# Emission inventories in Stockholm

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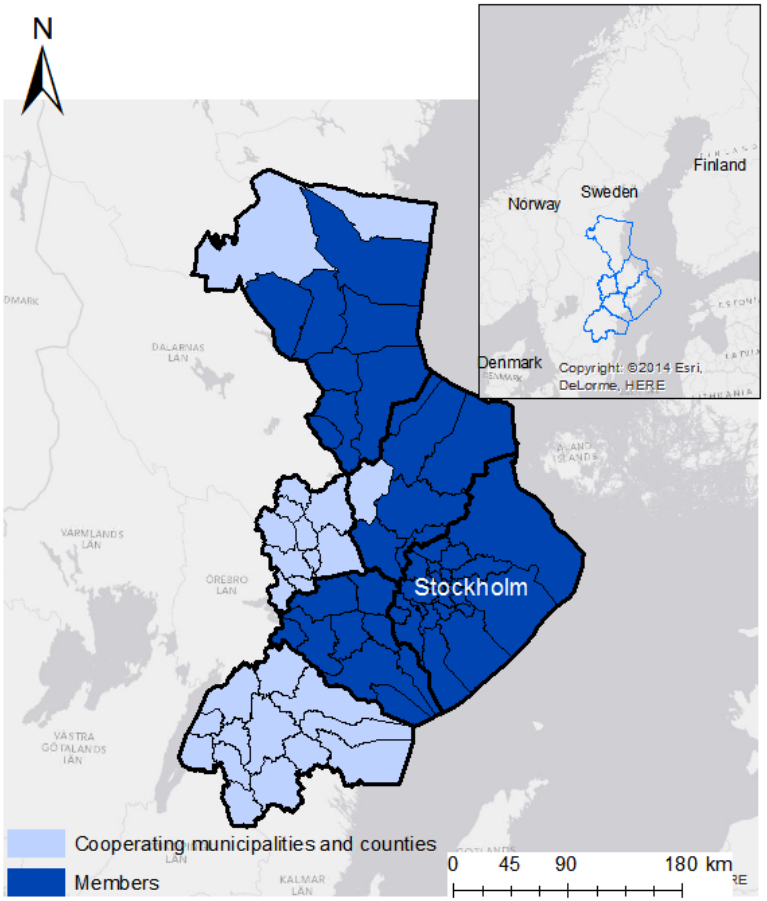
# Coordination of air quality monitoring

Air quality monitoring in **Stockholm** but also **surrounding counties**

## Eastern Sweden's Air Quality Management Association

- Founded in 1992
- 4 counties
- 50 municipalities
- ~ 3 million inhabitants (>30 % of total population in Sweden)
- Institutes, companies and government agencies

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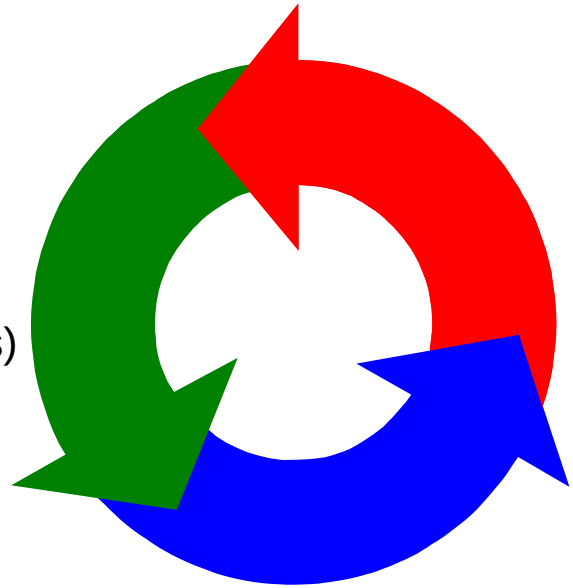
# Air quality management system

- Measurement databases

(air pollutants and meteorological parameters)



- Dispersion and deposition models
- Emission databases

Airviro on the web SMHI

http://www.smhi.se/airviro

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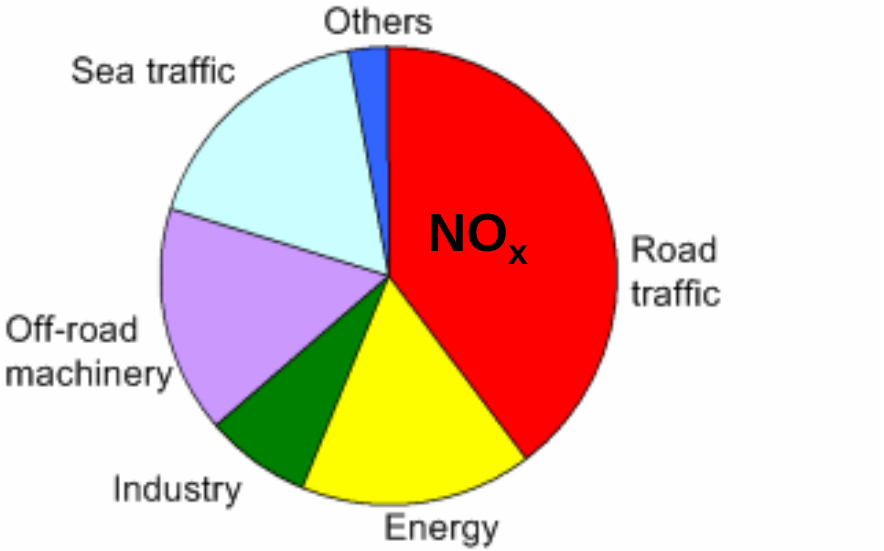
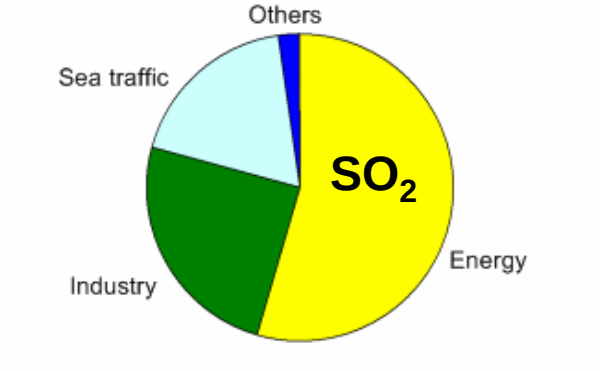
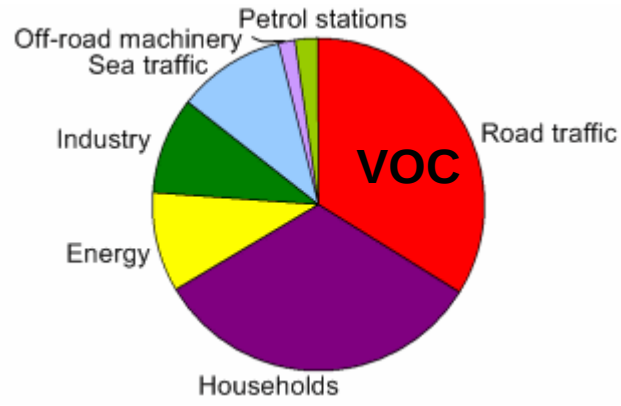
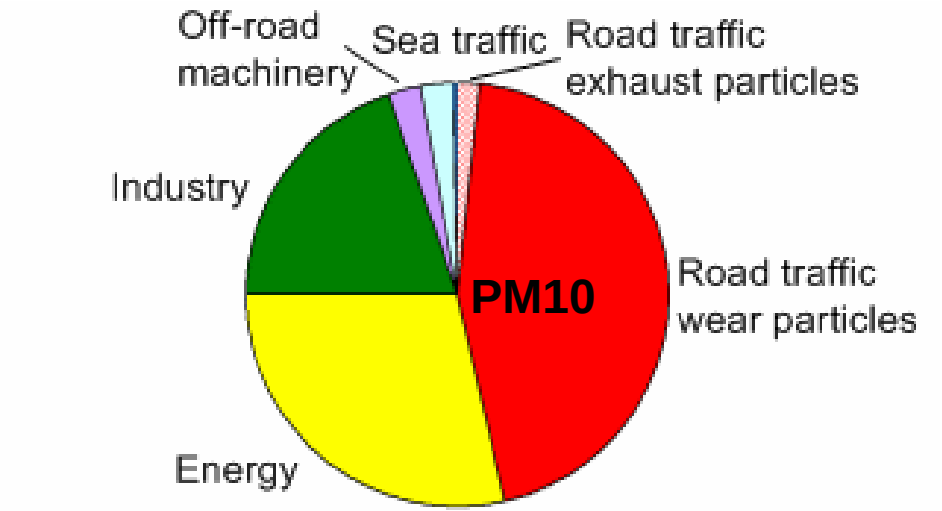
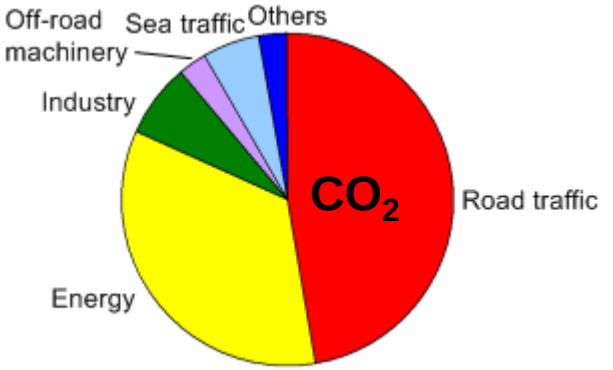
# Emissions in Stockholm County



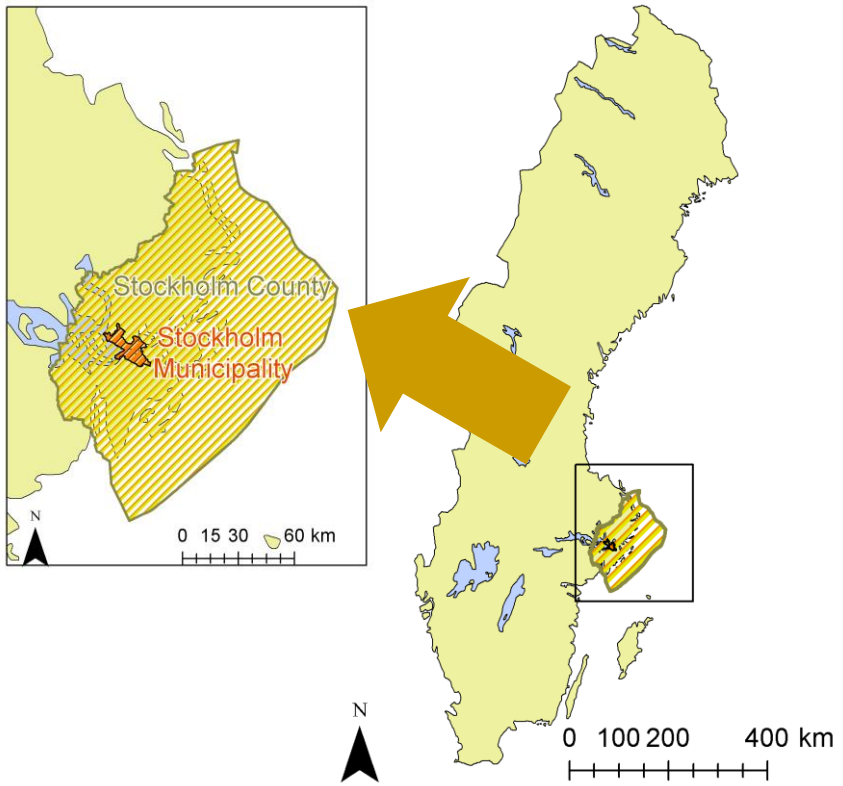



# Comparison of sectors SNAP and Sthlm

| SNAP | Description | Stockholm emission inventory |
|---|---|---|
| S1 | Combustion in energy and transf. industry | Energy plants |
| S2 | Non-industrial combustion plants | Boilers |
| | | Residental heating (top-down, local fuel statistics + district heating) |
| S3 | Combustion in manufacturing industry | Industrial energy plants |
| S4 | Production processes | Engineering industry |
| | | Other industry |
| S5 | Extraction and distribution of fossil fuels… | Petrol stations |
| | | Petrol depots |
| S6 | Solvent use and other product use | Paint industry |
| | | Graphic industry |
| | | Paint, varnish manufacturing |
| | | Dry cleaners |
| | | Household use of solvents (top-down) |
| S7<br>S7.1-7.5 | Road transport | Road transport |
| S8 | Other mobile sources and machinery | Sea traffic |
| | | Air traffic |
| | | Off-road machinery |
| | | Household use of garden machinery |
| S9 | Waste treatment and disposal | Combustion of waste |
| S10 | Agriculture | Agriculture |

# Input data to emission tool PM10 NOx VOC

- Road traffic
  - **National Road Data Base** (traffic amount, speed..) + the municipalities' own traffic count
  - Exhaust emissions: **HBEFA 3.2**
  - Road dust emissions: $NO_X$/PM10 measurements
  - VOC evaporation stationary cars: **HBEFA** grid 500mx500m
- Energy, industries and solvent use
  - Large plants: Emissions of $NO_x$, $SO_2$… from **annual environmental reports**
  - Small plants + boilers: **Fuel consumption** + fuel specific emission factors
  - Residental heating: grid 500mx500m
  - VOC, **amount of solvent use** + EF
- Petrol stations/depots
  - VOC, **amount of fuel stock** + EF

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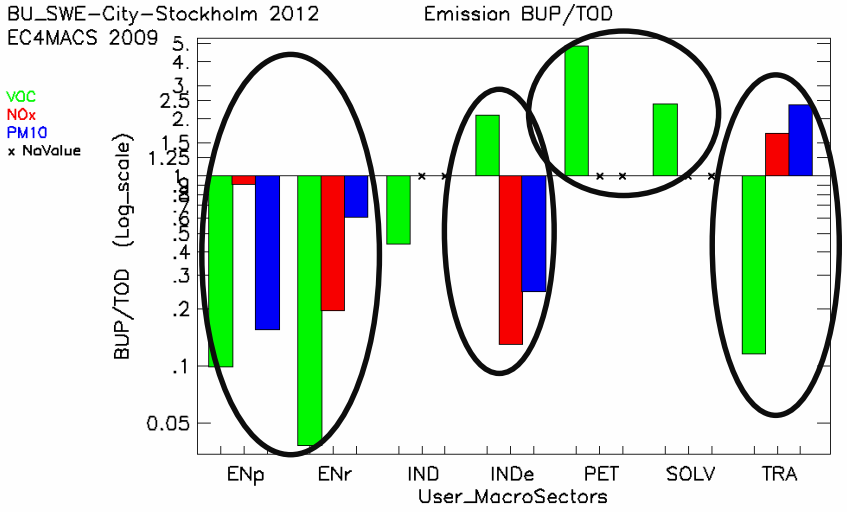
BU_SWE-City-Stockholm 2012
EC4MACS 2009
Emission BUP/TOD
VOC
NOx
PM10
x NaValue
BUP/TOD (Log_scale)
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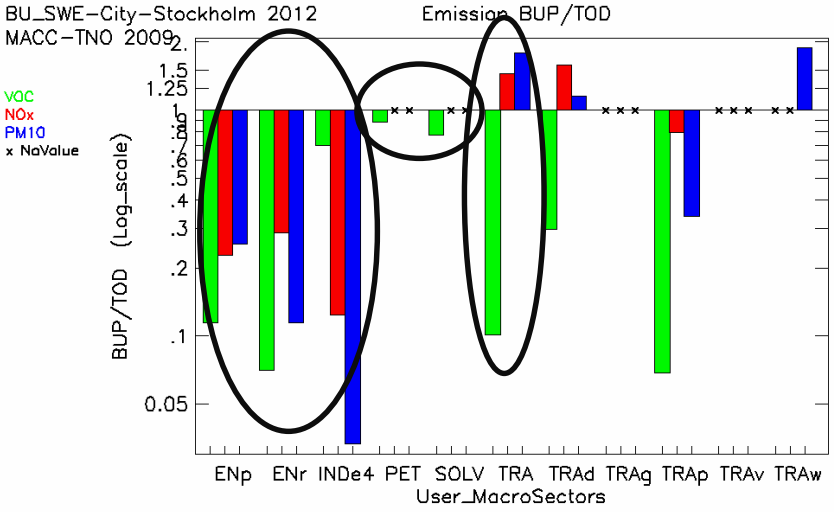
BU_SWE-City-Stockholm 2012
MACC-TNO 2009
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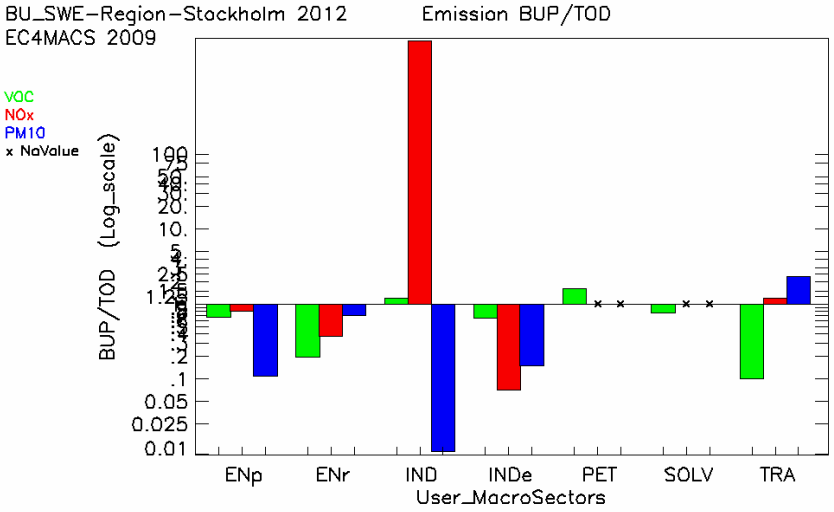
BU_SWE-Region-Stockholm 2012
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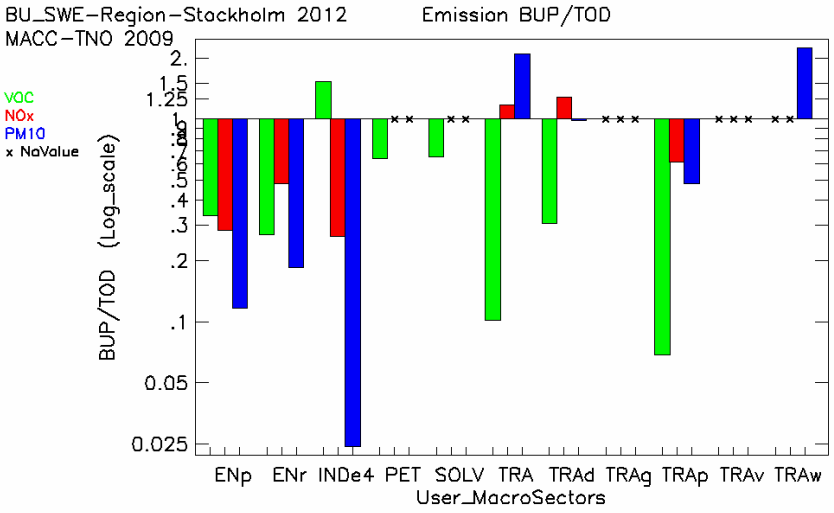
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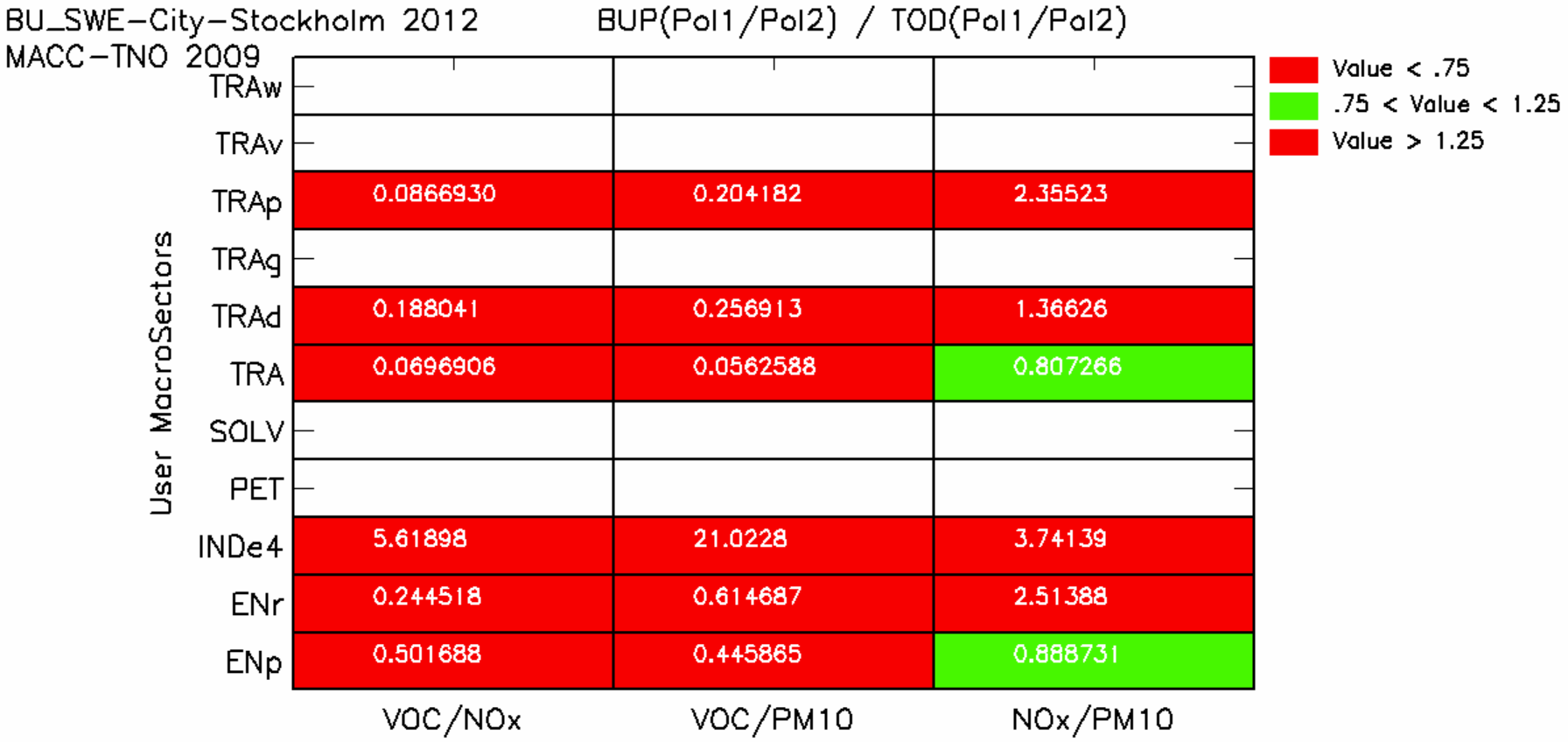
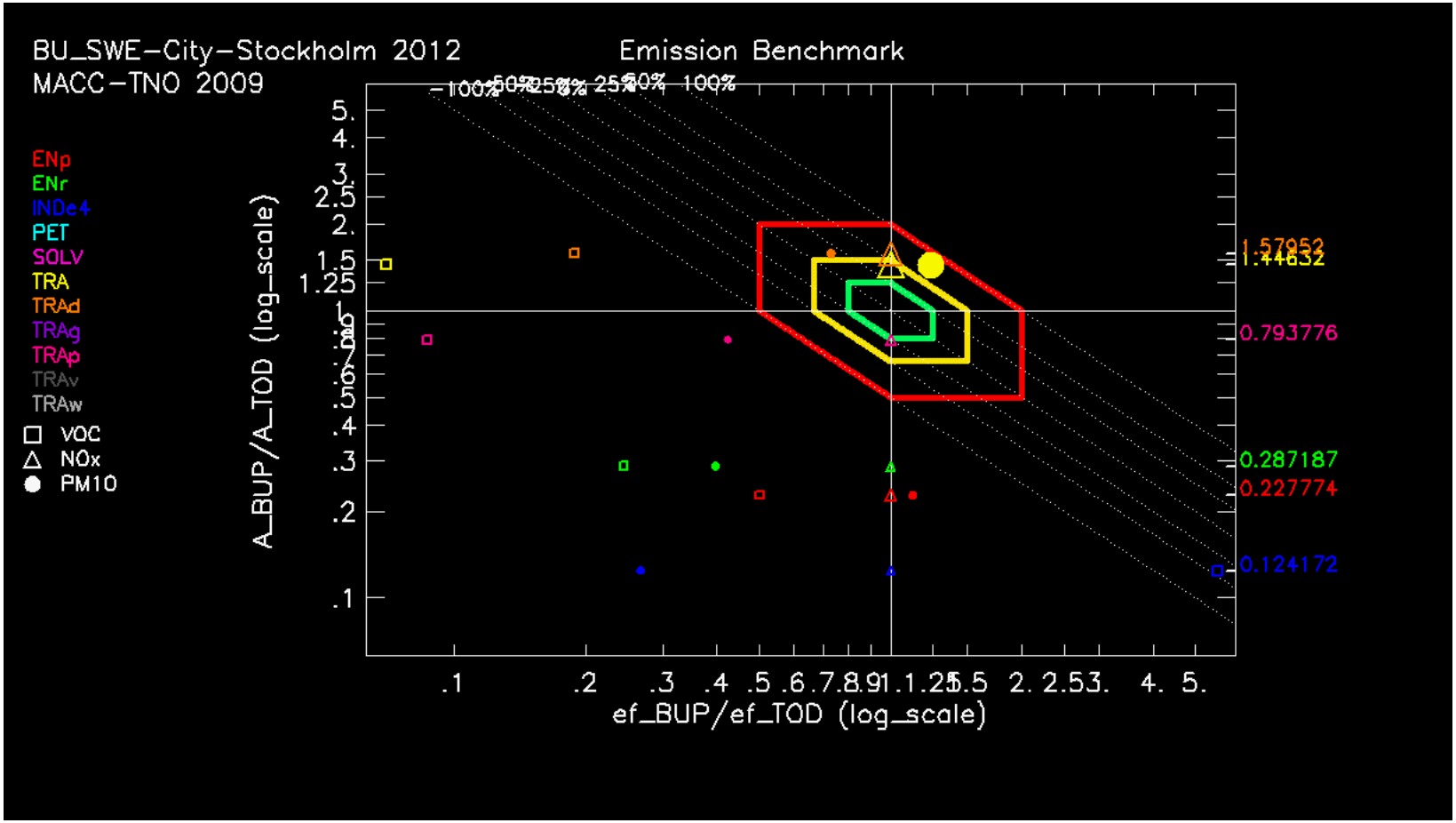
# Stockholm City MACC-TNO



# Stockholm City MACC-TNO



# Evaluation of the emission tool

- It is not possible to verify that the various geographical areas of top-down and bottom-up emission data sets match (?)
- Difficult to interpret the various graphs
- More information of the top-down data is needed to be able to draw any conclusions of the results, e.g. share of studded tyres, emissions in the different grid boxes
- Wishes for the future:
  - Gridded emission data (top-down) as shape-files
  - Top-down emission data for several years
  - How handle emission of wear particles from studded tyres?
  - Better guide/help function

# Thank you!

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