



FAIRMODE CT7

How can FAIRMODE best support the TFEIP revision of the Spatial Mapping of Emission (EMEP/EEA Guidebook)?

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CT7 – High resolution emissions - Background

- Metadata

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 urban area. The metadata recommendations will provide a common documentation framework to better understand the differences between inventories. The composite mapping platform will be used to support this task and test its feasibility

- Interaction with CAMS/TFEIP

Providing relevant feedback to improve European inventories used for regulatory purposes (EMEP) and Copernicus monitoring services (CAMS-REG).

- Best practice

Identifying best practices and drafting final recommendations for the compilation of traffic and residential heating high resolution emission inventories.

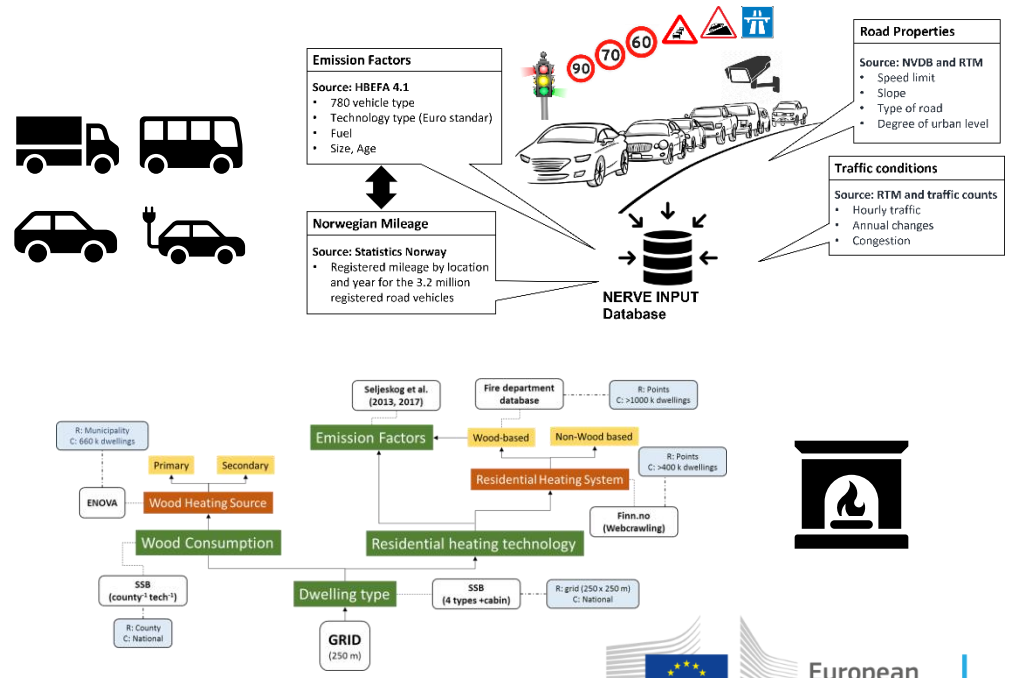
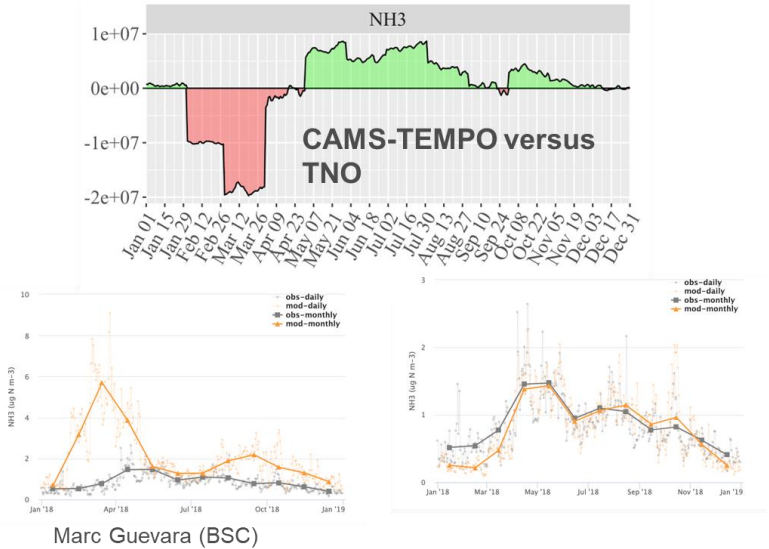
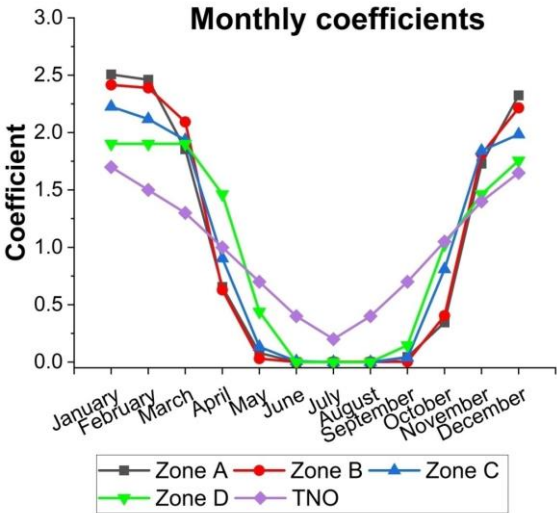
- New sectors

Initiate benchmarking activities for the compilation of high-resolution emissions from new sectors (construction, off-road, agriculture). This will be achieved through applying the benchmarking methodology (quality assurance) to a large number of datasets to capture local specificities across Europe. The composite mapping platform will also support this benchmarking activity.

CT7 – High resolution emissions – Why?

- Map current practices and existing knowledge and identifying gaps and key challenges
- Share methods and practice for high-resolution emission to improve current practices

FAIRMODE has a good understanding of spatial distribution of emissions:
 Methods for spatial distribution of main (new sectors) urban sectors → temporal profiles



How can we establish a Cooperation between FAIRMODE and TFEIP

On-going **TFEIP** initiatives and to which **FAIRMODE** can cooperate:

1. Spatial mapping of emissions (EMEP/EEA Guidelines chapter)

- General chapter review → Resulting in updated chapter for adoption by TFEIP in 2023 meeting
- Improve description of methodologies used in the Informative Inventory Reports (IIR)

- Lessons learned from identified practices in the residential wood combustion, road transport and non-road mobile machinery sectors
- Recommendation on defining relevant metadata for high resolution emissions

2. Provide guidance for users (modellers) – initiative lead by J. Kuenen (TNO)

1. PM and NMVOC speciation
2. Temporal disaggregation of emissions
3. Height distribution

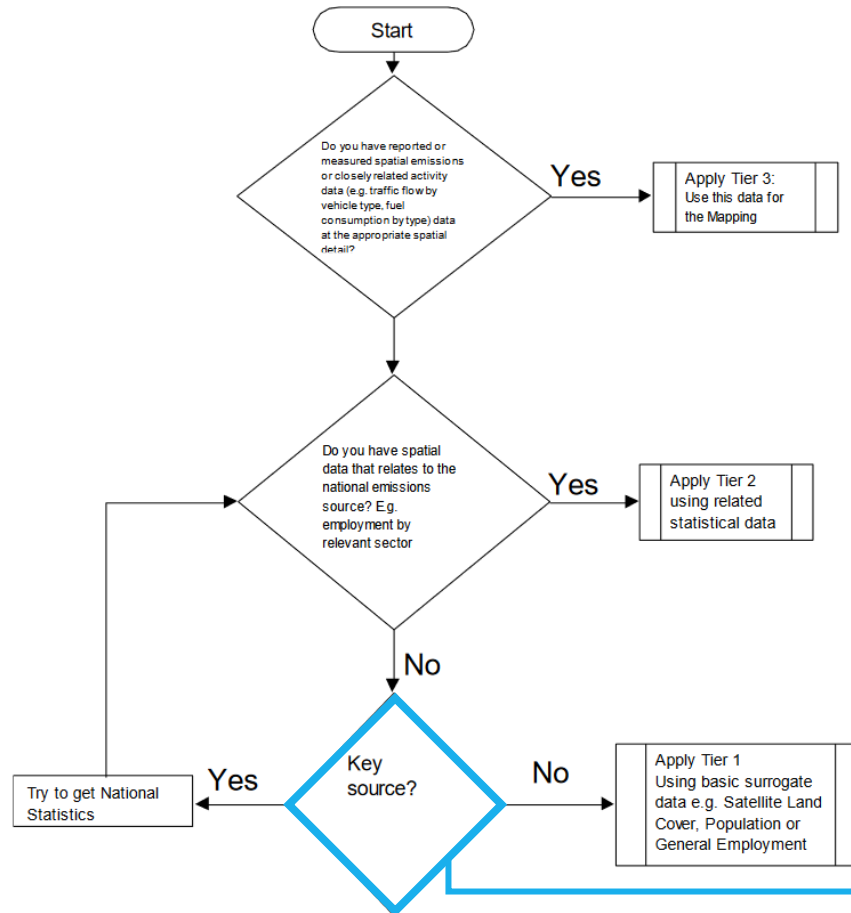
- Identified practices and datasets from CT7 participants
- Lessons learned from modelling activities performed under FAIRMODE to assess quality of emissions

Developers: Emission experts

Users: Modellers

How can FAIRMODE contribute to “Spatial mapping” update?

Figure 3-2 General decision tree for diffuse emissions mapping



Category	Title
General guidance	Spatial mapping of emissions
Version	Guidebook 2019

Tier 3 methods will include estimates that are based on closely related spatial activity statistics, e.g. road traffic flows by vehicle type, spatial fuel consumption data by sector (e.g. sub-national energy data).

Tier 2 methods will be based on the use of proxy statistics. However, for Tier 2, these statistics need to relate to the sector and could include detailed sector specific employment, population or household size and number (for domestic emissions).

Tier 1 methods will include the use of loosely related proxy statistics such as urban rural land cover data, population (for non-domestic sources).

FAIRMODE as network has contributed to capacity building:

- New types of data and proxies for Tier 3 (e.g., road traffic, residential heating, off-road transport, among others). Repository of methods/data?
- Modelling applications / purpose will define the “key source”

How can FAIRMODE contribute to “Spatial mapping” update?

NFR sector	NFR sector name	GNFR sector	Cat.	Best quality----->-----Approximate estimate			Notes							
				Tier 3	Tier 2	Tier 1								
1.A.1 Energy industries	1.A.1.a Public Electricity and Heat Production	A_PublicPower	A	Reported point source data or national totals disaggregated using plant-specific capacity or other activity statistics	Employment data	Industrial Land cover	A combination of tiered approaches might be needed depending on the availability of a complete dataset of point sources. Where only partial datasets are available for point sources use proxy data most relevant to sub-sectors to map diffuse remainder.							
	1.A.1.b Petroleum Refining	B_Industry	A		e.g. for 1.A.1.c: number of employees by economic activities (EUROSTAT Employment statistics - Manufacture of coke oven products)									
	1.A.1.c Manufacture of Solid Fuels and Other Energy Industries	B_Industry	B		See also section 3.3.5 for an example									
	1.A.2.a Stationary Combustion in Manufacturing Industries and Construction: Iron and Steel	B_Industry	B		Employment data		A combination of tiered approaches might be needed depending on the							
	1.A.4.b.i Residential: Stationary plants	C_OtherStationary Comb	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	1.A.3 Transport	1.A.3.b.v Road Transport: Gasoline evaporation	F_RoadTransport	D	Traffic flows and types of vehicles (2)	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. See section 3.3.4.
	1.A.4.b.ii Residential: Household and gardening (mobile)	I_OffRoad	D					1.A.3.b.vi Road Transport: Automobile tyre and brake wear	F_RoadTransport	D				
								1.A.3.c Railways	I_Offroad	D	Diesel rail traffic on the rail network reconciled with	Rail network and population-based traffic weightings	Population-weighted disaggregation of	Rail networks that have been electrified should be excluded from the

- Can FAIRMODE complement, further develop, the spatial data sources?
- Lessons learn from FAIRMODE modellers to evaluate the quality of emissions; e.g., modelling activities intercomparing different Tier spatial proxies to support the Tier – quality relationship?

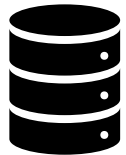
How can FAIRMODE contribute to “Spatial mapping” update?

4. Sourcing key spatial data sources (EEA/EMEP Guidebook, 2019)

4.1 General (e.g., administrative boundaries, georeference data)

4.2 National datasets (e.g., population and employment, gas distribution networks, agriculture data,)

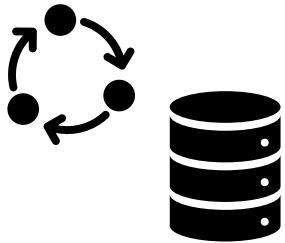
4.3 International datasets (INSPIRE, COPERNICUS, EuroStat,...)



- Creating a **dynamic** repository Annex with spatial data sources/methods?
- Supplement with references to studies where they evaluate the use of this data sources?

- Can FAIRMODE complement, further develop, the spatial data sources?
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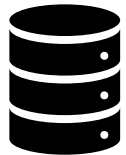
How can FAIRMODE contribute to “Spatial mapping” guidance for users (modelers)?



- Identifying current and best practices?
- Identifying datasets?
- Repository / Annex / supplementary information?

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1. PM and NMVOC speciation
2. Temporal disaggregation of emissions
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Discussion

- What is needed in the Spatial Mapping Chapter for 1) emission experts 2) users / modellers?
- How can FAIRMODE support and complement the update of the Chapter?
- Who is interested in participating in the meetings organized by TFEIP and support the work behind the update?





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Thanks!

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