The objectives of this flight were to sample one day old outflow forecasted to the NE of VER twice with a MCMA run sandwiched in between. This would give a ~3h separation between the two sampling periods of the one day old plume. The G-1 did a MCMA run earlier in the day which would set the starting condition for the city.

A flight planned for Thursday would then attempt to sample both air masses again further to the East.

We took off towards NAUTLA and encountered significant pollution on climb-out around 20N and 96.5W. The models had forecasted a significant plume (2500 feet thick) around 21.2N and 96W and this was our first point for an E-W leg. We started this leg at 13500 feet but the layer encountered there was very shallow and had significantly lower levels of particles and also lower levels of NOy and O3 than the pollution encountered further south on climb-out. I decided to return to the region around 20N and 96W to further sample this area since it appeared that the more significant MCMA outflow was located there. We crossed the area at 13500 and 14500 feet and proceeded to point W4 to start our city run with two legs over T-2, which were flown at 11500 and 10500 feet. At the west end of each run we sampled the Tula refinery plume a total of two times (1842Z and 1912Z) with a stronger signal at the lower altitude on the second pass. NOy, Ozone and SO2 were strongly enhanced (second pass SO2 was 170 ppb). Fresh outflow from the MCMA area was sampled in the center of the two legs with winds from the SW. We then proceeded into the city via Atizapan where we did our usual missed approach. The city was moderately polluted but a strong area of pollution with O3 around 130 ppbv and NOy up to 50 ppbv and large particle concentrations (very reduced visibility) were encountered around USL1-2 was encountered at all altitudes. Winds here were from the W and HCN was elevated so this might have been a plume from an upwind fire which we could not see.

On our first turn at USL-3 we encountered a fresh fire plume from an area of forest burning directly below us around 1945Z. We passed over T-0 at 2018Z and finished the city run with two legs over T-1 at ~2018 and ~2040Z. We then returned to 20.5N and 95.5E to sample the same air we sampled in the morning, again. After two successful passes through this air mass we returned to Veracruz.

Thanks to Bob, Henry, and John for a nice job on the helm.

Cheers,
Frank