Daily Weather Briefing

Veracruz Center of Operations

- Rest of March 6: Scattered clouds along the coast and over the Gulf of Mexico - dissipating during the day. Highs in Veracruz in the mid to upper low 80’s F; mostly sunny over the central plateau.
- March 7: Scattered clouds along the coast and over the Gulf of Mexico. Mostly clear with temperatures in Veracruz around 90 F.
- March 8-10: Highs in the mid to upper 90’s F and drier.

Clear condition expected for MISR high resolution satellite overpass at 1715 UTC
Current and Forecasted Regional Meteorological Conditions
RAMA Ozone, Sun 5, 18:00

Peak ozone in SW side of the valley, same expected for day
Radar Wind Profiler data from T1

Peak in signal-to-noise ratio suggest residual plume aloft??

NE winds 4-6 m/s 1-3 km AGL

Light and variable winds near surface
Where did the balloon go?
Sounding comparison, 18 UTC Sunday March 5 Veracruz

Good forecast of low- and mid-level winds

Modeled CMET Trajectories
Sunday 6

Veracruz Sounding

Forecast Sounding
WRF forecast
Of PBL heights
Monday, 6 March 2006

3 pm Monday
6 March (CST)
(21 h forecast)
WRF forecast
Of PBL heights
Monday, 7 March 2006

3 pm Tuesday
7 March (CST)
(45 h forecast)

Mexico City region

~ 800 m  10 am
~ 1500 m 12 noon
~ 2600 m  3 pm
WRF 21 h forecast
3 pm Monday
6 March 2006 (local time)

700 mb winds

500 mb winds

Integrated cloud water
Blue (high level cloud)
Yellow (mid – high level cloud)
Purple (low-mid level cloud)
Grey (low level cloud)
WRF 45 h forecast
3 pm Tuesday
7 March 2006 (local time)

Integrated cloud water
Blue (high level cloud)
Yellow (mid–high level cloud)
Purple (low-mid level cloud)
Grey (low level cloud)
WRF forecast 3 pm CST Wednesday 8 Mar

WRF forecast 3 pm CST Thursday 9 Mar
12 UTC 9 March Thursday, 500 mb

12 UTC 10 March Friday, 500 mb

12 UTC 11 March Saturday, 500 mb

12 UTC 12 March Sunday, 500 mb

ECMWF forecast similar
HYPSLIT Forward Trajectories

Based on 00 UTC 6 March GFS forecast

Start 12 UTC 9 March Thur
Forward trajectories starting at 12 UTC 09 Mar 06
06 UTC 06 Mar  GFSG Forecast Initialization

Start 12 UTC 10 March Fri
Forward trajectories starting at 12 UTC 10 Mar 06
06 UTC 06 Mar  GFSG Forecast Initialization

12 UTC 11 March Sat
Forward trajectories starting at 12 UTC 11 Mar 06
06 UTC 06 Mar  GFSG Forecast Initialization

Start at 500 m AGL, 1500 m AGL, 3000 m AGL
Mexico City Plume Forecast from WRF (Bill Skamarock)
Mexico City CO emissions tracer,
3 pm 6 March 2006 (Monday, local time)
(21 h forecast)
Mexico City CO emissions tracer, 3 pm 7 March 2006 (Tuesday, local time) (45 h forecast)
Vertical Cross Sections of CO tracer

3 pm Monday 6 March CST (21 h fcst)

3 pm Tuesday 7 March CST (21 h fcst)
WRF Mexico City CO emissions tracer, 9 km domain

0-4 km MSL average
69 h forecast, 3 pm Wednesday CST

4-6 km MSL average
69 h forecast, 3 pm Wednesday CST

0-4 km MSL average
96 h forecast, 6 pm Thursday CST

4-6 km MSL average
96 h forecast, 6 pm Thursday CST
Mexico City Plume Forecast from MM5-FLEXPART (Ben deFoy)
Mon 14:00, Plume to southwest  
Aerodyne van at PED, close to proposed G1 path
Wed 14:00, Plume to northeast
Aerodyne van at A1 (Pico Tres Padres)

MCMA Plume Cloud 08-Mar-2006 14:00 - 15:00 CST
72 hr FLEXPART forward trajectories
Mon 12:00, Plume south of basin
Tue 12:00, Plume south of basin

MCMA Plume Cloud 07-Mar-2006 12:00:00 CST, 3D slices, FLEXPART/MM5

Benjamin de Foy, 05-Mar-2006
UTME (km)
Wed 12:00, Plume to north, with aged plume pushed around MCMA
Fri 12:00, Plume flushed out to north: T0-T1-T2 alignment
Thu 12:00, Plume entrained to surface over Gulf?
Fri 12:00, Plume to northeast
Mexico City Plume Forecast from WRF-chem (Xuexi Tie, Danny McKenna)
Highest concentrations to the SW of the city
Mexico City Plume Forecast from FLEXPART
(Danny McKenna, Andreas Stohl)
Flexpart March 12:00 LST

700mb

Tuesday 03/08

Wednesday 03/09

Thursday 03/10

Friday 03/11

500mb
Flexpart
Wednesday March 08 15:00 LST
Total CO Column
X-section All Ages
Flexpart
Thursday March 09 15:00 LST
Total CO Column
X-section All Ages

X-section shows highest Mexico City CO amounts at the more southern latitudes indicative of recent emissions and lower CO amounts at the northern end indicative of the older returning emissions.
Flexpart
Friday March 10 15:00 LST
Total CO Column
X-section All Ages

X-section shows highest Mexico City CO amounts at the more southern latitudes indicative of recent emissions and lower CO amounts at the northern end indicative of the older returning emissions.
Mexico City Plume Forecast from STEM (Marcelo Mena)
Carbon Monoxide Monday, Tuesday, Wednesday, Thursday

- **Monday**
- **Tuesday**
- **Wednesday**
- **Thursday**

**Wednesday** wind shifts, bringing back pollution.

**Thursday** distinct offshore pollution to NE.
March 09 0 Z Carbon Monoxide

Pollution from Mexico City has NE influence.
March 10 0 Z Carbon Monoxide

Distinct lofted Mexico City Plume from 1000-4500m.

Biomass burning follows same pattern
Monday: Aged pollution to some influence from SE US.

Tuesday: SE US sulfate increases

Wednesday: Wind shifts, bringing back pollution.

Thursday: Distinct offshore pollution to NE.
Wednesday 21Z Ozone

Ozone will not be particularly bad. Plume has increasing presence to the NE.
Mexico City Plume Forecast from MOZART
(Louisa Emmons)
MODIS - March 5

Fires around the city, big one on Popo.
MOZART Tracers - Mar 7 18Z

Forecast for Tuesday

Mex City: 700 mb

Mex City: 19.4N

Fires: 700 mb

Mex City: 261.6E

Louisa Emmons, NCAR
MOZART Tracers - Mar 8 18Z

Forecast for Wednesday

Louisa Emmons, NCAR
12 LST March 7, Tuesday

Model predictions of Mexico City plume location consistent (flow to the SW)

Peak concentrations expect on the SW side of the basin

Some differences in width and vertical structure of the plume
Summary

Veracruz Center of Operations

- March 6: Forecasts have not changed from yesterday. Maximum pollutant concentrations are expected on the SW side of the valley as a result of north to northeasterly winds flowing into the valley. Pollutants from all the models indicated transport to the SW beyond Mexico City.
- March 7: Continued transport of new emissions to the SW but weakening as we approach the transition in the synoptic flows.
- Long-Range Outlook: Starting on the afternoon of Wednesday, pollutants from Mexico City are forecasted to move to the NE. The upper-air flow patterns are forecasted to be favorable for continued NE transport for several days, with plumes over the Gulf of Mexico. The T0-T1-T2 scenario looks very good on Friday.