

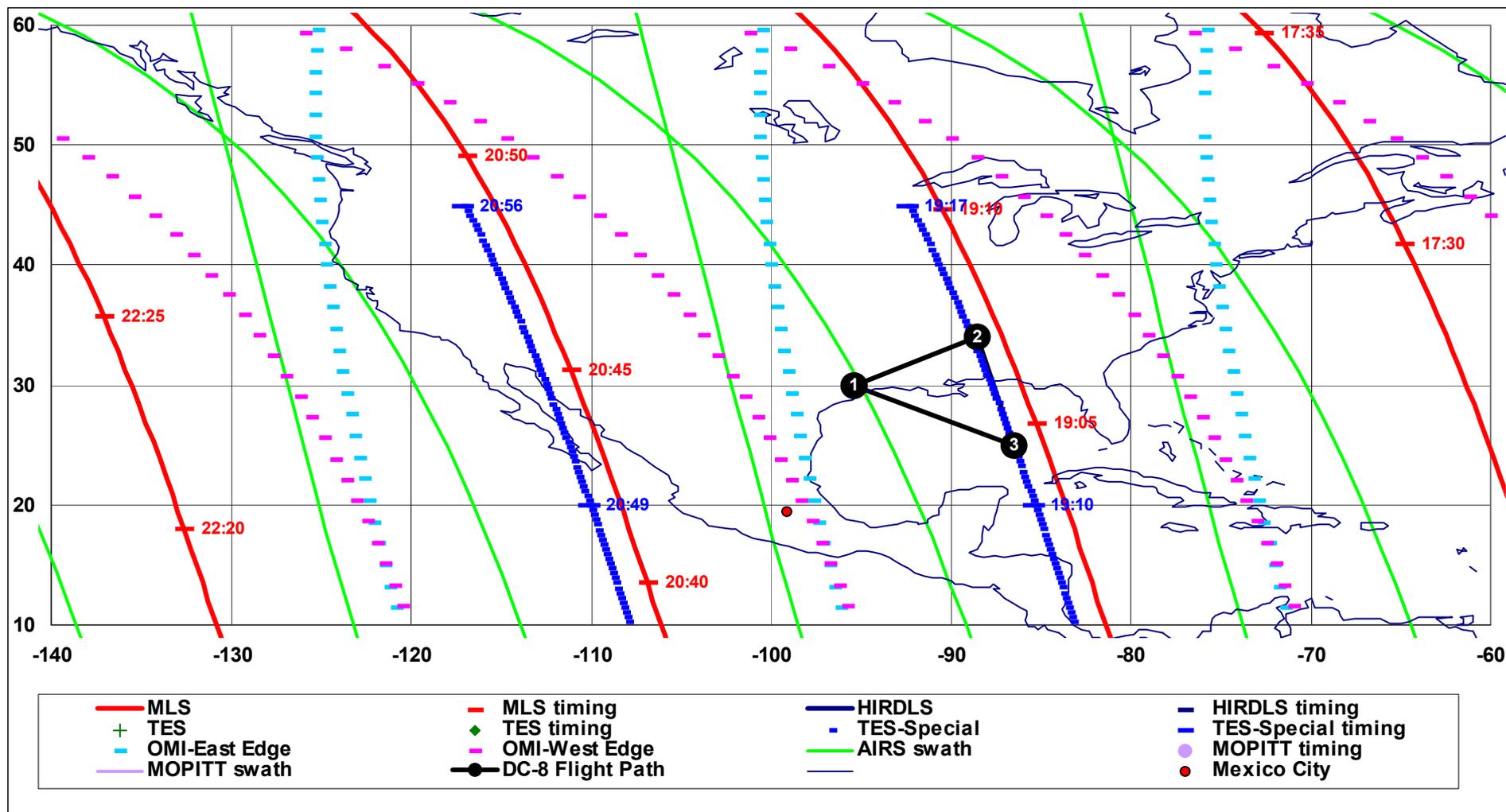
INTEX-B: Flight 3 (Science Flight; March 4, 2006; Saturday)

This was the first INTEX-B science flight conducted from Houston. The main objective of this flight was validation of several satellite instruments and sampling of outflow from south eastern US along the satellite tracks. Flight plan was particularly designed to be of most benefit to TES and OMI but also of substantial value to MLS, AIRS, and SCIAMACHY. This objective was chosen as the meteorology remains unfavorable for North-eastern outflow from Mexico City and C-130 is not fully ready for science flights. The nominal flight track and profile is shown in the slides below but this was modified in-flight to take advantage of specific opportunities. Takeoff time of 10:40 am was dictated by the 13:15 pm (1915 UT) flight overpass of Aura. Total flight duration was 6.1 hours.

All of the instruments relevant to satellite validation (CO, NO₂, O₃, HCHO, H₂O, aerosol) operated normally. The GT-LIF instrument is still not on line but progress is being reported. AROTAL could not display data due to some software issues but the instrument appeared to be working. PANAK developed a leak in the sampling system that will require fixing on the ground. Meteorological conditions were optimum for satellite validation over the Southeast U.S. and eastern Gulf of Mexico. At the surface and aloft, high pressure and a ridge axis were centered over or just east of Ellington Field. In the middle troposphere this orientation produced southwesterly winds on the western half of the flight track and northwesterly winds over the eastern half. Nearer the surface, there was offshore flow as we passed over the Mississippi coast line heading over the Gulf. Conversely, as we approached the Texas Coast, the southeasterly winds produced onshore flow. Clouds were virtually absent over the entire flight track, with only a few isolated clouds over both spiral points.

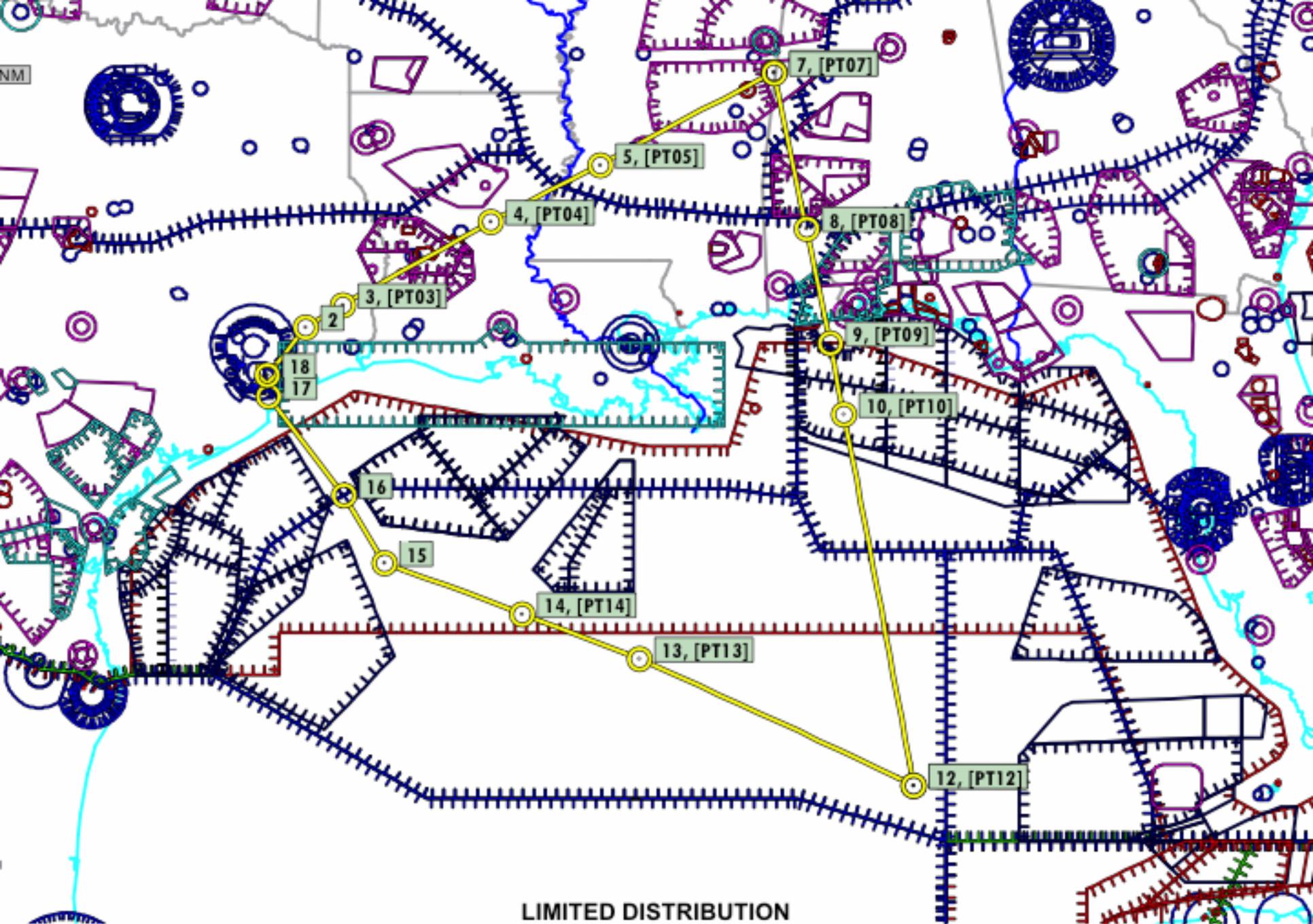
We flew North east to arrive at the TES/OMI/AIRS rendezvous point (3.4°N; 88.5°W) at 37 Kft well in the troposphere (O₃-60 ppb; CO-90 ppb) and spiraled down to 1 Kft under cloud free conditions. During descent the DC-8 sampled multiple pollution and smoke layers of moderate intensity. Fire plumes with CO as high as 300 ppb were sampled. Near the surface CO and O₃ were about 180 ppb and 50 ppb, respectively. After descent to 1K ft we headed in the southeasterly direction and porpoised between 1Kft and 10 Kft several times before doing a spiral ascent at our second satellite rendezvous point that also included the SCIAMACHY nadir swath. During this south easterly leg, pollution outflow from the south eastern US was sampled and high concentrations of pollution tracers persisted to our southern most point. Much of this outflow was at low altitudes and its vertical structure was established with both in-situ instruments and DIAL-lidar. The spiral ascent at point 3 (25°N; 86.5°W) took place under clear sky conditions but had to be terminated at 28 Kft due to ATC restrictions. However, most of the tropospheric column was below this altitude and sampled.. Typical levels of NO₂ and HCHO were 1-3 ppb near the surface and few hundred ppt aloft. We returned to Houston at a low altitude (1-2 Kft) that permitted sampling of urban pollution also useful for satellite validation and source modeling. Overall, this was a very successful flight that accomplished all of the planned science objectives and encountered interesting new phenomenon.

ICATS archived data files for INTEX-B are available at: <http://www.nasa.gov/centers/dryden/research/AirSci/DC-8/ICATS/FY06/INTEX-B/index.html>

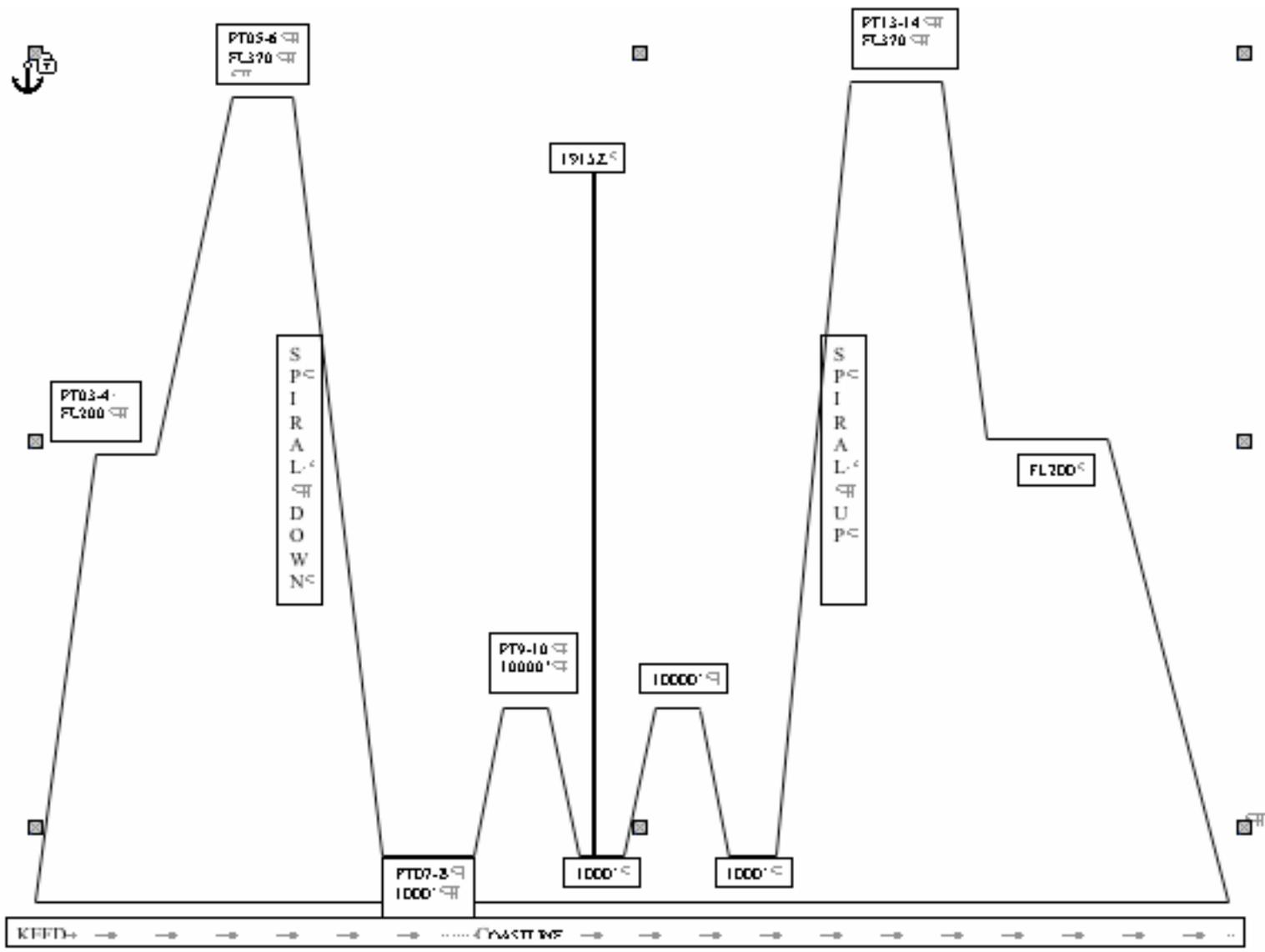


Point	1	2	3	4
Latitude	29.97	34	25	29.97
Longitude	-95.35	-88.5	-86.5	-95.35
Cum. Flt. Time	0:00	1:21	3:37	5:55
Leg Flt. Time		1:21	1:46	1:47
Local Time	11:00	12:21	14:37	16:55
UTC	17:00	18:21	20:37	22:55
Spiral		0:30	0:30	

Flight 3: 4 March 2006
 Takeoff: 1040 hrs LT
 Flight time: 6 hours



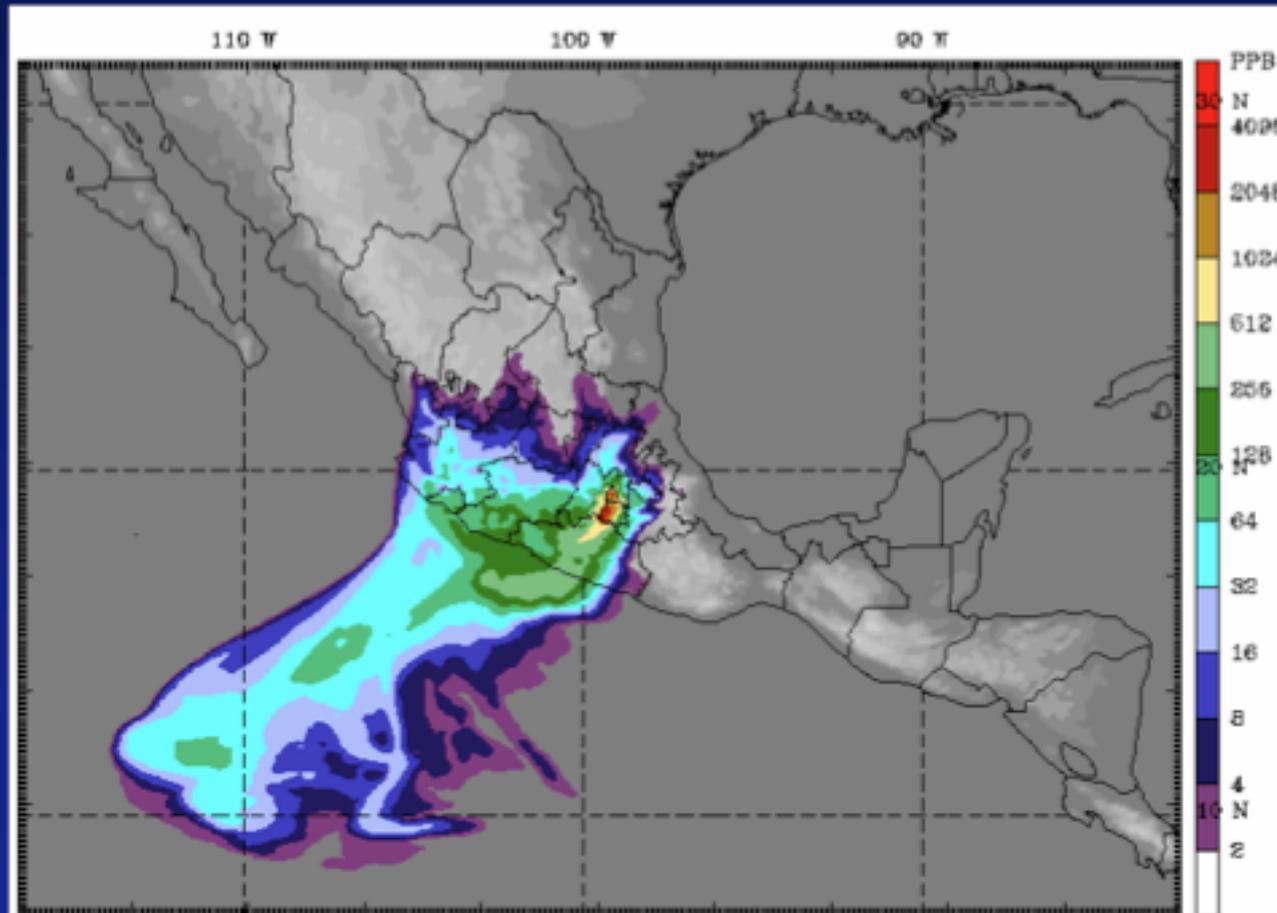
LIMITED DISTRIBUTION



Smoke from fires over the continental US



Mexico City CO emissions tracer, 3 pm 5 March 2006 (Sunday) LST
0-4 km mass-weighted tracer concentration (93 h forecast)



INTEX-B 3 pm Science Team meeting 3/2/06

- **Overview of activities & status (Singh)**
 - DC-8/Satellite/C-130/G1/J-31 status
 - DC-8 plans for flight 3
 - DC-8 instrument/research status
 - Manifest
- **Met Overview (Fuelberg)**
- **Flight planning considerations (Jacob/Crawford)**
- **Brief presentations (5-8 minutes each)**
 - in-situ measurements (MacNaughton/aerosol)
 - Satellites (Gleason/OMI)
 - 3-D Modeling (Pickering/Flight planning products)