

FAIRMODE 16th plenary meeting: Paris 26-27/02/2024

The meeting, held in Paris, hosted by the French Ministry in charge of ecology, was organized as a hybrid event to allow remote attendance. About 140 participants (80 in presence, 60 from remote) attended. The meeting was organized in sessions, each dedicated to the FAIRMODE working groups (WG) that constitute the current work structure in FAIRMODE. The meeting was held back-to-back with the CAMS Policy User's workshop on 28/02. This document summarizes the current status and next steps planned within each of the FAIRMODE WG's. All presentations are available on the FAIRMODE web pages:

The meeting was introduced by Hubert Holin (French Ministry) and E. Vignati (EC-JRC).

T. Henrichs (DG ENV) informed on the ongoing process of revision of the air quality directive. While both the Council and Parliament reached a consensus on February 20th, the final version of the text is yet not available. He reminded the main elements of the proposal regarding modelling and the foreseen timing. He invited the network to communicate better about the benefits and shortcomings of air quality modelling.

C. Buens (ENV) informed on the status of the ongoing standardization request for modelling quality objectives. The request has been presented to the Committee on Standards and will now go into inter-service consultation to be adopted as Commission Implementing Decision. After acceptance by CEN, practical work to set-up the standard will start. He also informed on the status of the service request to support the development of technical guidance documents in the field of air quality monitoring and modelling. The first draft of the modelling guidance will be shared for comments with the FAIRMODE community by June 2024. Publication of the final guidance document is planned for February 2025.

A. González Ortiz (EEA) informed on the EEA's views for the foreseen revision of the e-reporting process, taking into account the proposed ETC and FAIRMODE recommendations. These recommendations address different aspects of the e-reporting, including assessment, source apportionment and planning.

J. Struzewska (U. Warsaw) presented the main elements of the TFMM work plan 2024-2025, which includes among others an ozone modelling exercise (sensitivity to VOCs) and work on PM composition from a modelling point of view. Work on dust, emissions (in collaboration with TFEIP), and on source-receptor methodologies are topics where potential collaboration with FAIRMODE could be valuable.

A. Colette (INERIS) informed on perspectives of collaborations between the CAMS Policy Service and FAIRMODE. There is a mutual interest of CAMS and FAIRMODE in developing air quality modelling tools and products to address the needs of air quality competent authorities, while keeping methodologies robust and transparent, and accompanied by adequate QA/QC procedures. He presented the current version of the CAMS webpages that include updated guidance and the use of a harmonized nomenclature. He reported on the evaluation and quality control of specific CAMS applications (assessment and forecast)

and informed on two joint FAIRMODE-CAMS inter-comparison exercises, on natural dust and on source apportionment.

WG1: Source apportionment (SA)

G. Pirovano (RSE) reviewed the status of the activities in the source apportionment WG. These consist in: (1) consolidating the fitness for purpose source apportionment (SA) guide also including other pollutants and complementarity of the methods, (2) supporting the reporting of SA results and update of documentation, (3) developing a SA protocol in support to planning, (4) interacting with CEN, (5) provide guidance on the use of the CAMS policy products related to source apportionment. He informed on the status of CEN 264/44 (topic 4) and on the release of the first draft of the publication on the NO₂ intercomparison exercise (Topic 1). A. Clappier and G. Pirovano proposed two exercises that were open for discussion. The first exercise is a follow-up of the activities performed in the frame of projects like REMY, RI-Urbans or CAMEO (topic 1 and 2). It consists in assessing ways to compare and/or use in a complementary way source oriented and receptor oriented approaches to source apportionment. The modelling of elemental carbon and its relation to biomass burning and the reconstruction of road-transport resuspension were elected as priority topics for this particular exercise. A dedicated workshop will be organized in spring with interested participants to define the exercise in details. The second exercise aims at defining best practices in the use of SA products (SHERPA, CAMS, local tools...) to support EU policy (topic 1 and 5). Starting from a selection of interesting receptor locations, participants will be asked to define a planning strategy to limit exceedances at those receptors, based on a panel of SA products. For this exercise too, a workshop will be organized later this year, prior to the technical meeting.

Actions:

- Organization of the “Source-receptor vs source oriented” online workshop (mid of April)
- Organization of the “SA methods for planning” online workshop, (mid of April)
- Deliver a second draft of the paper of NO₂ intercomparison exercise (end of April)

WG2: MQO, composite mapping exercise: next steps

P. Thunis (EC-JRC) reported on the status of the composite mapping exercise. Due to technical issues in setting up the user’s interface, the initially planned schedule could not be met. The platform is however now being finalized and an online workshop will be organized on April 18th to discuss the details of the exercise. Three main points were then discussed.

1. Three formulations of the modelling quality indicators are currently available. On top of the ones used by FAIRMODE and set in the AAQD proposal, CEN is developing its own version based on AQUILA measurement uncertainty estimates. It was agreed to keep all three available in the composite mapping user’s interface with appropriate naming (FAIRMODE, AAQD proposal, AQUILA-Based).
2. Data providers to the composite mapping will be contacted to assess whether their dataset can be used in the context of CEN WG264/43 for testing. They will also be asked whether they can deliver additional data, i.e. high frequency data at measurement sites within their domain.

3. In the first phase of the composite mapping exercise, it has been agreed that the focus would be on testing the various MQI formulations and their associated level of stringency.

Actions

- An online workshop will be organized on April 18th to start the first phase of the composite mapping exercise.

WG3: Quality assurance for air quality forecast

This WG aims at providing a specific benchmarking framework for modelled air quality forecasts. A. Piersanti (ENEA) and A. Monteiro (UA) reviewed the status of the WG, focusing on open issues and ideas for developments. One of the major remaining points of discussion is the stringency of the persistence-based MQI and the need of an objective evaluation for forecasting of exceedances. One exercise will be launched to compare different formulations, in particular the one based on AQUILA-based uncertainties. Future steps will also consist in determining how to establish the fitness for purpose of a forecast model application, the definition of objective criteria for threshold exceedance's indicators and the improvement of air quality indexes evaluation. A broad discussion on perspectives is foreseen in a dedicated WG3 workshop, foreseen in May

Actions:

- An exercise will be launched to evaluate the impact of adopting AQUILA-based uncertainties within forecast MQI formulation
- An online workshop will be organized in May to discuss the results of the exercise and future steps

WG4: Microscale assessment

Microscale air quality modelling refers to air quality modelling at high spatial resolution (typically order of meter scale), usually focused on urban environments. V. Rodrigues (U. Aveiro) and F. Martin (CIEMAT) reviewed the current state of activities which focus on the inter-comparison on the city of Antwerp and the latest results on the comparison of spatial representativeness areas and limit value exceedances. The discussion focused on possible future work:

- The need to move to another case study (considering other urban structure, complex terrain and other sources and pollutants), but a concrete decision was missing.
- Recommendation/guidance document. Interesting suggestions were done such as discussing the range of applicability of the different type of microscale modeling applications, defining MQI for annual microscale model estimates, computational costs, etc
- Open questions:
 - Do the needed number of wind sectors or the model/methodology results depend on urban morphology?
 - How to derive other AAQD indicators than the annual average (percentiles related with the limit values) in a wind sector approach?

- Can the NO_x-O₃ chemistry be taken into account?
- How many stations do we need for a proper validation at micro scale? Passive samplers? Sensors? (contacts with WG6 are recommended)

Actions:

- A hackathon will be organised on April for discussing the last findings of the model intercomparison respect to the spatial representativeness and limit value exceedance areas and the elaboration of a recommendation/guidance document.
- Elaboration of a second scientific paper about the results of the model intercomparison with respect to the spatial representativeness and limit value exceedance areas during spring 2024.
- Elaboration of a recommendation/guidance document during 2024
- Contact with WG6 for microscale modelling applications validation.

WG5: Air quality planning

S. Janssen (VITO) first explained why WG5 (air quality measures) and WG9 (robustness of air quality projections) have been merged. E. Pisoni (JRC) then presented the status of the work on the reporting of air quality measures, based on the WG5 template and the future of the current AQ database of measures. While it was agreed that supporting the EEA e-reporting process by working on a common harmonized template will be useful, the need for a specific database of measures hosted by JRC was questioned, in particular because it would somehow be redundant with the EEA database. E.Pisoni also announced the availability of the online SHERPA-cloud version and the development by the JRC of interactive source apportionment maps to support the reporting process.

S. Janssen reported on the panel session organized in Athens dedicated to technical issues encountered when using modelling in planning mode. A note summarizing the various issues is being prepared to identify good practices. Among the various issues discussed then, (1) the way base-case biases are projected and (2) the integration of local and larger scale air quality plans have been identified as priority topics to treat in a first stage.

Actions:

- the checklist for reporting air quality measures (developed in the former WG5) will be used to feed the possible future revision of the EEA e-reporting schemes (mainly dataflow H to K)
- the AQ database of measures on the contrary will be abandoned, as deemed not useful (so the checklist for reporting air quality measures will not be used for this purpose)
- WG5 will focus on the priorities decided during the meeting (i.e. on how to apply bias corrections for future modelling scenarios).

WG6: Low-cost sensors and data-fusion

The main objectives of this activity are to explore and compare results from different approaches using/exploiting sensor networks. S. Van Ratingen (RIVM) presented the outcome of the activities

performed so far on the calibration of sensors network, which resulted in a joint publication in the “Air Quality, Atmosphere and Health” journal, detailing an inter-comparison of three calibration methods.

J. Wesseling (RIVM) presented a proposal for the next phase of the WG activities, focusing on the benchmarking of data fusion, using real low-cost PM2.5 measurements/sensor data. A dedicated online workshop will be organized to discuss the following aspects (location, metrics for comparison, evaluation). Interesting issues are to assess the effect of using more/less data or more/less uncertain data in the data fusion process, to understand how the results of data fusion are influenced by the available amount and quality of the input data (official measurements, low-cost measurements, model quality and input).

Actions

- Gather feedback and interested parties
- Organize web-meeting to discuss set-up of benchmark

WG7: High-resolution emissions

M. Guevara (BSC) reviewed the status of the activities in the “high resolution emission” WG, in particular the development and set-up of the composite mapping user’s interface for emissions. This interface is now on-line and includes all available data delivered so far. He highlighted some of the key features of the interface and showed how to retrieve the key information, based on one specific example, the emissions from Catalonia. One of the challenges faced is to get the key persons around the table to discuss these results as emission developers are not always present during the FAIRMODE meetings. Data providers indicated that they would contact their respective experts and invite them to the next technical meeting. Some participants expressed their preference for delivering gridded data rather than spatially aggregated ones. The JRC will accept gridded data on case-by-case and will convert the data to NUTS and FUA level or provide support for doing it.

In complement to this activity, an emission dashboard will serve the purpose of assessing the consistency of the main EU wide inventories and of developing a reference against which bottom-up inventories can be compared to. This second interface will be available in the spring 2024.

Actions

- Identify key people responsible for the development of the emission inventories that have been uploaded to the composite mapping platform.
- Organization of a webinar to go through the methodology for benchmarking emissions and address questions from users (10th April)
- Organisation of the first composite mapping exercise on intercomparison of emissions (May/June)

WG8: Exc. indicators, spatial representativeness and network design

M. Ross-Jones (Swedish EPA) reviewed the status of the various activities in this WG, in particular the remaining questions regarding the assessment of the spatial representativeness area of monitoring

stations. A number of important decisions have been made following recent testing on key issues, but further testing of the methodology is needed. A series of remaining open issues were discussed: (1) the relevant size limit for rural background stations; (2) the lower cut-off values for remaining pollutants; (3) the nomenclature for the lower cut-off; (4) the handling of overlapping SR areas and (5) the bias correction and the use of observed/modelled data.

Regarding the monitoring network design activities, L. Tarrason (NILU) presented the status and planned next steps which will consist in developing a guidebook based on participants contributions (due by April 15th). The final document will be presented at the next technical meeting. The discussion addressed some formatting aspects of the guidebook (best way to report country experiences) and the possibility of carrying on additional exercises by August 2024.

Regarding exceedance indicators, participants were reminded of the proposed 2-stages approach. A consensus is forming that the proposed flagging indicator may not be needed and that the focus should be on the Exceedance Situation Indicator (ESI) during the development of AQ plans. There is a need for further activities and production of guidelines for ESIs at a later stage within this work period.

L. Tarrason finally provided an overview of the on-going CAMS-FAIRMODE joint exercise on natural dust to assess how Member States deduct the natural contributions to measured exceedances to limit values. The purpose of the exercise is to identify best practices for use of CAMS modelling dust products. Expectations regarding the final report were discussed and a final meeting will be organised in March to summarise the recommendations, agree on the final form of the report and discuss possible next stages.

Actions:

- Natural dust final meeting: March 21st (10:00-12:00)
- Contributions to the guidebook on use of MoNET for evaluating monitoring networks by 15th April
- Further activities to test / discuss remaining open issues related to spatial representativeness

Next meeting

The next technical meeting will be organized in Dublin from 7th to 9th October 2024.