

## Highlights

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# The Daily Plan-It

The TexAQS 2000  
Field Study Newsletter  
Issue 24  
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## Rain Chances 50/50 Tomorrow, Higher Saturday

### Weather Forecast

John Nielsen-Gammon and Dick McNider provided today's weather forecast. Morning background ozone levels are lower than yesterday, with 6 to 7 AM hourly concentrations ranging from the mid-teen's to a high of 31 ppbv at Galveston.

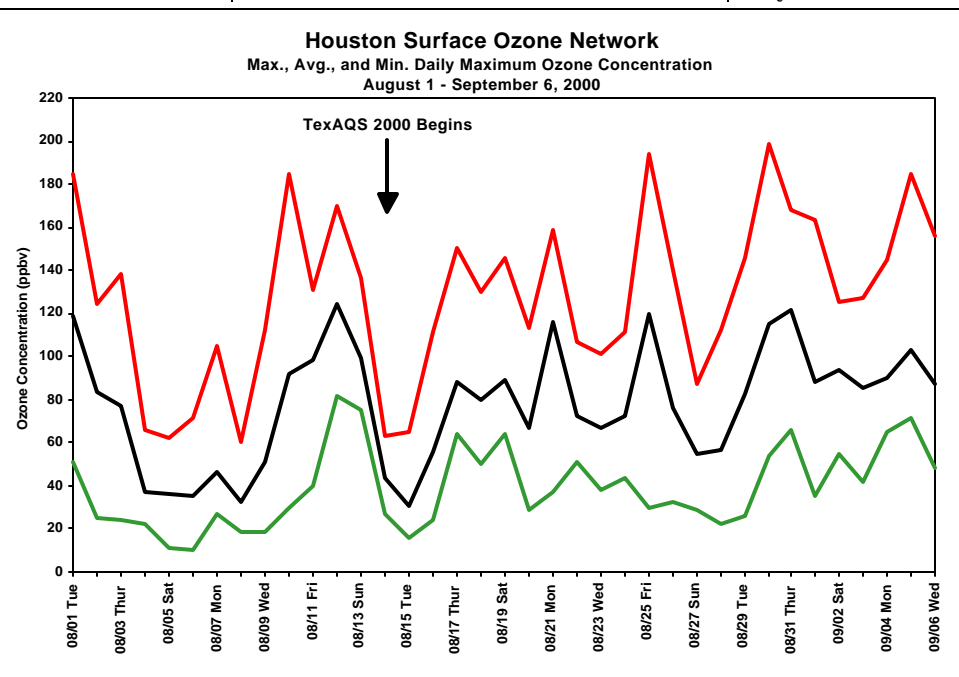
Given yesterday's persistent east-northeasterly flow, the maximum surface levels of hourly ozone occurred west-southwest of downtown Houston - at Croquet (156 ppbv) and Bayland Park (122 ppbv) from 1 to 2 PM. These two sites were the only ones to record preliminary hourly average in excess of 120 ppbv.

High pressure is slowly drifting off to our northwest, and low pressure is approaching from the east. The surface and mid-level dewpoints are still low, and so is today's probability

of precipitation. As the flow aloft continues to veer to the southeast, the probability of precipitation should increase this evening and throughout Friday and Saturday. Saturday, in particular, looks to be quite wet.

concentrations from the 23 surface monitoring stations in and around the Houston-Galveston-Brazoria area have varied widely. Prophetically, perhaps, the lowest ozone concentrations encountered were on the first study day. Since then, we've had lots of

ozone to study under a variety of transport conditions. We've seen daily maximum levels to the north, south, east, and west of downtown. Three days - August 21<sup>st</sup>, 25<sup>th</sup>, and the 31<sup>st</sup> exhibited average maximum hourly ozone concentrations near 120 ppbv.



### Surface Ozone Levels

Even though we're in the "green" (hourly ozone levels 79 ppbv or less) so far this afternoon (through 4 PM at least), there's little doubt that we've had a good run of high ozone conditions.

As can be seen in the figure, maximum daily hourly ozone

The Electra flight yesterday included the planned intercomparison with the NASA WB-57 over the Gulf. The Houston characterization part of the flight encountered high concentrations of carbon monoxide east of Houston associated, they believe, with marsh and other east

Electra  
N308D

Texas/Louisiana wild fires. The Houston ozone plume in mid-afternoon was atypically quite narrow and, as the surface network results suggest, moved to the west-southwest under persistent northeasterly winds.

Today the Electra will conduct an urban and power plant plume characterization flight over Dallas/Fort Worth. Leaving Ellington 11 AM, the Electra will fly a series of parallel northeast-to-southwest oriented transects upwind (southeast), over and downwind (northwest) of the Dallas/Fort Worth metropolitan area. In the process, the Electra should also catch some east Texas power plant plumes. As always, the Electra will fly at a nominal altitude of 1500 to 2000 feet above ground level with excursions to probe height of boundary layer and to consider conditions aloft. Total flight time should be approximately 6 hours with a return to Ellington at 5:00 PM. This flight should mimic the August 23<sup>rd</sup> flight over the Dallas area which encountered high-efficiency ozone production.

#### G-1 N701BN

Yesterday's mid-afternoon G-1 flight began at 2:30 PM. Transects along the I-10 corridor encountered maximum ozone concentrations of about 110 ppbv. During this flight, the G-1 encountered the W. A. Parrish power plant plume. This first encounter indicated ozone levels about 110 ppbv while the second encounter - 30 miles further downwind (west-southwest) - exhibited ozone concentrations of about 180 ppbv. It is not yet clear whether or not this second encounter was solely attributable to the power plant or whether it had mixed with other industrial/urban plumes.

Today, the G-1 is planning two urban chemistry/power plant plume flights along with an intercomparison

with the Twin Otter during the afternoon flight. The morning flight will leave Ellington at 9:30 AM to fly a series of parallel north-to-south oriented transects upwind (east), over and downwind (west) of Houston Metropolitan Area and the W. A. Parrish power plant. The morning flight will establish preconditions for ozone production and the afternoon flight - tentatively planned for a 2:00 PM takeoff - will, essentially, see what happened as a consequence of earlier conditions. The G-1 will fly at a nominal altitude of 1500 to 2000 feet msl with brief excursions to probe height of boundary layer. Total G-1 flight time should be about 6 hours (3 hours for each flight).

#### DC-3 N56KS

Yesterday's DC-3/Lidar flight upwind (east), over and downwind (west) of Houston encountered both the Houston and W. A. Parrish power plant plumes. Maximum ozone levels ranged from 150 to 200 ppbv.

The DC-3/Lidar plans an urban ozone/aerosol characterization flight today starting with an 11 AM takeoff. Similar to yesterday, the DC-3 will fly a series of parallel north-to-south oriented transects upwind (east), over and downwind (west) of Houston metropolitan area. This pattern will be flown twice. The westernmost extent of this flight should be about 75 miles west of Houston. Per usual, they will fly at a nominal altitude of 10.5k feet msl with a total flight time of approximately 7 hours. They will return to Ellington at 6 PM.

#### Twin Otter N153BU

The Twin Otter did not fly yesterday.

For today, the Twin Otter has planned an urban chemistry/marsh fire characterization flight. Taking off at 1:30 PM, the Twin Otter will fly a

series of parallel north-to-south oriented transects upwind (east), over and downwind (west) of Houston Metropolitan Area. Southernmost extent of transects to the Gulf coast. During their flight they hope to fly several intercomparison legs with the G-1. Following their last downwind transect, the Twin Otter anticipates a return to Ellington along the I-10 corridor. The Twin Otter flies at a nominal altitude of 1500 feet msl with brief excursions to probe height of boundary layer. Total flight time will be approximately 2.5 hours, returning to Ellington at about 4 PM.

#### Learjet N933WA & Citation N10EG

All Houston thermal mapping flights completed successfully, TexAQS 2000 bids a fond farewell to the NASA Learjet and DOE Citation.

Look for a more substantial story on the thermal mapping effort in tomorrow's Plan-It.

#### Washburn Tunnel

##### By David Allen

On August 29 through September 1, TexAQS investigators and a Texas Natural Resource Conservation Commission field team collected gas and particulate phase samples in the Washburn Tunnel. The Washburn Tunnel runs under the Houston Ship Channel as an extension of Federal Blvd., between the bridges that carry Interstate 610 and the Sam Houston Tollway (Highway 8) over the Channel. The tunnel bore is approximately 1500 feet in length and the tunnel carries a steady stream of traffic. Concentrations of air pollutants associated with vehicular sources are approximately an order of magnitude greater in the tunnel than in the ventilation air entering the tunnel, therefore, samples collected in the

tunnel provide a source signature for vehicular traffic in Houston.

Gas phase measurements made in the tunnel included nitrogen oxides, carbon dioxide, carbon monoxide, and individual hydrocarbon species. Carbonyl species were collected using DNPH cartridges. Impactor and filter samples were collected and will be used to determine total particle loading and the concentrations of organic functional groups and tracer compounds. Videotapes captured the distribution of traffic in the tunnel during sampling.

Since the study was done on an ad-hoc basis, plans for data analysis have not yet been finalized. Details, as they

emerge, can be obtained from Jim Price, Dave Allen, or Matt Fraser.

### Upcoming Events

**Daily Meteorological and Aircraft Planning Meetings** - 7:30 AM and 1:00 PM (Ellington CapRock Building, Conference Room).

**Aerosol Group Meeting** - To be announced. A discussion with Dave Allen this morning revealed that the next meeting will probably be held at CapRock on Wednesday afternoon, September 13<sup>th</sup>.

**LaPorte Team Meeting** - Was held today (Thursday, September 7<sup>th</sup>) from 2 to 4 PM in Room 1408 of the Bayou Building at the University of Houston-

Clear Lake. Next meeting scheduled for Wednesday, September 13<sup>th</sup>.

### Thoughts for the Day

“We shall not cease from exploration, and the end of all our exploring will be to arrive where we started and know the place for the first time.”

-T. S. Eliot

Learn from the mistakes of others-- you can never live long enough to make them all yourself.”

-John Luther

“The trouble with the world is that the stupid are cocksure and the intelligent are full of doubt.”

-Bertrand Russell