Thunderstorms throughout the Houston area played havoc with our flights today. However, I’m sure we’ll have a lot of good data concerning the effects these storms had on the lower tropospheric composition. HSRL profiles showed a strong gradient in extinction between Galveston and points farther north.

A short wave trough coming around the 500 mb ridge is forecast to enter east Texas tomorrow, likely increasing the chances for cloudiness and showers. Therefore, a down day has been called for tomorrow. Sunday, some drying should occur and general cloudiness may be less than on Saturday. Flow from the east will continue, with a sea breeze developing in the afternoon, which again could lead to induced thunderstorms. Ozone is forecast to remain in the moderate range, and maxima will likely be to the NW of Houston.

Monday a vorticity maximum in the Gulf south of Houston will lead to an increase of cloudiness, and the trend will likely continue Tuesday and Wednesday as a strong easterly wave progresses across the Gulf and impacts our area.
9/6/2013 Weather Briefing

Chris Loughner
Ken Pickering
Bob Chatfield
Current Conditions

Conroe:
- Partly Cloudy
- Temperature: 90°F (32°C)
- Humidity: 54%
- Wind Speed: 5 mph
- Barometer: 30.09 in (1018.4 mb)
- Dewpoint: 71°F (22°C)
- Visibility: 10.00 mi
- Heat Index: 96°F (36°C)
- Last Update: 6 Sep 11:33 am CDT

Houston Hobby:
- Mostly Cloudy
- Temperature: 88°F (31°C)
- Humidity: 61%
- Wind Speed: NE 13 mph
- Barometer: 30.06 in (1018.4 mb)
- Dewpoint: 73°F (23°C)
- Visibility: 10.00 mi
- Heat Index: 96°F (36°C)
- Last Update: 6 Sep 11:33 am CDT
Current Conditions

Galveston:

Mostly Cloudy

79°F
26°C

Humidity 88%
Wind Speed E 7 mph
Barometer 30.08 in (1018.4 mb)
Dewpoint 75°F (24°C)
Visibility 10.00 mi
Heat Index 83°F (28°C)

Last Update on 6 Sep 11:52 am CDT

1 PM CDT
500 mb vorticity
10 m winds at 1 PM today
Tomorrow: Scattered thunderstorms. Northeasterly winds changing to southeasterly as sea breeze develops. Shortwave trough entering east Texas.

1 PM CDT
500 mb vorticity
10 m winds at 1 PM tomorrow
Conroe
Today: Cloud cover around 50%
Tomorrow: Cloud cover around 50%
Houston Hobby
Today: Mostly cloudy
Tomorrow: Mostly cloudy
Galveston
Today: Mostly cloudy
Tomorrow: Mostly cloudy
Sunday: Scattered thunderstorms. Easterly winds changing to southeasterly as sea breeze develops.

1 PM CDT
500 mb vorticity
10 m winds at 1 PM Sunday
Monday: Scattered thunderstorms. Vorticity max south of Houston.

1 PM CDT
850 mb RH

500 mb vorticity
Conroe
Sunday: Partly cloudy
Monday: Cloud cover around 50%
Houston Hobby
Sunday: Cloud cover around 50%
Monday: Cloud cover around 50%
Galveston
Sunday: Cloud cover around 50%
Monday: Mostly cloudy
-Tomorrow: Partly cloudy.
-Sunday: Mostly cloudy around mid-day.
-Monday: Mostly cloudy.
-Tomorrow: Partly cloudy.
-Sunday: Partly cloudy.
-Monday: Mostly cloudy.
-Tomorrow: Partly cloudy.
-Sunday: Partly cloudy.
-Monday: Mostly cloudy.
Tomorrow: NAM – a few low and high level clouds

Integrated liquid and frozen hydrometeors (all levels)

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Integrated liquid and frozen hydrometeors (all levels)

Integrated liquid and frozen hydrometeors (all levels)
Tomorrow: Canadian - scattered clouds

10 AM CDT

1 PM CDT

4 PM CDT

7 PM CDT
Tomorrow: GEOS-5 – low level clouds in the afternoon

10 am 1 pm 4 pm 7 pm

High

Mid

Low
Sunday: NAM – a few low and high level clouds in the afternoon
Sunday: GEOS-5 – high level clouds

10 am

High

1 pm

Mid

4 pm

Low

7 pm
Monday: NAM – low, mid, and high level clouds

Integrated liquid and frozen hydrometeors (all levels)
75-hour forecast valid 1500 UTC Mon 09 Sep 2013

10 AM CDT

Integrated liquid and frozen hydrometeors (all levels)
81-hour forecast valid 2100 UTC Mon 09 Sep 2013

4 PM CDT

Integrated liquid and frozen hydrometeors (all levels)
78-hour forecast valid 1800 UTC Mon 09 Sep 2013

1 PM CDT

Integrated liquid and frozen hydrometeors (all levels)
84-hour forecast valid 0000 UTC Tue 10 Sep 2013

7 PM CDT
Monday: GEOS-5 – high and mid level clouds

10 am

1 pm

4 pm

7 pm

High

Mid

Low
Recommendations

• Tomorrow: A few more clouds due to a shortwave trough moving into Texas.
• Sunday: Possible flight day.
• Monday: Cloudy ahead of strong easterly wave that will impact Houston Tuesday and Wednesday.
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.
Ozone (ppbv)
Aug. 6th – Sept. 5th

= 50 ppbv

Houston – Network of Environmental Towers (H-NET)
Ozone (ppbv)  
Sep. 2nd – Sept. 6th

Sugar Land

Moody Tower

West Liberty

Houston – Network of Environmental Towers (H-NET)

Coastal Center

= 50 ppbv
CO (ppbv)
Sep. 2nd – Sept. 6th

= 200 ppbv

Houston – Network of Environmental Towers (H-NET)
Hourly Ozone (airnowtech.org)
Monday – Friday morning (6 am)
NO2 [ppb] at 1013 [hPa] Valid 14Z SEP 07 2013
* TCEQ: WRF Model suggests winds even a bit stronger, diluting Houston emissions to produce an even weaker plume extending towards the WSW.
TCEQ: WRF Model suggests low ozone production in diluted plume

Novel: inflow ozone from ENE ~ Houston’s own production at 3-5 CDT
TCEQ: WRF Model suggests strong winds dilute Houston plume greatly on Saturday

Formaldehyde
Best Case: CAMx Layer 14

Min(109,98) = 0.3, Max(136,87) = 5.2
Sat September 7 06:00 CST

NO₂
Best Case: CAMx Layer 14

Min(116,28) = 0.0, Max(148,82) = 0.6
Sat September 7 06:00 CST
Surface Forecast emphasizes traffic NOx

Environ model inventory stresses rush-hour contribution to NOx ...but do midday concentrations bear this out??

Somewhat lower PBL heights
Dallas continues to have the highest ozone of the region
Moderate ozone (Code Yellow) expected Fri., Sat., Sun., Mon., Tues.

Peak ozone will be generally on the NW side of Houston (may vary from W to N day to day)
Hourly PM$_{2.5}$ (airnowtech.org)
Monday – Friday morning (6am)

- Conroe
- Houston - Deer Park
- Aldine
- Galveston

### Graph Details
- **Y-axis**: Hourly PM$_{2.5}$ (ug/m$^3$)
- **X-axis**: Date
- **Legend**:
  - Houston Aldine C8/PM2.5-88502 - 88502/1 Hr/3
  - Clinton C403/PM2.5-88502 - 88502/1 Hr/3
  - Houston Deer Park C35/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
LAT = 30.3, LON = -95.4, Location = Conroe, Fcst_Init = 20130906