Daily Weather Briefing

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**Weather forecast around Veracruz**

**Monday:** Scatters clouds this morning. Mostly clear midday-afternoon, with minimal chance of scattered light rain during night. Winds S-SE this morning 10-20 km/h, E-NE 20-30/35 km/h. Maximum temperatures of 27-29°C. RH 65-75% midday.

**Tuesday:** Partly cloudy to mostly clear. Low chance of rain, Winds E-NE 25-35 km/h. Maximum temperatures 28-30°C. Chance light fog morning.

**Long Range** (Wednesday+): Partly cloudy to clear, low chance of rain, Winds E-NE 25-35 km/h. Maximum temperatures increasing.

**Weather forecast around Mexico City**

**Monday:** Mostly clear this morning. Becoming partly cloudy with a chance of afternoon convection and scattered rains/showers mostly over the higher terrain. Maximum temperatures between 23-25°C. Winds WNW~10-20 km/h.

**Tuesday:** Party cloudy to mostly cloudy with lower chance of afternoon showers. Maximum temperatures 24-26°C. Winds W-SW ~10-20 km/h.
Another Subtle Difference in Upper-Air Forecast

Yesterday’s 700 mb Forecast for 12 UTC today

Today’s 700 mb Forecast for 12 UTC today

More recent run has high to the south of Mexico City, for more favorable transport towards the NE out of the city during the day.
NOTE: No Internet at T1 today, so cannot view data in real time.

Southerly near-surface winds transport nighttime emissions to the north.

SE winds transport morning emissions towards NE.
Current and Forecasted Regional Meteorological Conditions
WRF forecast for Mexico City region PBL heights

Mon 27 March 2006
3 pm, 21h fcst
~ 1200 m 10 am (local time)
~ 2100 m 12 noon
~ 2100 m 3 pm (showers around MC)

Tues 28 March 2006
3 pm, 45h fcst
~ 1000 m 10 am (local time)
~ 1800 m 12 noon
~ 3000 m 3 pm (3200 m 4 pm)
WRF 27 March, 21 UTC (15 LT) Monday

700 mb winds

Integrated cloud water
Blue Yellow Purple Gray (high->low)

Showers in MC

500 mb winds

Precipitation
WRF 28 March, 21 UTC (15 LT) Tuesday

700 mb winds

500 mb winds

Showers in MC

Integrated cloud water
Blue Yellow Purple Gray (high->low)

Precipitation
WRF 29 March, 21 UTC (15 LT) Wednesday

700 mb winds

500 mb winds

Integrated cloud water
Blue Yellow Purple Gray (high->low)
WRF 30 March, 21 UTC (15 LT) Thursday

700 mb winds

500 mb winds

Integrated cloud water
Blue Yellow Purple Gray (high->low)

Integrated cloud water
Blue Yellow Purple Gray (high->low)
Local-Regional Plume Forecast Side-by-Side Model Comparisons
Monday March 27, 21 UTC (15 LT)

STEM - 1 km AGL

MM5-Flexpart

WRF - C1 Tracer 0-4 km

3 km max

Shift to E later in afternoon

T1

T2
CMET balloon trajectories from MM5-FLEXPART

Other models suggest transport to the SE as well at night
Tuesday March 28, 12 UTC (6 am LT)

STEM - 1 km AGL

MM5-Flexpart

WRF - C1 Tracer 0-4 km

Monday's emissions

T1

T2

3 km max

MM5-Flexpart
Tuesday March 28, 18 UTC (noon LT)

STEM - 1 km AGL

MM5-Flexpart

3 km max

WRF - C1 Tracer 0-4 km

New emissions shift to S side of valley in afternoon

Monday's emissions

stagnant afternoon

T1

T2
Wednesday Mar 29, 21 UTC (15 LT)

STEM - 1 km AGL

MM5-Flexpart

Difference in location

MM5-Flexpart afternoon

T1

T2

5 km max
Regional-Scale Plume Forecast Side-by-Side Model Comparisons
Monday March 27, 18 UTC (12 pm LT)

Plume location uncertain because of uncertainty in location of High over M.C.
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Tuesday March 28, 18 UTC (12 pm LT)

Plume location uncertain because of uncertainty in location of High over M.C.
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Sample Cross Sections of Tracer and Chemistry
21 h WRF forecast C5 tracer, 3 pm Mon CST 27 Mar
0-4 km MSL average

Sun & Mon emissions
earlier emissions

18Kft
12Kft
45 h WRF forecast C5 tracer, 3 pm Tuesday CST 28 Mar 0-4 km MSL average.

- Sun & Mon emissions
- Late Mon & Tues emissions

12Kft
18Kft
69 h WRF forecast C5 tracer, 3 pm Wed CST 29 Mar 4-6 km MSL average

93 h WRF forecast C5 tracer, 3 pm Thu CST 30 Mar 4-6 km MSL average

- **Wednesday emissions**
- **Mon & earlier emissions**
- **Older emissions**
- **Tue, some Mon emissions**
- **Fri - Mon emissions**
- **Mix of Wed & Thurs emissions**

**0-4 km MSL avg**
Tuesday March 28 Propane

3 AM 3 km AGL

6 AM

9 AM

Lower elevations

Tuesday Dawn

As expected, largest pollution between 3 and 6 AM. Light low level flow to North.

Tuesday Morning

Increase in emissions, and low PBL cause biggest extension of pollution. NW winds transport plume ESE.
Time series T0, T1, T2
**Wed March 29 18 Z Carbon Monoxide**

**Simulated CO (ppbv) in the 3km layer at 1800UT, 03/29/2006**

- **CO 3km**
- **E-W section**
- **VOC Age**

**4-6 days**

**2-3 days.**

**1-2 days.**

**<1 day**

**Wednesday**

Late Tuesday emissions to South, and then SW of domain. High pressure system continues to make situation complex on surface.
**Monday:** Mexico City plume is expected to move to the NE during the day, and then the whole plume will drift to the E late in the afternoon. T1 and T2 are likely to be hit by the plume. Convective clouds will form over the mountains with a possibility of an isolated shower or thunderstorm late in the afternoon.

**Tuesday:** More stagnant conditions are predicted over the city, but some venting of the Mexico City plume is predicted to the south and east later in the day. Not a good day for T1/T2 sampling. Another chance of late afternoon convection, primarily over the mountains.

**Wednesday:** Transport conditions similar to Monday. The Mexico City plume will first be transported to the north and then drift east so that both T1 and T2 may be hit by the plume. Continued chance of late afternoon clouds and showers.

**Regionally:** Older material at low levels will be caught in the high pressure circulation and transported clockwise, with highest concentrations SE of Mexico City. Strong upper-level winds at 500 mb will still transport material aloft quickly to the east-southeast.