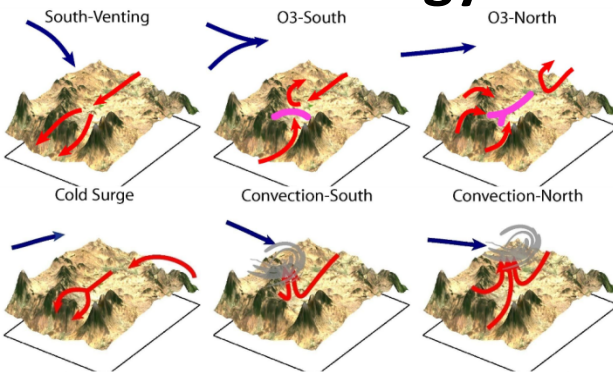


Ozone air pollution in the Mexico City Metropolitan Area (MCMA)



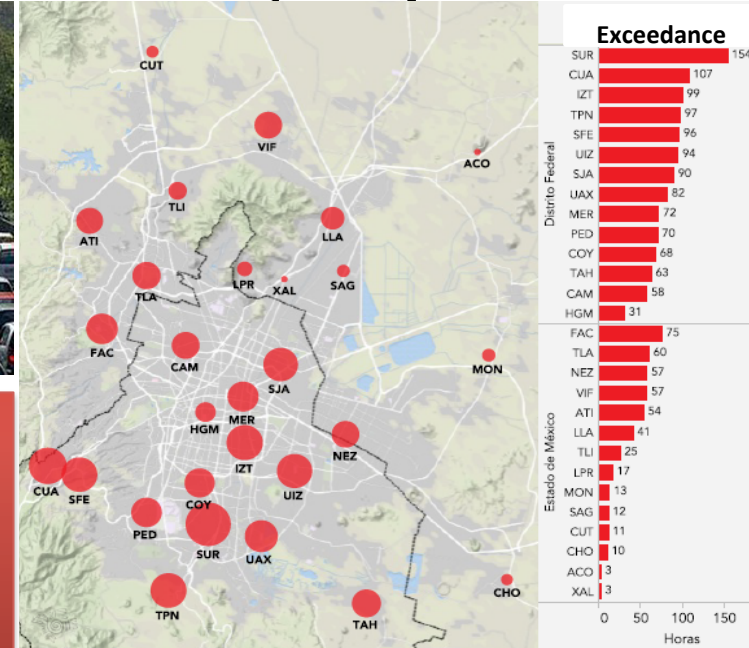
Meteorology



Emissions



Air Quality

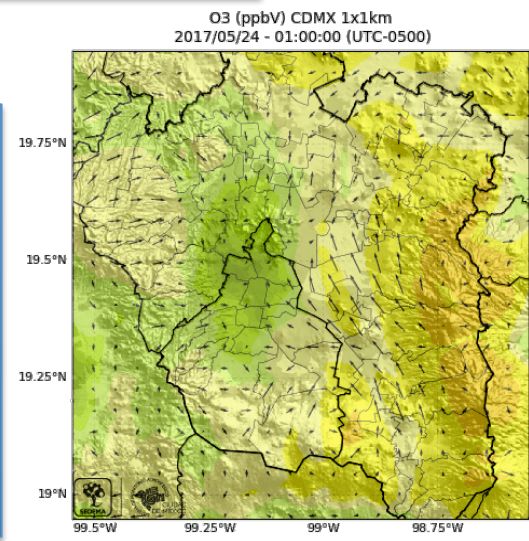


- Surrounding terrain that favours stagnant conditions
- > 86,000 million VKT per year
- > 130 days of exceedance of O₃ hourly limit value

Air Quality Forecast System for Mexico City

<http://www.aire.cdmx.gob.mx/pronostico-aire/>

- ✓ Know in advance the possibility that air pollution episodes occur
- ✓ Contribute to the evaluation of short and long term measures



PRONÓSTICO

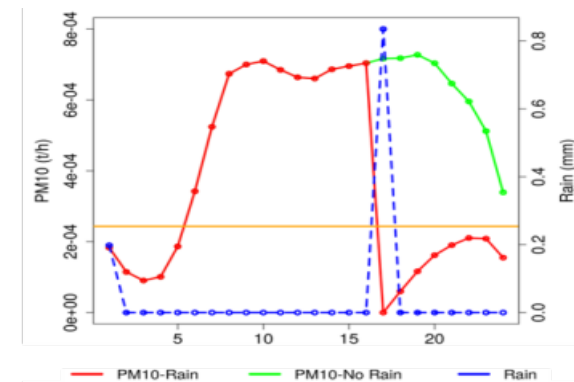
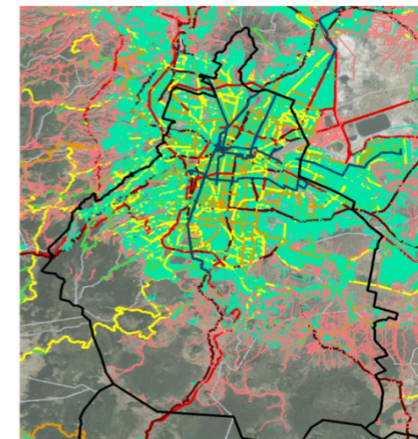
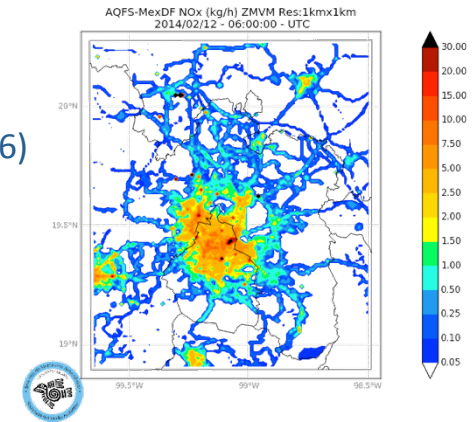
Pronóstico: la calidad del aire por ozono para el jueves 25 será **MALA**

Recomendaciones

HERMES-Mex: An emission processing system for the Mexico City Metropolitan Area



- **Hourly, gridded and speciated emissions (1km², 1h):**
 - **Anthropogenic:** (1) MCMA (SEDEMA, 2016) (2) INEM (SEMARNAT, 2016)
 - **Biogenic:** MEGANv2.1 (Guenther et al., 2012)
 - **Biomass burning:** GFASv1.2 (Kaiser et al., 2012)
 - **Open-air trash burning:** Wiedinmyer et al. (2014)
- **Flexible platform for emission scenario/contribution analysis:**
 - 101 source categories (type, fuel, tech.) + individual industries
 - Option to deactivate/scale individual sources
- **Local spatial and temporal proxies per source category**
 - Weight factors per road type and vehicle category
 - Rain effect on traffic resuspension (Amato et al., 2012)
- **Multiple chemical speciation options:**
 - Gases: CB05, CB05e51
 - Aerosols: AERO5, AERO6



All details available at Guevara et al. (2017)

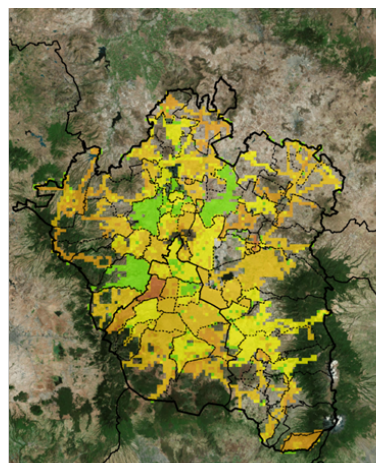
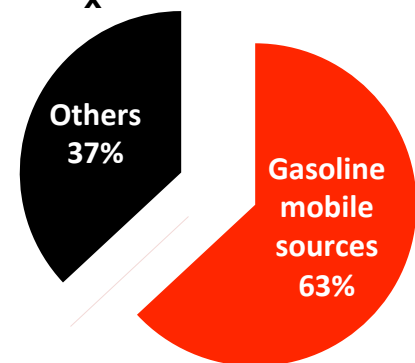
MOBILE6.2-Mexico versus MOVES-Mexico: Emission results



MOBILE6.2-Mexico: Emission rates based upon a small dataset of emission testing results (< 1,000 vehicles) and currently **outdated**.

MOVES-Mexico: Emission data collected between **2008 and 2014** using **Remote Sensing Devices (> 250,000 measurements)**

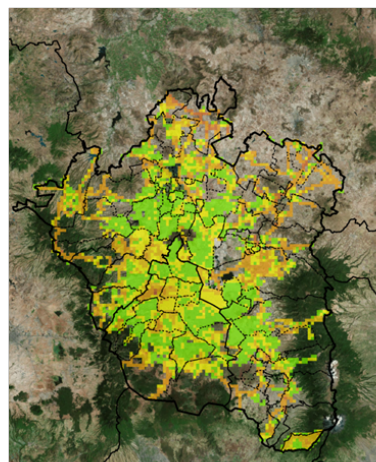
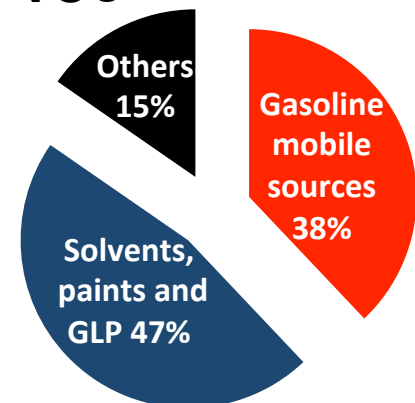
NO_x



When using MOBILE6.2-Mexico:

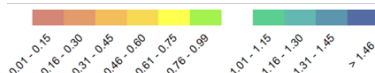
- **NO_x:** Gasoline vehicles ~ 63%
- **VOC:** Use of solvents and LPG ~47% + gasoline vehicles ~ 38%.

VOC



When using MOBILE6.2-Mexico:

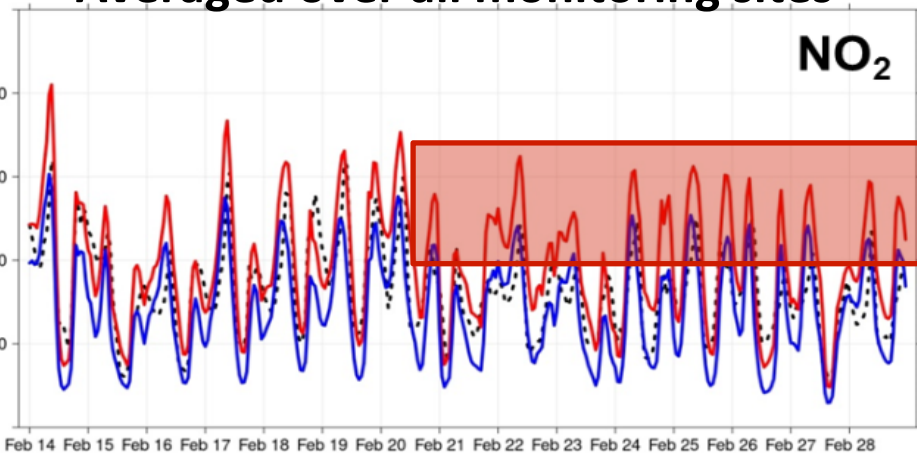
	NO _x	VOC
Mobile Sources	-42%	-63%
Total Sources	-37%	-26%



MOBILE6.2-Mexico versus MOVES-Mexico: Air quality results

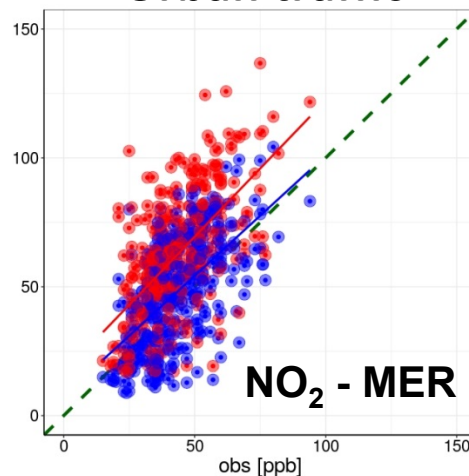


Averaged over all monitoring sites



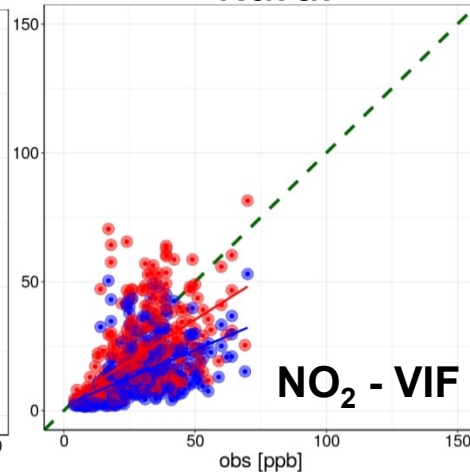
NO₂

Urban traffic

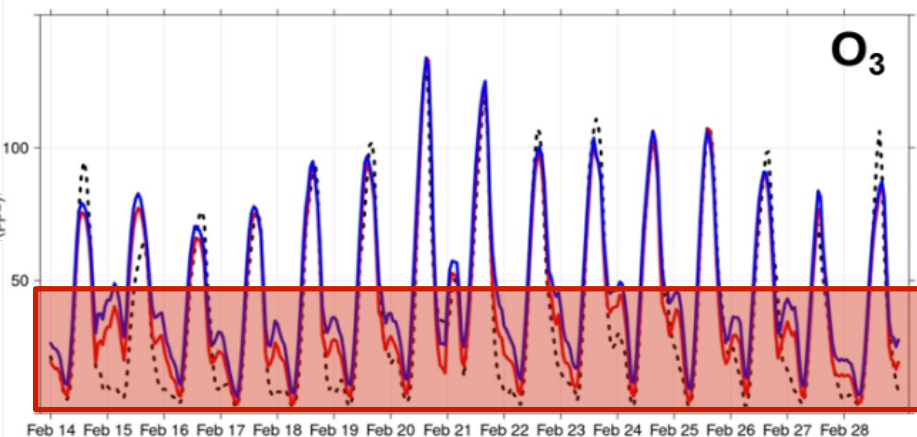


NO₂ - MER

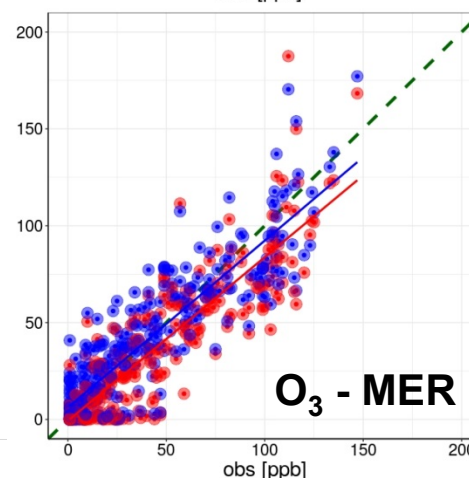
Rural



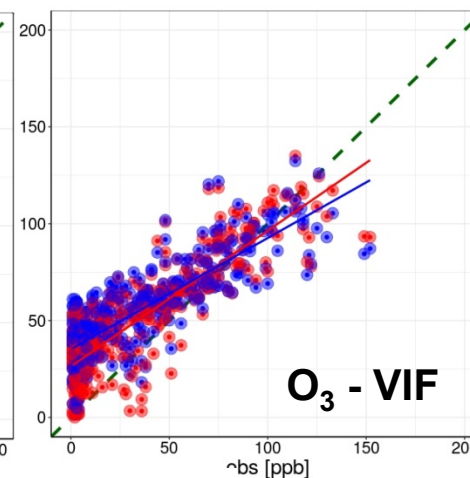
NO₂ - VIF



O₃



O₃ - MER



O₃ - VIF

--- obs — MOBILE6 — MOVES

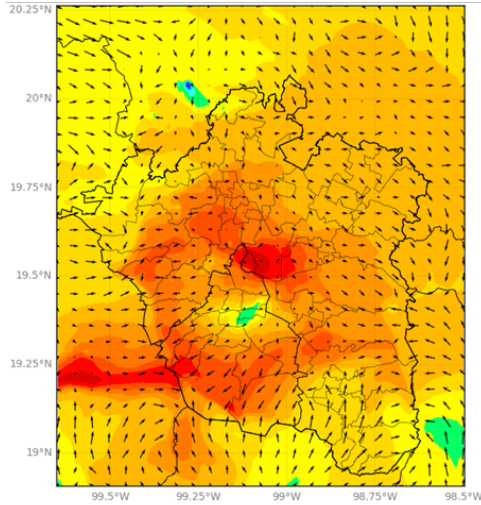
● MOBILE6 ● MOVES

MOBILE6.2-Mexico versus MOVES-Mexico: Air quality results

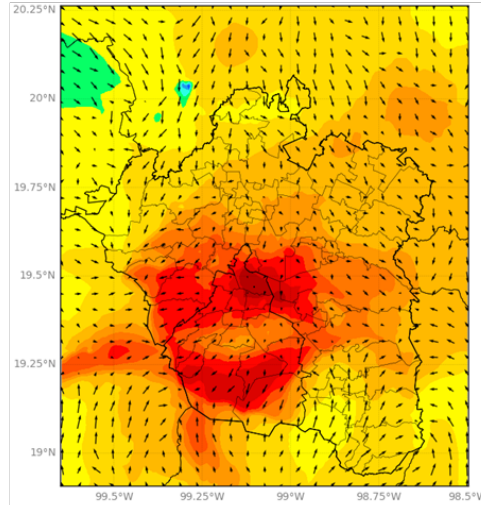


MOBILE

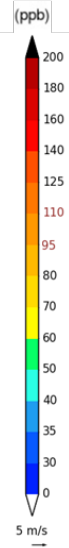
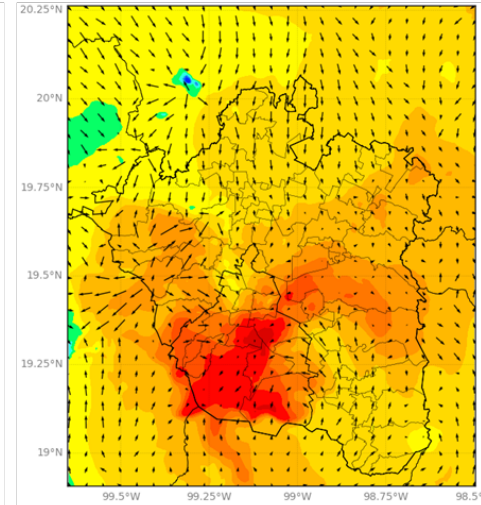
20/02/2014 – 13:00 LT



20/02/2014 – 15:00 LT

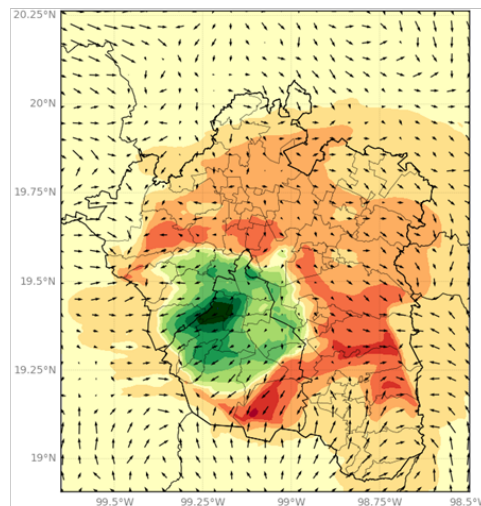


20/02/2014 – 17:00 LT

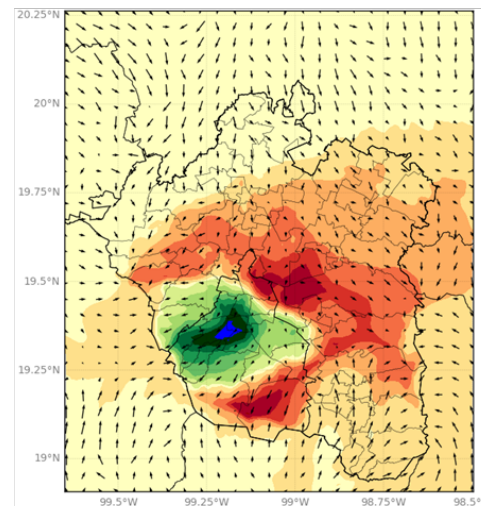


MOVES - MOBILE

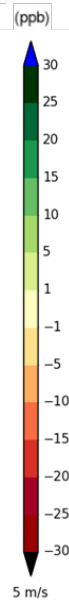
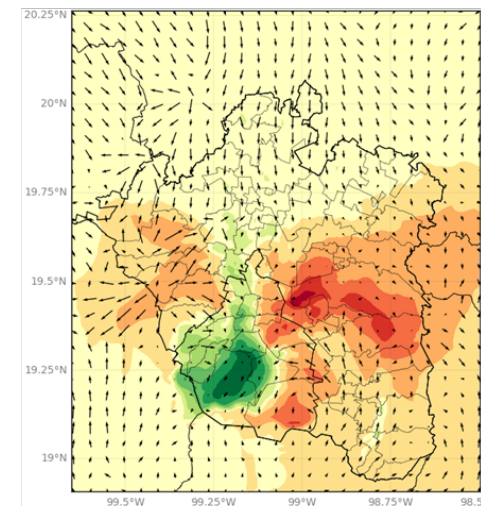
20/02/2014 – 13:00 LT



20/02/2014 – 15:00 LT



20/02/2014 – 17:00 LT





**Barcelona
Supercomputing
Center**

Centro Nacional de Supercomputación



Thank you!

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References:

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