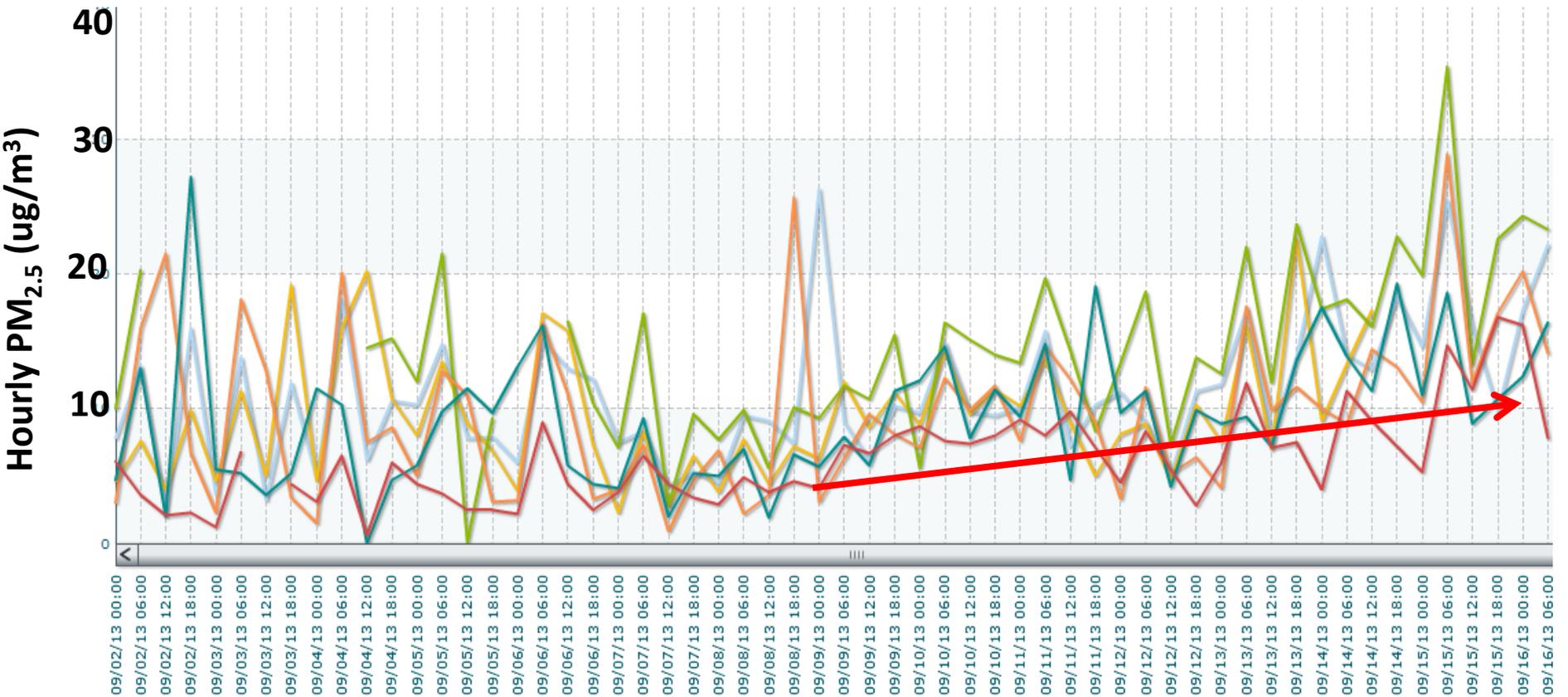
Aqua AOD - Yesterday



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

September 2nd – 15th

** EVERY 6th HOUR PLOTTED!!!!



Houston Aldine C8/PM_{2.5}-88502 - 88502/1 Hr/3

Houston Deer Park C35/PM_{2.5}-88502 - 88502/1 Hr/3

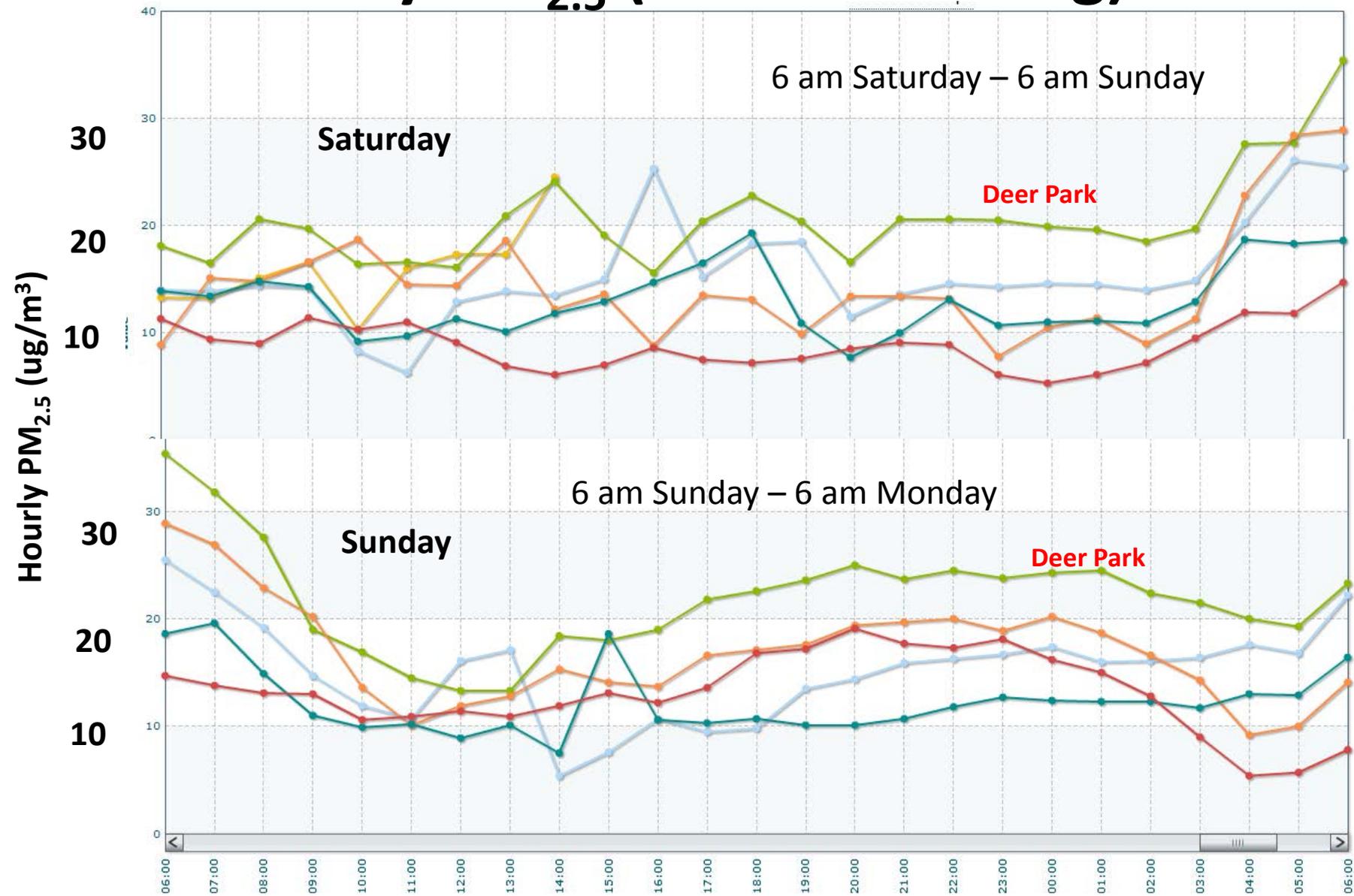
Conroe Relocated C78/PM_{2.5}-88502 - 88502/1 Hr/3

Clinton C403/PM_{2.5}-88502 - 88502/1 Hr/3

Seabrook Friendship Park C45/PM_{2.5}-88502 - 88502/1 Hr/3

Galveston Airport C1034/PM_{2.5}-88502 - 88502/1 Hr/3

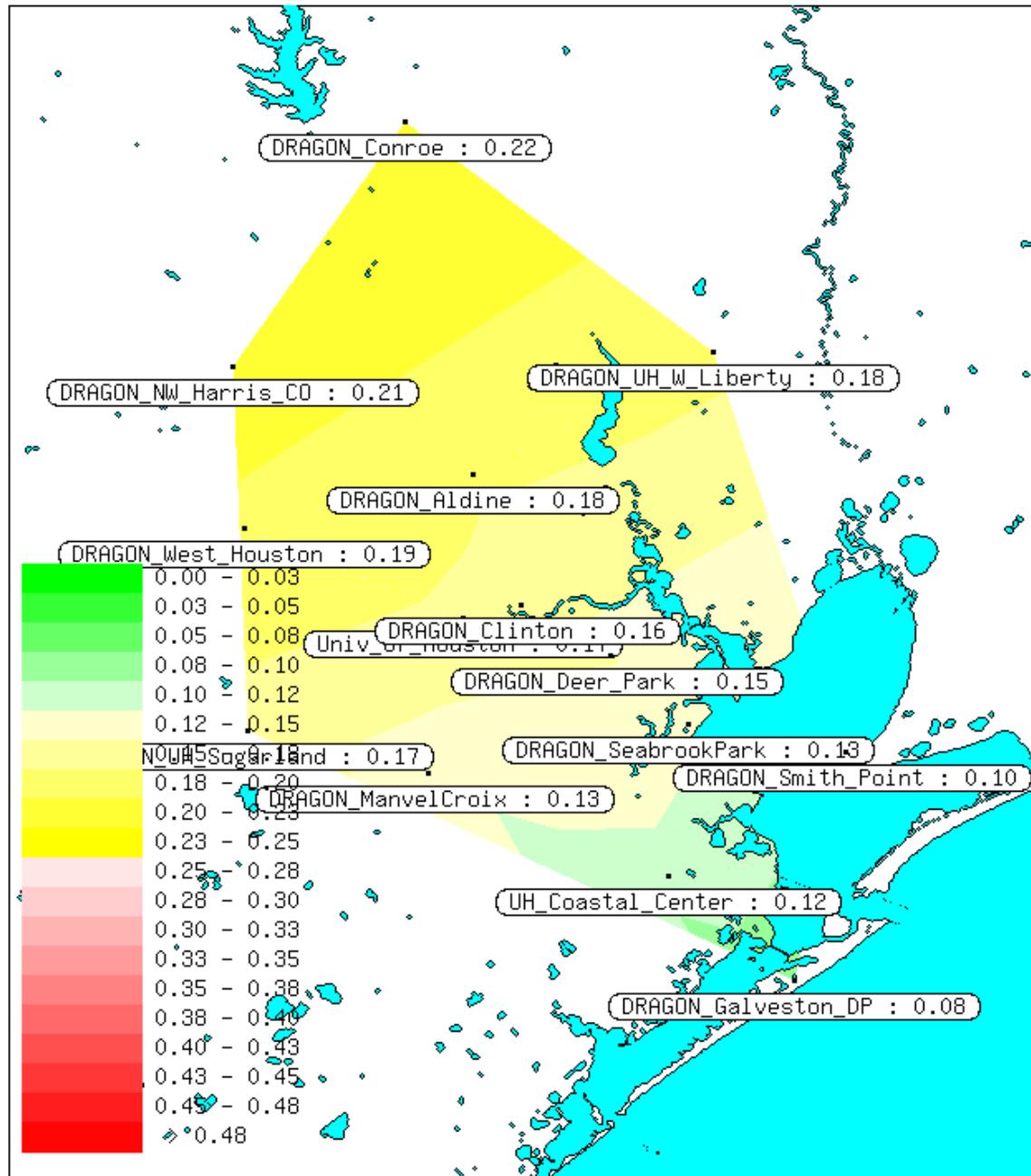
Hourly PM_{2.5} (airnowtech.org)



- Houston Aldine C8/PM2.5-88502 - 88502/1 Hr/3
- Houston Deer Park C35/PM2.5-88502 - 88502/1 Hr/3
- Conroe Relocated C78/PM2.5-88502 - 88502/1 Hr/3
- Clinton C403/PM2.5-88502 - 88502/1 Hr/3
- Seabrook Friendship Park C45/PM2.5-88502 - 88502/1 Hr/3
- Galveston Airport C1034/PM2.5-88502 - 88502/1 Hr/3

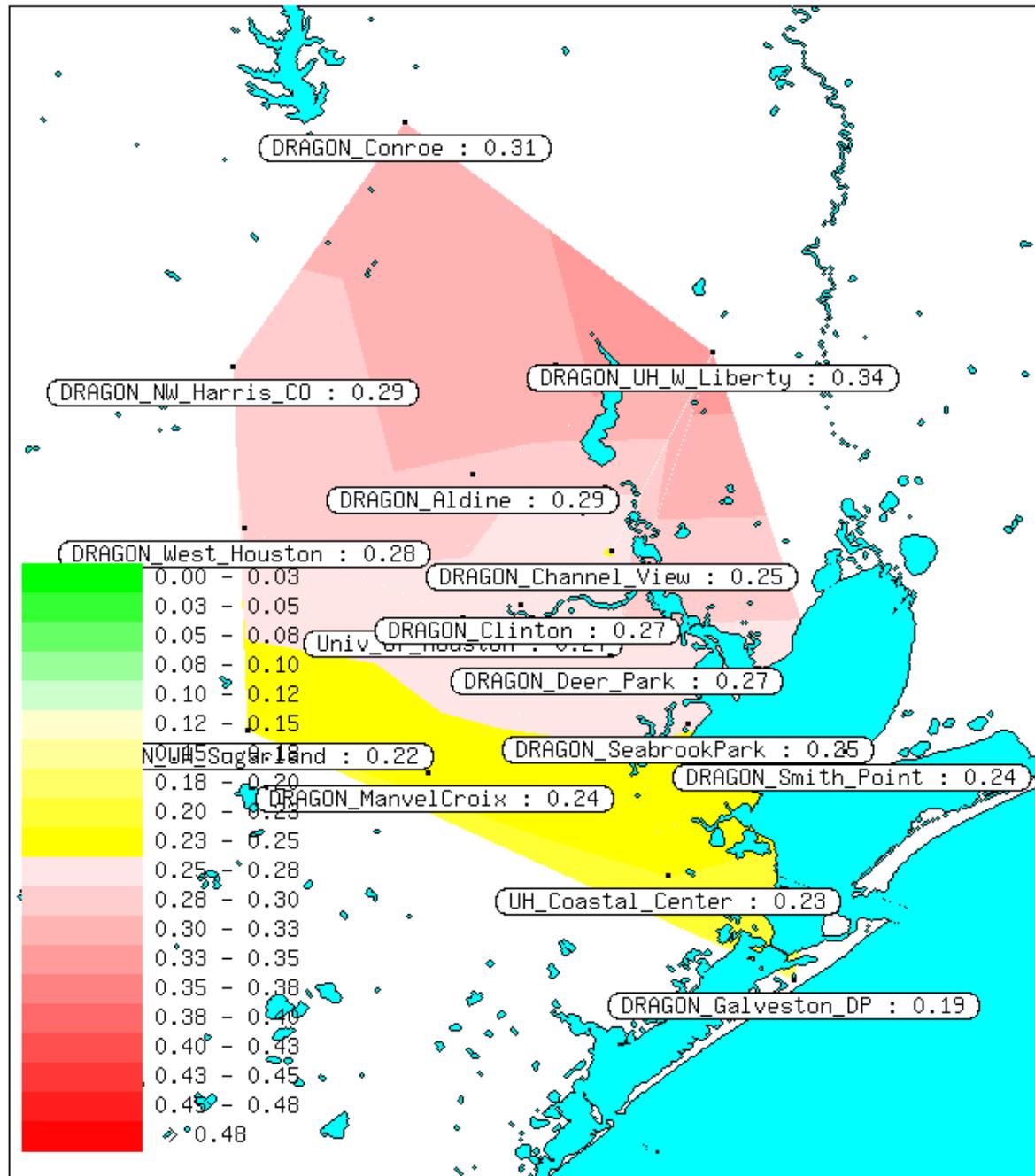
DRAGON : September 12th (Thursday) at Level 1.5

0.08-0.22



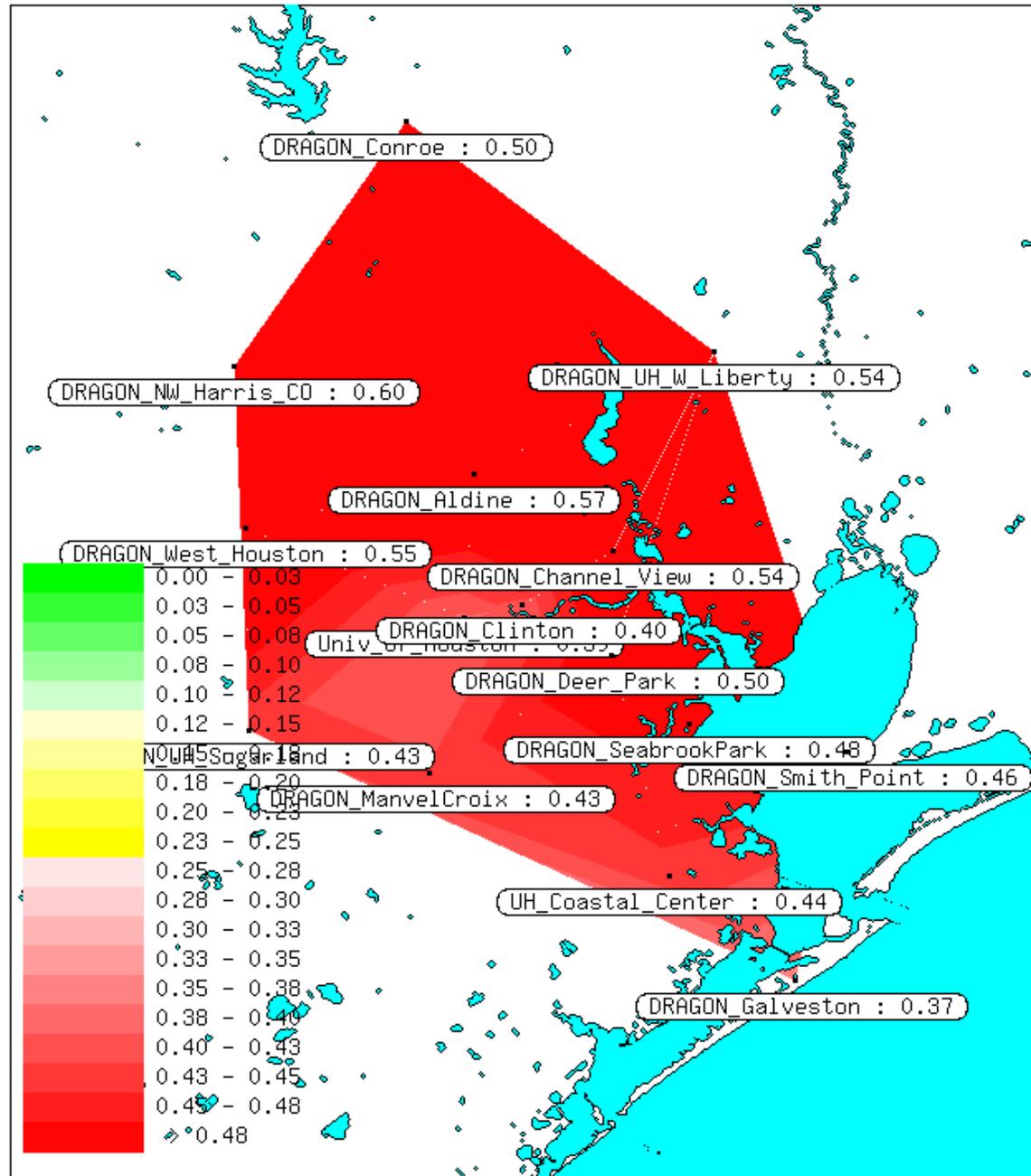
DRAGON : September 13th (Friday) at Level 1.5

0.19-0.34



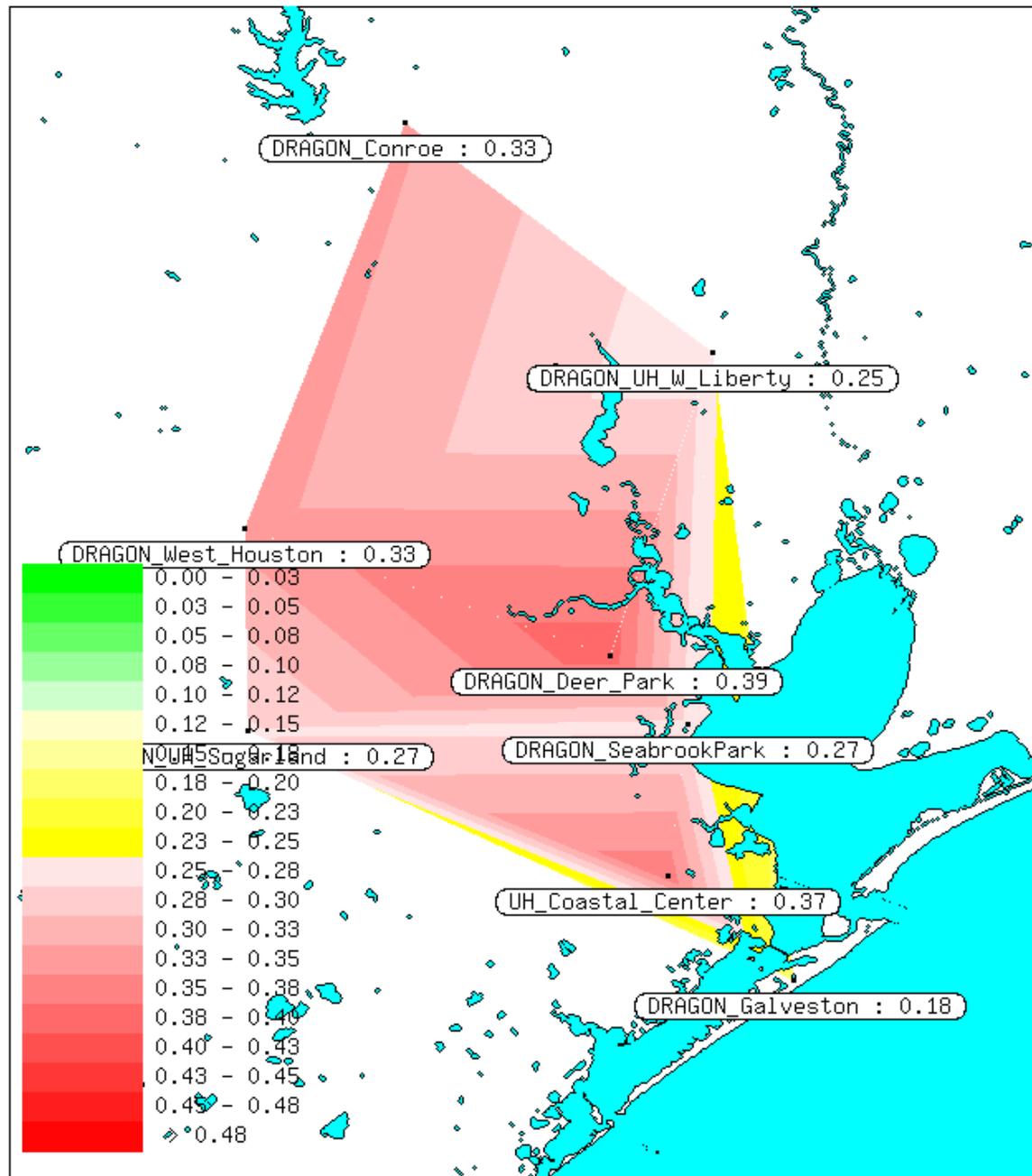
DRAGON : September 14th (Saturday) at Level 1.5

0.37-0.60

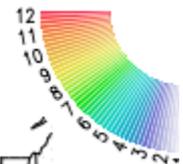


DRAGON : September 15th (Sunday) at Level 1.5

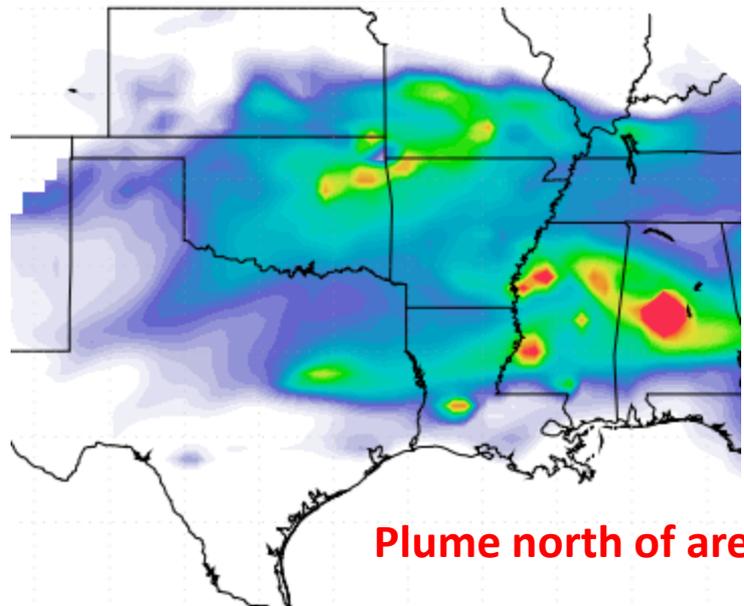
0.18-0.39



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

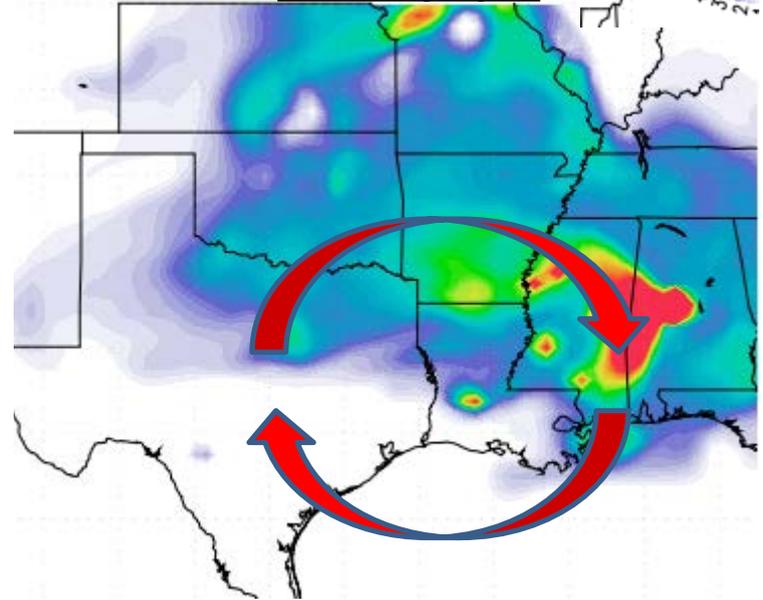


Monday 1pm

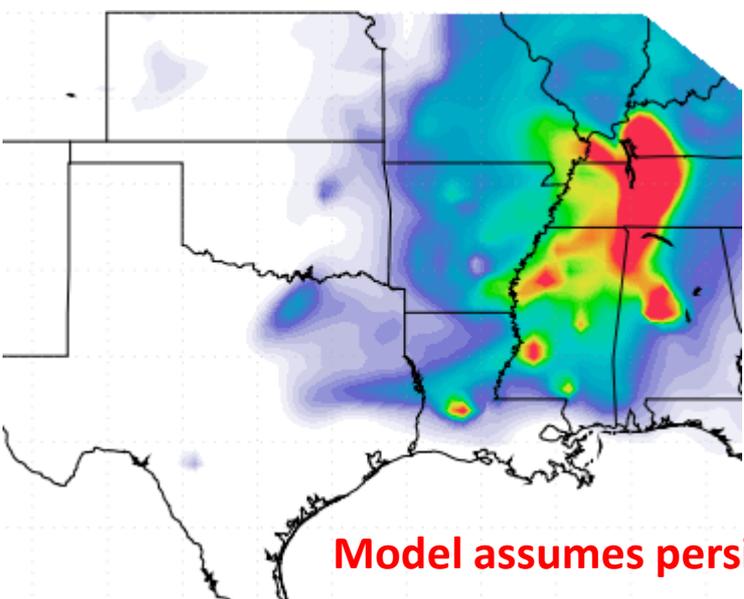


Plume north of area today.

Tuesday 1pm

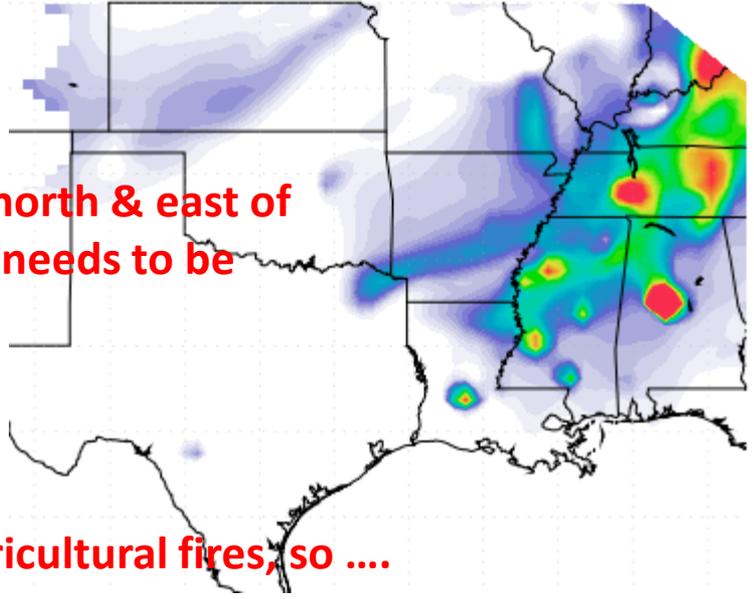


Wednesday 1pm



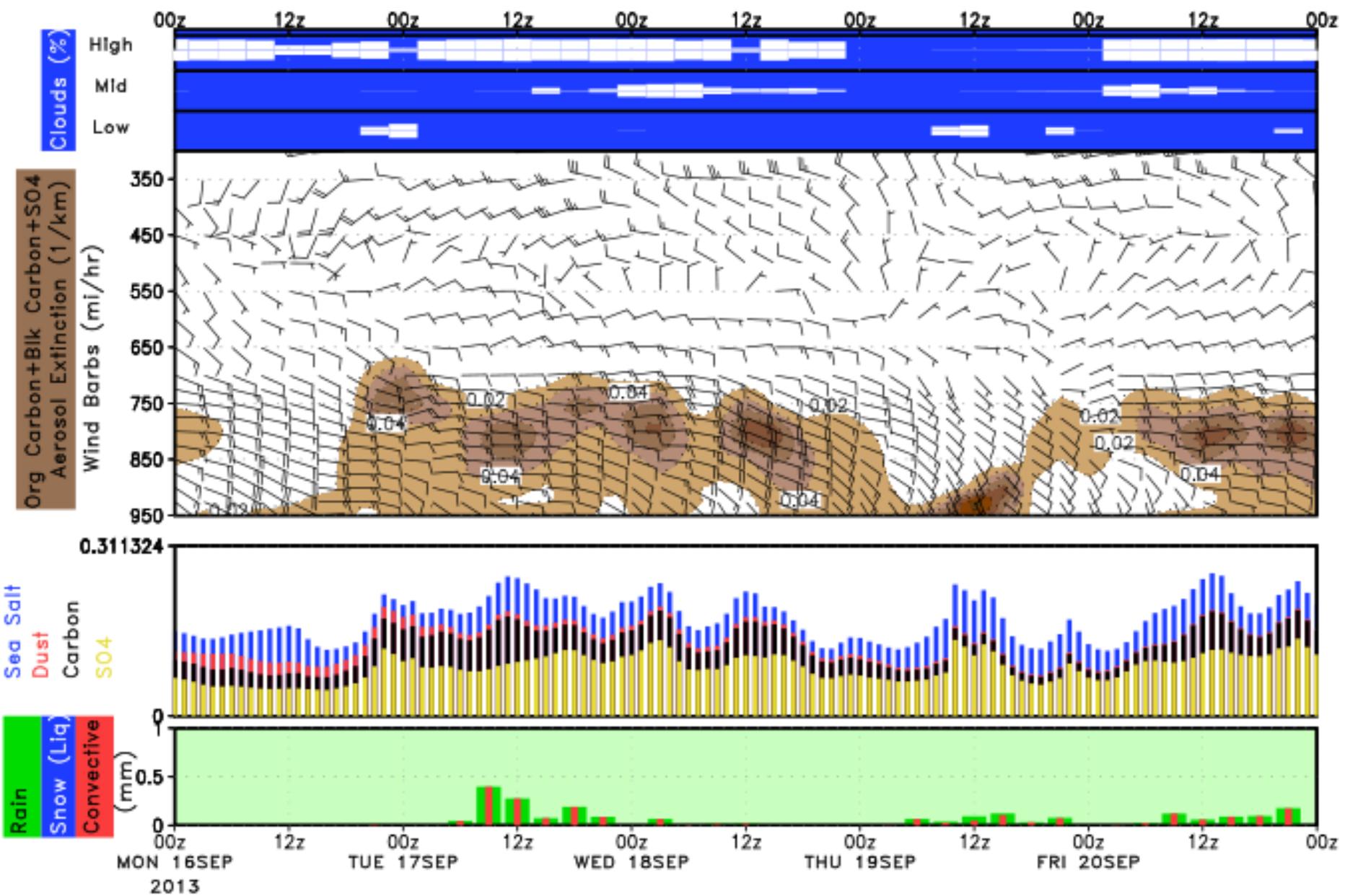
Plume just north & east of Houston so needs to be watched.

Thursday 1pm

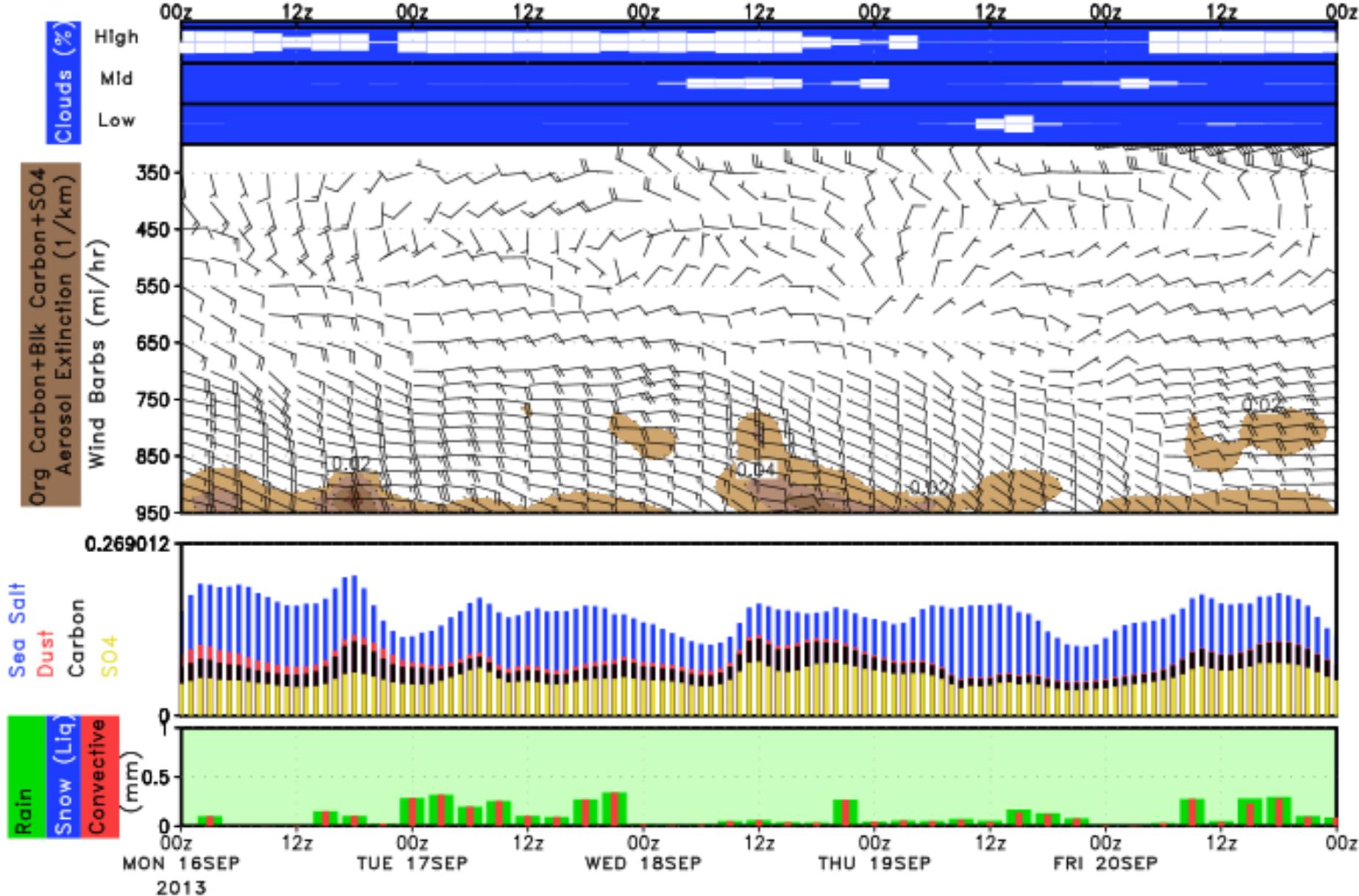


Model assumes persistence of agricultural fires, so

CONROE



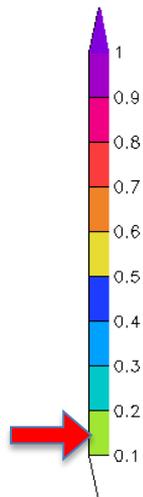
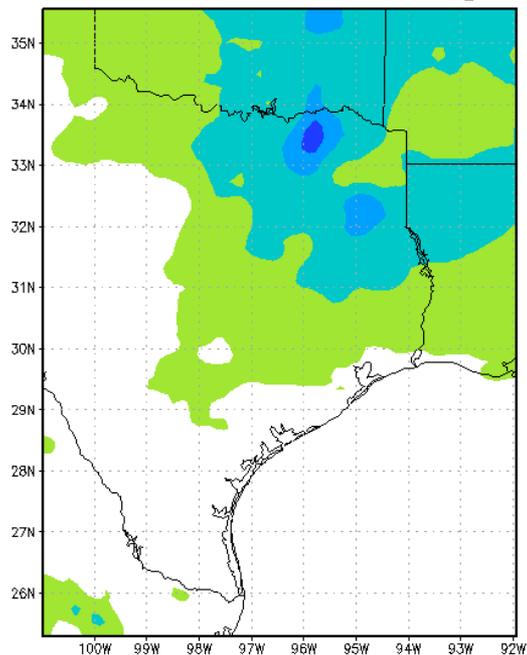
GALVESTON





(dev) aot 32H VALID 14Z 17 SEP2013 [dimensionless]

2 pm

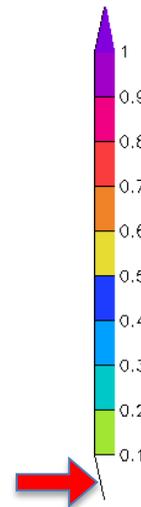
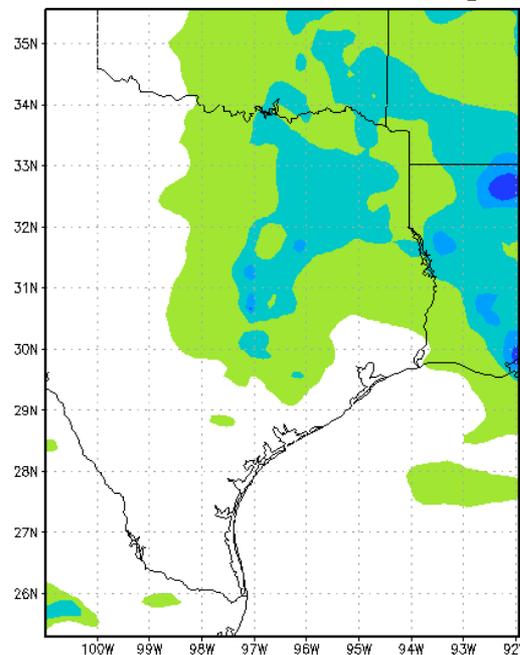


TUESDAY

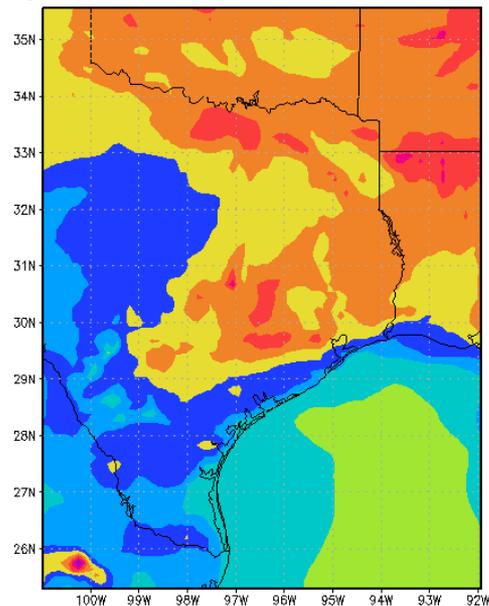
NOAA Experimental CMAQ AOT

(dev) aot 40H VALID 22Z 17 SEP2013 [dimensionless]

5 pm



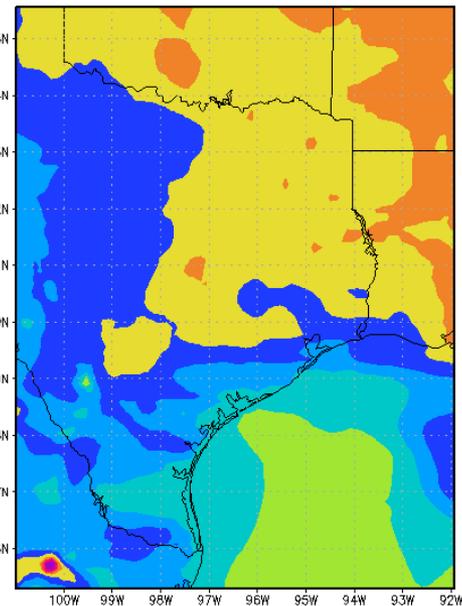
 (dev) sfc pm25 32H VALID 14Z 17 SEP2013 [$\mu\text{g}/\text{m}^3$]
9 am



TUESDAY

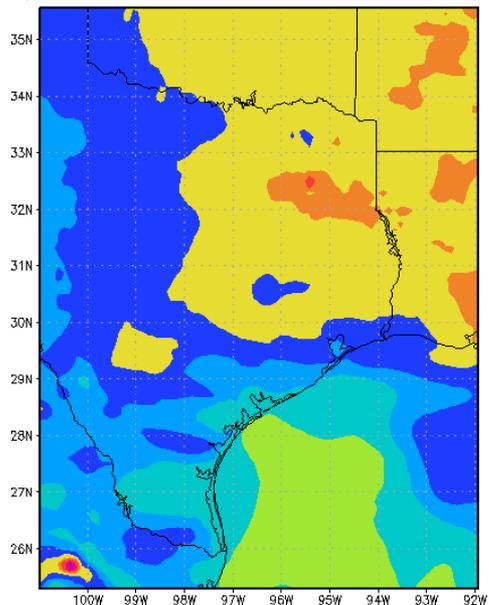
**NOAA
Experimental
CMAQ Surface
Pm 2.5**

(dev) sfc pm25 35H VALID 17Z 17 SEP2013 [$\mu\text{g}/\text{m}^3$]
noon

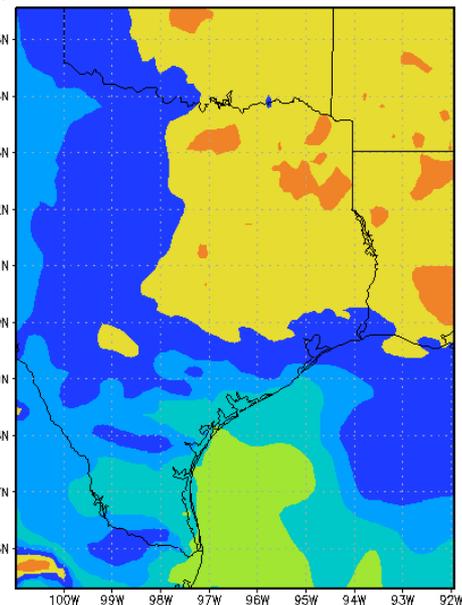


5 pm

(dev) sfc pm25 37H VALID 19Z 17 SEP2013 [$\mu\text{g}/\text{m}^3$]
2 pm

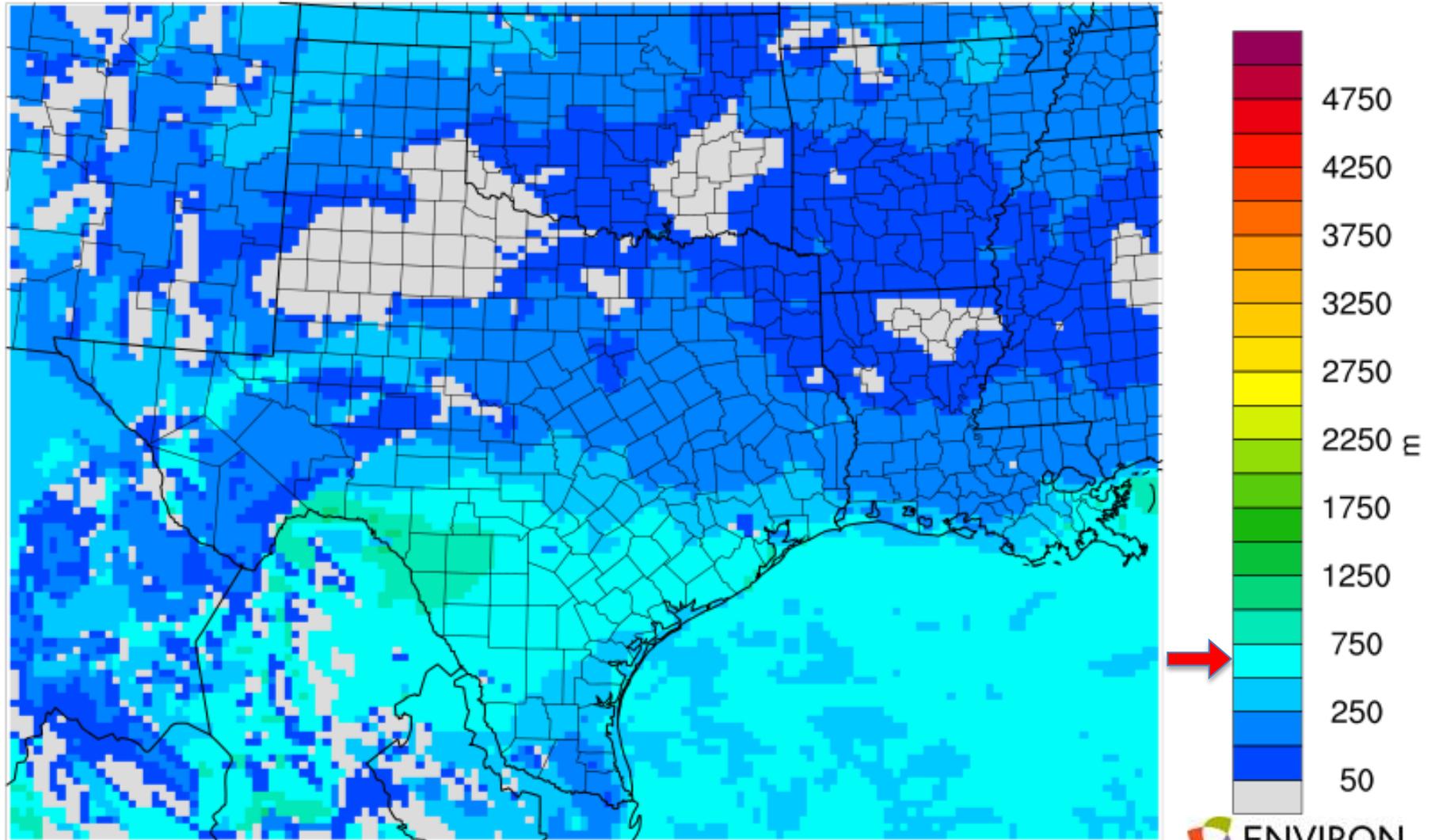


(dev) sfc pm25 40H VALID 22Z 17 SEP2013 [$\mu\text{g}/\text{m}^3$]



PBL Height

Texas 12km

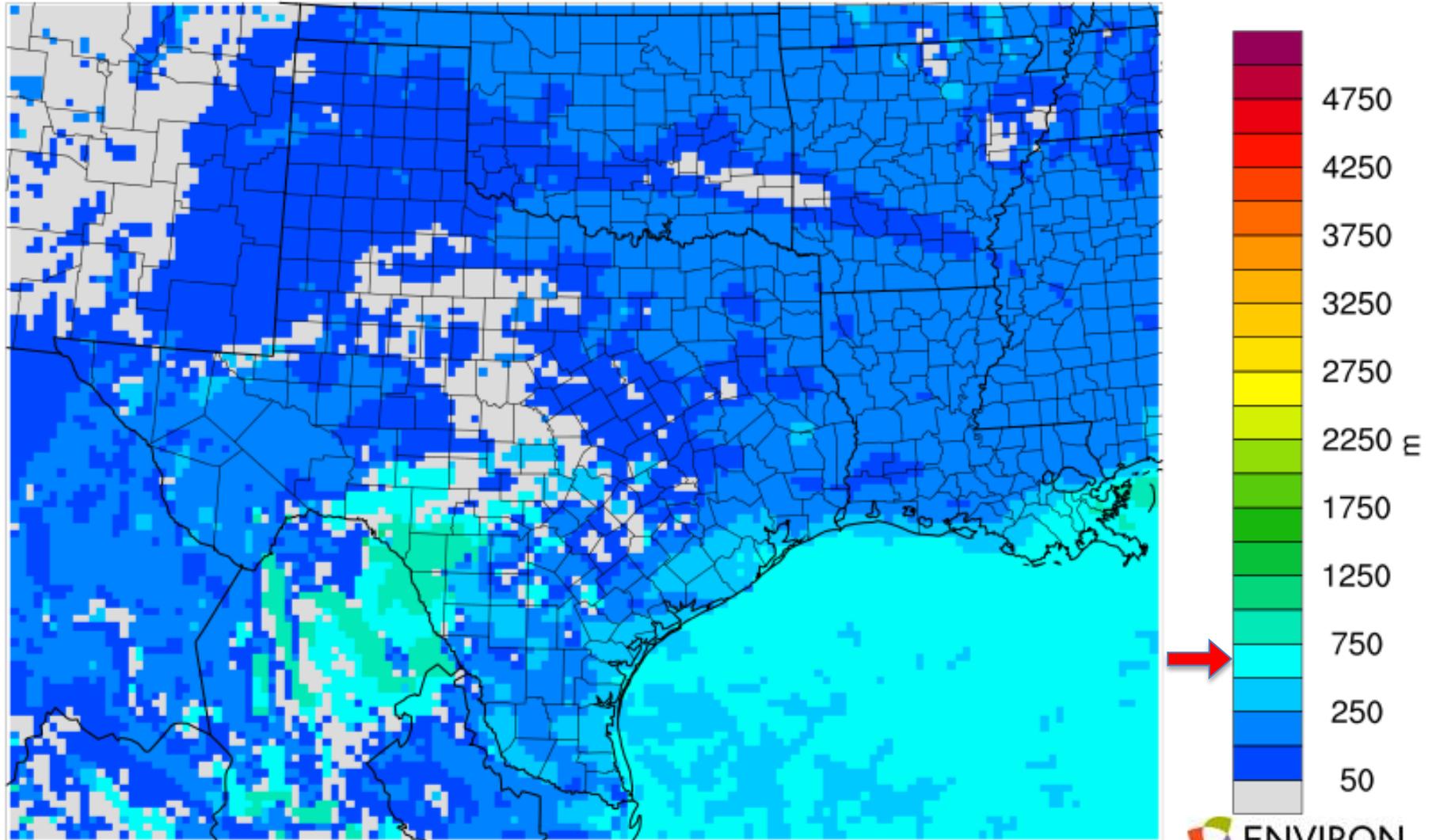


Min(14,108) = 15.6, Max(48,43) = 1037.2

Tue September 17 06:00 CST

PBL Height

Texas 12km

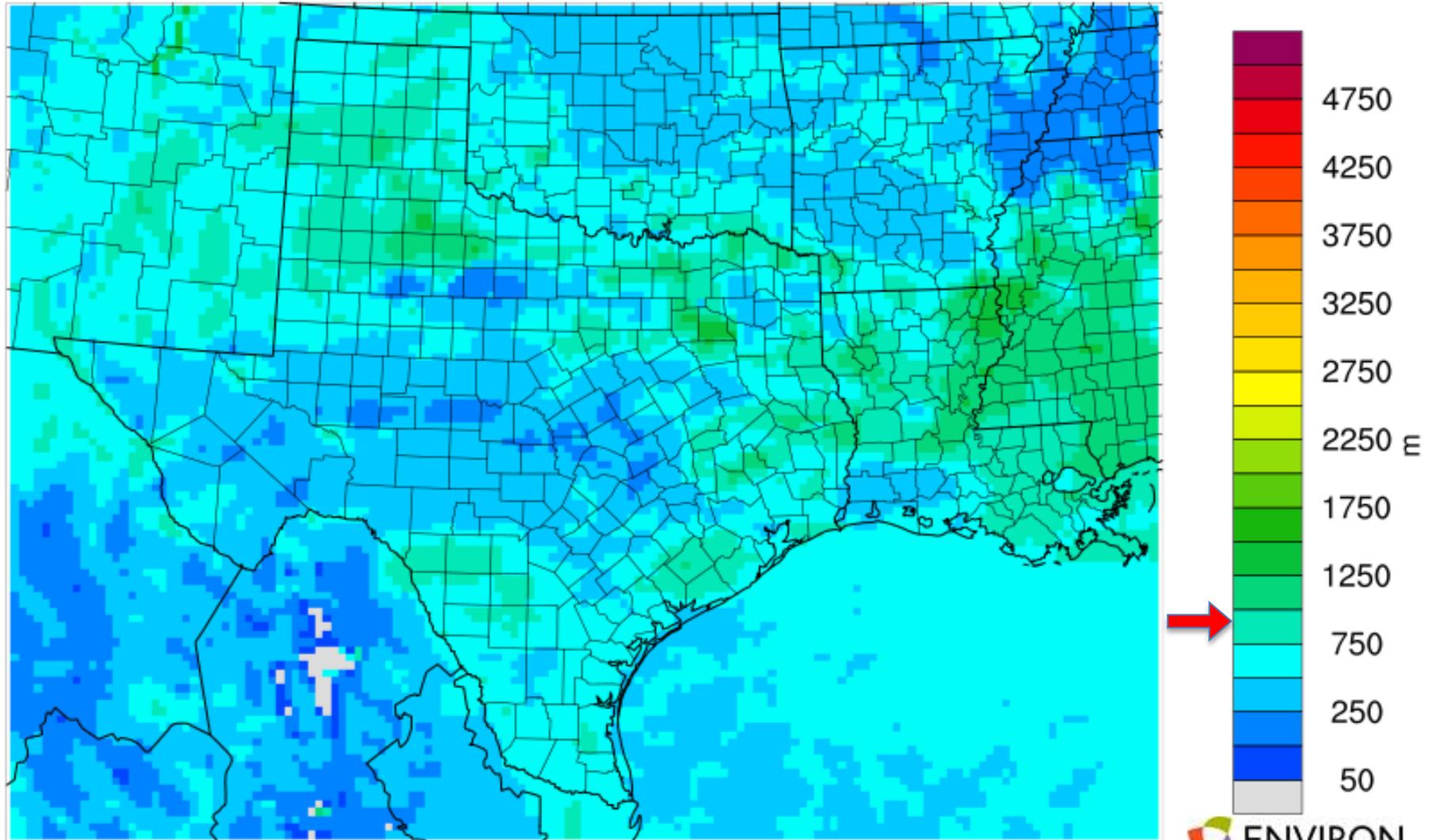


Min(12,108) = 15.9, Max(49,41) = 1083.2

Tue September 17 08:00 CST

PBL Height

Texas 12km

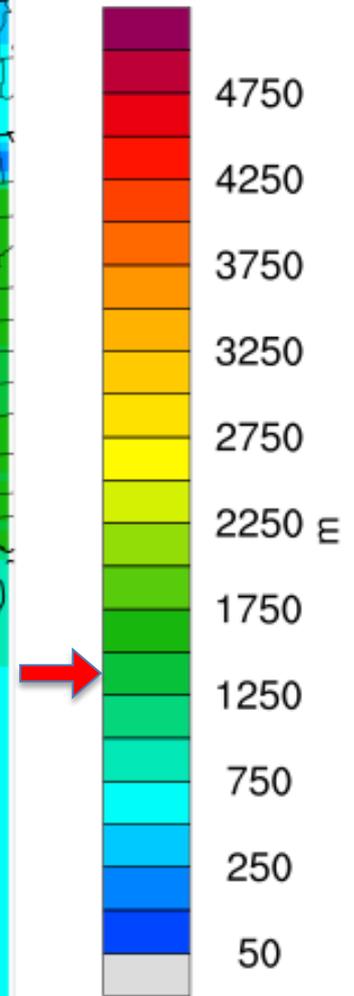
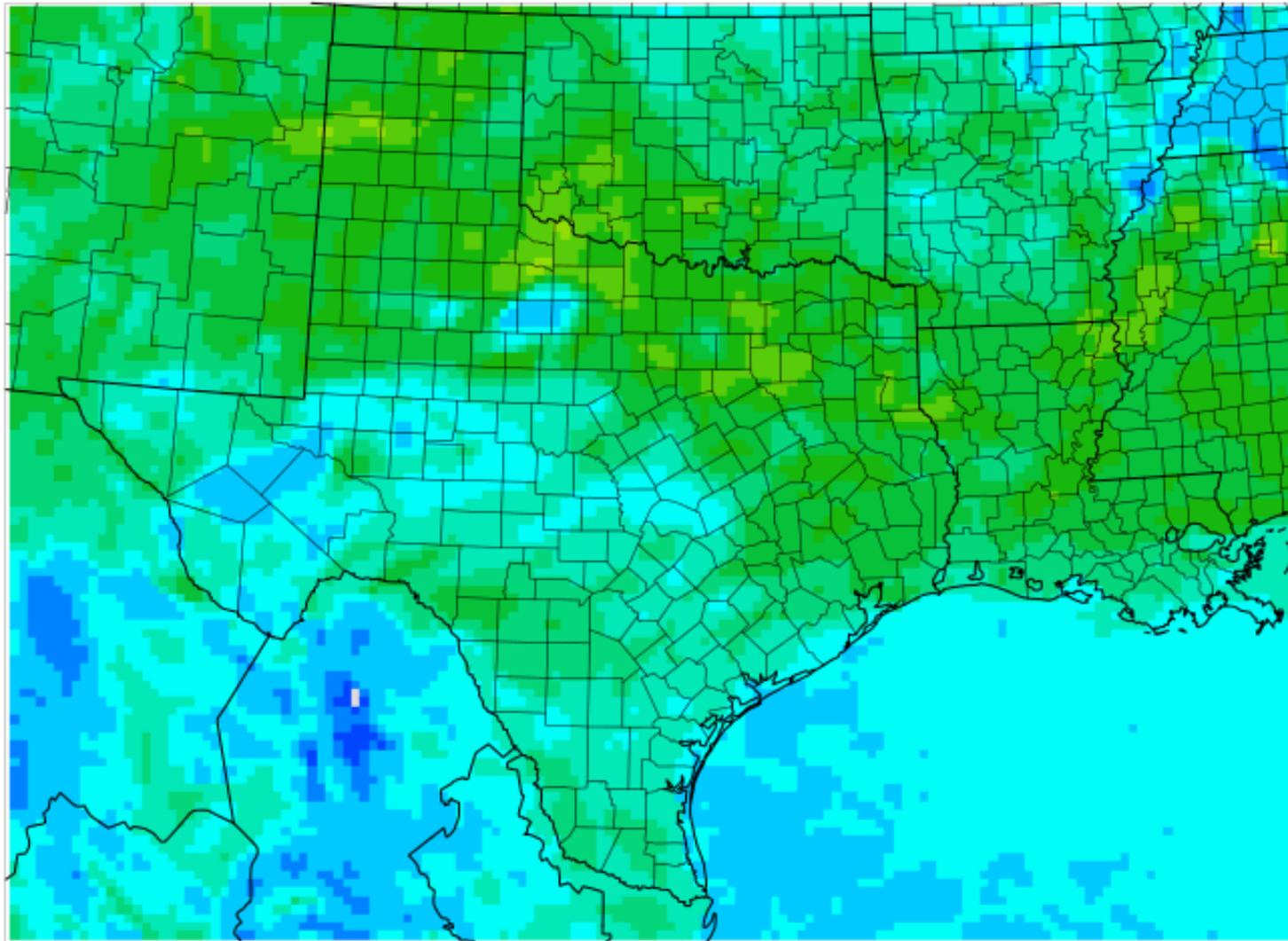


Min(42,25) = 23.4, Max(23,105) = 1433.3

Tue September 17 10:00 CST

PBL Height

Texas 12km



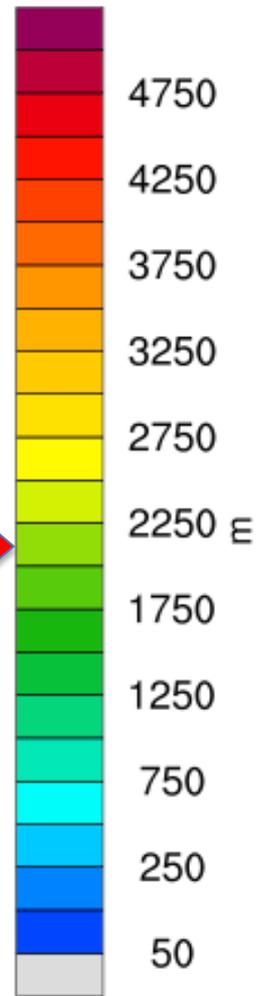
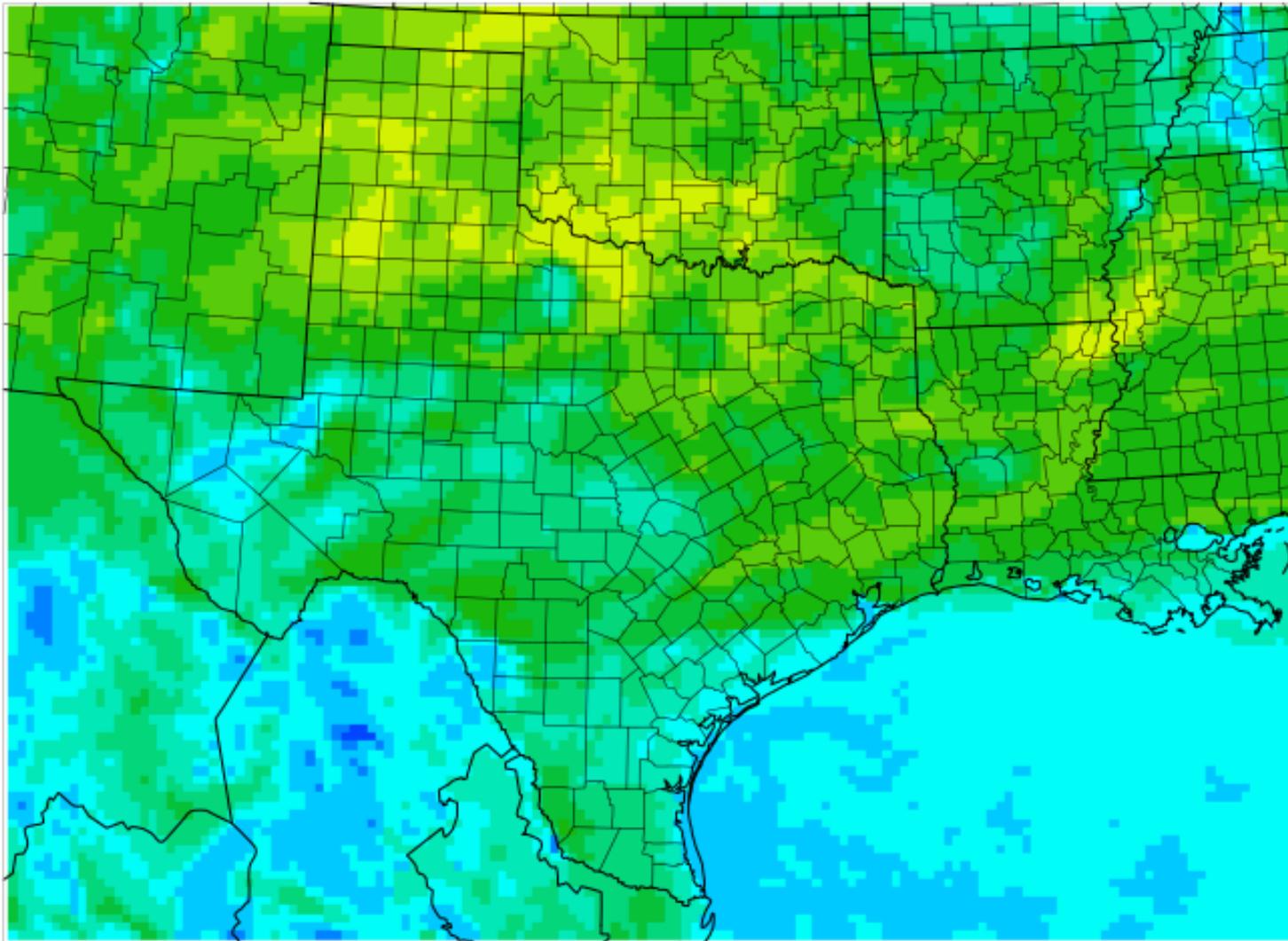
Min(41,30) = 44.2, Max(65,83) = 2098.5

Tue September 17 12:00 CST



PBL Height

Texas 12km



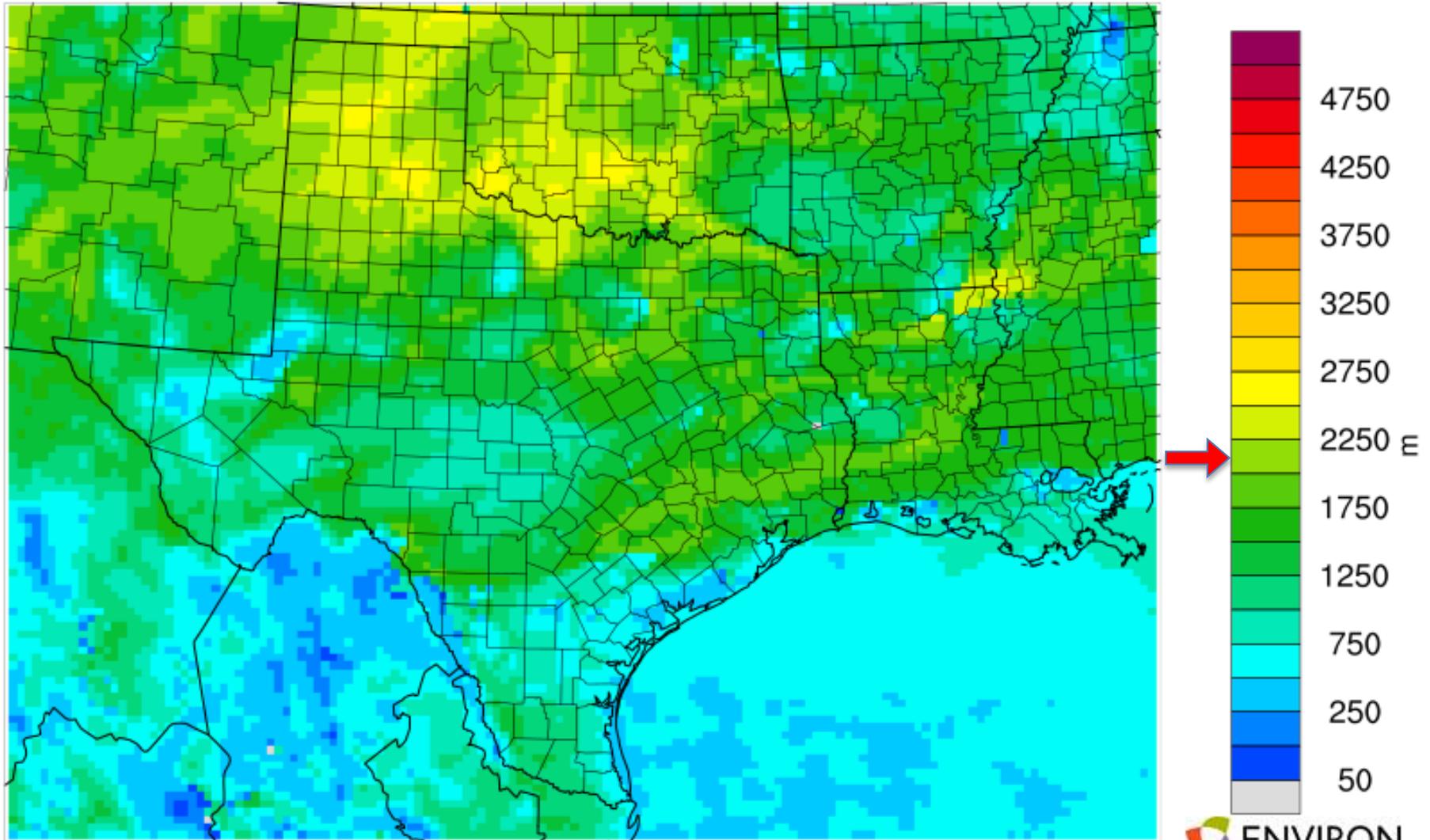
ENVIRON

Min(41,25) = 55.7, Max(59,109) = 2470.8

Tue September 17 14:00 CST

PBL Height

Texas 12km

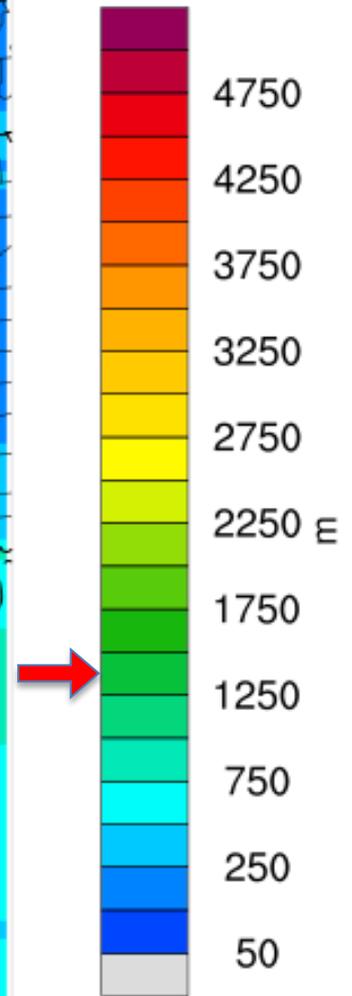
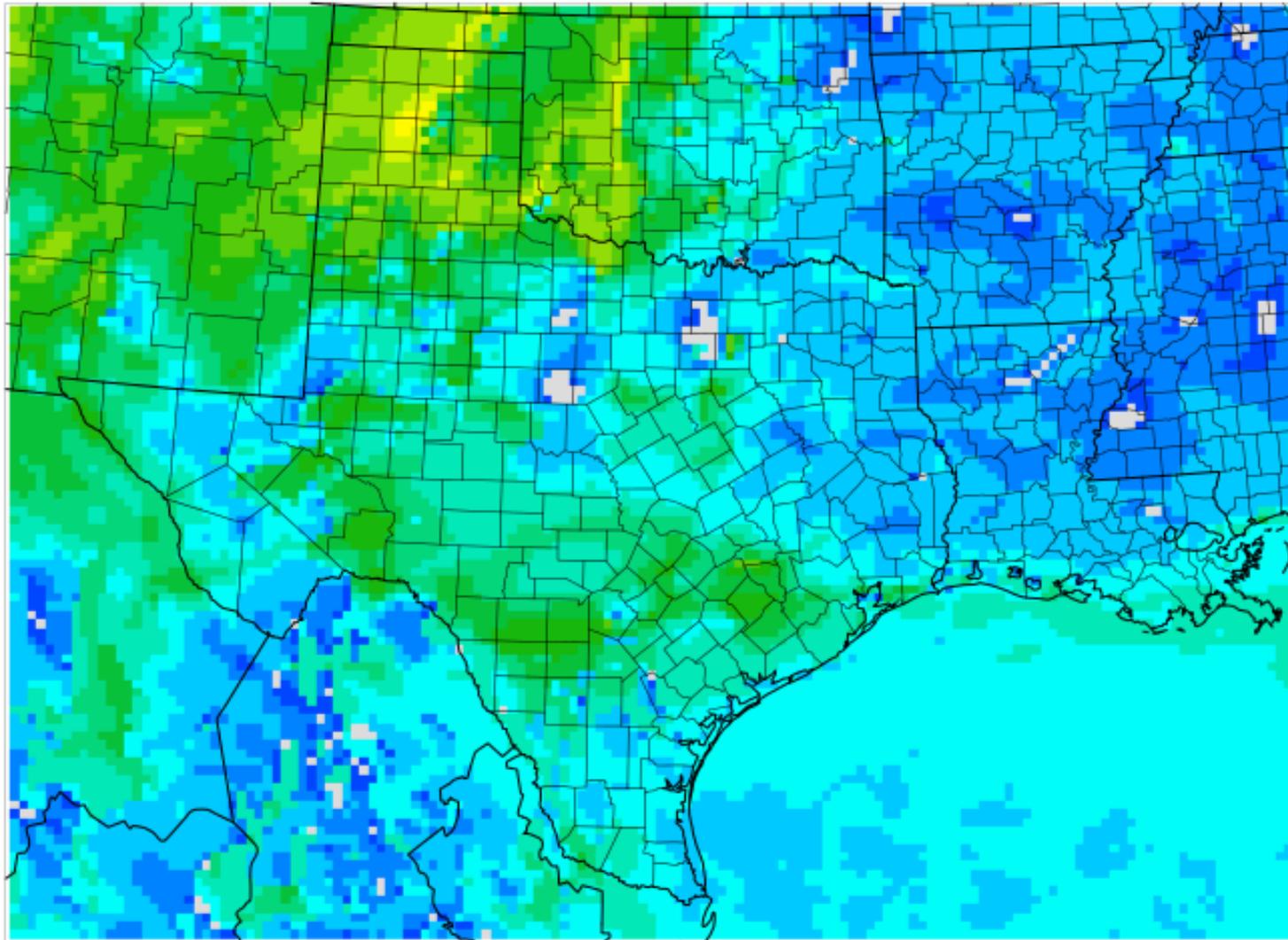


Min(105,55) = 42.6, Max(72,85) = 2679.5

Tue September 17 16:00 CST

PBL Height

Texas 12km



ENVIRON

Min(142,106) = 16.8, Max(48,97) = 2515.9

Tue September 17 18:00 CST

Model Intercomparison September 16, 2013

Marcel Friberg

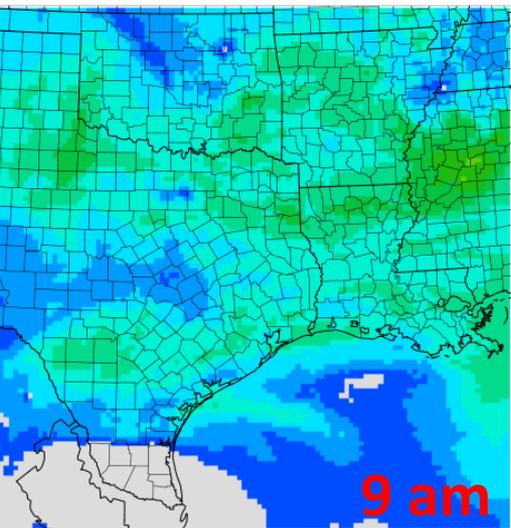
03

CAMx vs. NOAA-CMAQ
vs. UH-CMAQ
Surface



CAMx

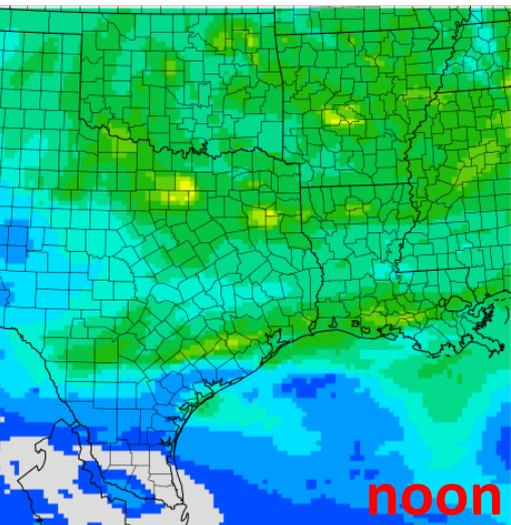
Ozone
Best Case



Min(54,4) = 4.0, Max(142,78) = 66.0

Tue September 17 09:00 CST

Ozone
Best Case



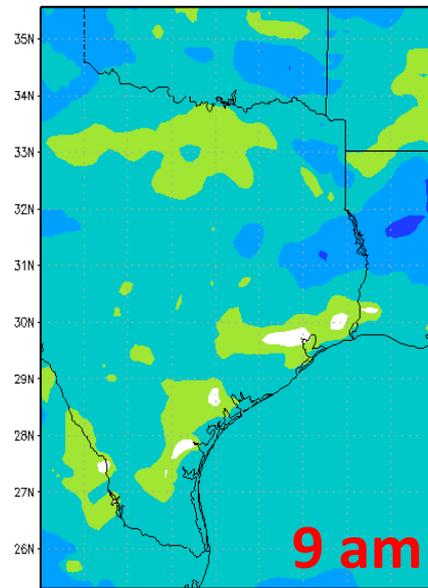
Min(45,16) = 23.8, Max(113,86) = 77.6

Tue September 17 12:00 CST



NOAA-CMAQ Surface O3

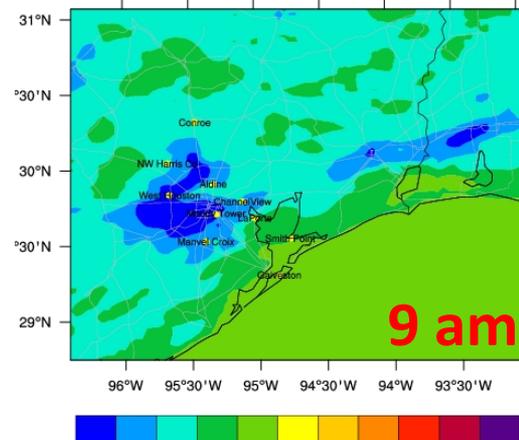
O3 [ppb] at 1013 [hPa] Valid 14Z SEP 17 2013



UH-CMAQ

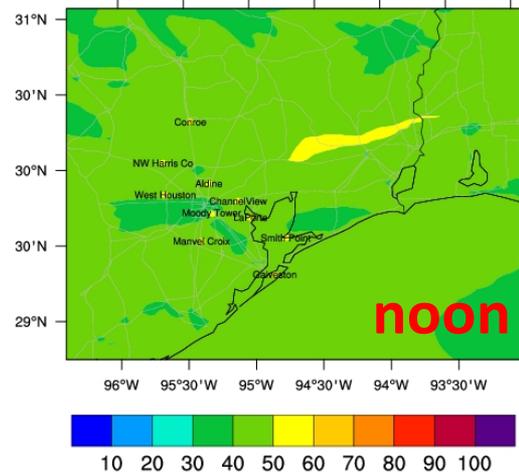
CMAQ 20130916_14:00:00Z

O3 (ppbv) at 1000 hpa UH Modeling Group



CMAQ 20130916_17:00:00Z

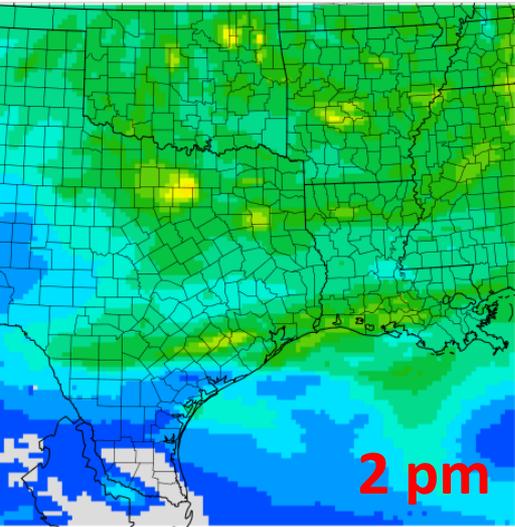
O3 (ppbv) at 1000 hpa UH Modeling Group



10 20 30 40 50 60 70 80 90 100

CAMx

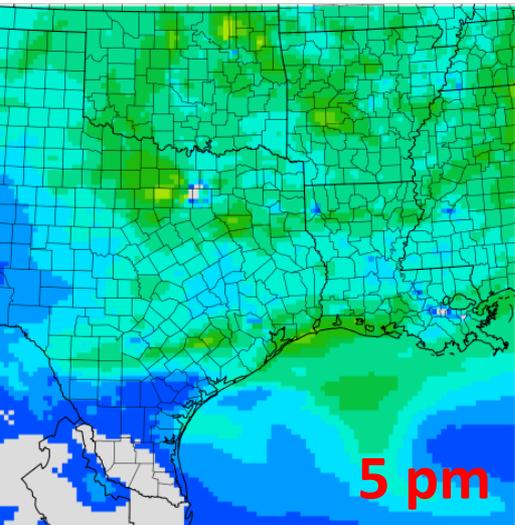
Ozone
Best Case



Min(71,14) = 25.7, Max(81,71) = 83.5

Tue September 17 14:00 CST

Ozone
Best Case

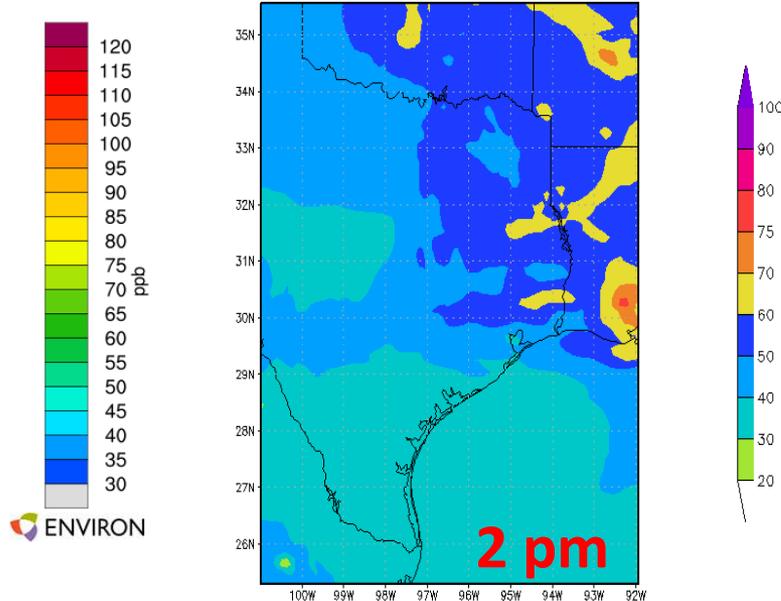


Min(55,4) = 1.1, Max(89,104) = 74.2

Tue September 17 17:00 CST

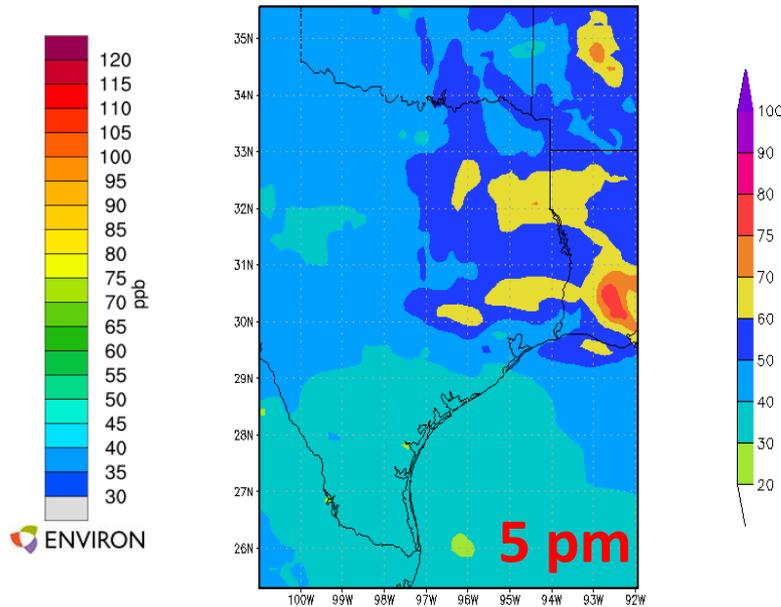
NOAA-CMAQ Surface O3

O3 [ppb] at 1013 [hPa] Valid 19Z SEP 17 2013



ENVIRON

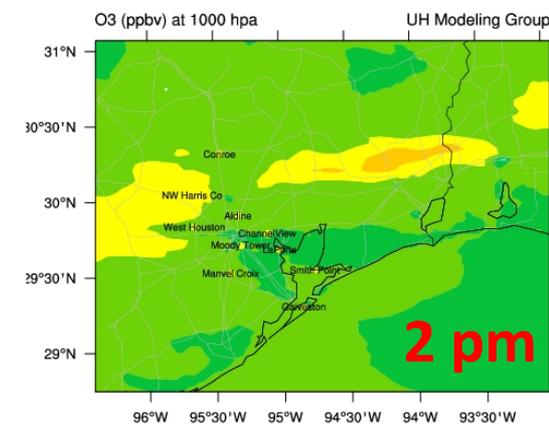
O3 [ppb] at 1013 [hPa] Valid 22Z SEP 17 2013



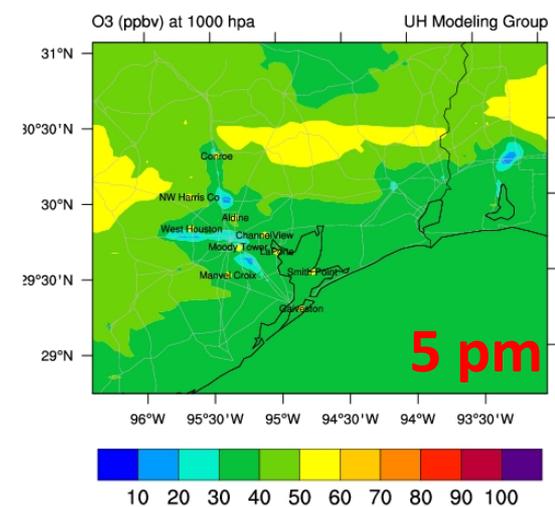
ENVIRON

UH-CMAQ

CMAQ 20130916_19:00:00Z



CMAQ 20130916_22:00:00Z



10 20 30 40 50 60 70 80 90 100

03

CAMx vs. NOAA-CMAQ

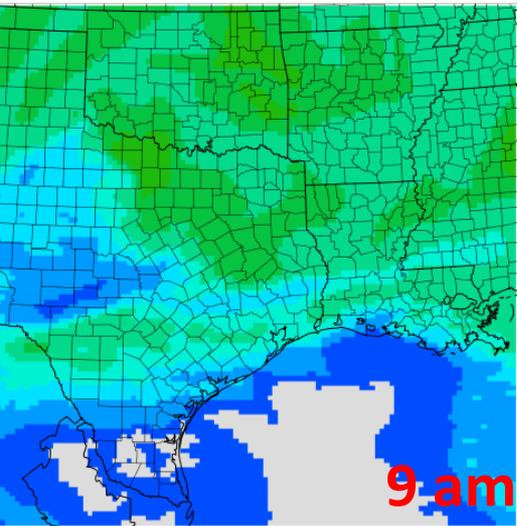
vs. UH-CMAQ

Layer 14

CAMx

Ozone

Best Case: CAMx Layer 14

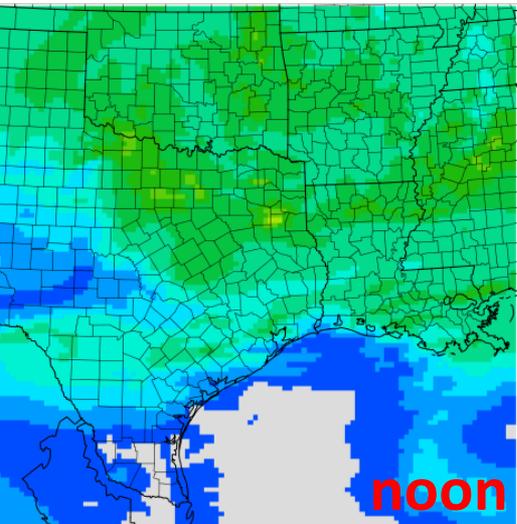


Min(113,25) = 24.6, Max(94,99) = 64.4

Tue September 17 09:00 CST

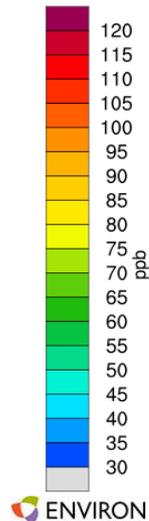
Ozone

Best Case: CAMx Layer 14



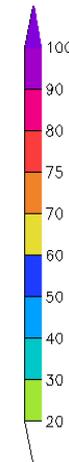
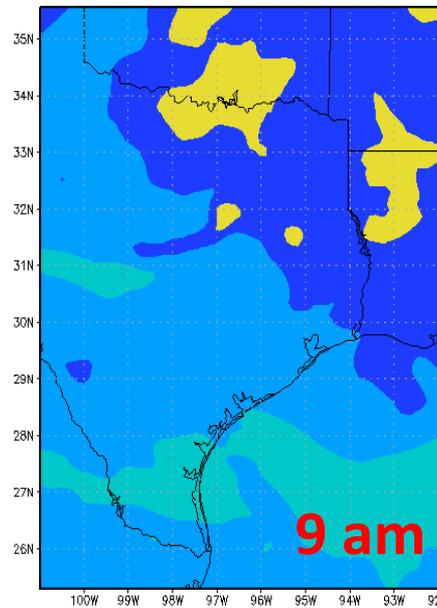
Min(106,25) = 24.5, Max(99,65) = 71.9

Tue September 17 12:00 CST



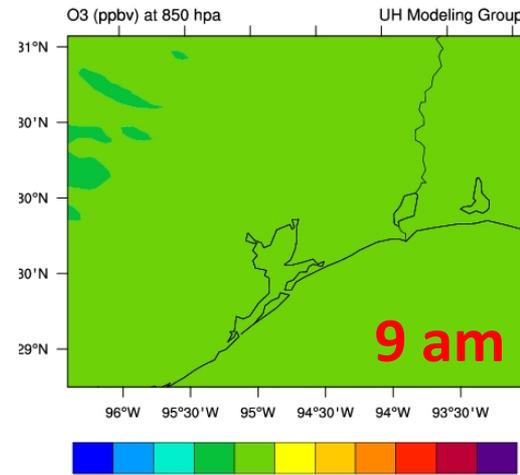
NOAA-CMAQ 850 hPa O3

O3 [ppb] at 850 [hPa] Valid 14Z SEP 17 2013

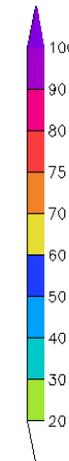
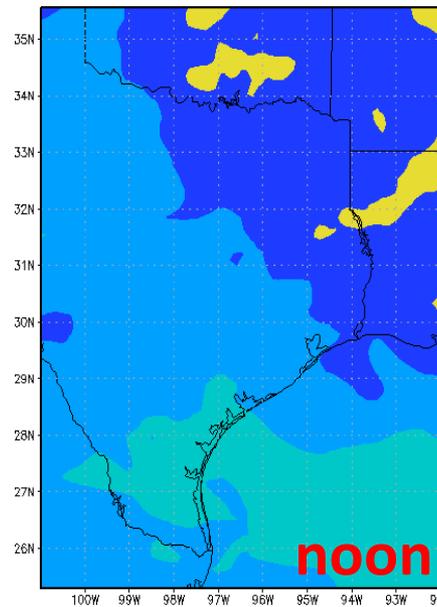


UH-CMAQ

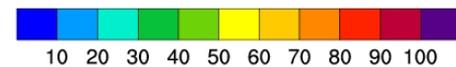
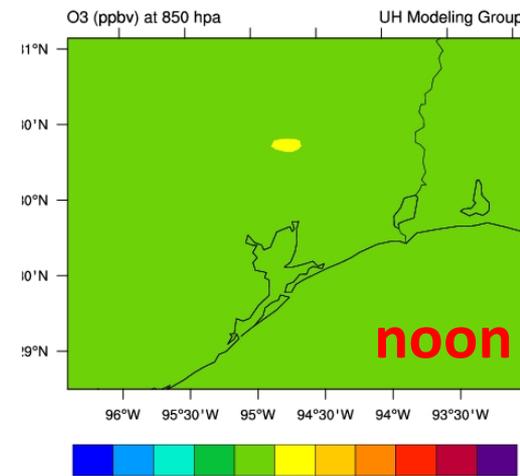
CMAQ 20130916_14:00:00Z



O3 [ppb] at 850 [hPa] Valid 17Z SEP 17 2013



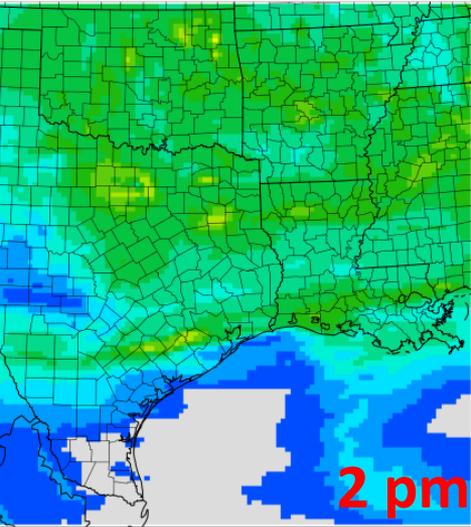
CMAQ 20130916_17:00:00Z



CAMx

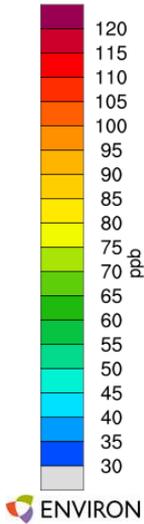
Ozone

Best Case: CAMx Layer 14



Min(88,25) = 24.7, Max(96,102) = 79.1

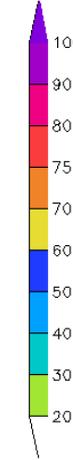
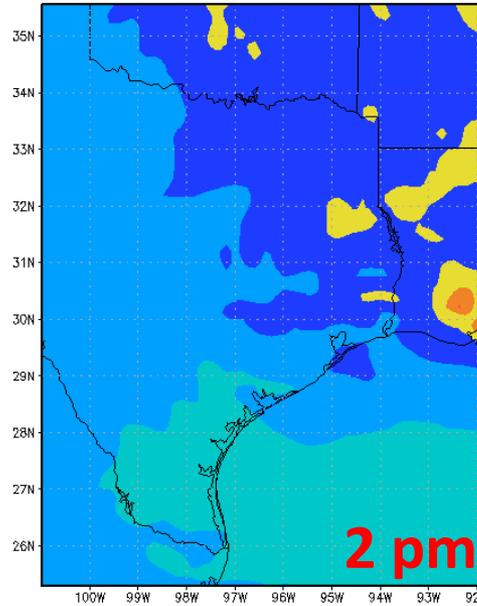
Tue September 17 14:00 CST



NOAA-CMAQ

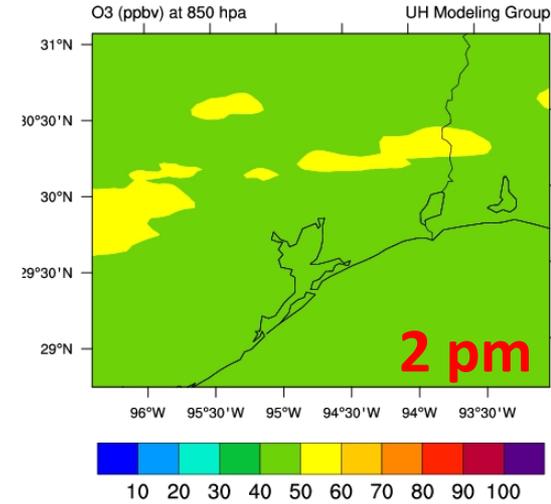
850 hPa O3

O3 [ppb] at 850 [hPa] Valid 19Z SEP 17 2013



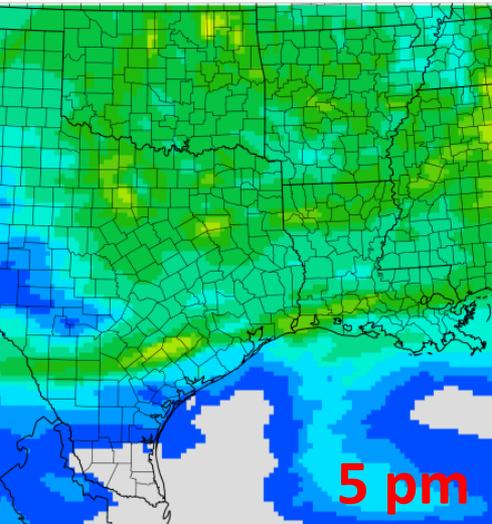
UH-CMAQ

CMAQ 20130916_19:00:00Z



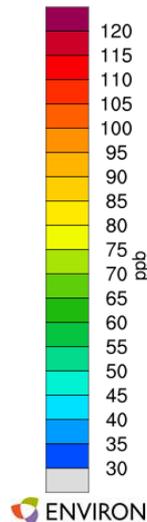
Ozone

Best Case: CAMx Layer 14

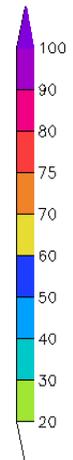
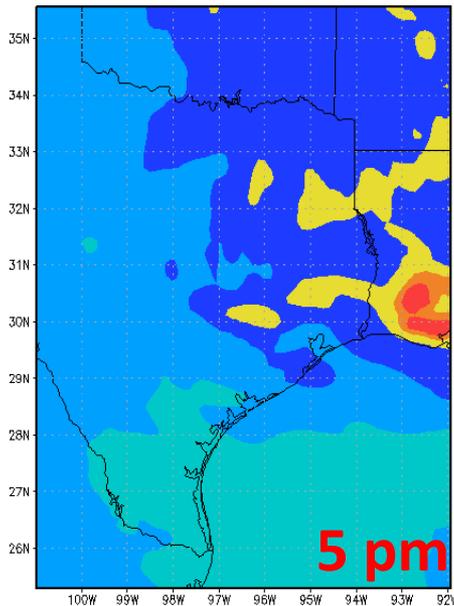


Min(88,2) = 25.5, Max(90,105) = 77.1

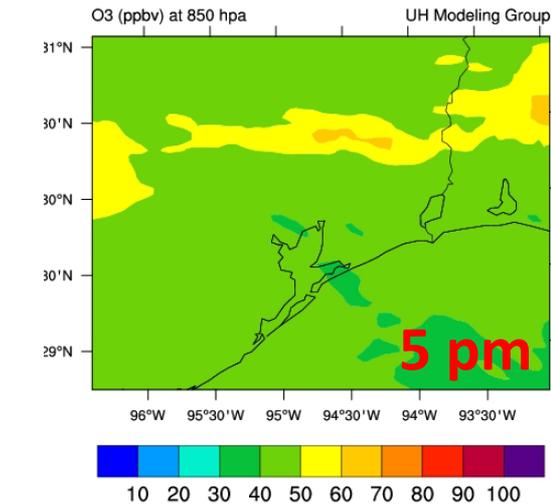
Tue September 17 17:00 CST



O3 [ppb] at 850 [hPa] Valid 22Z SEP 17 2013



CMAQ 20130916_22:00:00Z



NO₂, NO, NO_x

CAMx vs. NOAA-CMAQ

vs. UH-CMAQ

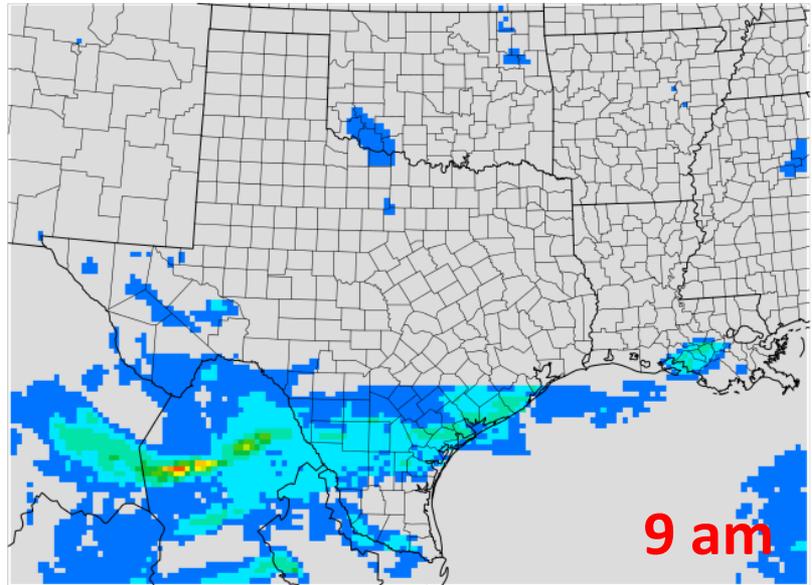
Layer 14

CAMx

NO2 850 hPa

NOAA-CMAQ

NO₂
Best Case: CAMx Layer 14

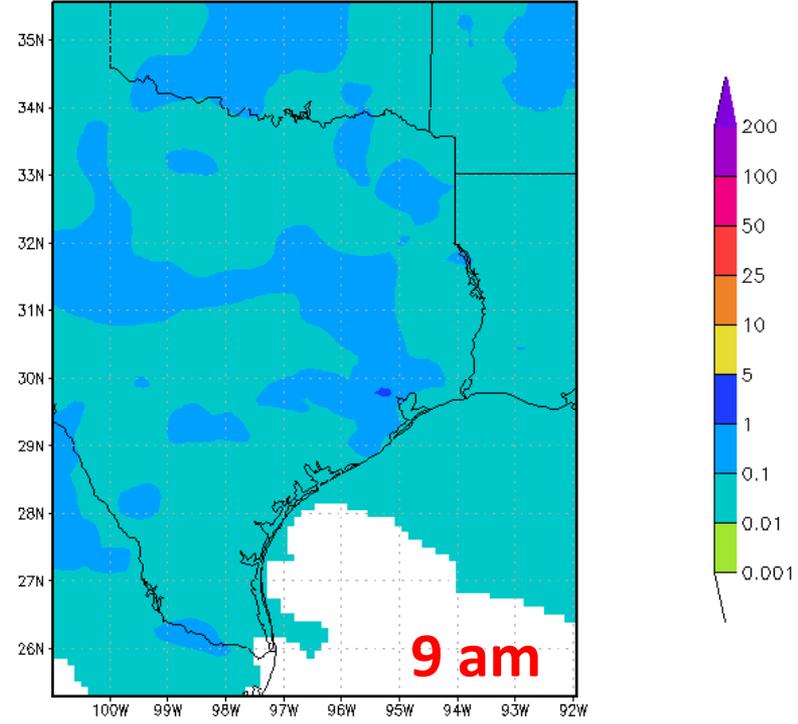


Min(103,5) = 0.0, Max(33,23) = 3.5
Tue September 17 09:00 CST

ENVIRON

GrADS: COLA/IGES

NO2 [ppb] at 850 [hPa] Valid 14Z SEP 17 2013

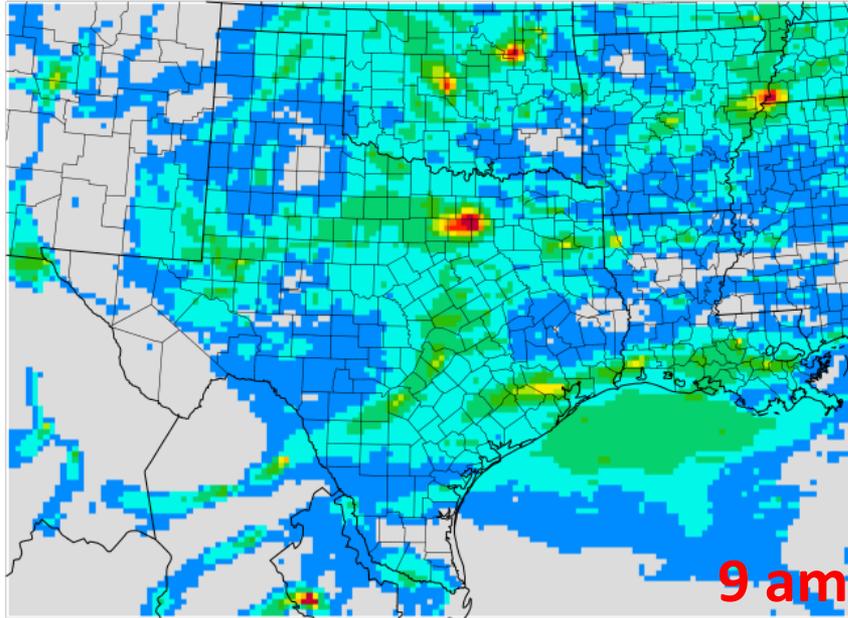


CAMx

NOAA-CMAQ Surface NOx

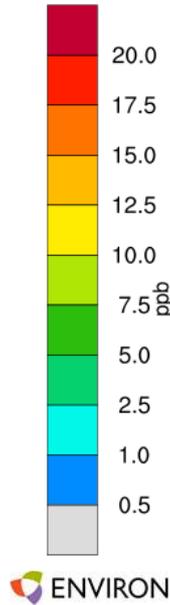
NOx
Best Case

CMAQ 20130916_14:00:00Z



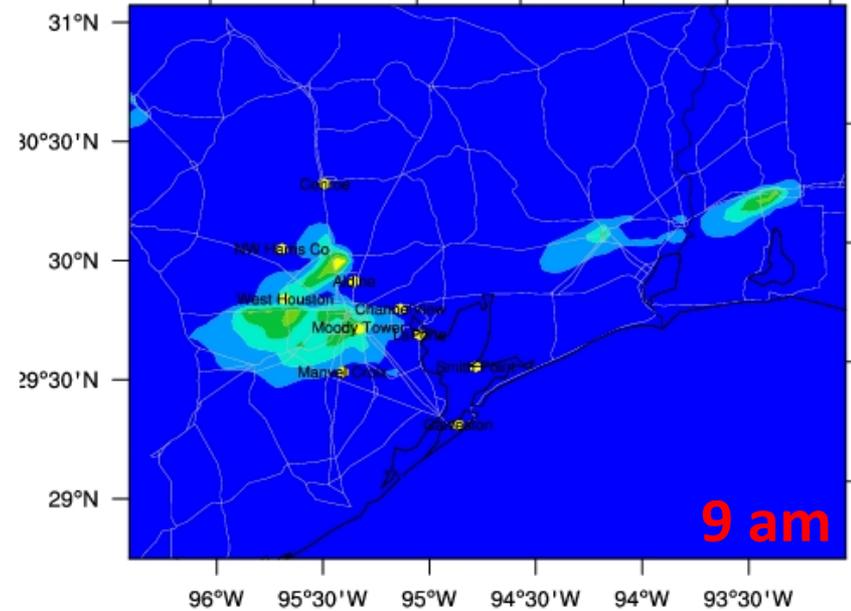
Min(15,72) = 0.1, Max(54,4) = 36.8

Tue September 17 09:00 CST



NOx (ppbv) at 1000 hpa

UH Modeling Group



20 40 60 80 100 120 140 160 180 200

CH20

CAMx Best Case vs. NOAA-CMAQ

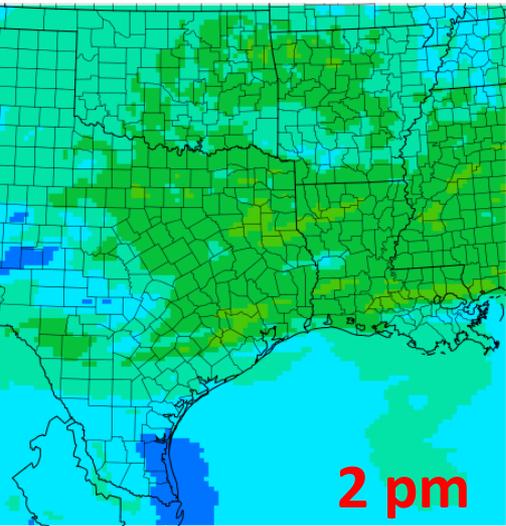
vs. UH-CMAQ

Layer 14

CAMx

Formaldehyde

Best Case: CAMx Layer 14

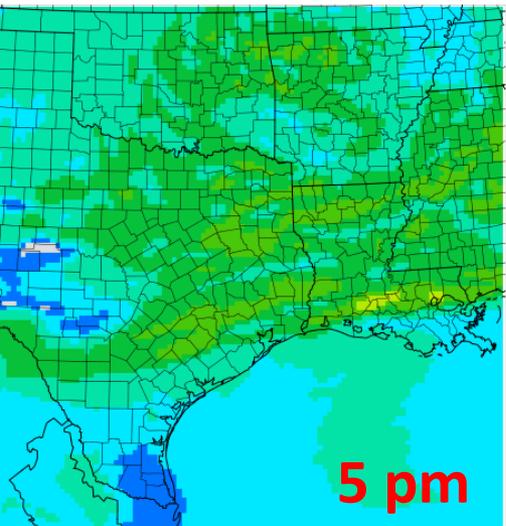


Min(50,59) = 0.4, Max(137,50) = 3.9

Tue September 17 14:00 CST

Formaldehyde

Best Case: CAMx Layer 14



Min(52,59) = 0.1, Max(122,48) = 4.5

Tue September 17 17:00 CST

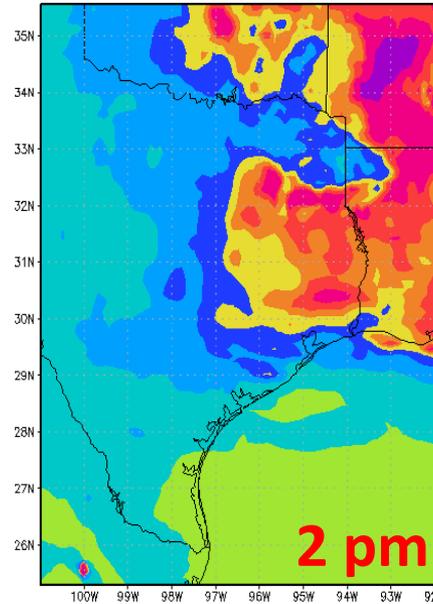
ENVIRON

ENVIRON

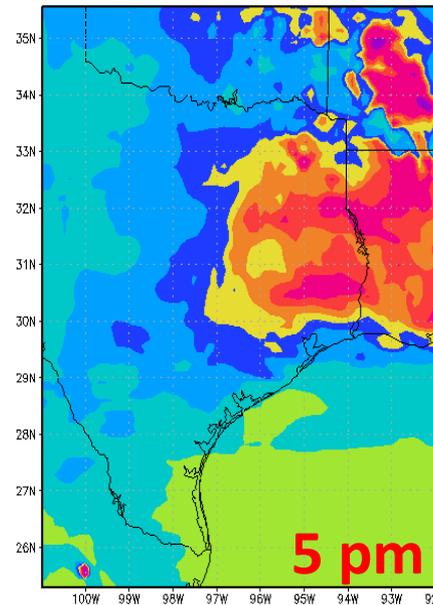
NOAA-CMAQ

Formaldehyde 850 hPa

FORM [ppb] at 1013 [hPa] Valid 19Z SEP 17 2013



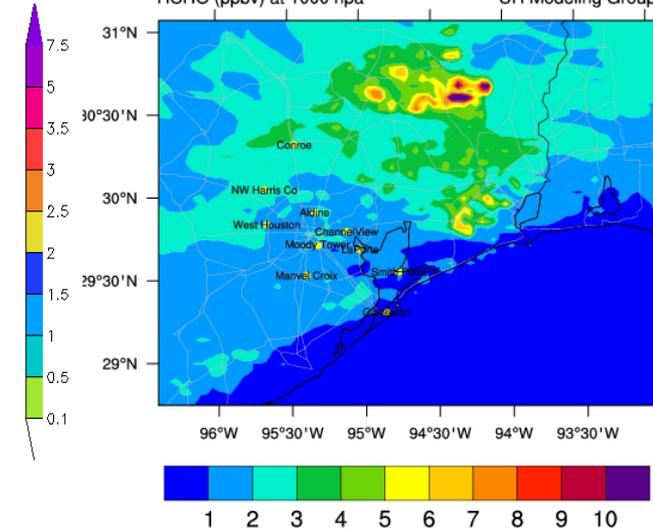
FORM [ppb] at 1013 [hPa] Valid 22Z SEP 17 2013



UH-CMAQ

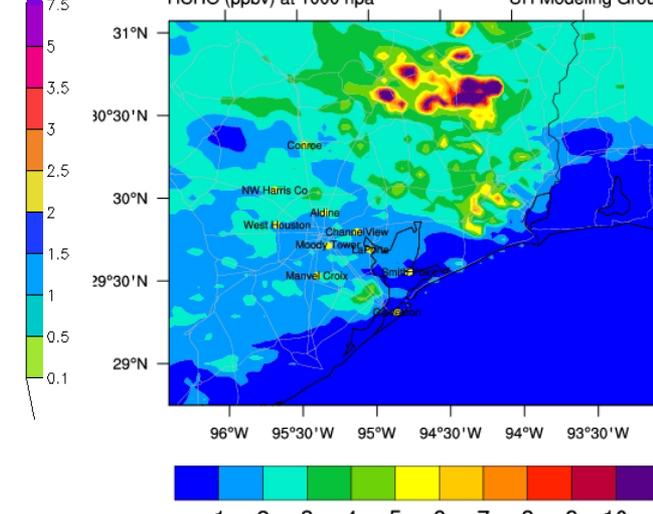
CMAQ 20130916_19:00:00Z

HCHO (ppbv) at 1000 hpa UH Modeling Group



CMAQ 20130916_22:00:00Z

HCHO (ppbv) at 1000 hpa UH Modeling Group

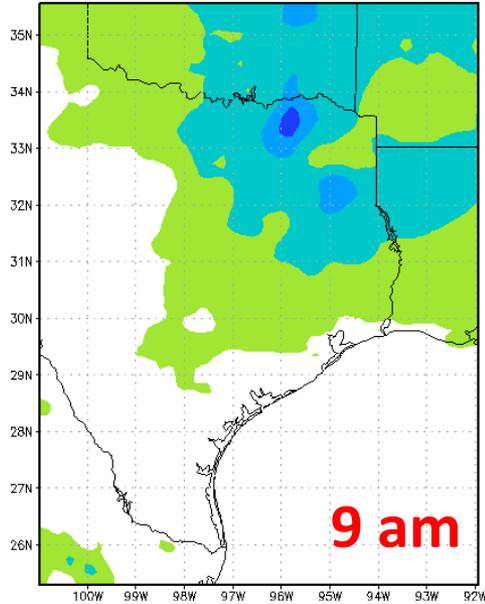


AOD

NOAA-CMAQ vs. UH-CMAQ

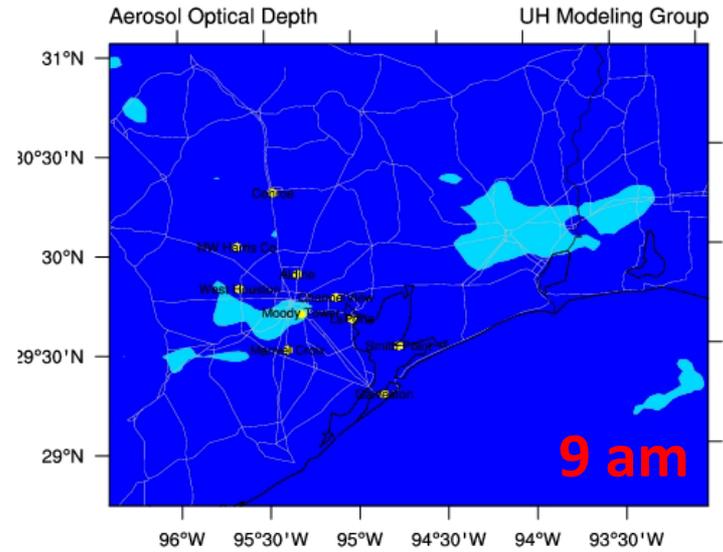
NOAA-CMAQ

(dev) aot 32H VALID 14Z 17 SEP2013 [dimensionless]

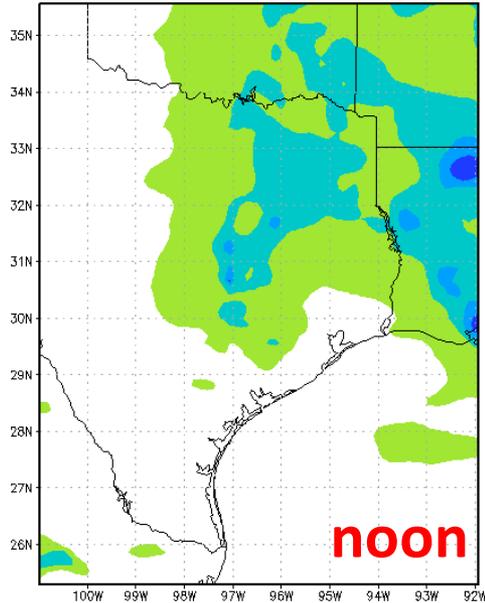


AOD UH-CMAQ

CMAQ 20130916_14:00:00Z



(dev) aot 40H VALID 22Z 17 SEP2013 [dimensionless]



CMAQ 20130916_22:00:00Z

