

# FAIRMODE 7<sup>th</sup> plenary meeting: Baveno 11-12/02/2014

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The meeting was attended by about 70 participants from 21 countries (see list in Annex 2) and was the opportunity to introduce the new FAIRMODE structure and associated work-plan. A summary of the main topics addressed during the meeting is given below. In addition, some action points are highlighted (in bold). Note that all presentations are available on the FAIRMODE web page.

## FAIRMODE New structure

P. Thunis introduced the main changes in terms of structure which include:

- A three steps “Benchmarking – Guidance – Capacity building” approach common to all working groups (Assessment, Emissions, Source apportionment and Planning),
- Three Cross-Cutting Activities (CCA) on 1) modeling and monitoring, 2) forecasting and 3) spatial representativeness set-up which the aim to foster interactions among the working groups.
- A split of the traditional yearly meeting into a plenary and a technical meeting
- An extension of each working group (WG) focus to cover all spatial scales (from national to local)
- The set-up of a feed-back mechanism (questionnaire) on a regular basis to ensure feedback between the FAIRMODE community, the Air Quality Expert group and the FAIRMODE National Contact Points (NCP)

### Discussion:

- The new structure and proposed changes in terms of format were well accepted.
- One of the main issues raised was the need of funding to achieve the quite ambitious objectives detailed in the work-plan (document sent to the participants in December 2013, available on the FAIRMODE web page). DG ENV confirmed its strong support to the FAIRMODE activities. FAIRMODE is considered by both DG ENV and DG JRC as one of the main policy support initiatives in the coming years and DG ENV stressed willingness to work with the FAIRMODE community to ensure that available funding opportunities (e.g. LIFE - see below) are used to reinforce the FAIRMODE activities. On the other hand, FAIRMODE relies on the contribution from MS to support modelling benchmarking and other activities that are relevant and have an added value for the MS.

- An activity (CCA or other) on e-reporting has not been set-up yet in the FAIRMODE structure as the outcome of the discussion on this subject was first necessary (see below for more details of the result of this discussion).

## Air quality package and LIFE initiative

T. Verheye gave an overview of the recently (18/12/2013) adopted Air quality package ([http://ec.europa.eu/environment/air/clean\\_air\\_policy.htm](http://ec.europa.eu/environment/air/clean_air_policy.htm)). Further to this presentation, potential connections between FAIRMODE and EU support actions have been detailed. One of the key initiatives is LIFE within which both Integrated and conventional projects have the potential to support FAIRMODE activities, especially in terms of guidance and training, and collaboration would be useful to ensure that the opportunities are exploited to the full.

## WG1: Assessment

### Model Quality Objectives (MQO) and Cross Cutting Activities

An overview of the updates regarding the MQO has been presented by P. Thunis and S. Janssen. On one hand a series of tests has been performed to assess the robustness of the MQO formulation and parameters (NO<sub>2</sub>, PM<sub>10</sub>), on the other hand new MQO (PM<sub>2.5</sub>, Wind speed and temperature) are proposed. The main outcome of these tests and the new MQO formulations are contained in a working document (available on request to the JRC) for which a review by the FAIRMODE community has been asked for. A call to the participants has also been made to collect contributions for the next technical meeting regarding MQO and Delta applications, including the aspects related to the three cross-cutting activities. From the circulating poll about 40 meeting participants expressed their wish to contribute and/or follow the work of this WG. **A detail of the received intentions for contribution is provided in Annex 1 (any contribution further to this list is welcome).**

**Action: Stijn Janssen will contact the WG1 participants to inform on the meeting outcome regarding assessment and confirm the contributions for the Oslo meeting.**

### MDS and DELTA database

Given the wish of EEA to stop maintaining the Model Documentation System (MDS) in the future, a brief overview of the current features of the MDS and usage statistics of this system has been given as background. In parallel a proposal to couple this MDS which currently only includes model description to a DELTA application database (performance report & associated input/output validation data) was discussed. The advantage of coupling the two systems would be to provide references (in a harmonized format) to model applications in addition to the model description.

Although based on a rather old-fashioned technology (mid 1990s) and despite the efforts required to maintain it up to date, the usefulness of the MDS has clearly been recognized. And this is currently the only service of this type in operation. The advantages of coupling it to an application database were also recognized by the participants as very valuable. However the foreseen development of e-reporting for modeling data (still to be defined – see below) might lead to redundant databases. The discussion did not lead to any clear statement about if and who would be going to take care of the MDS in the future. Further discussion on this topic is planned at the technical meeting in April.

### MQO Guidance

Model evaluation is treated in a relatively general and scattered way in the different FAIRMODE guidance documents. It is proposed to elaborate a specific guidance on MQO and benchmarking which would summarize the work performed so far on MQO and include some examples of benchmarking applications. This might be extended to more a general quality assurance process (e.g. check lists before model application...).

**Action: S. Janssen will propose the guidance template for discussion at the next technical meeting in Oslo.**

## **WG2: Emissions**

L. Tarrason presented an overview of the proposed activities for WG2. These activities will focus on urban emissions and in a first stage on traffic. The presentation highlighted the prevailing inconsistencies in emission compilation at urban scale and pointed out to the need of supporting competence building initiatives to secure the consistency of detailed bottom-up emission inventories with those compiled for regulatory purposes at local, national and European scale. In order to support the implementation of European Air Quality legislation at urban scale, further knowledge of actual emission processes is necessary and go beyond the current downscaling approaches.

In the discussion the following points were addressed:

- The emission WG is a challenging activity and difficulties to achieve the proposed objectives have been recognised in past years. A main difficulty is to include the relevant experts in the emission benchmarking activities due to the lack of active participation from city scale experts in most international fora. The Air Implementation Pilot was a step on the right direction. One possible way forward to support the participation of urban experts is to link to existing networks and propose new COST actions in this area. Another main difficulty has been the lack of dedicated programs to develop further knowledge on emission processes. The meeting agreed that such programs and networking activities are essential to support the implementation of air quality control actions.

- At the Technical meeting in Oslo, participants will be encouraged to identify current practices for calculating bottom-up traffic emission and to provide the first feedback on concrete benchmarking emission activities.

From the circulating poll more than 20 meeting participants expressed their wish to contribute and/or follow the work of this WG.

**Actions:**

- 1) **L. Tarrason will contact the WG2 participants to inform a) on the meeting outcome regarding emissions and b) about specific requests regarding possible benchmarking activities.**
- 2) **L. Tarrason will pursue the possibility of elaborating proposals to encourage competence building and benchmarking activities for urban emissions (COST, LIFE)**

## **WG3: Source apportionment**

C. Belis provided an overview of the results achieved in the previous years. This was the basis for an analysis of needs that led to the definition of a list of priorities with associated proposed activities. In coherence with the orientations of FAIRMODE, effort to disseminate and get user's feedback on the recently published Harmonized Protocol on Receptor Models (<http://source-apportionment.jrc.ec.europa.eu/>) will be made. In addition, a new inter-comparison exercise including for the first time receptor models and chemical transport models was proposed. Other areas of interest are the mutual validation between source apportionment techniques and emission inventories, extension of the range of considered pollutants, and assessing the spatial dimension of source contributions (trans-boundary transport and representativeness).

The discussion mostly focused on the following points:

- How can we implement the review process of the published reference document? In response to this it was suggested to involve more experts, even beyond the FAIRMODE community. Many participants expressed their willingness to review the recently produced Source apportionment guide.
- The complexity of source apportionment studies due to the fact that the actual contribution of sources to pollution in a particular point cannot be directly measured, was also discussed. For that reason, comparison between different approaches and sensitivity analysis are needed to assess the robustness and potential non-linearities.
- The need to perform further work on the quantification of Natural Sources and Road Salting and Sanding

From the circulating poll more than 20 meeting participants expressed their wish to contribute and/or follow the work of this WG.

**Action: C. Belis will contact the WG3 participants to inform on the meeting outcome regarding source apportionment and confirm the contributions for the Oslo meeting. As requested, he'll also explore with the WG experts the feasibility of applying to funding schemes to support their participation in the technical work.**

## **WG4: Planning**

Planning is a new WG within FAIRMODE. A. Clappier provided an overview (including advantages and disadvantages) of the different methodologies currently used to assess the quality and robustness of model responses when models are used in scenario mode. While planning is probably the AQD topic for which models are the most essential, assessing the quality of models when used in this mode is challenging. As illustrated by the outcome of the APPRAISAL project (see below) most of the models used in this mode for regulatory purposes are only evaluated on the basis of their performance on the base- or reference-case or on past experiences. One of the main objectives of this WG is to develop a common benchmarking methodology and indicators to overcome this gap. A. Clappier concluded his presentation with a first proposition of benchmarking indicators to enable model inter-comparison in an easy and meaningful way. A document describing the benchmarking indicator methodology is being produced and is intended to be used as basis for discussion during the technical meeting. Contrary to WG1 (assessment of current levels against measurements) where participants can use their already available model results to test the MQO and assess their model results, the benchmarking of planning applications is more challenging as it will require additional efforts (in terms of simulations) to the participants. From the circulating poll more than 20 meeting participants expressed their wish to contribute and/or follow the work of this WG.

**Action: A. Clappier will contact the WG4 participants to inform on the meeting outcome regarding planning activities and inquire about possible contributions for the Oslo meeting. The WG1 distribution email list complemented by the intentions collected during the plenary meeting will be used in a first stage. A document describing the proposed indicators will be distributed to the WG participants before the Oslo meeting.**

## **Cross-cutting activities (CCA)**

The main objective of the CCA is to foster interactions among WGs. To achieve this goal, the CCA coordinators do not have specific deliverables to reach but will rather contribute to each WG deliverables. While “forecasting” is a new activity in FAIRMODE, the two other CCA (“modelling and monitoring” and “spatial representativeness”) will build on experience gathered in FAIRMODE past WGs dealing with these two topics. F. Meleux, A. Miranda and O. Kracht gave an overview of their CCA

objectives and detailed the points which will be discussed in each WGs during the Oslo technical meeting.

## Links to other projects/activities

### Appraisal

APPRAISAL is a FP7 coordination and support action aiming at reviewing current methodologies for air quality assessment and planning in support to the revision of the air quality legislation. A. Miranda illustrated the main finding of this review (performed through questionnaires) which was organized around five topics: 1) synergies across scales, 2) assessment methodologies, 3) source apportionment, 4) health assessment and 5) uncertainties and robustness. Some conclusions of this review work of special interest to FAIRMODE were that:

- No reference technique is proposed so far to check the quality of the models used to quantify the impact of emission reduction (link to WG4).
- There is a need to reduce uncertainties in model input data, particularly emissions (urban inventories and new technologies) used for air quality plans (link to WG2).
- The need of measurement time series for receptor models should be taken into consideration when source apportionment studies are planned" (link to WG3).

APPRAISAL and FAIRMODE are complementary as both aim to provide insights to the modelling community regarding the Air Quality Directive implementation. A call to the participants was made to encourage them to participate to the APPRAISAL review (through an online questionnaire) and/or to screen the results obtained so far (<http://www.appraisal-fp7.eu/site>)

### MACC-II

L. Rouil gave an overall presentation of the project and L. Tarrason continued with a presentation identifying the many ways FAIRMODE and MACC-II can cooperate. MACC-II experts are crucial for the competence building activities in FAIRMODE. The participation of MACC teams in the benchmarking activities in FAIRMODE will be very useful to identify the current scientific state-of-art. Furthermore, MACC-II products are relevant to most of the FAIRMODE WG activities. The links between the MACII and the FAIRMODE communities will be strengthened in the future by favouring the participations of MACCII experts in the FAIRMODE benchmarking and guidance activities. The discussion also showed the interest of several FAIRMODE experts to participate in the MACC-II guidance and training workshops/meetings organized by MACC-II. Positive feedback was received during the presentation and follow-up discussion.

## Air Implementation Pilot (AIP)

M. Adams (EEA) provided an overview of the recently concluded Air Implementation Pilot exercise. Two main streams of activities: emissions and modelling were of particular interest to the FAIRMODE community. The focus of the AIP was on Implementation, and particularly on the set-up of cooperative actions to build capacity and knowledge to deliver more effective policy. Twelve cities participated to the AIP.

From the emission point of view, this AIP city network might constitute a good starting point to focus the FAIRMODE activities on city scale modelling and improve the quality and consistency of the input emissions (e.g. emission factors). Regarding modelling, 11 of the 12 cities used models for a variety of purposes (assessment, source apportionment, planning...). Improvements are mostly seen in terms of emission quality and boundary conditions where FAIRMODE might help by contributing to guidance and training on these aspects in the future.

## AQUILA

AQUILA, established in 2001, is the brother/sister of FAIRMODE in the field of measurements. Its long experience and structure could be used as an example to obtain useful hints for the organization of FAIRMODE. A. Borowiak provided the historical background and identified potential connections and interactions with FAIRMODE. These include the siting and selection of monitoring stations (mostly related to the CCA on spatial representativeness), data and model quality objectives, the setup of specific joint projects and the standardization. Regarding the latter point, AQUILA illustrated the increased quality of measurements reached as a consequence of the standardization process. Given its extended experience in this field AQUILA proposed its support to FAIRMODE for those aspects. A list of further areas of common interest was proposed.

## e-Reporting

An overview of the current state regarding e-reporting was given by A. Gsella (EEA). While the situation is well advanced for monitoring this is not yet the case for modeling. The two data flows regarding modeling are yet at an early stage and the FAIRMODE community would be the adequate one to provide support on the better definition of these two data-flows. A discussion on the potential advantages and disadvantages of e-reporting for modeling led to the following conclusions:

- Under EEAs guidance, the specifications for e-reporting of modelling data are presently under development. This involves primarily metadata description for modelling data. FAIRMODE could

provide recommendation on which type of common framework is necessary to describe adequately modelling data (also documenting models, as by the MDS).

- One advantage of using models (and reporting) is to substitute monitoring by modelling under well-defined conditions, resulting in significant savings. But models should be demonstrated to be of sufficient quality based on agreed rules. FAIRMODE is here also seen as one possible instrument to define these common rules.
- Given the current status regarding e-reporting and its foreseen time frame the Fairmode community agreed on the opportunity to be pro-active in the process. One step taken will be the participation of FAIRMODE experts in the forthcoming sessions on e-reporting that are foreseen in the Pilot Project meetings.

**EEA agreed to act as contact point for e-reporting within FAIRMODE and convey the necessary information and requests to the Fairmode WG leaders. EEA will specify the input that they would need from FAIRMODE to support their work defining the e-reporting requirements for modelling data.**

## Standardization

Three future work activities are proposed in the frame of CEN/TC 264 that are related to FAIRMODE (points "n", "o" and "t"):

- Modeling air quality: performance requirements, QAQC; relation with FAIRMODE
- Representativeness, classification, siting of monitoring stations; relation with Aquila, Fairmode
- Source apportionment (receptor models) to explain limit value exceedances; relation with FAIRMODE and JRC initiative.

These topics are due to be voted by the CEN representatives on 04/04/2014 and this was the reason for launching this issue for discussion during this meeting. While standardization (CEN standard) is a common process within the measurement community which has led to significant progress in terms of quality (as illustrated by A. Borowiak AQUILA presentation), this issue is however new to the FAIRMODE community. It has also been clearly explained that CEN standards focus on the methodological aspects and not on the quantitative values to be reached (e.g. the CEN standard is not on to the quantitative value of the measurement data quality objective (i.e. 50%) but rather on the methodology to reach it). Therefore it was suggested to limit the scope of a new CEN working group to the MQO concept only and not the broader performance requirements and QA/AC procedures as suggested in the voting bulletin. Given the novelty aspect of this topic the discussions did not lead to a clear consensus view. While some NCP raised the fact that Fairmode was not mature enough to start this process, other NCP saw clear advantages in this process to increase the relevance of modeling with regards to the AQD directive.

**Action: NCP are asked to discuss with their national standardisation body (France: AFNOR, UK: BSI, etc, [<http://www.cen.eu/cen/Members/Pages/default.aspx>]) and make them aware of these new work items.**

## **A.O.B**

### **Oslo technical meeting**

The next technical meeting will take place in Oslo (NILUs headquarters, Kjeller) on 28-29/04/2014. The agenda and registration information will soon be sent to the FAIRMODE community.

### **Harmonisation conference**

The 16th international conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes will take place in Varna (BG) on 8-11/09/2014. One of the topics of the Conference will be "Use of modelling in support of EU air quality directives, including FAIRMODE". Participants were therefore encouraged to contribute to this topic by submitting an abstract (the deadline has been postponed to 25/02/2014). More information at the official conference web site: [www.harmo.org](http://www.harmo.org)

### **Regional/local initiatives**

As one of the FAIRMODE objectives is to extend the approach to all spatial scales (including regional and urban), some MS initiatives have been presented as a possible way forward to increase the participation of regional and urban Authorities involved in modelling aspects. G. Zanini (ENEA) presented the FAIRMODE-Italy initiative supported by the Italian Ministry in which regional authorities, research organizations and the private sector meet prior to the FAIRMODE meeting to discuss the points related to the plenary FAIRMODE meeting. L. Rouil (INERIS) introduced a foreseen inter-comparison exercise at the French level, oriented to city scale modelling for which some of the FAIRMODE tools and methodologies might be used.

Nevertheless, NCP will remain the only contact points through which the regional and urban activities should be channeled.

### **PM Modelling Review Report**

The Fairmode PM modelling review report addresses mainly air quality assessment and planning and provides an overview of questions and recommendations for the modelling of ambient particulate matter (PM10 and PM2.5) concentrations in Europe. This ETC/ACM technical paper is available on the ETC website:

[http://acm.eionet.europa.eu/reports/ETCACM\\_TP\\_2013\\_11\\_FAIRMODE\\_guide\\_modelling\\_PM](http://acm.eionet.europa.eu/reports/ETCACM_TP_2013_11_FAIRMODE_guide_modelling_PM)."

## Fairmode web site

The Fairmode website, hosted by the EEA, will be managed in the future by the JRC. The migration of the portal is considered a good opportunity to renew and improve it. To this end, a discussion about the current use that Fairmode participants make of it and what would be the needs for the future was launched . A short questionnaire was distributed to the participants with the following questions:

- How often do you use the Fairmode website?
- What areas do you use?
- Do you find the information you're interested in?
- What other information /service would you like to find (max 10 words)

Those wishing to contribute to the discussion are kindly asked to send their answers to C. Belis (Claudio.belis@jrc.ec.europa.eu)

## Annex 1: WG1 proposed contributions for the Oslo technical meeting

This annex summarizes the requests for contribution agreed upon in July 2013 and complemented by new possible contributions agreed at the meeting. They all regard the review and testing of existing, updated and newly formulated MQO. Further contributions to those points are obviously welcome.

Review of the MQO formulation for NO2 (updated) and PM2.5, WS, Temp (new)	AEA Ricardo, RIVM, INERIS, IRCEL	A review note will be sent to contributors
Test the 90-90 principle: 90% of stations for validation + 90% of measured values within the yearly time series	UNIBS	
Test NO2 MQO with 1h and 3h averages	CERC, STMK	
DELTA applications over EU-MS/ regions, application of MQO and target reporting	Swedish EPA, AEA Ricardo	
MQO/DELTA including data-assimilation	U. Aveiro, IRCEL, U. AVEIRO, BSC, UNIBS, AEA Ricardo, FMI, Swedish EPA, U. Cologne	
MQO/DELTA including forecasting	INERIS, NILU, U. Cologne, TU Madrid	
MQO/DELTA including spatial representativeness	JRC, CIEMAT, Swedish EPA	

## Annex 2 Participants lists ( Baveno 11-12/02/2014)

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