



# FAIRMODE WG7

## WG7 – Compilation of high-resolution emissions

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# WG7 – Road map 2023-2025

- Best – practise through QA/QC

Identifying best practices through QA/QC approaches and drafting recommendations for the compilation of sectorial high resolution emission inventories that are relevant at the urban scale.

- Metadata recommendation

Elaborating recommendations for a common system to document the use of ancillary data and define the relevant meta-data that support each emission inventory at the urban scale.

- Provide relevant feedback

To European inventories used for regulatory purposes (EMEP, CAMS-REG) and research project (e.g., REMI, RI-URBANS, NordicWelfAir, “Others”).

- Benchmarking and Emission dashboard

Benchmarking and creating an emission dashboard (EU, bottom-up national and local inventories) to monitor progress and identify inconsistencies among inventories. Regular inter-comparisons will be carried out to support this objective.

- Use of Composite mapping platform

i) as spatial information support to evaluate specific sectors/ topics identified as inconsistency by the dashboard;  
ii) to carry out emission evaluation in relation with activities of the composite mapping for assessment purposes

# Work performed

## How did WG7 contribute to better modelling for assessment and/or planning?

### 1) Benchmarking and Composite mapping platform



**The Benchmarking principle:** detecting large inconsistencies supports further discussion, investigation, explanation, and resolution



The method



The tool

Methods for assessment of models 08 jul 2022

A multi-pollutant and multi-sectorial approach to screening the consistency of emission inventories

Philippe Thunis<sup>1</sup>, Alain Clappier<sup>2</sup>, Enrico Pisoni<sup>1</sup>, Bertrand Bessagnet<sup>1</sup>, Jeroen Kuenen<sup>3</sup>, Marc Guevara<sup>4</sup>, and Susana Lopez-Aparicio<sup>5</sup>

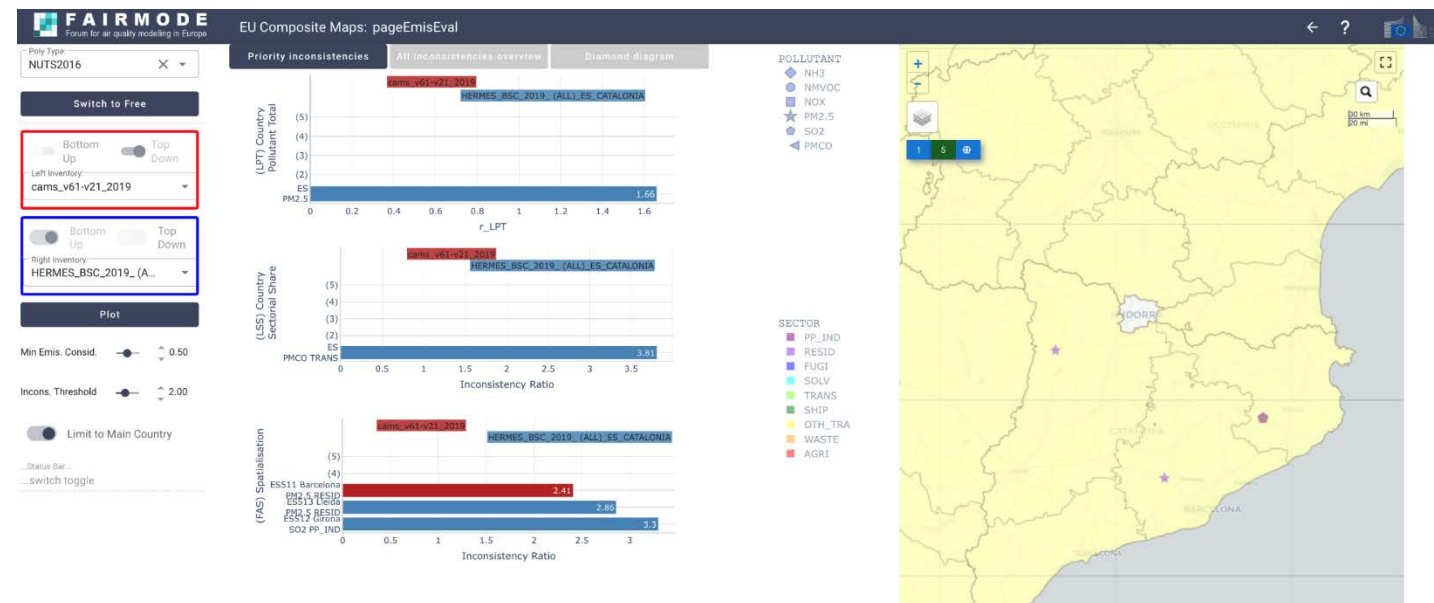
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- 1 Emission ensemble approach to improve the development of multi-scale emission inventories

Philippe Thunis<sup>1</sup>, Jeroen Kuenen<sup>2</sup>, Enrico Pisoni<sup>1</sup>, Bertrand Bessagnet<sup>1</sup>, Manjola Banja<sup>1</sup>, Lech Gawlic<sup>1</sup>, Karol Szymankiewicz<sup>2</sup>, Diego Guizardi<sup>1</sup>, Monica Crippa<sup>1,4</sup>, Susana Lopez-Aparicio<sup>5</sup>, Mare Guevara<sup>4</sup>, Alexander De Meij<sup>3</sup>, Sabine Schindlbacher<sup>4</sup>, Alain Clappier<sup>2</sup>



# Work performed

## How did WG7 contribute to better modelling for assessment and/or planning?

### 1) Benchmarking and Composite mapping platform



**The Benchmarking principle:** detecting large inconsistencies supports further discussion, investigation, explanation, and resolution



**Bringing the method/tool in practice:** 2 webinars, a 10-steps protocol, and benchmarking across 8 teams → common discussion, explanation and “problems resolution”)

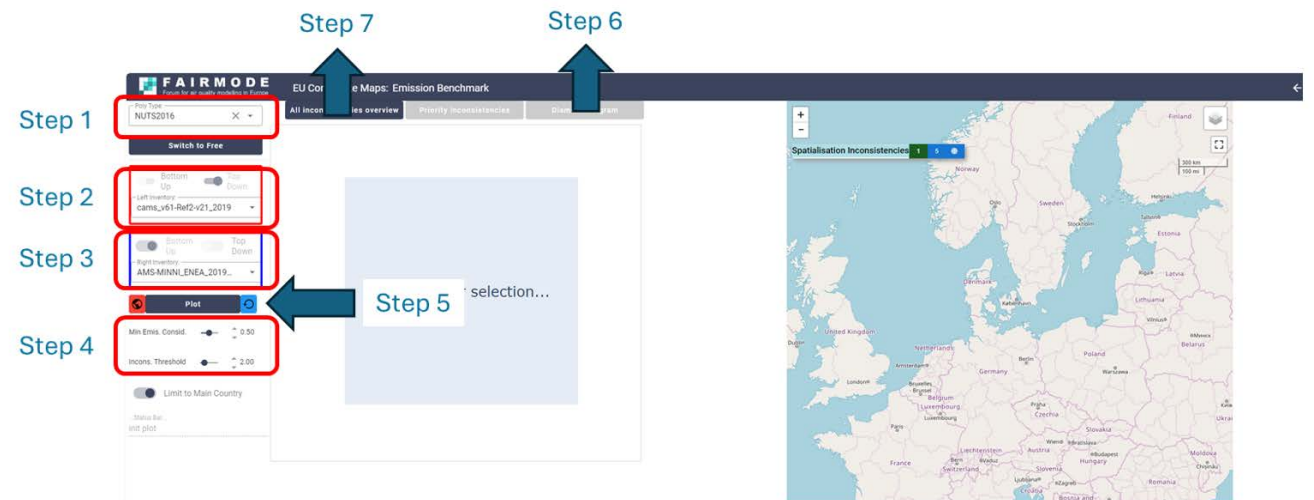


Figure 1: Home page of the Emission Composite Map, and steps 1 to 7 from the protocol.

# Work performed

## How did WG7 contribute to better modelling for assessment and/or planning?

### 1) Benchmarking and Composite mapping platform – Example

Identification of Large inconsistency:

- NILU and CAMS
- Industry - SO<sub>x</sub>

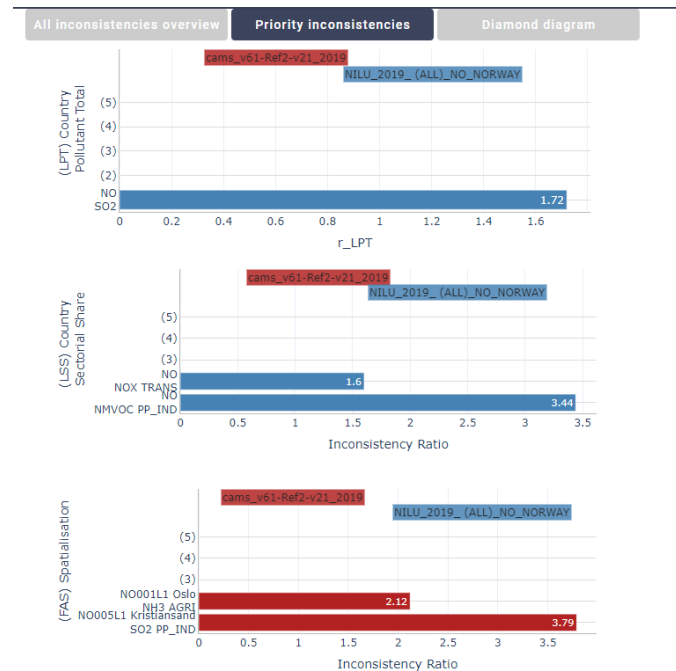
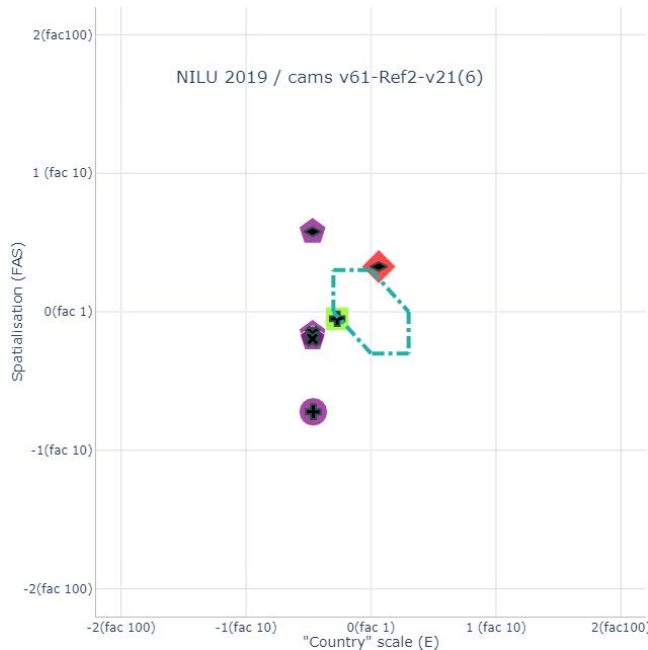


Investigation of causes:

- Inconsistent nomenclature (SO<sub>x</sub> vs SO<sub>2</sub>) in national point source reporting



Error identified - Corrected



Example of contribution to better modelling application

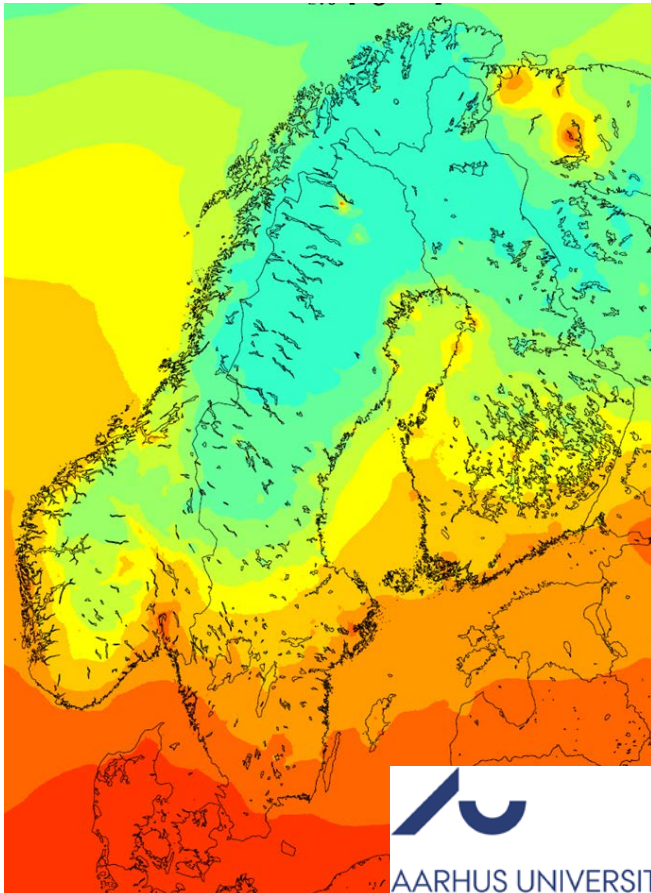




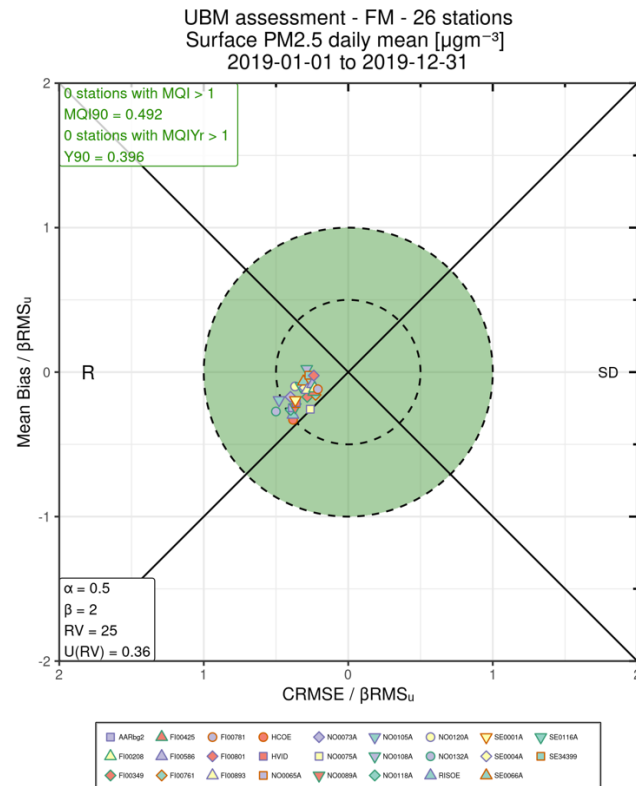
# Work performed

## How did WG7 contribute to better modelling for assessment and/or planning?

### 1) Benchmarking and Composite mapping platform



Emissions corrected through benchmarking exercise



Modelling application

- **Current situation (2019)**
- **Baseline projection (2023)**
- **2030 Projection with**
  - National RWC measures
  - Local RWC measures

# Work performed

## How did WG7 contribute to better modelling for assessment and/or planning?

### 2) Provide relevant feedback use for regulatory purposes



Category	Title
General guidance	Spatial mapping of emissions
Version	Guidebook 2023

#### Lead authors

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#### Contributing authors (including to earlier versions of this chapter)

John Van Aardenne, Justin Goodwin, Katarina Mareckova, Martin Adams, Paul Ruysenaars, Robert Wankmüller, Stephen Pye, Katie King, Nele Veldeman, Wim van der Maas, Susana Lopez-Aparicio, Marlene Schmidt Plejdrup, Ilaria d'Elia, Stefan Feigenspan, Marc Guevara Vilardell

- FAIRMODE contribution to the update of the «Spatial Mapping of Emissions» chapter in the EEA/EMEP Guidebook
- Continuous close collaboration with CAMS
- Closer collaboration with EMEP team and TFEIP

# Work performed

## How did WG7 contribute to better modelling for assessment and/or planning?

### 3) Discussion / feedback to guidance modelling document

#### Assessment

source responsible of the exceedances determines which sector needs to be **prioritize as at the highest quality in the emission inventory**

#### Forecasting

- i) **Reference year** (closer to now time)
- ii) Possibility of **proxies for sectors** dependent on meteorology



#### Planning

- i) emphasis on the **spatial component** of the measures;
- ii) **inventories needs detailed information** that allows designing emission reduction measures

#### Source apportionment

emission source classification according to requirements (e.g., data on fuel type, exhaust vs non-exhaust)

“What are the most relevant **emission needs / recommendations** that the technical guidance document should emphasize for each application?”

#### General needs

- i) Revision of the **terminology** (top-down, bottom-up, hybrid, downscaled, local high-resolution).
- ii) Reference and guidance for **emission requirements for modelling applications**; a) gridded, b) vertically and c) temporally distribution, d) speciated



# Way forward - 2025

- **Benchmarking and composite mapping platform:**
  - The composite mapping has gone through several updates: test and communicate
  - Tools and documentation already in place, evaluate improvements
  - Encourage the continued use of the tools to flag inconsistencies and identify opportunities of improvement (e.g., bridging with other WG - activities)
  - Exchange of success stories within the FAIRMODE community
- **Emission needs for modelling applications in the framework of the Directive:**
  - Feedback to guidance for modelling in Dublin was only a first step
  - Discussions and exchange of best practices specific for different modelling applications by stablishing bridges with other WGs
  - Get more involved in others WGs meeting and activities to identify topics of interest for 1) benchmarking emissions, and 2) develop recommendations for emissions for modelling applications.