Updates and next steps on the FAIRMODE Composite mapping platform

Agenda

- Overview of the current implementation

- A quick SLIDO

- Proposal for next steps, and discussion

https://fairmode.jrc.ec.europa.eu/ecmaps/

Aim of the composite mapping

Building a mosaic of the best available national, regional or local estimates for different EU areas, for qualitative and quantitative (spatial) comparison of emission and concentration maps.

Objectives: capacity building and triggering discussions on topics such as:

- border effects which become more visible between regions/countries,

- quality and consistency of emission and concentration maps,

- use of spatial proxies to allocate air pollutant emissions,
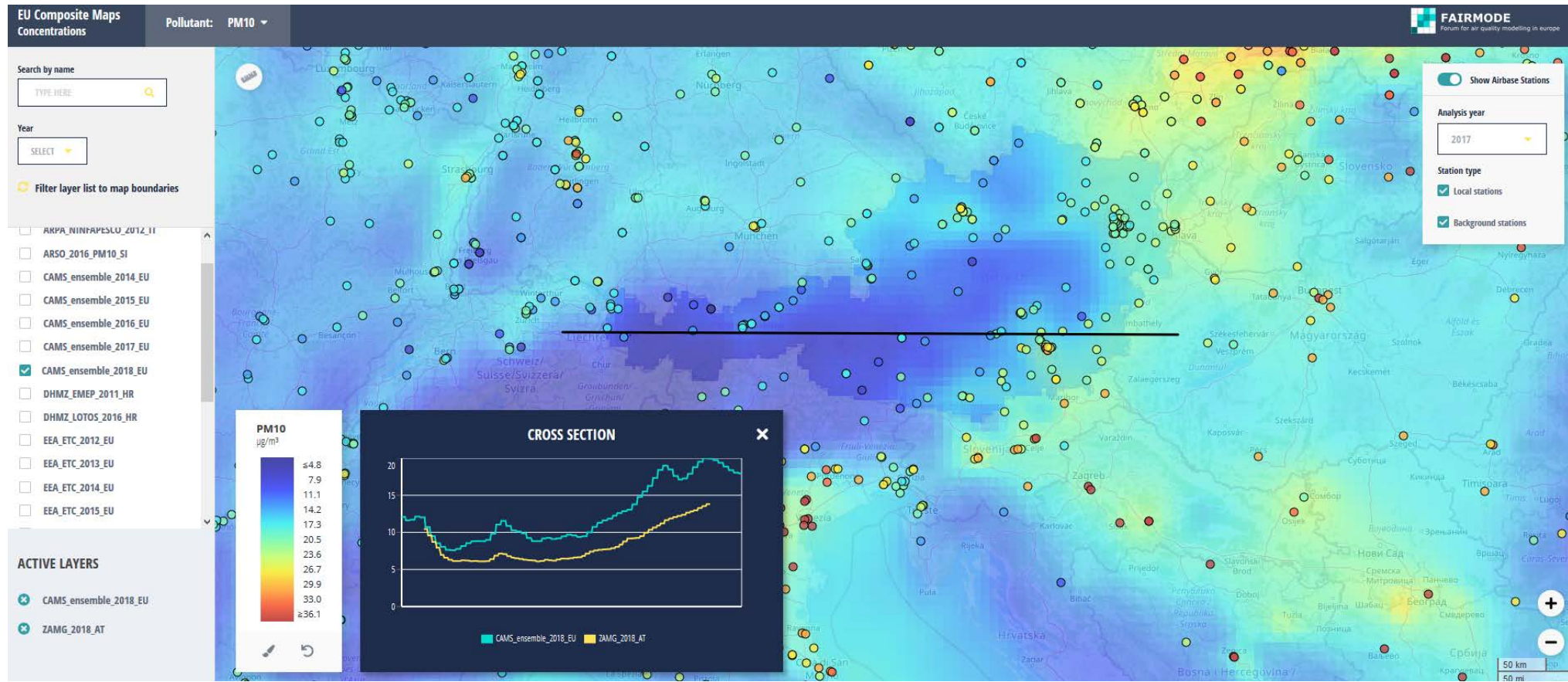
- ...

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Available data

For the **concentration maps**, data is requested as:

- annual mean concentration for NO_2 and PM_{10},

For the **emission maps**, data is requested as:

- annual total values, preferably for NO_x, NMVOC, PM_{10}, $PM_{2.5}$

- one map per pollutant sector

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Focus on concentrations

Some numbers

The CM Platform currently includes more than 158 air concentration maps

Both:

- Local / national maps

- EU wide, as CAMS (2014 to 2018) and EEA/ETC (2013-2015)

Spatial coverage: maps for 22 countries (in some cases with multiple maps per country, to allow for comparisons on a given domain).

Temporal coverage: from 2010 to 2018

Pollutant coverage: currently there are 81 NO_2 and 77 PM_{10} maps.

Some numbers (2)

A total of 34 different models were used to produce the concentration maps

Model name	Model type	Model name	Model type
ADMS URBAN	Gaussian	EURAD	Eulerian
AERMOD	Gaussian	GEM-AQ	Eulerian
AIRVIRO	Gaussian	Gral	Other-Lagrangian
AMS-MINNI	Eulerian	IDWA	Other
ATMO-Street	Other-Gaussian	Geostatistics interpolation	Other
Basemap	NA	LOTOS-EUROS	Eulerian
CALIOPE	Eulerian	MARS-aero	NA
CAMx	Eulerian	MATCH	Eulerian
CEMOD	NA	NINFAPESCO	NA
CHIMERE	Eulerian	OPS	Other
CMAQ	Eulerian	PCMBK	NA
CWFS	NA	RCG	Eulerian
DEHM	Eulerian	RIMM	Other
DEHM-UBM	Other	RIO	Other
EMEP	Eulerian	RIO-IFDM	Other
EMEP_annual	Gaussian-Eulerian	Simair	NA
Episode	Eulerian + NA	WRFCHEM	Eulerian

Data assimilation	Number of maps
(ensemble) Kalman filter	1
Background measurement values	7
(residual) Kriging	8
Interpolation	12
Other	16
None	30
NA	84

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Getting your feedback (slido 1)

On the usage of the CM:

- Did you upload concentration maps Y/N

- Did you use the CM for comparisons Y/N

- Did you visit the CM? Y/N

- I did not know about the CM but I intend to visit it

www.slido.com (#FT21)

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Getting your feedback (slido 2)

On the CM features:

- Do you think the CM can be useful for your work? Y/N

- What features would you see as useful to complement it?

    - Enhanced links to MQO and MQI

    - More features for analysis

    - Other

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Proposal for next steps

Option to foster the CM usage

- Online implementation of the MQO

- Generation of a composite benchmark EU map based on MQO

- A proposal for structured intercomparison

A Composite BENCHMARK EU map?

Possible approach:

1. Implement an online yearly MQO calculation

2. Select the set of available results for a given meteorological year.

3. Apply the MQO to the EU wide datasets and pick the best performing

4. Starting from this EU wide dataset, progressively overlay concentration (generally at finer resolution) starting from national to regional to local, only if finer resolution models have better MQO than coarse ones

5. Assemble the selected set of data into a benchmark map

6. Use this benchmark as basis for inter-comparisons and for QA/QC testing

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Proposal for structured inter-comparisons

1. Use the benchmark map for comparisons with the available maps for a given region or city (supported by the dynamic MQO).

2. Involve map providers in the discussion, to get explanations for the observed discrepancies…

3. Strengthen meta data to support the analysis

4. Based on improvements, update the benchmark map for another round of discussion.

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Slido (your feedback)

Are the proposed changes positive?

An online dynamic MQO (Y/N)

Reasoning:

A benchmark EU map (Y/N)

Reasoning:

A structured intercomparison activity

Reasoning:

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