European Commission

Guidance on Emissions

WG2 Urban emissions

Agenda

Tuesday 8th October - Parallel session on Guidance on emissions

17:00- 17:20	**Jeroen Kuenen** (TNO) "Comparison between CAMS-REG and EMEP"
17:20- 17:40	**Kees Cuvelier** (JRC) "Mosaic of bottom-up inventories"
17:40 - 18:00	**Daniel Rodríguez Rey** (BSC) "Coupling between traffic and emission models for evaluation of mobility plans"
18:00 - 18:20	**Sandy Fameli** (NOA) "Local profile of emissions from residential heating in Greece"
18:20- 18:30	Conclusions from this session for plenary discussion next day

Guidance on Emissions

Agenda

Wednesday 9th October - Plenary session on Guidance on emissions

08:30- 8:50	**Marc Guevara** (BSC) "Best practices on fine scale emissions derived from HERMESv3**"**
08:50- 09:10	**Jeroen Kuenen** (TNO) "Presentation of CAMS-REG emission inventory"
09:10- 09:20	**Leonor Tarrasón** (NILU) "Introduction to emission roadmap"
09:20- 10:00	Common discussion on FAIRMODE emission activities

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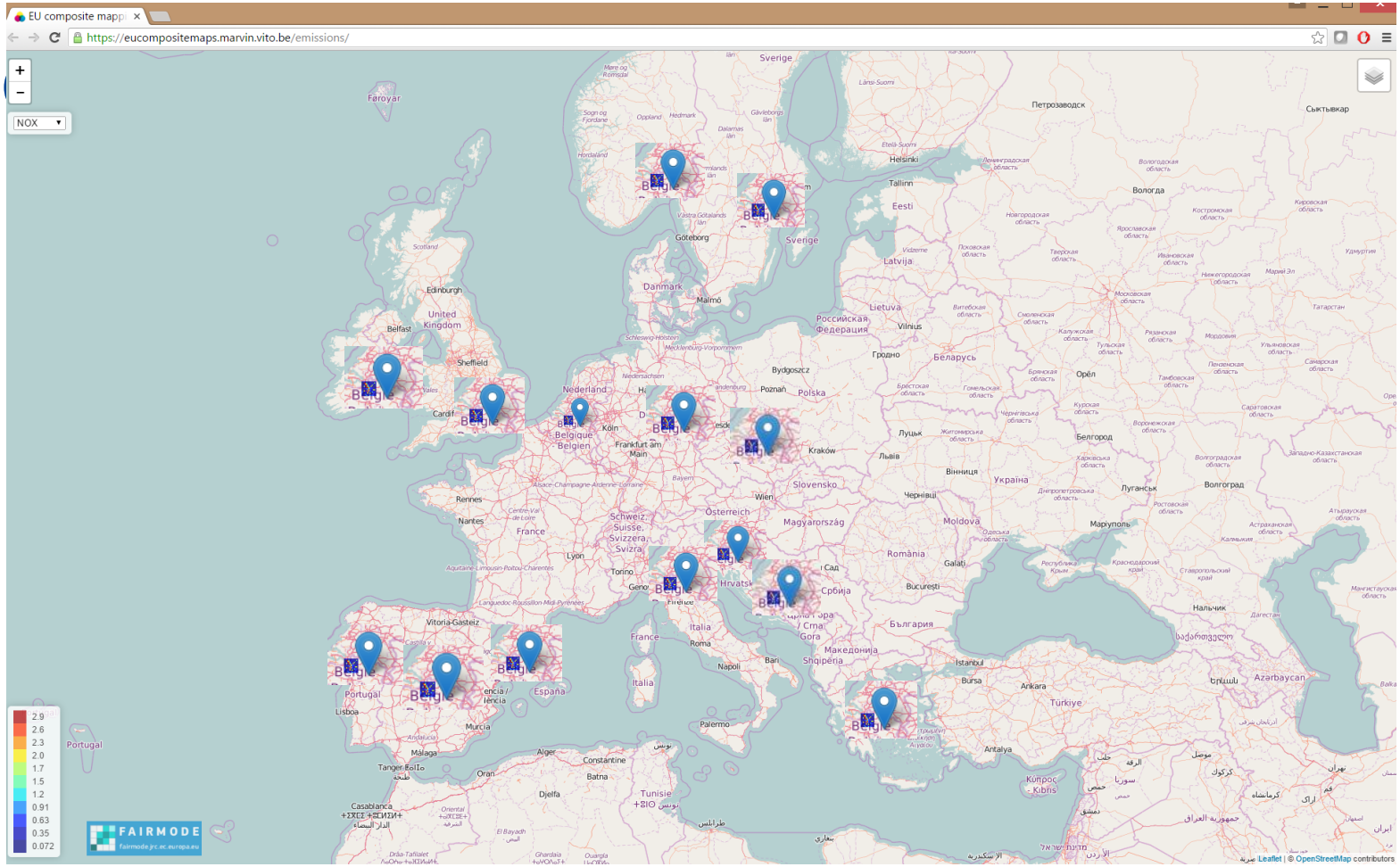

FAIRMODE

Forum for air quality modelling in Europe

Composite Emissions Capabilities

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- Visualisation of spatial patterns
- Quick first check of emission results

- Comparison of inventories - emission densities and totals
- 2 sectors : S2: residential heating , S7: road traffic
- Requires knowledge on emissions to interpret the results of the comparison

2 current applications

- ✓ Pilot exercise
- ✓ Evaluation of regional inventories

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		Best ---------- Worst			
GNFR sector	Cat.	Tier 3	Tier 2	Tier 1	Notes
ary	D	Detailed fuel deliveries for key fuels (e.g.gas) and modelled estimates for other fuels using data on population density and/or household numbers and types.	Population or household density combined with land cover data if smoke control areas exist in cities.	Land cover	Tier 1 & 2 methods assume that a linear relationship between emissions and population density or land cover exists. This assumption will be most realistic if a country has a uniform distribution of fuel use by type. Where there is a broad variation of fuel type use in different areas, the accuracy of the simple method will be much lower
	D				

		Best ---------- Worst			
GNFR sector	Cat.	Tier 3	Tier 2	Tier 1	Notes
_RoadTransport	D				usually need to apply a Tier 2 method for minor roads
_RoadTransport	D				
_RoadTransport	D	Traffic flows and types of vehicles	Using road network information and population based traffic intensity	Population and Land cover	Different tiered approaches will usually be needed for different road types. Major roads will often have traffic counts or modelled flows, while minor roads will not. Countries that have traffic count/flow information will usually need to apply a Tier 2 method for minor roads
_RoadTransport	D				
_RoadTransport	D				

Guidance in place

Information on what's used

missing?

WG 2 : Evaluation of emission inventories

Benchmarking with other inventories to understand strengths and limitations

Guidance on how to evaluate an emission inventory

- Cookbook
- User guidance documents
- 4 publication examples
- Bilateral support
- Workshop group discussions

Documentation of the inventory:

- What to look for
- How to classify the inventory

Benchmarking Δ- emission tool

- identify stengths
- identify possible processes missing

Benchmarking emission composite

- check spatial differences across pollutants

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Related documents

- *Cookbook for Use of the Δ - Emission Tool (V0 - September 2015)*
- *Δ - Emission Tool User's guide (March 2015)*

Related publications

Spatial inter-comparison of Top-down emission inventories in European urban areas, M. Trombetti, P. Thunis, B. Bessagnet, A. Clappier, F. Couvidat, M. Guevara, J. Kuenen, S. López-Aparicio, 173, 142-156, 2018.

Assessment of discrepancies between bottom-up and regional emission inventories in Norwegian urban areas, S. Lopez-Aparicio, M. Guevara, P. Thunis, K. Cuvelier, L. Tarrason, Atmospheric Environment, 154, 285-296, 2017.

A benchmarking tool to screen and compare bottom-up and top-down emission inventories, M. Guevara, S. Lopez-Aparicio, C. Cuvelier, L. Tarrason, A. Clappier and P. Thunis, Air Qual Atmos Health, 2016.

A novel approach to screen and compare bottom-up vs. top-down emission inventories, P. Thunis, B. Degraeuwe, K. Cuvelier, M. Guevara, L. Tarrason and A. Clappier, Air Qual Atmos Health, DOI 10.1007/s11869-016-0402-7, 2016.

Related tools: The Fairmode emission benchmarking

- Δ - Emission tool

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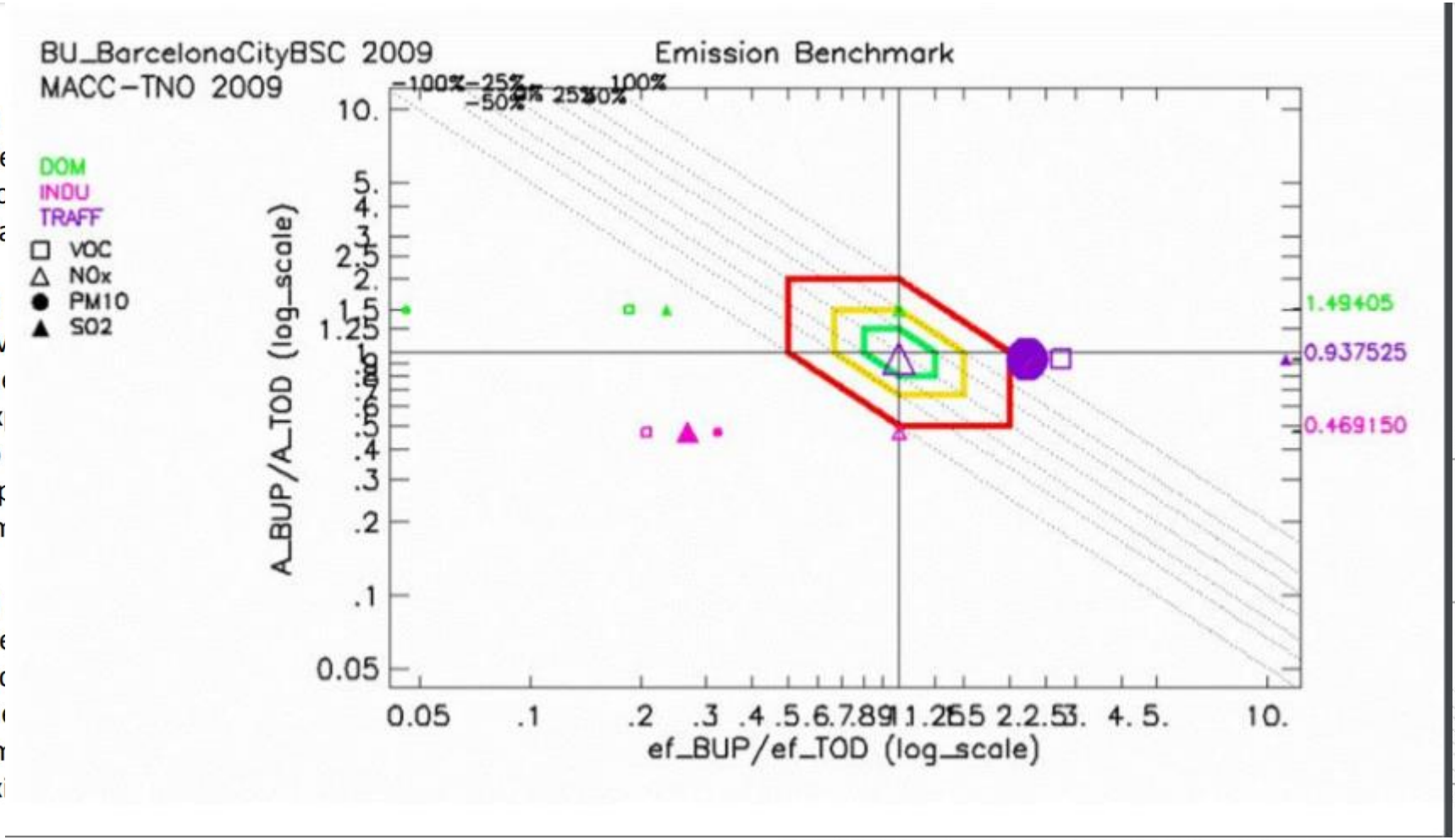

FAIRMODE Recommendations

Fitness-Check for AAQDs

Feedback reflection on FAIRMODE

1. Modelling not generally used for reporting under AAQDS
2. Focus on compliance with limit values – not impact assessment
3. Limited links to NECD – Emission gap

- FAIRMODE mature network
- FAIRMODE Guidance needs to be strengthened

….to secure the AAQD have successfully defined methods to monitor and assess air quality and to ensure that representative and high quality assessment regimes are in place in all Member States.

WG2: Urban Emissions Recommendations

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- The compilation of emission data under NECD does not take into account the needs for emission data in air quality modelling applications under the AAQDs.

- The guidance under EMEP/EEA do not aim at providing input to high resolution air quality models

- Urban Emission Gap: The experience gained in FAIRMODE with emission benchmarking and understanding of urban emissions shows the existence of a large gap between national and urban inventories.

Recommendations (1)

1. Specify the requirements on the (urban) emission data to be used as input for air quality assessments.

The current system to compile and report national emission data is not appropriate to ensure the representative and highly spatially and temporally disaggregated air quality assessments required under the AAQD.

Additional Reporting Requirements - Links to NECD

Recommendations (2)

2. Contribute to the current EMEP/EEA emission inventory Guidebook to include guidance on urban emission compilation.

More specifically, to raise awareness of the limitations of downscaling. FAIRMODE WG2 can host a process to secure the development of user-checked guidance for URBAN emission inventory compilation.

Additional Guidance – links to NECD

Recommendations (3)

3. Promote benchmarking activities in FAIRMODE as a system to study the quality of emission data used as input in air quality assessments.

The benchmarking of emission inventories in selected cities that has been performed in the framework of FAIRMODE WG2 during the last years has highlighted large inconsistencies between local bottom-up urban emission inventories and regional emission inventories and contributed to the improvement to both types of emission inventories. It is recommended to promote the use of the Emission Delta-tool.

Quality assessment

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Implications

The application of the WG2 recommendations would have significant implications for the compilation and quality control of emission data and in the resources used for the emission data compilation.

- Due to the current lack of information and high level of discrepancy, Member States need to include detailed information on the geographical distribution of emissions (spatial proxies and methods used) in the following Informative Inventory Report (IIR)

- Top-down regional emission inventories would need to ensure consistency with bottom-up urban emission inventories when used for supporting local air quality planning.

- The use of a growing range of open data relevant to the compilation and evaluation of activity and emission data – satellite data for industrial sector – agricultural