Regional-scale winds were mostly easterly today with sea breeze development. For example, wind shift at La Porte at around 3 PM. Thunderstorms developed over downtown Houston and to the northeast in mid afternoon and moved to the west. AOD showed strong gradient from the coast up to Conroe.

We will be under a similar pattern for the next few days. Tomorrow should be similar to today with partly cloudy skies with isolated thunderstorms and sea breeze development. The easterly wave entering Mexico should not induce high cloudiness this far north. Saturday should see more clouds as a short wave trough comes around the major ridge into eastern TX. Less cloudiness expected on Sunday.

Air quality for ozone is expected to be moderate for the period from today through Sunday. Maximum ozone will likely occur on the northwest side of Houston. Aerosol optical depth may become less on Friday and Saturday in the easterly flow.
9/5/2013 4:00PM Weather Update

Chris Loughner
Ken Pickering
Bob Chatfield
Current Conditions

Conroe:
- Partly Cloudy
- Temperature: 93°F (34°C)
- Humidity: 46%
- Wind Speed: N 8 mph
- Barometer: 30.02 in (1016.3 mb)
- Dewpoint: 69°F (21°C)
- Visibility: 10.00 mi
- Heat Index: 98°F (37°C)
- Last Update on 5 Sep 2:53 pm CDT

Houston Hobby:
- Thunderstorm
- Temperature: 93°F (34°C)
- Humidity: 50%
- Wind Speed: SE 15 G 22 mph
- Barometer: 30.02 in (1017.0 mb)
- Dewpoint: 72°F (22°C)
- Visibility: 10.00 mi
- Heat Index: 101°F (38°C)
- Last Update on 5 Sep 2:53 pm CDT
Current Conditions

Galveston:

Partly Cloudy

89°F

32°C

Humidity 65%
Wind Speed E 10 mph
Barometer 30.04 in (1017.1 mb)
Dewpoint 76°F (24°C)
Visibility 10.00 mi
Heat Index 100°F (38°C)

Last Update on 5 Sep 2:52 pm CDT
Tomorrow: Weak easterly winds changing to southeasterly as sea breeze develops. Mid and upper atmosphere a little drier than today. Cirrus associated with tropical wave to our south should stay south of our region.

1 PM CDT
500 mb vorticity
10 m winds at 1 PM tomorrow
Houston Hobby
Tomorrow: Cloud cover around 50%
Saturday: Shortwave trough moving into East Texas will bring in more moisture.

1 PM CDT
500 mb vorticity
10 m winds at 1 PM Saturday
Sunday: More drying in the mid and upper levels.

1 PM CDT
850 mb RH

500 mb vorticity
Houston Hobby
Saturday: Cloud cover around 50%
Sunday: Cloud cover around 50%
-Tomorrow: Partly cloudy.
-Saturday: Partly cloudy.
-Sunday: Partly cloudy.
Tomorrow: NAM – low level clouds

Integrated liquid and frozen hydrometeors (all levels)

27-hour forecast valid 1500 UTC Fri 06 Sep 2013

Integrated liquid and frozen hydrometeors (all levels)

30-hour forecast valid 1800 UTC Fri 06 Sep 2013

Integrated liquid and frozen hydrometeors (all levels)

33-hour forecast valid 2100 UTC Fri 06 Sep 2013

Integrated liquid and frozen hydrometeors (all levels)

36-hour forecast valid 0000 UTC Sat 07 Sep 2013
Saturday: NAM – a few low and high level clouds in the afternoon
Sunday: NAM – clear; low level clouds north and south of our region

Integrated liquid and frozen hydrometeors (all levels)

75-hour forecast valid 1500 UTC Sun 08 Sep 2013

10 AM CDT

Water (T>0°C)  Supercooled  Ice/Snow

Integrated liquid and frozen hydrometeors (all levels)

78-hour forecast valid 1800 UTC Sun 08 Sep 2013

1 PM CDT

Water (T>0°C)  Supercooled  Ice/Snow

Integrated liquid and frozen hydrometeors (all levels)

81-hour forecast valid 2100 UTC Sun 08 Sep 2013

4 PM CDT

Water (T>0°C)  Supercooled  Ice/Snow

Integrated liquid and frozen hydrometeors (all levels)

84-hour forecast valid 0000 UTC Mon 09 Sep 2013

7 PM CDT

Water (T>0°C)  Supercooled  Ice/Snow
Recommendations

• Tomorrow: Possible flight day.
• Saturday: Cloudier due to shortwave trough moving into Texas.
• Sunday: Possible flight day.
DISCOVER-AQ Air Quality Outlook
Sept. 5, 2013

Ken Pickering
Bob Chatfield
Sugar Land

Jones Forest

West Liberty

Moody Tower

Houston – Network of Environmental Towers (H-NET)

Ozone (ppbv)

Sep. 2nd – Sept. 5th

Coastal Center

= 50 ppbv

Sugar Land

Local Time

Local Time

Local Time

Local Time
Houston – Network of Environmental Towers (H-NET)

CO (ppbv)
Sep. 2nd – Sept. 5th

= 200 ppbv
NO2 [ppb] at 1013 [hPa] Valid 14Z SEP 06 2013
Univ. of Houston CMAQ

CMAQ 20130906_14:00:00Z

CMAQ 20130906_17:00:00Z

CMAQ 20130906_19:00:00Z

CMAQ 20130906_22:00:00Z

9 AM

12 PM

2 PM

5 PM

O3 (ppbv) at 1000 hpa

UH Modeling Group

10 20 30 40 50 60 70 80 90 100

10 20 30 40 50 60 70 80 90 100
2500-m PBL develops by noon on NW side of Houston; much shallower near coast
TCEQ: WRF/CAMx Model suggests low ozone production in diluted plume

CAMx Layer 14 Winds
Texas 12km

Ozone
Best Case: CAMx Layer 14

Min(11,109) = 0.3, Max(101,26) = 30.4
Fri September 6 08:00 CST

Min(81,8) = 24.5, Max(148,68) = 71.8
Fri September 6 08:00 CST
Near Surface Analyses

Rapid low-altitude transport off the coast
TCEQ: WRF Model suggests strong winds enough dilute Houston plume but some Louisiana VOCs offshore, affecting Galveston
Moderate surface ozone levels (Code Yellow) expected Thurs., Fri., Sat., Sun.

Maximum values expected to the northwest of the city due to combination of easterly large-scale flow and southeasterly sea breeze
Hourly PM$_{2.5}$ (airnowtech.org)
Monday – Thursday morning (6am)

Galveston
Conroe
Houston - Deer Park

Hourly PM$_{2.5}$ (ug/m$^3$)

Houston Aldine C8/PM2.5-88502 - 88502/1 Hr/3
Houston Deer Park C35/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
Conroe Relocated C78/PM2.5-88502 - 88502/1 Hr/3
Galveston Airport C1034/PM2.5-88502 - 88502/1 Hr/3
2013/SEP/05: Daily average AOT Level 1.5, 13 sites

(N 30.5000, W 96.0000) (N 30.5000, W 94.5000)
LAT = 30.3, LON = -95.4, Location = Conroe, Fcst_init = 20130905
GEOS-5 Aerosol Forecast

LAT = 29.2, LON = -94.8, Location = Galveston, Fast_init = 20130905