Emissions Inventories Update:

Binational cooperation to better understand emissions in the border region

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Overview

- Binational Cooperation
- Inventory of Emissions Inventories Effort
  - Overview & Status
  - Initial Observations
- Inventory Improvements
  - INEM methodological improvements
  - Comparison to satellite images
- Questions?

Binational Cooperation

- EPA and SEMARNAT, in consultation with local and regional stakeholders, have a history of cross-border collaboration to help improve air quality and public health outcomes along the Mexico-U.S. border

- Growing interest in understanding emissions creates additional opportunities for binational cooperation
  - EPA and SEMARNAT are collaborating to increase information and data exchange, particularly with respect to emissions
  - The agencies are also discussing ways to further harmonize national emissions inventories

- Today, EPA and SEMARNAT are sharing emission inventory updates that may be of interest to the JAC

Inventory of Emissions Inventories

Inventory of Emissions Inventories: Overview

- Project description: high-level, quick reference guide that describes the characteristics and content of national inventories
  - Effort focused on *how* the data is collected, but not the actual data
  - U.S. National Emissions Inventory (US NEI)
  - Inventario Nacional de Emisiones de Contaminantes Criterio (INEM)

- Information collected:
  - Frequency with which the inventory is updated and released
  - Pollutants included
  - Source categories (examples: point, area, mobile)
  - Process(es) used to collect/calculate emissions data
  - Main references for emissions factors used to calculate emissions
  - Main sources of activity data used to calculate emissions
  - If included, emission control information for source categories
  - Any processes/methods to account for missing or unknown data

Inventory of Emissions Inventories: Status

Since July 2020:

- In collaboration with SEMARNAT, translated and/or collected details regarding the preparation of the INEM
- Compiled similar information for the US NEI

Status:

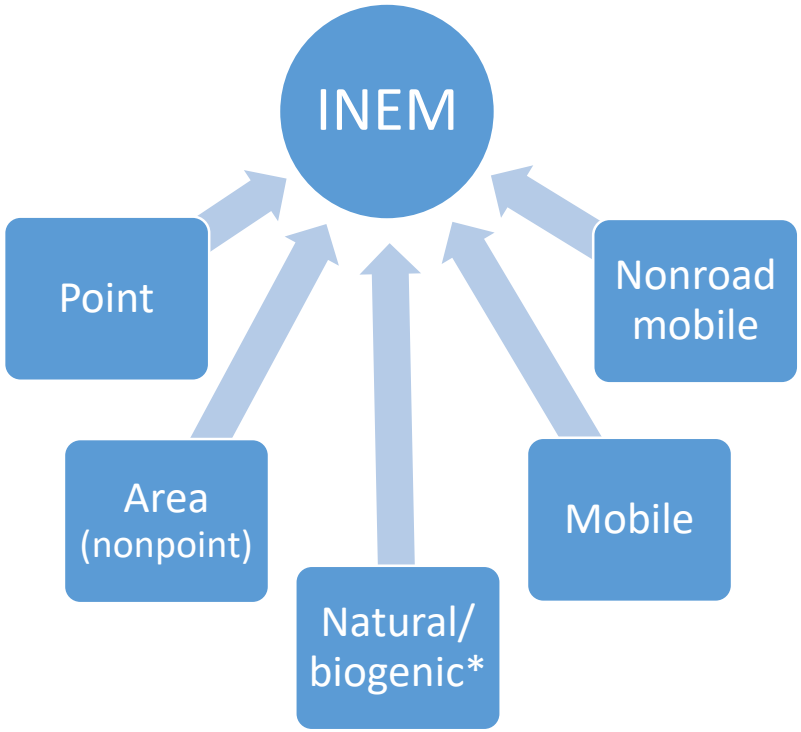
- Final stage of compiling findings into a digestible document

Next Steps:

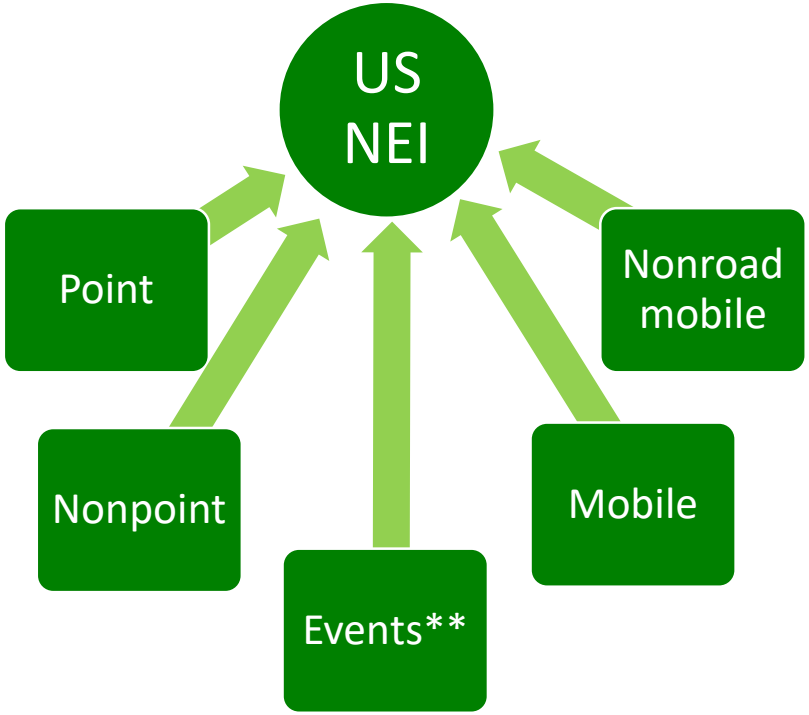
- Prepare draft document for review
- Finalize reference document and share findings
- Determine what additional efforts, if any, will follow

Initial Observations: Source Categories

Inventario Nacional de Emisiones de Contaminantes Criterio



U.S. National Emissions Inventory



*The "natural/biogenic" source category includes emissions from vegetation and soil; the US NEI includes such emissions in the "nonpoint" source category.

**The "Events" source category includes emissions from wild and prescribed fires; the INEM includes such emission in the "area" source category.

Initial Observations: Pollutants Covered

Inventario Nacional de Emisiones de Contaminantes Criterio

$PM_{2.5}$	PM_{10}
SO_2	CO
NOx	VOCs
NH_3	BTEX*

U.S. National Emissions Inventory

$PM_{2.5}$	PM_{10}	Pb
SO_2	CO	
NOx	VOCs	
NH_3	HAPs**	

*BTEX (Benzene, toluene, ethylbenzene, xylene) – estimated where applies

**HAPs are voluntarily reported by state, local and tribal agencies; the EPA augments the data where possible.

Inventory Improvements

INEM methodological improvements

1999

- International emission factors
- Disaggregation, State and Municipal
- Per capita estimates

2005

- Mexico Emission Factors
- State and Municipal Disaggregation
- Housing, establishments and employees

2008

- Some emission Factors for Mexico
- State and Municipal Disaggregation
- Homes, establishments and employees
- BTEX estimation
- Use of emission calculation models
- emissions from combustion and process equipment in stationary sources

2013

- Some emission factors for Mexico
- Housing, employees, substance use
- BTEX estimation
- emission calculation models
- emissions from combustion equipment and fixed source process
- Distribution by establishments and production units
- SCC code assignment for modeling (area sources)
- documentation

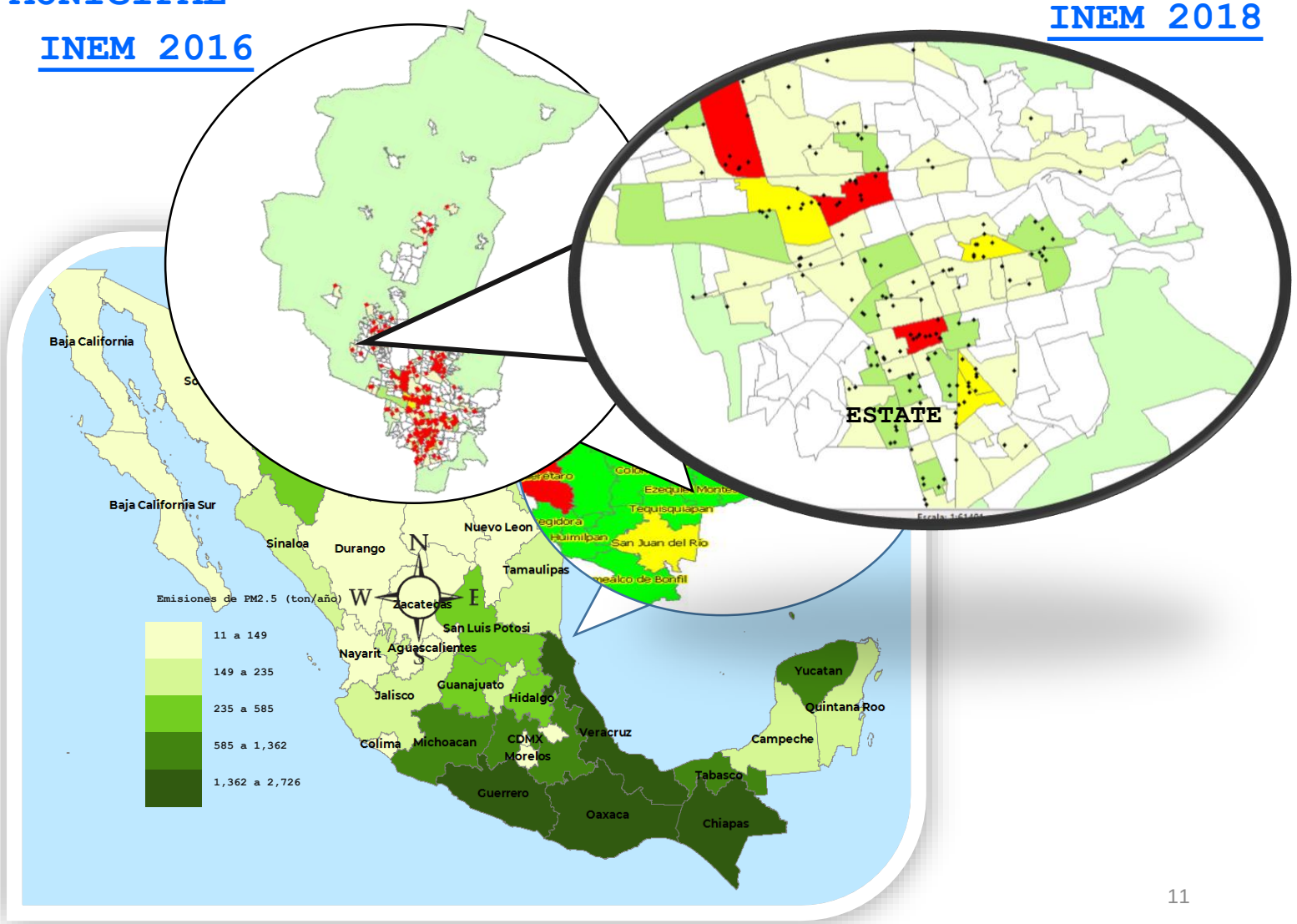
2016

- Emission Factors Update for Mexico
- Housing, employees, substance use
- BTEX estimation
- Update of emission calculation models for Mexico
- emissions by combustion equipment and process in FF
- Distribution by establishments and production units
- Assignment of SCC codes for modeling (area)
- SCC identification for modeling (Fixed)
- documentation

Geographical distribution

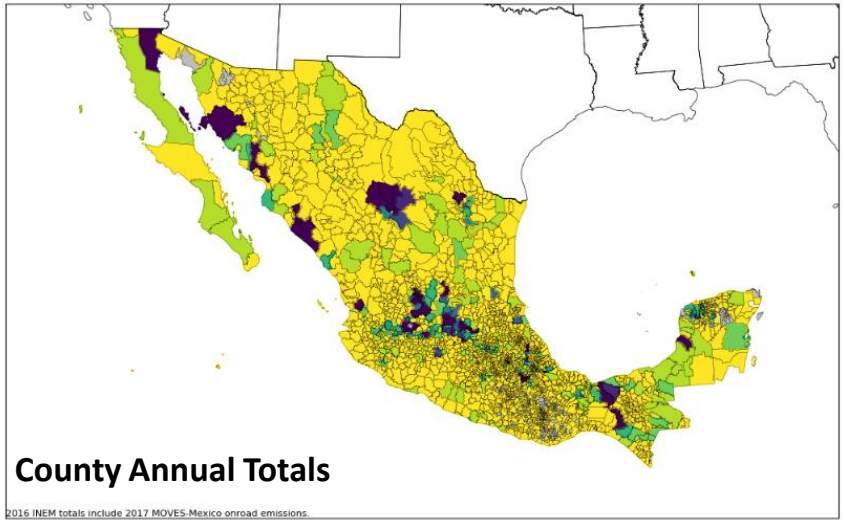
MUNICIPAL
INEM 2016

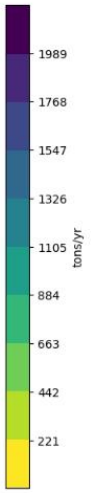
AGEB and Point
INEM 2018

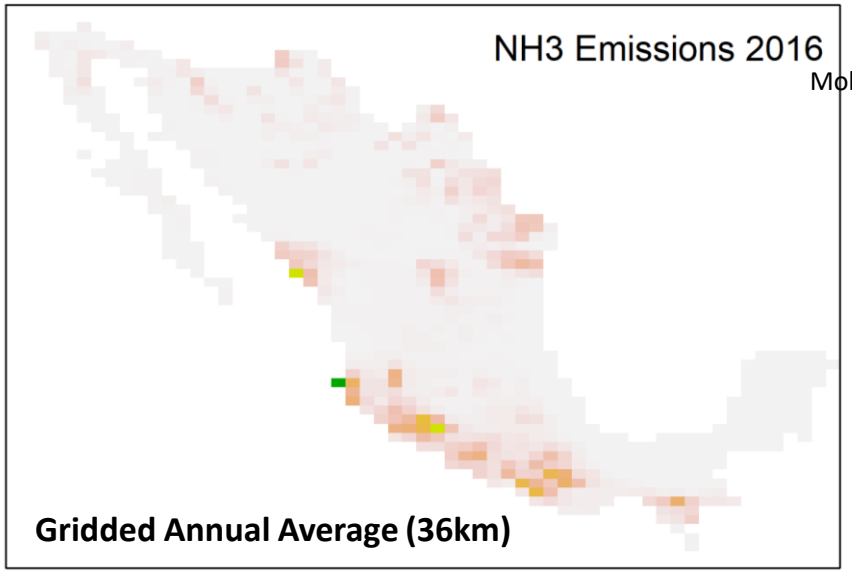


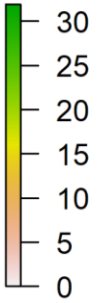
Comparison to Satellite Images

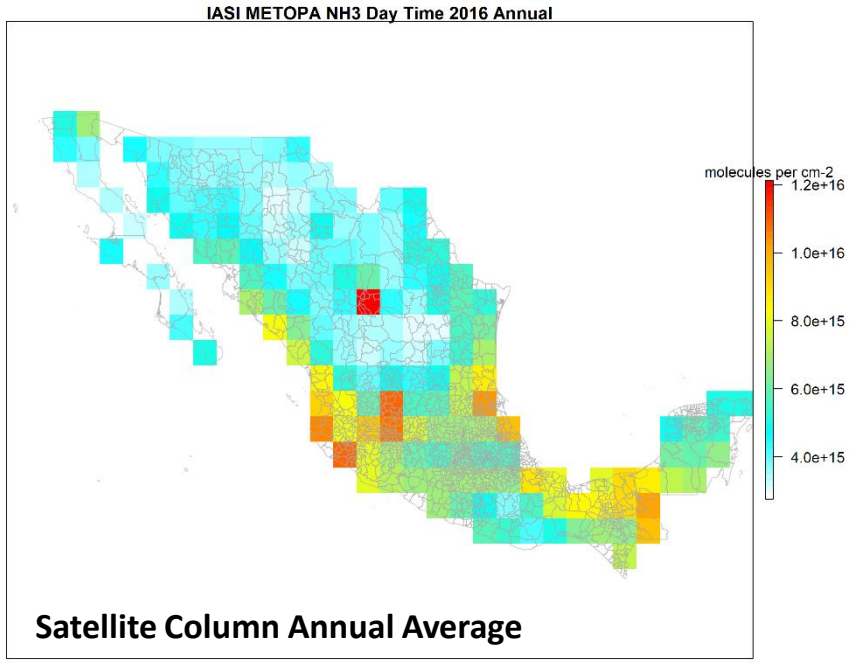
IASI Mexico NH_3 vs. Mexico 2016 Inventory NH_3





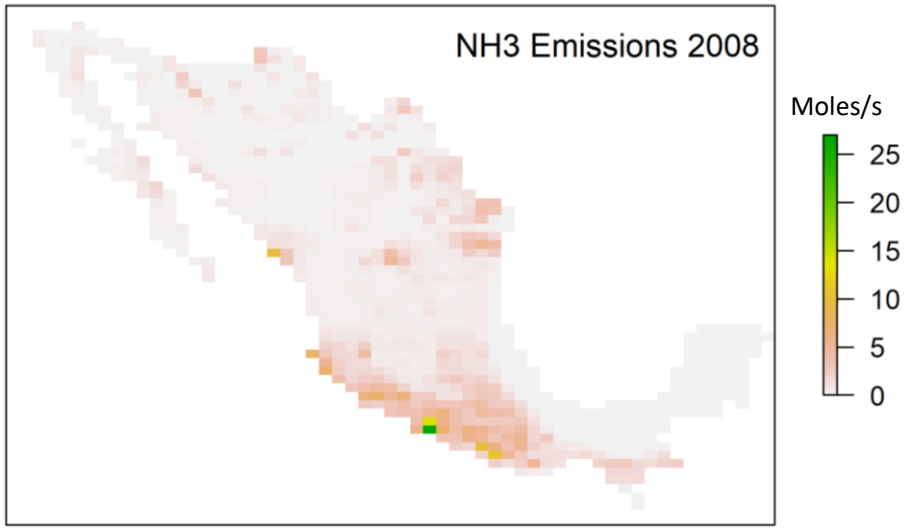


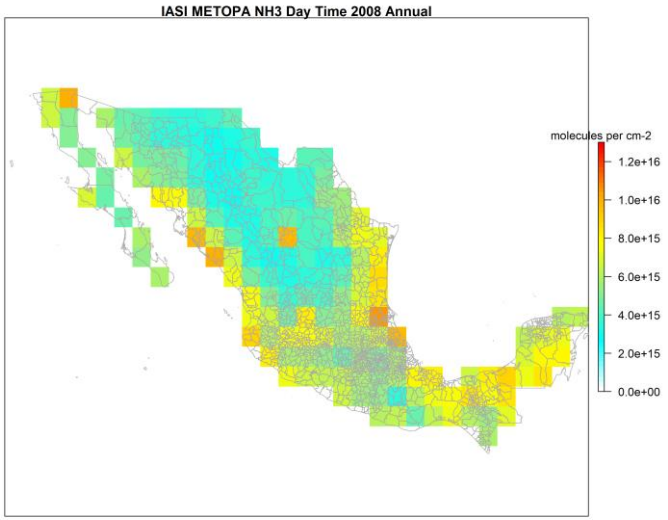




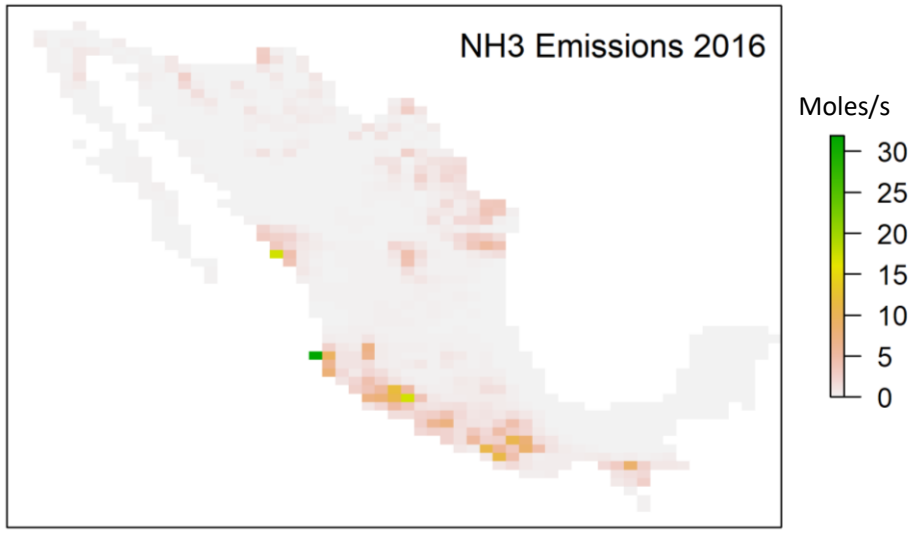
NH_3 2008 vs. 2016

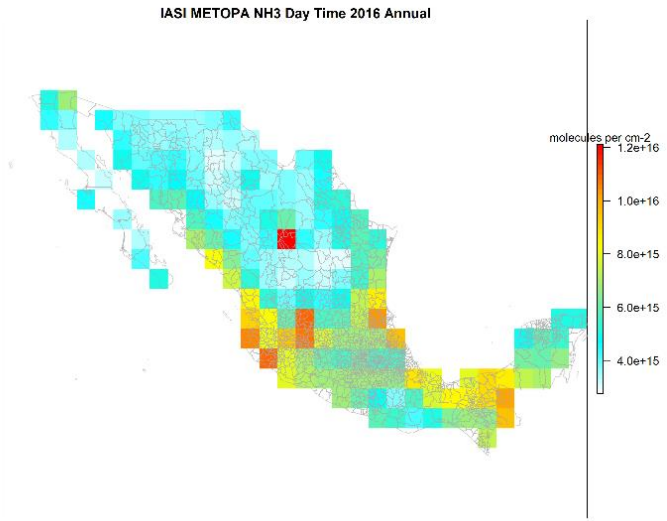
2008



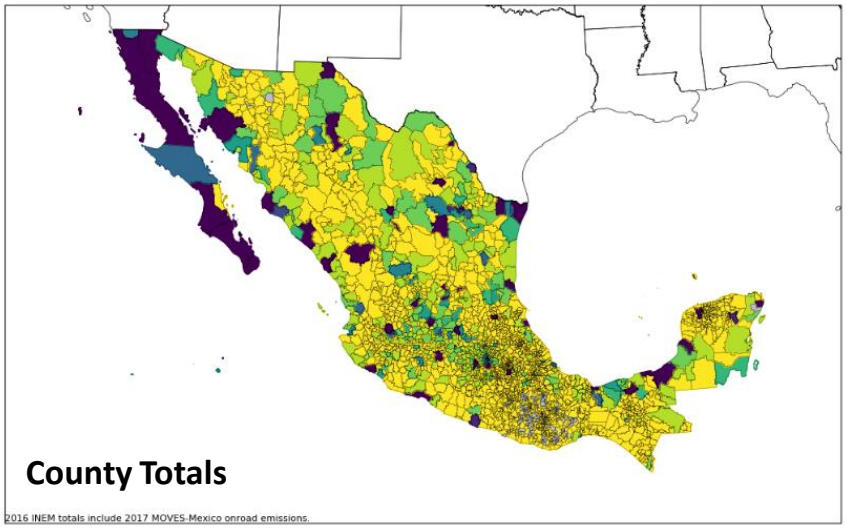


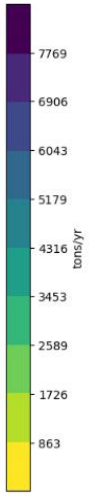
2016

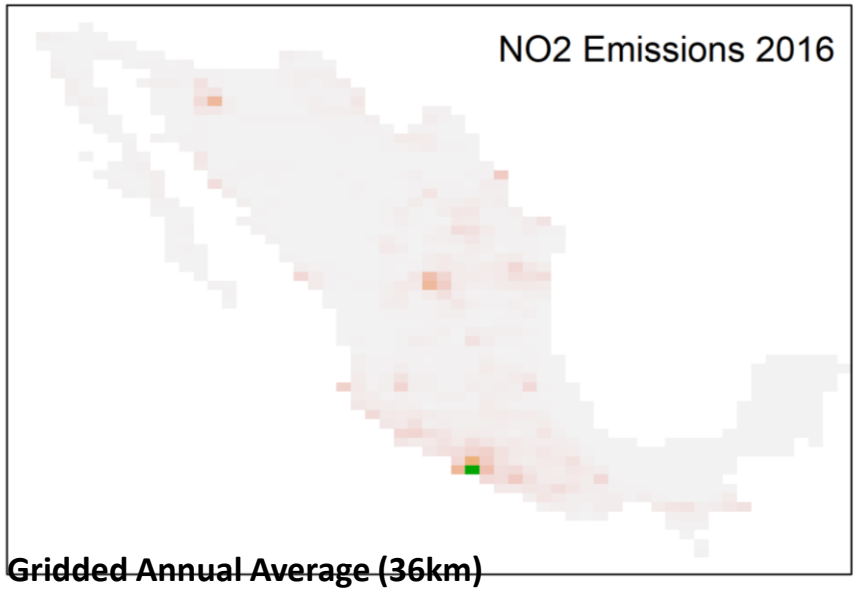


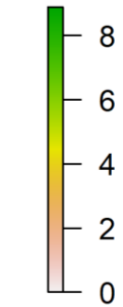


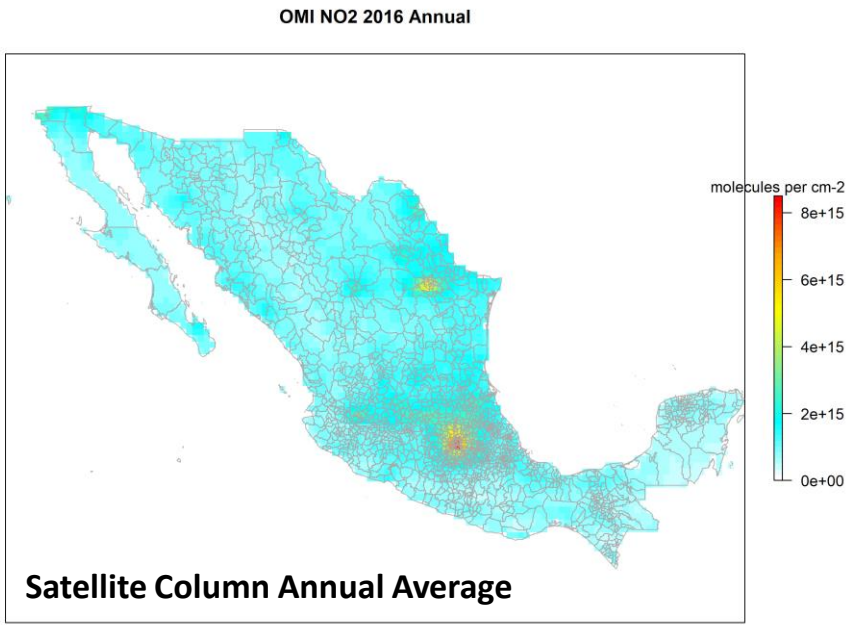
OMI Mexico NO_2 vs. Mexico 2016 Inventory NO_2





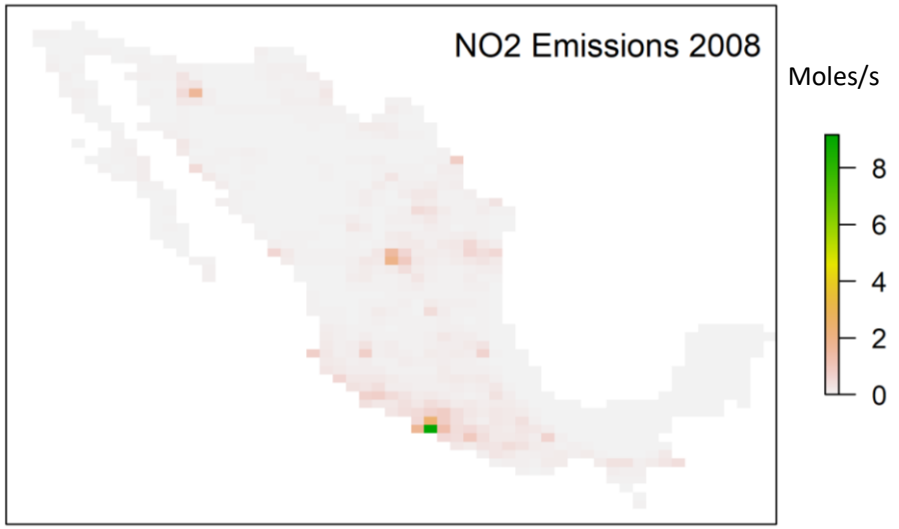


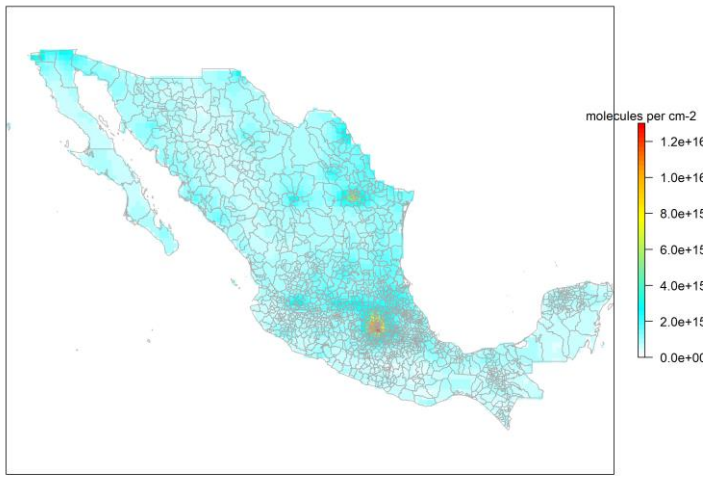




NO_2 2008 vs. 2016

2008





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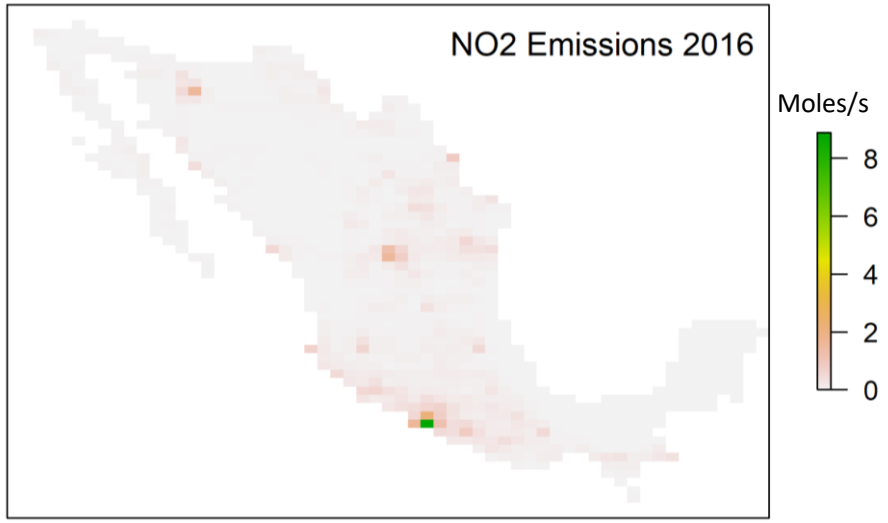
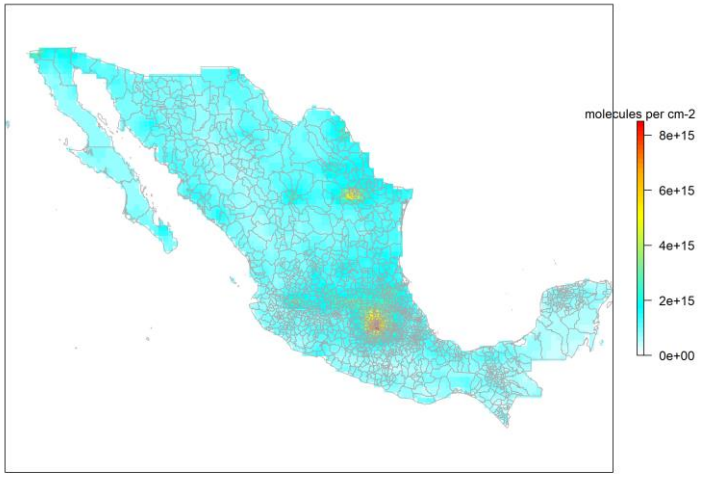
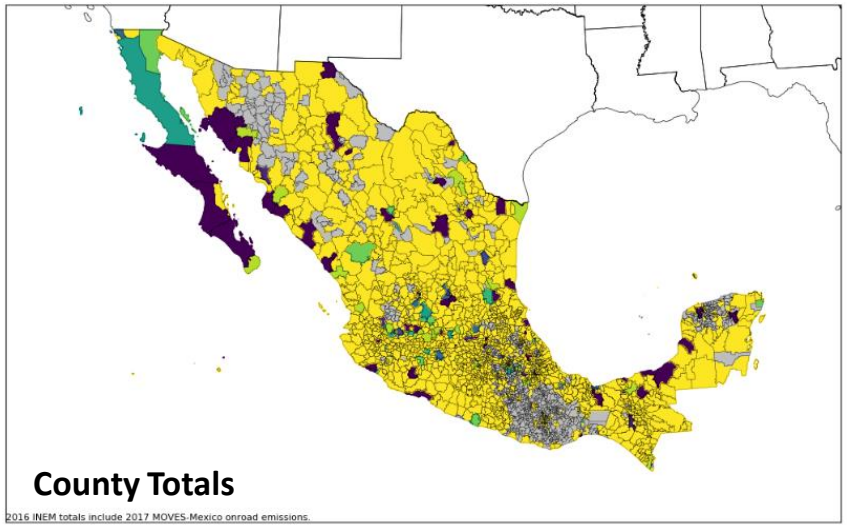
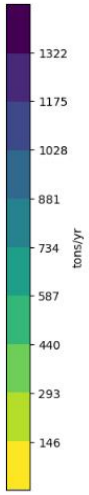
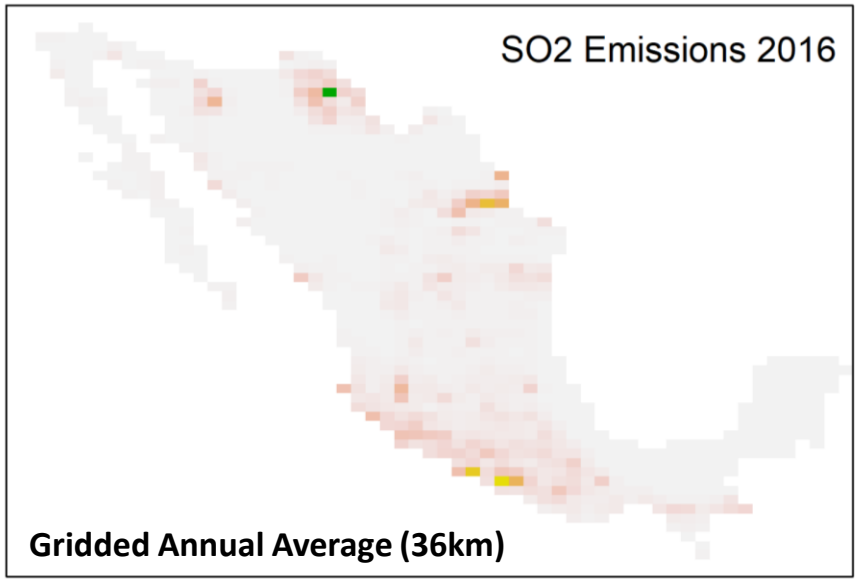




OMI Mexico SO_2 vs. Mexico 2016 Inventory SO_2







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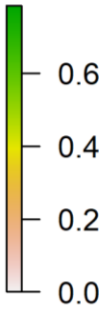

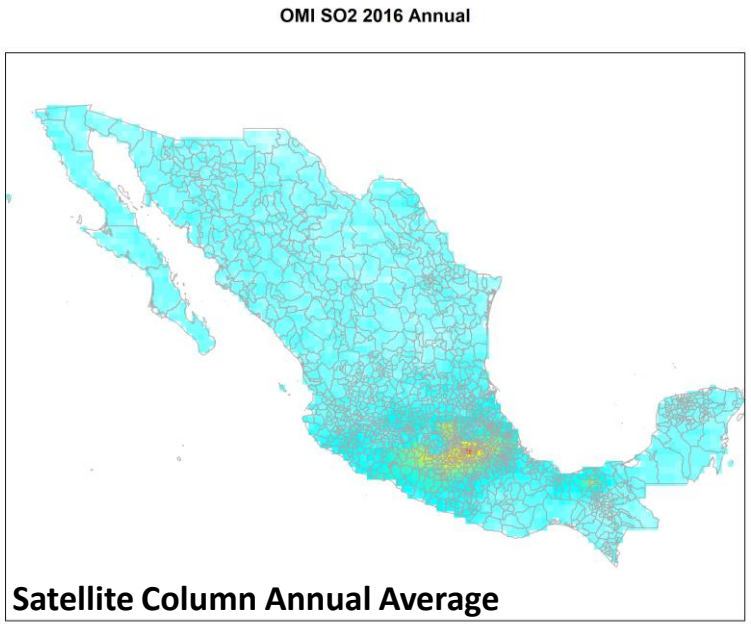

SO_2 2008 vs. 2016

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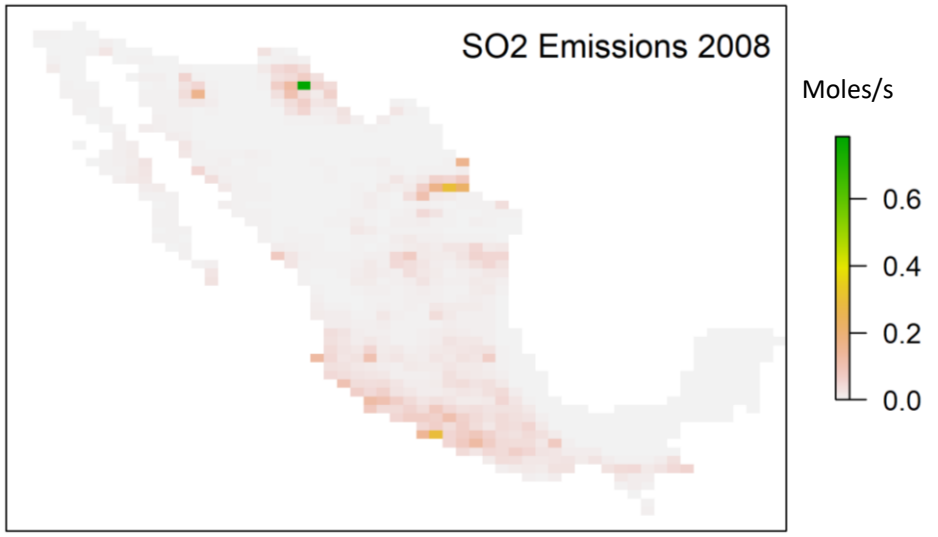

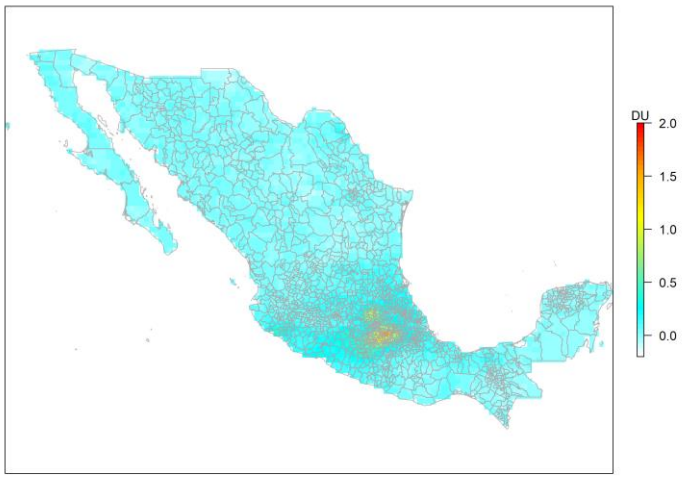

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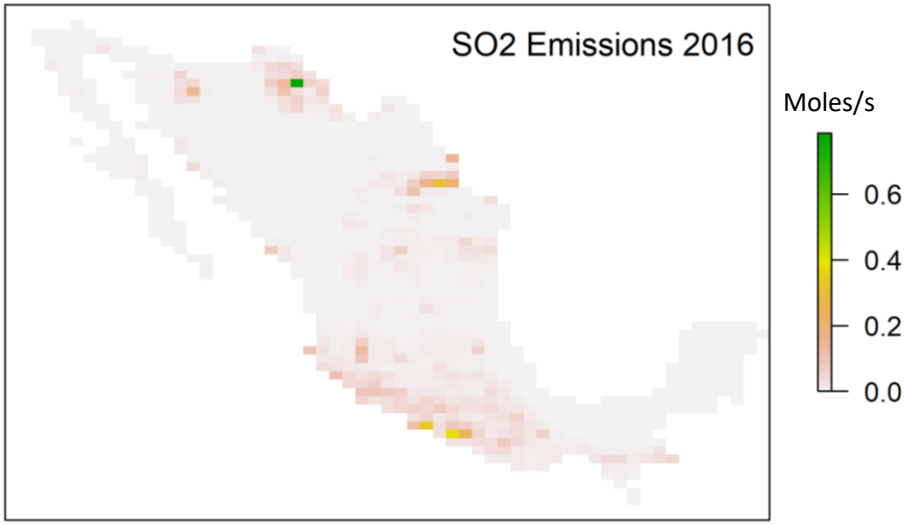

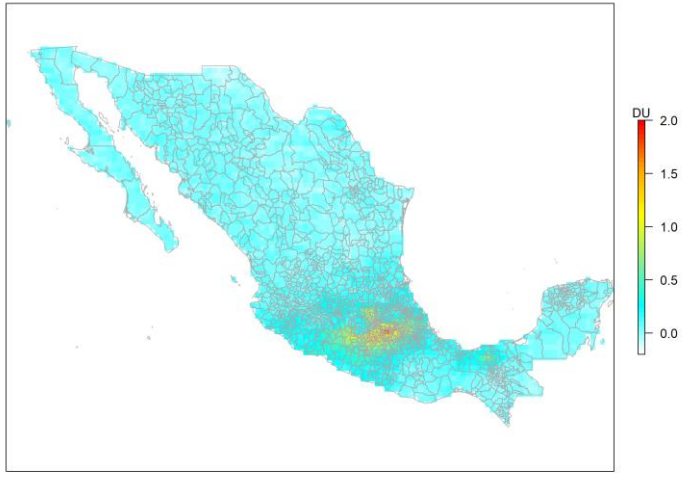

Thank You!

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