Daily Weather Briefing

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Weather forecast around Veracruz

Today (Meteorology Day): Cloudy with a chance of rain - highest probability tonight and early Friday (> 50 mm in 24-h in the region). Maximum temperatures of 27-29°C. RH 65-75% midday. Winds "Norte" 10-20 km/h morning; 30-40/50 km/h midday with gale conditions of 45-55/75 afternoon and 55-65 km/h gusts 85-95 km/h night.

Friday: Cloudy with chance of rain - mostly likely in the morning (> 30 mm in 24-h in the region). "Norte" with gale conditions of 50-60 km/h gusts 75-85 km/h and then decreasing during the afternoon and night. Decreasing temperatures with a maximum of ~24-26 C.

Long Range (Sat+): Partly cloudy, low chance of rain from end of Norte. Winds N-NE 25-35 km/h shifting to E afternoon. Maximum temperatures 25-27°C.

Weather forecast around Mexico City


Friday_Saturday: Mostly cloudy with a chance of rain and showers. Maximum temperatures 22-24°C. Winds E ~10-20 km/h.
Current and Forecasted Regional Meteorological Conditions
MODIS/Aqua

Yesterday, Wednesday
March 22 1:30pm LT

Dust, etc. before
El Norte
Predicted Norte Tres Arrival, WRF 850 mb winds

12 UTC (06 LT) 23 March

18 UTC (12 LT) 23 March

00 UTC (18 LT) 23 March

12 UTC (06) 24 March

Highest winds speeds tonight
WRF short-range precipitation forecast
Predicted Norte Tres Arrival, MM5 900 mb winds

12 UTC 23 March (06 LT)

18 UTC 23 March (12 LT)

00 UTC 24 March (18 LT)

06 UTC 24 March (00 LT)
MM5 Veracruz 10-m Wind Speed, Thu-Fri 23,24 March
Peak Winds along coast at VER, Little variation within 2 km AGL
WRF forecast for Mexico City region PBL heights

Thurs 23 March 2006
3 pm, 21h fcst
~ 1300 m 10 am (local time)
~ 1800 m 12 noon
~ 3100 m 3 pm

Friday 24 March 2006
3 pm, 45h fcst
~ 900 m 10 am (local time)
~ 1600 m 12 noon
~ 1600 m 3 pm

much low PBL depths after Norte - higher pollution levels?
WRF 23 Mar 06, 3 pm Thu LST

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

700 mb winds

WRF 24 Mar 06, 3 pm Fri LST

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

700 mb winds
WRF 25 Mar 06, 3 pm Sat LST

700 mb winds

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

WRF 26 Mar 06, 3 pm Sun LST

700 mb winds

Integrated cloud water
Blue Yellow Purple Gray (high->low)
Precipitation WRF-STEM 12km short and long-range forecast
Based on 00 UTC 23 March Forecast

Long-range forecast looks GREAT for NE transport on 30 March!!
Based on 06 UTC 23 March GFS forecast

Start 12 UTC 25 March Saturday

GFS has transport to E the SE

Start 12 UTC 26 March Sunday

GFS has transport to N-NE at low levels and E aloft (500 mb)

Start 12 UTC 27 March Monday
HYPPLIT Forward Trajectories
* outlook for end of experiment *

Based on 06 UTC 23 March GFS forecast

GFS has transport to NE-E

Start at 500 m AGL, 1500 m AGL, 3000 m AGL

Shorter trajectories artifact results from end of GFS forecast period
Movie
Regional outlook CO, Friday March 24

Friday

High pressure system makes flow more complex, stagnated. Low level with most pollution to SW and W of MC.

MEXICO CITY

Biomass Burning
Regional outlook CO, Sat March 25

Saturday
High moves offshore, making outflow to W and SW. Biomass Burning plume in Pacific..

MEXICO CITY
Biomass Burning
Regional outlook CO, **Sunday** March 26

High continues to drag emissions to SW and W of domain, with some flow into Chiapas.
Regional-Scale Plume Forecast
Side-by-Side Model Comparisons
Thursday March 23, 18 UTC (12 pm LT)

STEM 3 km CO

WRF - C5 Tracer 0-4 km

FLEXPART column tracer (21Z)

MOZART CO 700 mb

GMAO MC 790 mb
Friday March 24, 18 UTC (12 pm LT)

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GMAO MC 790 mb

FLEXPART column tracer (21Z)
Sunday March 26, 18 UTC (12 pm LT)
Local-Regional Plume Forecast Side-by-Side Model Comparisons
Saturday March 25 UTC (16 CST)

Cloud 12-18:00

Rain 12-18:00

Very light

Log scale

MM5-Flexpart

MM5-Flexpart
Sunday March 26 UTC (16 CST)

Cloud 12-18:00

Rain 12-18:00

Very light

MM5-Flexpart

MM5-Flexpart
Monday March 27 UTC (16 CST)

Cloud 12-18:00

Rain 12-18:00

Very light

MM5-Flexpart

MM5-Flexpart
CMET Trajectories, Teotihuacan, 16:00 CST Release
(1000-5000 m agl)
Sample Cross Sections of Tracer and Chemistry
10 deg  WRF-Chem Today FRI 03/23 15:00 LST
90 deg  WRF-Chem Today FRI 03/23 15:00 LST

Western part of today’s C130 flight path

CO cross section, heights (3000 ft incr)

NOy cross section, heights (3000 ft incr)

THC cross section, heights (3000 ft incr)

Ozone cross section, heights (3000 ft incr)

H2O2 cross section, heights (3000 ft incr)

PM2.5 cross section, heights (3000 ft incr)
Convection?

70 deg  WRF-Chem Tomorrow FRI 03/24 15:00 LST
21 h WRF forecast C5 tracer, 3 pm Thu CST 23 Mar 0-4 km MSL average

Thursday emissions

Wednesday emissions

45 h WRF forecast C5 tracer, 3 pm Friday CST 24 Mar 0-4 km MSL average

Thursday & early Friday emissions

 Wednesday emissions

18,000 ft
12,000 ft

NW SE W E

Thu, early Fri emissions
Thursday emissions

Friday emissions

Saturday emissions

Wednesday emissions

69 h WRF forecast C5 tracer,
3 pm Sat CST 25 Mar
4-6 km MSL average

93 h WRF forecast C5 tracer,
3 pm Sun CST 26 Mar
4-6 km MSL average

0-4 km MSL avg

mix of Wed & Thu emissions

All earlier emissions exited stage right

Wednesday emissions

Friday emissions

Saturday emissions

0-4 km MSL avg

MILAGRO
Saturday March 25 18 Z Carbon Monoxide

Some outflow gulf, with emissions split to SW and NE.
Stratospheric ozone intrusion enhance ozone in MC.
Ozone intrusion starts to cause enhancements at 3km in portions of domain.
Low level emissions influence southern Mexico, while older emissions are drifted S in the Pacific.
Sunday March 27 0 Z Ozone

Ozone enhancements over upper levels in Mexico City.
Biomass Burning
Fires

0-hr FORECAST valid for 1800 UTC Mar-23

MILAGRO
Thursday (March 23): The next Norte event arrives today, with wind speeds increasing during the afternoon in Veracruz bringing precipitation and transporting Tuesdays and Wednesdays emissions to the SE. Possibility of afternoon thunderstorms over Mexico City. Pollution in Mexico City is expected to stagnate with highest concentrations over the southern valley.

Friday (March 24): Continued clouds and precipitation along the coast with showers possible over the plateau in the morning. Strong winds in the morning slowly diminishing during the afternoon. Northward transport of pollution from Mexico City and widely dispersed.

Saturday and Sunday: Scattered clouds and precipitation diminishing from the Norte. The Mexico City plume will be transported to the east, with older emissions widely dispersed towards the south and southeast over the southern Gulf of Mexico, southern Mexico, and the Pacific Ocean.