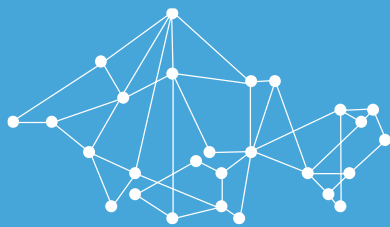




FAIRMODE

Forum for air quality modelling in Europe



EU COMPOSITE MAPPING CONCENTRATION VERSION 2

PETER VIAENE, LIEVE DECORTE, STIJN JANSSEN (VITO)
LUCA 'SPANO, PHILIPPE THUNIS (JRC)

OBJECTIVE

EU Composite Mapping Exercise

- » Collect national, regional or local air quality assessment maps
- » Compile an overall composite EU air quality map
- » Use the map and the process as support to provide updated model QA/QC guidelines (MQO, emissions, data assimilation, e-Reporting...)

New version:

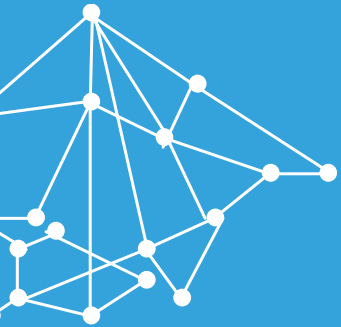
- » *Include year in analysis*
- » *Request data for 2015 (previously 2012) from participants*
- » *Some enhancements to the viewer*



THE PROCESS



European composite maps database



OVERVIEW

- » Database developed at JRC to collect concentration and emission map data that can be managed online
- » How to start? registration procedure
- » How to access the database?
- » How to upload data?

EUROPEAN COMPOSITE MAPS DATABASE

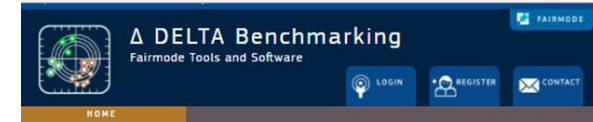
Registration



Main page Fairmode



Fairmode/ composite mapping



Registration

Your credentials are requested for downloading the DELTA tool and its associated components. You can apply for a personal password by filling in the application form below. Note that some of the tools in the download area are still under development and reserved to the members of the FAIRMODE (Forum for air quality modelling in Europe). If you already have a user name and a password, please proceed to the [Download Area](#)

Application form

Email:

First Name:

Last Name:

Affiliation:

I am a member of FAIRMODE

Tools and software (select desired options)

Δ - Assessment & Planning (A&P)

Δ - Emission

Contribute to Δ - Database (FAIRMODE Composite Maps)

SHERPA (Screening for High Emission Reduction Potential on Air)

DELTA Benchmarking

EUROPEAN COMPOSITE MAPS DATABASE

Registration

- » Access to the website is restricted and users need to register
- » <http://aqm.jrc.ec.europa.eu/register.aspx>
- » Same form as for DELTA tool, SHERPA, ...
- » Indicate that you want to contribute to the composite mapping!



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EUROPEAN COMPOSITE MAPS DATABASE

Registration

- » If you have **registered before**, because you use SHERPA or DELTA you have to indicate that you want to participate in the composite mapping
- » Change your profile on the profiletab on the [Δ DELTA Benchmarking website](#)
- » Indicate that you want to contribute to the composite mapping!

FAQ | Privacy statement | Legal notice | Contact JRC | Search

European Commission
JOINT RESEARCH CENTRE
Air Quality Modeling

European Commission > EU Science Hub > AQM

FAIRMODE

Δ DELTA Benchmarking
Fairmode Tools and Software

LOGOUT YOUR PROFILE CONTACT

HOME Δ-ASSESSMENT & PLANNING Δ-EMISSION

Your Account

Email: peter.viaene@vito.be
Password: [Change]

Your details

First name: Peter
Last name: Viaene
Affiliation: VITO
Fairmode:

Save

Software & Tools

Δ - A&P Δ - Emission Δ - Database

New Registration

Check the box

Send the request Send

EUROPEAN COMPOSITE MAPS DATABASE

Main page

JOINT RESEARCH CENTRE
European Composite Maps Database

European Commission | EU Science Hub | AQ/ETC/MS

Home Your Models Log out

European Composite Maps Database

About FAIRMODE

Access to your dataset(s)
in the database

Contribute to AQM/ECM Database

The exercise

For registered users only, a bottom-up composition map of air quality over Europe is open for discussion. Interested members of FAIRMODE can view the results or request to participate in this exercise by registering at the [JRC DATA Inventory/Mapping website](#).

How to contribute

Members of FAIRMODE can upload their data through the ECHPASS Database website. Before uploading, you need to register as a "Database contributor" in the [JRC DATA Inventory/Mapping website](#). If you already have a username and password you can login and proceed to the dedicated area for database contributors where you can upload your data.

Disclaimer

The data sets included in the EU Composite Mapping Exercise remain the exclusive property of the national, regional or local data providers. All information provided via the EU Composite Mapping Platform can only be used in the context of FAIRMODE.

Manual for the database

Background

One of the aims of FAIRMODE is to harmonize modelling practices and provide guidance to EU Member States (MS) on the use of models in the framework of the Air Quality Directive. A recent survey completed by the National Contact Points pointed out that modelling activities have a clear added value to the policy making process but there is still a lack of clarity in legislation and a lack of common guidance on how to use models in support of the implementation of the Air Quality Directive. Over the last couple of years FAIRMODE-WG1 has focused on a QA/QC methodology (House Quality Objectives, DECAs) and a benchmarking process for air quality assessment. Although tackling the QA/QC problem is for sure a big step in the right direction to provide common guidance, it is not sufficient. Remaining open questions within the modelling community are for example: when is a model fit for purpose? (adequate resolution, adequate assumptions...)? how best to combine modelling results with monitoring data...? Providing answers to those questions is seen as the main challenge for AQM.

User Manual

A user guide is available for downloading. Follow the steps to upload your data to the Composite Maps Database.

Download

About the platform

EU Composite Mapping Platform

Link to the Concentration Composite Map viewer

The EU Composite Mapping initiative

In order to open the discussion on the questions mentioned above, FAIRMODE-WG1 launched an initiative to collect and assemble modelled air quality maps into an EU wide "Composite Map". The objective of this exercise is in the first place capacity building and to trigger discussions on topics such as:

- border effects which will become more visible between neighboring regions/countries,
- use of data assimilation or data fusion techniques to produce air quality maps,
- quality and consistency of underlying emission inventories,
- choice of adequate spatial resolution for a particular application.

The platform will improve comparability of assessment methodologies and will make it easier to learn from each other. Furthermore, the exercise can also be used to convince countries or regions that are not yet using models on a regular basis to participate in the process.

In the course of 2015-2016 many national/regional agencies and modelling teams provided their best available air quality mass for PM₁₀ and NO₂ for their particular country, region or city. These maps were compiled into an EU-wide bottom-up Composite Map which was presented at the FAIRMODE Plenary Meeting in February 2017 in Brussels. At the plenary meeting in Brussels the second version of the Composite Map initiative was also announced. For this second version:

- The data sets that are available in the prototype version of the platform will be copied to the new data base and can be updated by users,
- Where the data for the first version was for 2012 (or any nearby year) users are for this new version invited to provide data for the year 2015,
- In order to facilitate the data processing step, a new Quality Check tool is now available that should be used to check the maps before uploading.

e-Reporting

A long term objective of the initiative is to contribute also to the e-reporting process. Some Member States are already reporting modelling data in the official data flows and more MS are expected to do so in the future. However, also here is a clear lack of guidelines on the use of models and reporting formats. As mentioned before it is not the objective of this initiative to deliver model data for the e-reporting process but it is obvious that FAIRMODE can prepare the ground for a possible harmonized approach and contribute to reporting guidelines.

(*): A European compilation of national air quality maps based on modelling, Peter de Smet et al., ETC/ACH Technical Paper 2013/3

Quality Check tool v1.0.0

The CHAP/MS tool should be used to check the concentration and emission maps before these are uploaded to the Composite mapping database. The tool is installed by downloading and then double clicking on the CHMapping.exe file. Once installed a manual can be found in the help directory that can be accessed through the Windows Start button under All programs/ARC-EU/CHMapping/Tools.

Download

Download quality control tool

EUROPEAN COMPOSITE MAPS DATABASE

Access to the database

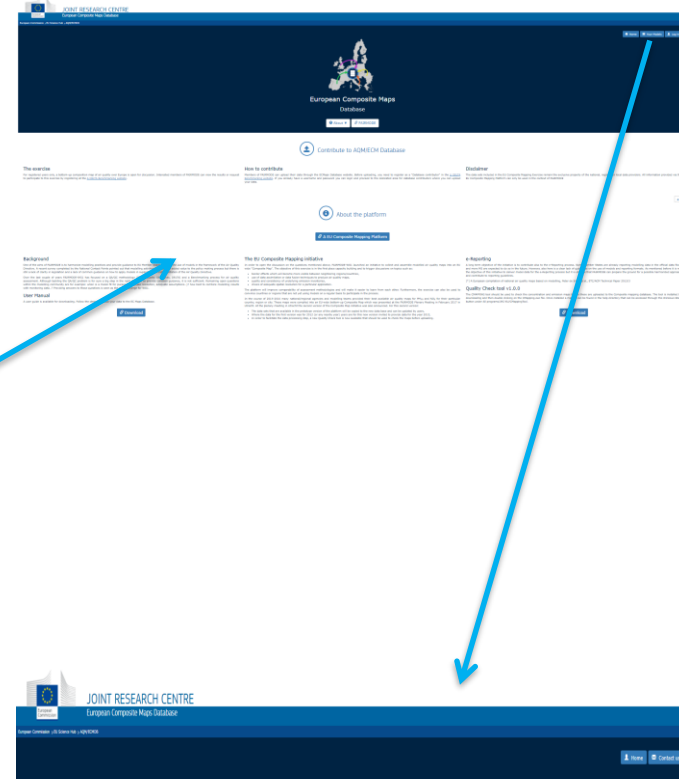


Main page Fairmode

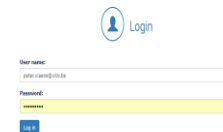


Fairmode/ composite mapping

Composite map database

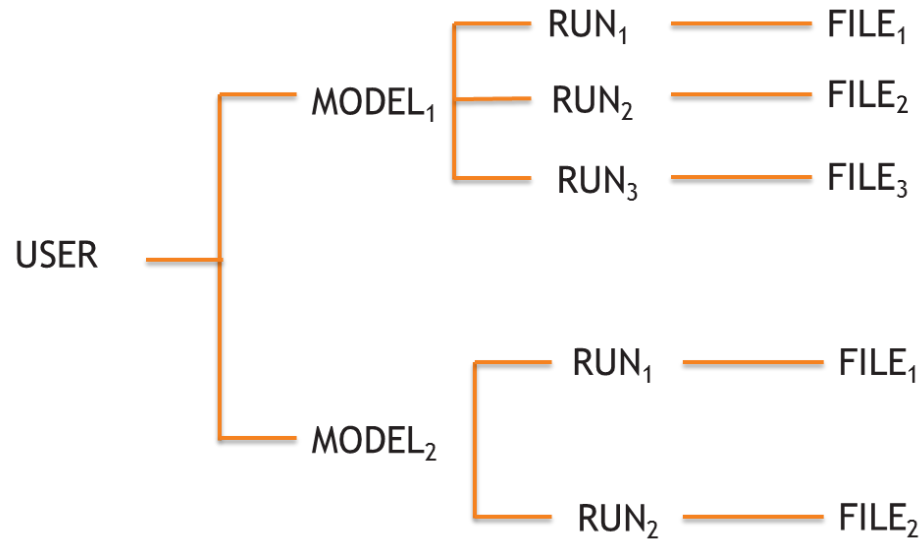


Login page



DATABASE STRUCTURE

» Hierarchical structure:



» Users can only see their own data (login)

EUROPEAN COMPOSITE MAPS DATABASE

UPLOAD DATA: MODEL

ADD a new model

One line per model

EDIT model data

runs for the model

DELETE model

	Model category	Code	Name	Model type	Status	Updated	
Runs 0	Concentration	VITO_BELEUROS	BELEUROS	Eulerian	Created	17/06/2017	Edit Delete
Runs 1	Concentration	VITO_AURORA	AURORA	Eulerian	Created	16/06/2017	Edit Delete
Runs 2	Concentration	VITO_RIO_IFDM	RIO_IFDM	Other...	Created	17/06/2017	Edit Delete

EUROPEAN COMPOSITE MAPS DATABASE

UPLOAD DATA: NEW MODEL

Label used on map viewer

New Model

Category
Concentration

Code
Reference code to your model (model_institute). This code will be used to identify your data on the EC Maps viewer.
VITO_BELEUROS

Model name
BELEUROS

Description (optional)
15 km resolution model results for Belgium

Model type
Eulerian

Save Cancel and return to list



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EUROPEAN COMPOSITE MAPS DATABASE

UPLOAD DATA: RUN

ADD a new run

One line per run

EDIT run data


files for the run

Run details

DELETE RUN

	Model Category	Pollutant	Run Year	Country	Area	Updated			
Files 1	Concentration	PM10	2015	Belgium		17/06/2017	Details	Edit	Delete
Files 1	Concentration	NO2	2015	Belgium	Flanders	17/06/2017	Details	Edit	Delete

UPLOAD DATA: RUN details



Run Details

[Back to runs](#)

Model attributes

Category: Concentration
Code: IRCEL_RIO
Model name: RIO
Model type: Other...

Run attributes

Pollutant: PM10
Output Frequency: Yearly
Data assimilation: None
Country: Belgium
City:
EPSG Code: EPSG-31370
Year: 2017
Release version: 1
Documentation: <http://www.irceline.be/en/documentation/models>
Status: Created
Update: 17/06/2017 21.17

Files (1)

File name: CMAP_RIO_BEL_PM10_EPSG31370_2015.tiff
File size: 32 KB
Content type: image/tiff
System file name: 20170617212016.Concentration.177.137.14e045.tiff

[Download](#)



EUROPEAN COMPOSITE MAPS DATABASE

UPLOAD DATA: new run



Pollutant

NO2

Output Frequency

Daily/Hourly

Data Assimilation

Other...

Country

Belgium

Area (optional)

Flanders

EPSG Code

Map coordinate reference id from the [EPSG Dataset](#)

EPSG - 31370

Year

2015

Version

v1

Documentation

<http://www.irceline.be/en/documentation/models/rio-ifdm>

Description (optional)

annual average NO2 concentration for 2015 calculated with RIO IFDM

Save

Cancel and return to list



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EUROPEAN COMPOSITE MAPS DATABASE

UPLOAD DATA: files



Select a file

The [CMAPPING tool](#) should be used to check the concentration maps before these are uploaded to the Composite mapping database. Please, avoid to upload unvalidated data to the database to help us keeping the database consistent

Upload file

Cancel and return to list

- » No extra information, just upload: one file per run
- » Please use the CMAPPING tool to check your data before uploading

EUROPEAN COMPOSITE MAPS DATABASE

UPLOAD DATA: RUN

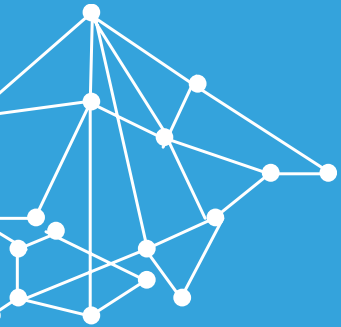
The screenshot shows a web interface for managing files. At the top, there are navigation buttons: 'Back to models', 'Back to run', and '+ Add new file'. Below this is a table with the following columns: File Name, File Size, Content Type, Updated, and actions. A single file is listed: 'CMAP_RIO_BEL_NO2_EPSG31370_2015.tiff' with a size of 32 KB, content type 'image/tiff', and updated on 17/06/2017. The actions for this file are 'Download', 'Edit', and 'Delete'. Annotations with arrows point to these elements: 'ADD a new file' points to the '+ Add new file' button; 'One line per file' points to the file name; 'EDIT file attributes' points to the 'Edit' button; 'DELETE file' points to the 'Delete' button; and 'Download file' points to the 'Download' button.

File Name	File Size	Content Type	Updated	
CMAP_RIO_BEL_NO2_EPSG31370_2015.tiff	32 KB	image/tiff	17/06/2017	Download Edit Delete

UPLOAD DATA: DELETING DATA

- To remove a model:
 first remove all runs for the model

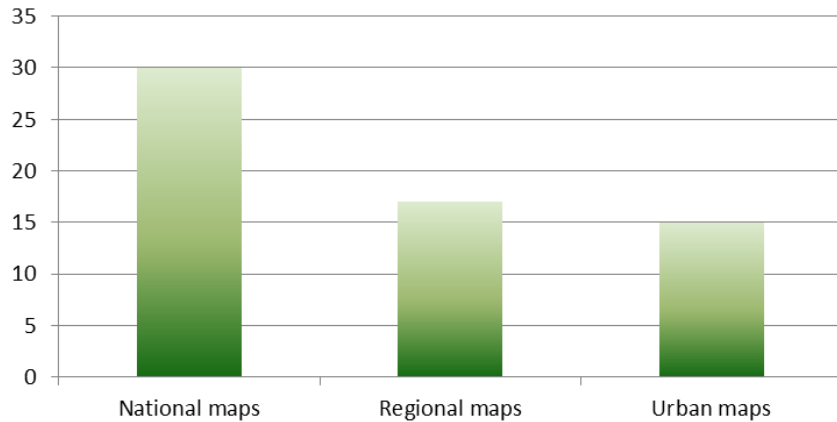
- To remove a run:
 first remove all files for the run



Contributions

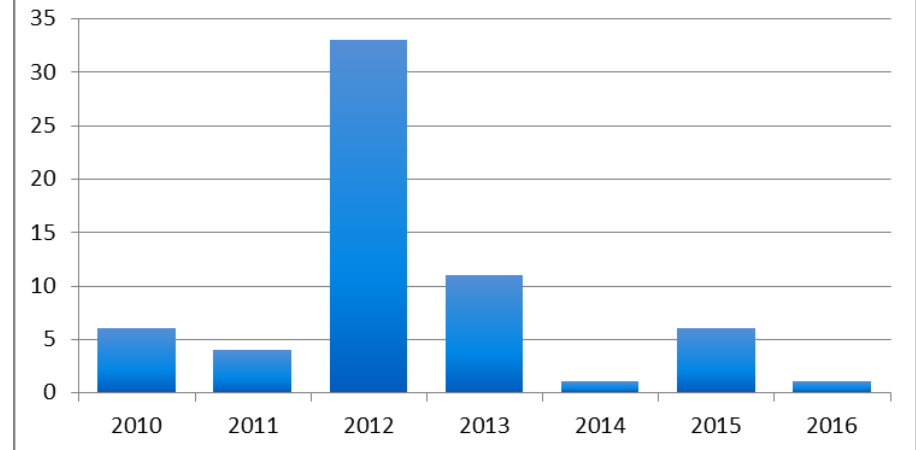
CONTRIBUTIONS

Spatial scales



63 PM₁₀ maps
62 NO₂ maps

maps/year



FAIRMODE

Forum for air quality modelling in Europe

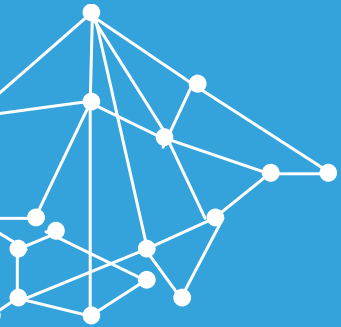


Country	Region/City	Institute	Contact person	Model	Year
Austria	Austria	ZAMG	Hirtl Marcus	WRF-Chem	2014
	Austria	ZAMG	Hirtl Marcus	WRF-Chem	2015
	Styria	Federal state government of styria	Payer Ingrid	GRAL-Graz	2010
	Linz	Linz - Amt der Oö. Landesregierung	Oitzl Stefan	GRAL-Linz	2010
	Klagenfurt	V&U IVT TU Graz	Reifeltshammer Rafael	GRAL-Kgft	2010
	Leibnitz	V&U IVT TU Graz	Reifeltshammer Rafael	GRAL-Lbnz	2010
	Wien	V&U IVT TU Graz	Reifeltshammer Rafael	GRAL-Wien	2010
Belgium	Belgium	IRCEL	Fierens Frans	RIO	2012
	Belgium	IRCEL	Fierens Frans	RIO	2015
	Flanders	IRCEL	Fierens Frans	RIO-IFDM	2012
	Flanders	IRCEL	Fierens Frans	RIO-IFDM	2015
	Antwerp	VITO	Lefebvre Wouter	RIO-IFDM-OSPM	2012
Bulgaria	Bulgaria	NIHM	Georgieva Emilia	CWFS	2013
	Sofia	NIHM	Georgieva Emilia	CWFS	2013
Croatia	Croatia	DHZ	Sonja Vidic	EMEP	2011
Cyprus	Cyprus	University Thessaloniki	Tsegas Georgios	MARS-aero	2012
	Nicosia	University Thessaloniki	Tsegas Georgios	MARS-aero	2012
	Famagusta	University Thessaloniki	Tsegas Georgios	MARS-aero	2012
	Limassol	University Thessaloniki	Tsegas Georgios	MARS-aero	2012
	Larnaca	University Thessaloniki	Tsegas Georgios	MARS-aero	2012
	Paphos	University Thessaloniki	Tsegas Georgios	MARS-aero	2012
Czech Republic	Czech Republic	CHMI	Benešová Nina	RIMM	2012

Country	Region/City	Institute	Contact person	Model	Year
Denmark	Denmark	Aarhus University	Jesper Helle Christensen	DEHM	2012
	Denmark	Aarhus University	Matthias Ketznel	DEHM+UBM	2012
	Denmark	Aarhus University	Matthias Ketznel	DEHM+UBM	2015
France	France	INERIS	MELEUX Frederik	CHIMERE	2012
Germany	Germany	Umweltbundesamt	Nordmann Stephan	RCG	2012
	Germany	Research Center Juelich	Krajsek Kai	EURAD_IM	2012
	Baden_Wurzburg	IVU	Florian Pfäfflin	RCG	2010
	Hessen	IVU	Florian Pfäfflin	RCG	2010
Italy	Italy	ENEA	Ciucci Alessandra	AMS-MINNI	2010
	Emila Romagna	ARPA Emilia Romagna	Stortini Michele	NINFAPESCO	2012
	Italy	RSE	Pirovano Guido	CAMx	2010
Luxemburg	Luxemburg	Intgeo	Schiltz Claudine		2012
Norway	Norway	NILU	Vogt Matthias	Basemap	2011
	Oslo	NILU	Vogt Matthias	Episode	2011
Poland	Poland	Ekometria	Malgorzata Paciorek	CAMx	2012
	Dolnoslaskie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Lodzkie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Mazowieckie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Opolskie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Podlaskie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Pomorskie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012

Country	Region/City	Institute	Contact person	Model	Year
Poland	Warminsko-mazurskie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Zachodniopomorskie Voivodship	Ekometria	Malgorzata Paciorek	CALPUFF	2012
	Poland	EcoForecast	Durka Pawel	GEM-AQ	2012
	Poland	EcoForecast	Durka Pawel	GEM-AQ	2015
Portugal	Portugal	Universidade de Aveiro	Monteiro Alexandra	CHIMERE	2012
Slovakia	Slovakia	SHMU	Matejovicova Jana	IDWA/CEMOD	2012
Slovenia	Slovenia	UOL			
Spain	Mainland Spain and the Balearic Islands	CIEMAT	Theobald Mark	CHIMERE	2012
	Mainland Spain and the Balearic Islands	CIEMAT	Theobald Mark	CHIMERE	2015
	Canary Islands	Barcelona Supercomputing Center	Pay Maria Teresa	CALIOPE	2013
	Iberian Peninsula and Balearic Islands	Barcelona Supercomputing Center	Pay Maria Teresa	CALIOPE	2013
	Madrid	Barcelona Supercomputing Center	Pay Maria Teresa	CALIOPE	2013
	Andalucia	Barcelona Supercomputing Center	Pay Maria Teresa	CALIOPE	2013
	Catalonia	Barcelona Supercomputing Center	Pay Maria Teresa	CALIOPE	2013
Sweden	Sweden	SMHI	Leung Wing	MATCH	2012
	Sweden	SMHI	Leung Wing	MATCH	2016
UK	UK	Ricardo-AEA	Brookes Daniel	PCMBK	2013
	London	CERC	Kate Johnson	ADMS-Urban	2012

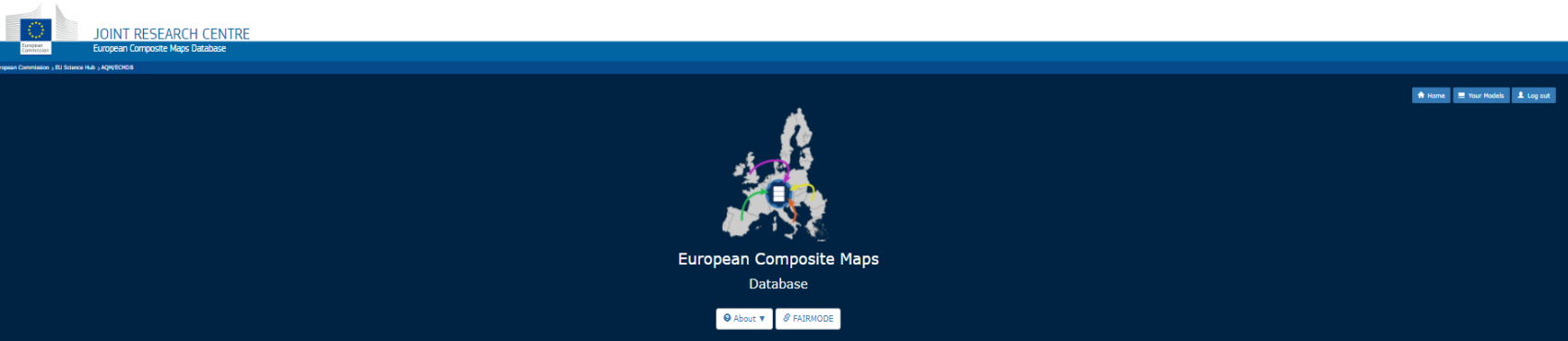




The composite map viewer

EUROPEAN COMPOSITE MAPS VIEWER

Access through Main page



Contribute to AQM/ECM Database

The exercise

For registered users only, a bottom-up composition map of air quality over Europe is open for discussion. Interested members of FAIRMODE can view the results or request to participate in this exercise by registering at the [JRC/ECM/FAIRMODE website](#).

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About the platform

[EU Composite Mapping Platform](#)

[Link to the Concentration Composite Map viewer](#)

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One of the aims of FAIRMODE is to harmonize modelling practices and provide guidance to EU Member States (MS) on the use of models in the framework of the Air Quality Directive. A recent survey completed by the National Contact Points pointed out that modelling activities have a clear added value to the policy making process but there is still a lack of clarity in legislation and a lack of common guidance on how to apply models in support of the implementation of the Air Quality Directive. Over the last couple of years FAIRMODE-WG2 has focused on a QA/QC methodology (Issue Quality Objectives, DQCs) and a benchmarking process for air quality assessment. Although tackling the QA/QC problem is for sure a big step in the right direction to provide common guidance, it is not sufficient. Remaining open questions within the modelling community are for example: when is a model fit for purpose (adequate resolution, adequate assumptions...)? how best to combine modelling results with monitoring data...? Providing answers to those questions is seen as the next challenge for AQM.

User Manual

A user guide is available for downloading. Follow the steps to upload your data to the EC Maps Database.

[Download](#)

The EU Composite Mapping initiative

In order to open the discussion on the questions mentioned above, FAIRMODE-WG1 launched an initiative to collect and assemble modelled air quality maps into an EU wide "Composite Map". The objective of this exercise is in the first place capacity building and to trigger discussions on topics such as:

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(*): A European compilation of national air quality maps based on modelling, Peter de Smet et al., ETC/ACH Technical Paper 2013/3

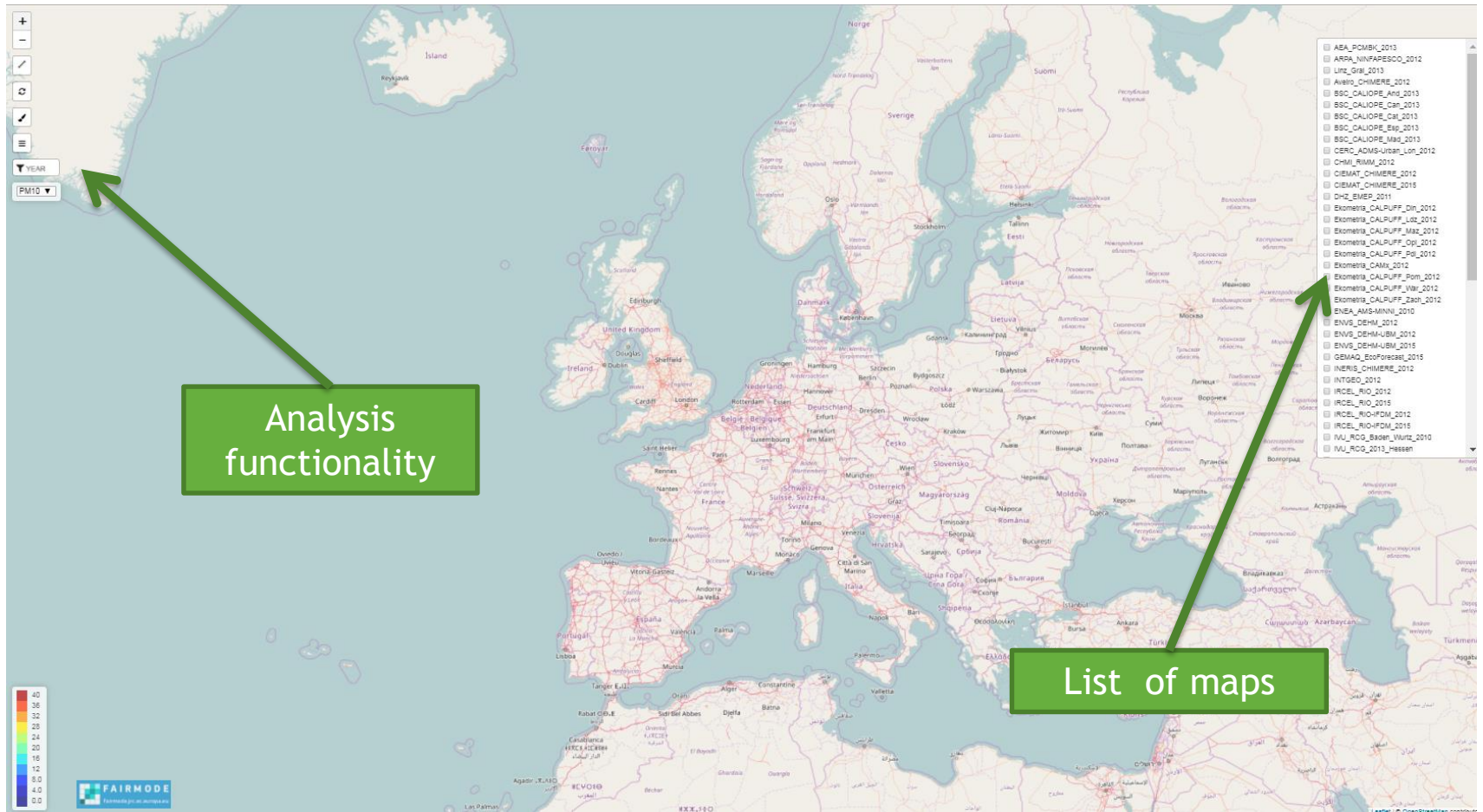
Quality Check tool v1.0.0

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[Download](#)

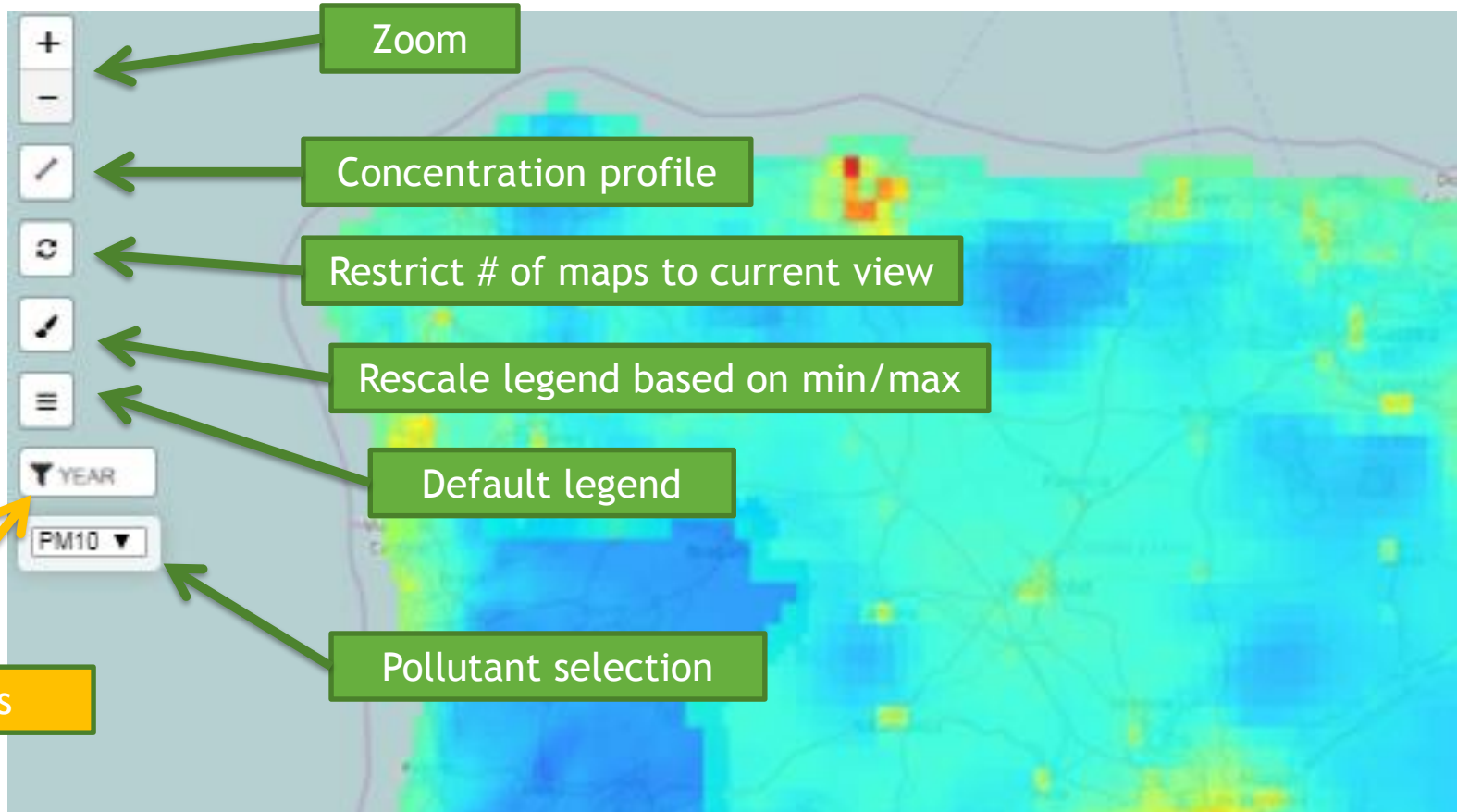
EUROPEAN COMPOSITE MAPS VIEWER

Main page concentration viewer



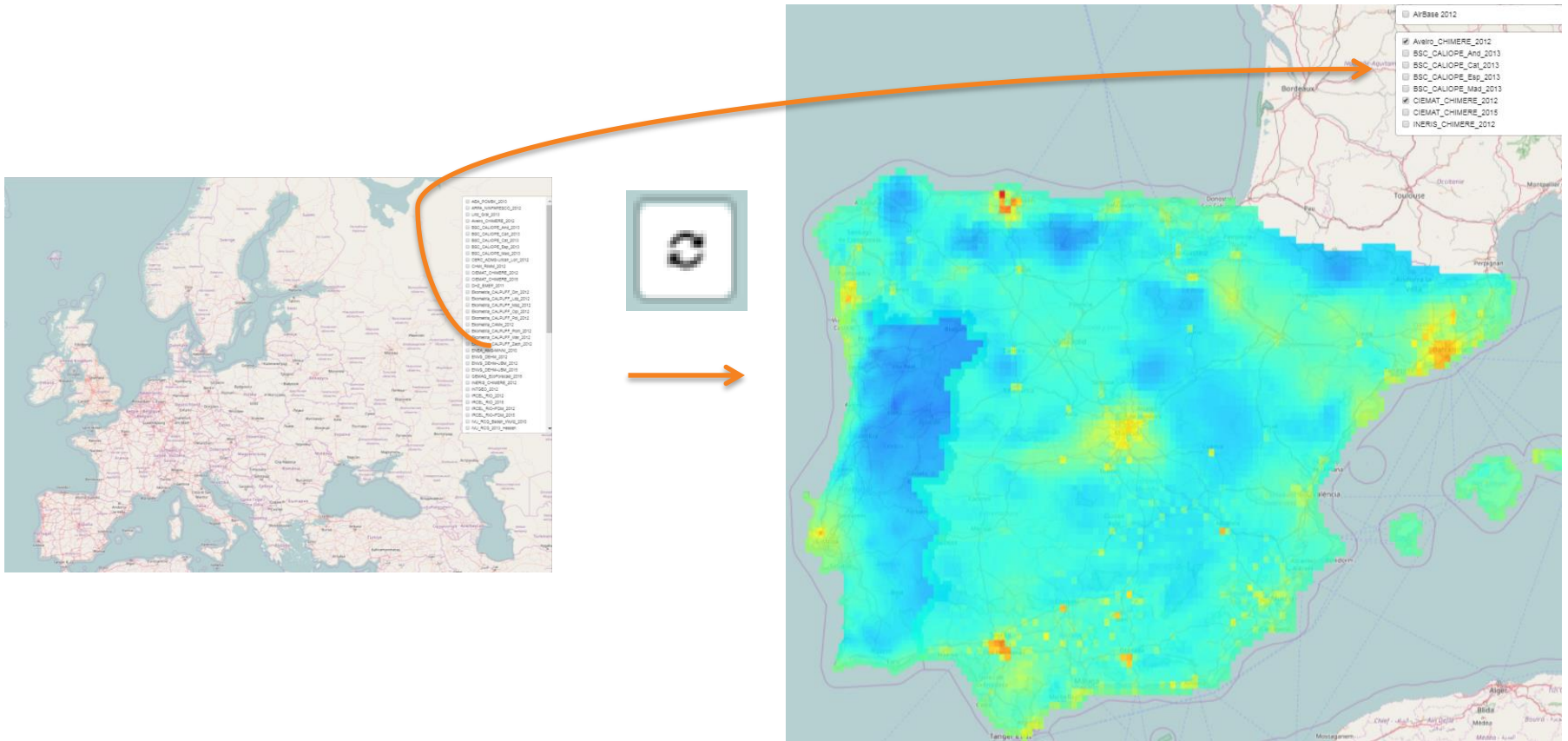
EUROPEAN COMPOSITE MAPS VIEWER

Analysis functionality



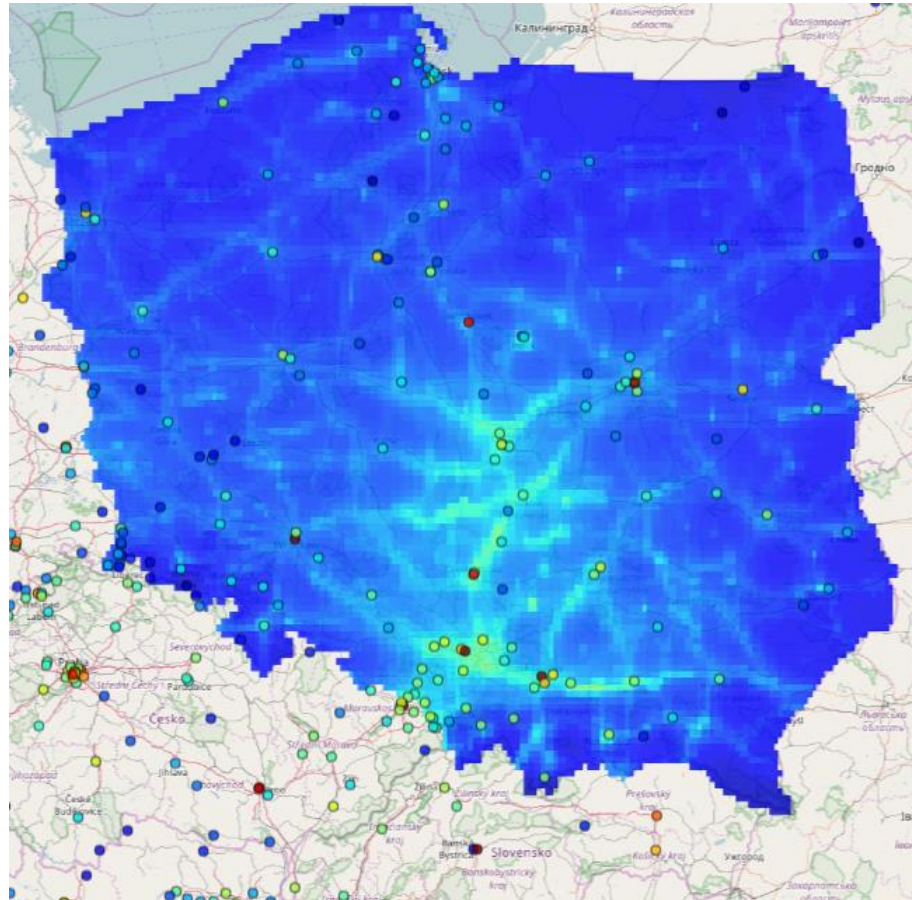
EUROPEAN COMPOSITE MAPS VIEWER

Restricting the maps to the view area



EUROPEAN COMPOSITE MAPS VIEWER

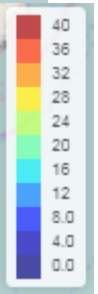
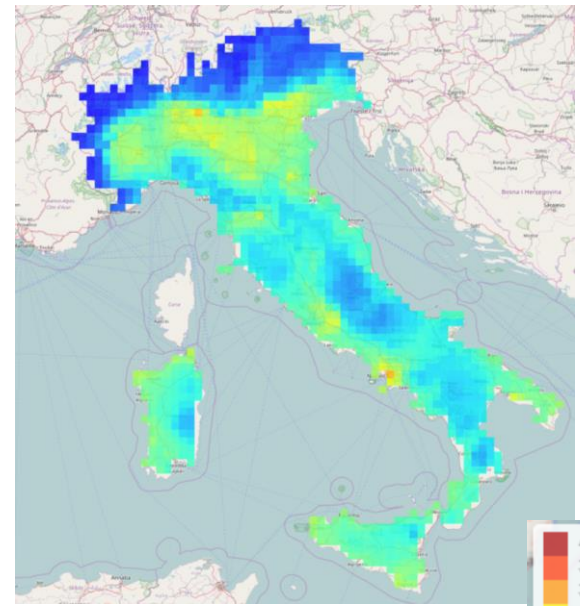
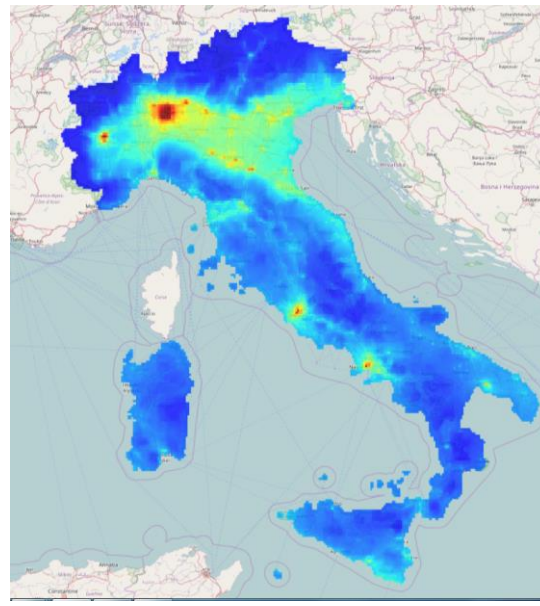
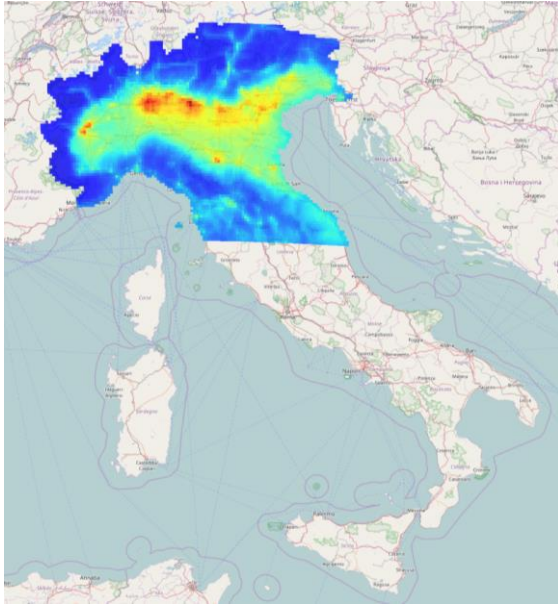
AIRBASE stations



Points can be added for AIRBASE stations with same colour as concentration legend of the map

EUROPEAN COMPOSITE MAPS VIEWER

Cross sections



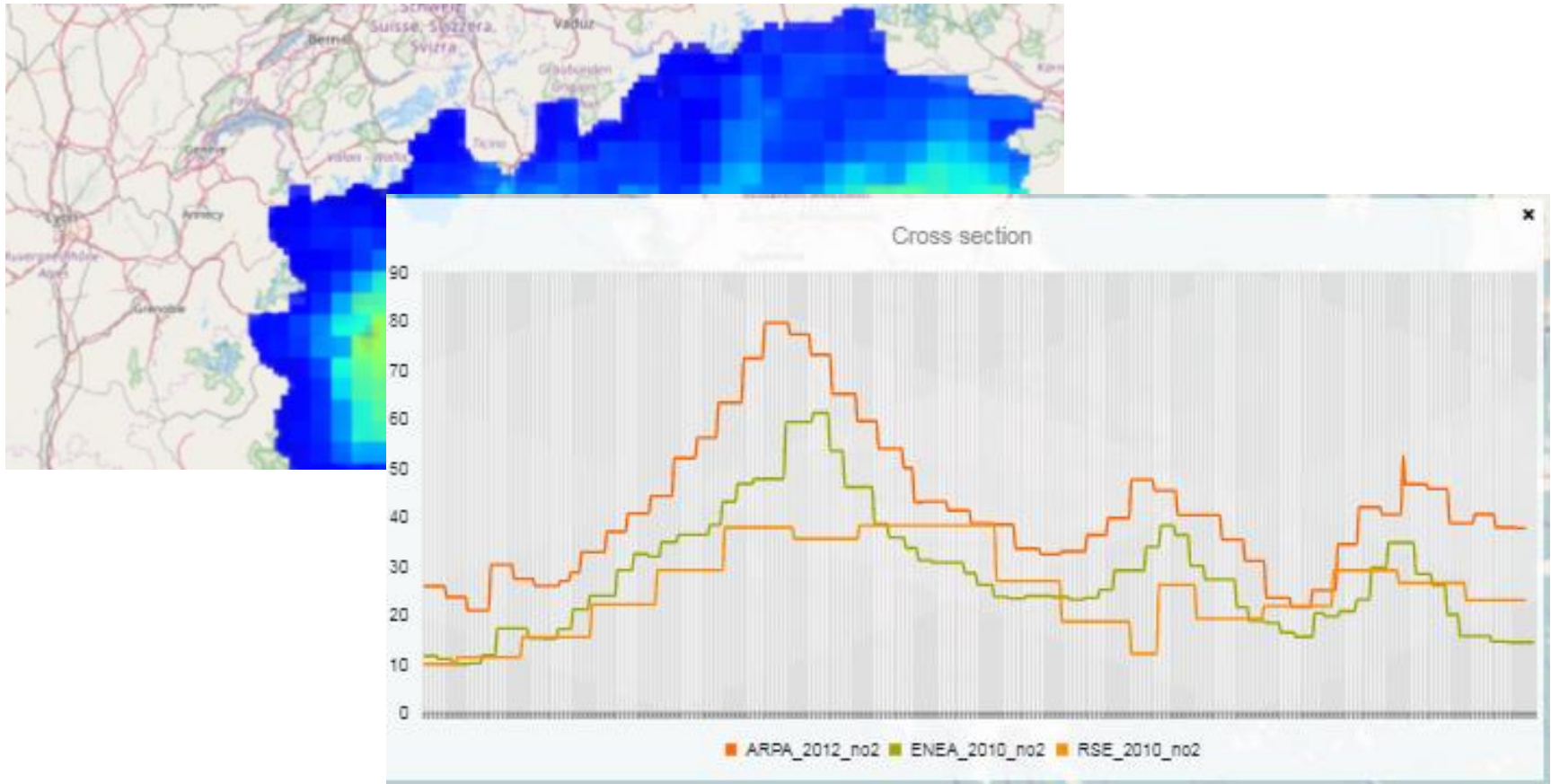
Italy PM10 2012
ARPA Emilia-Romagna
NINFA PESCO

Italy PM10 2010
ENEA
AMS MINNI

Italy PM10 2012
RSE
CAMx

EUROPEAN COMPOSITE MAPS VIEWER

Cross sections



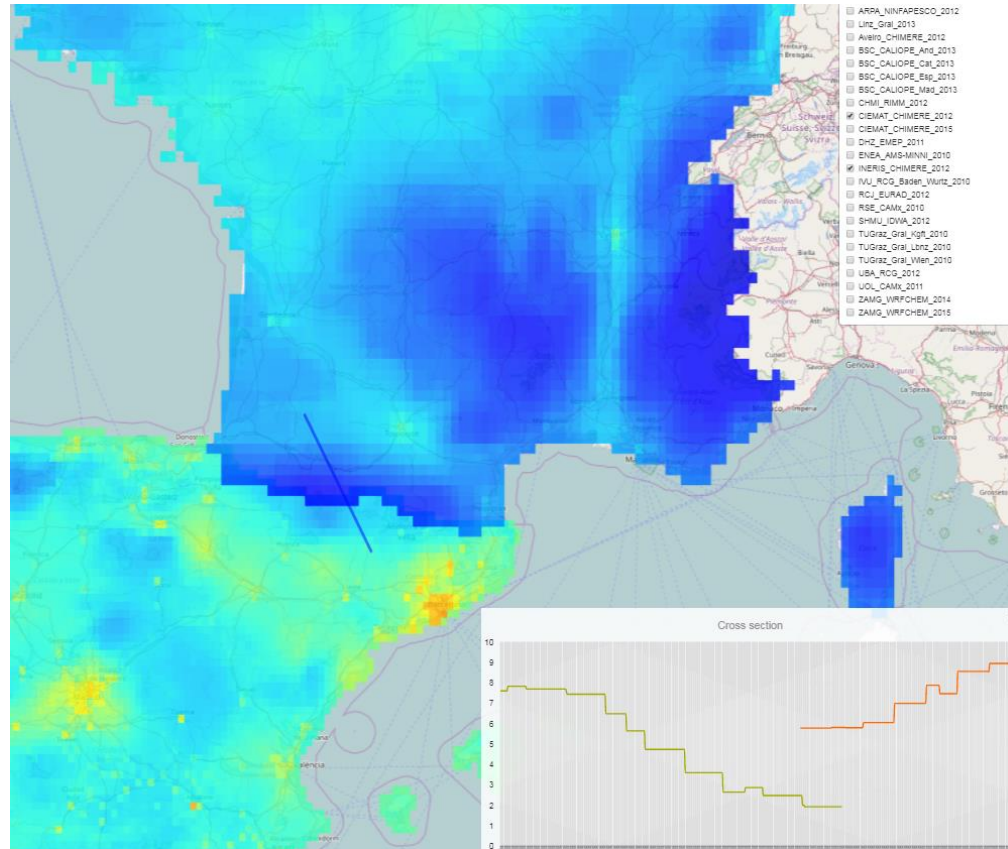
FAIRMODE

Forum for air quality modelling in Europe



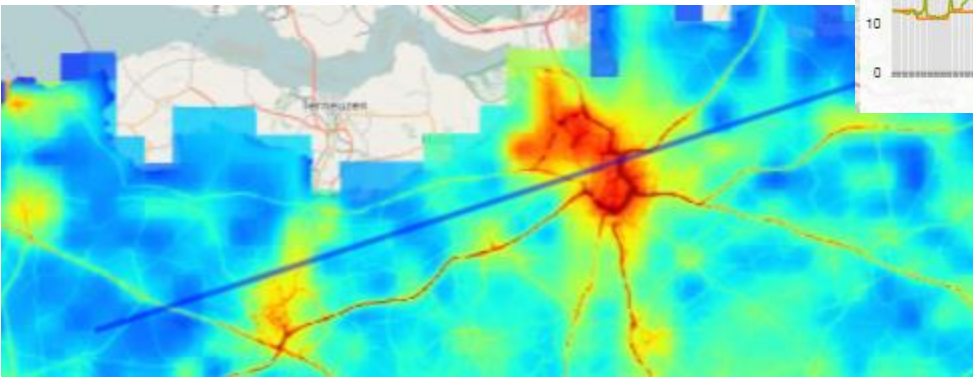
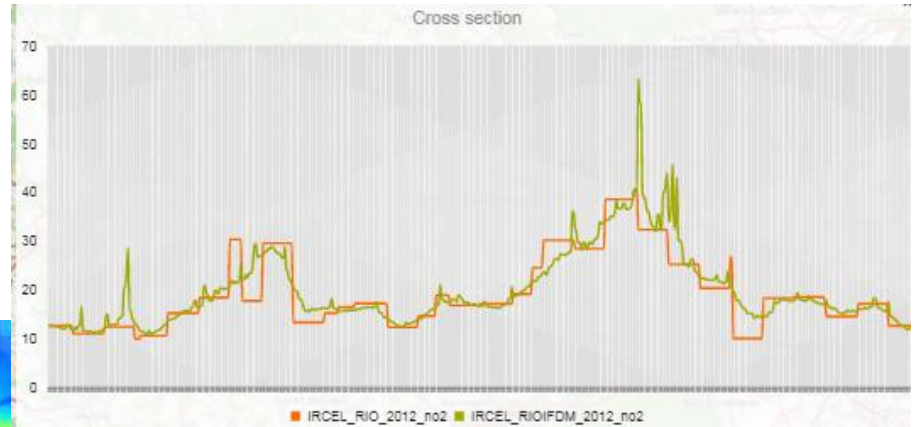
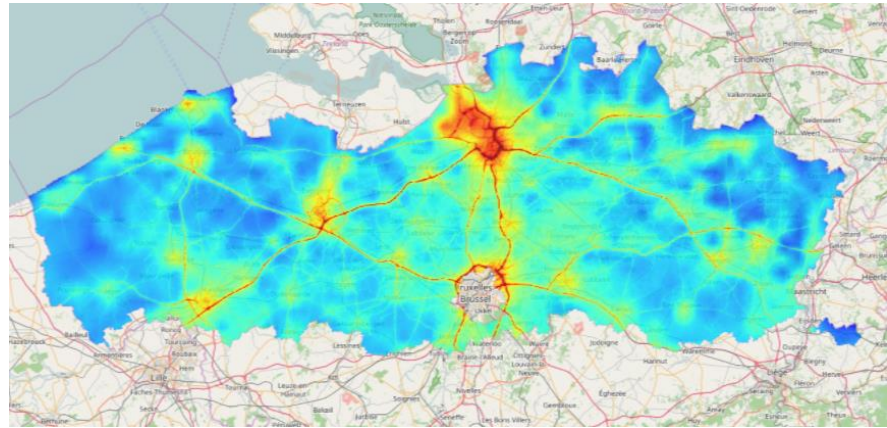
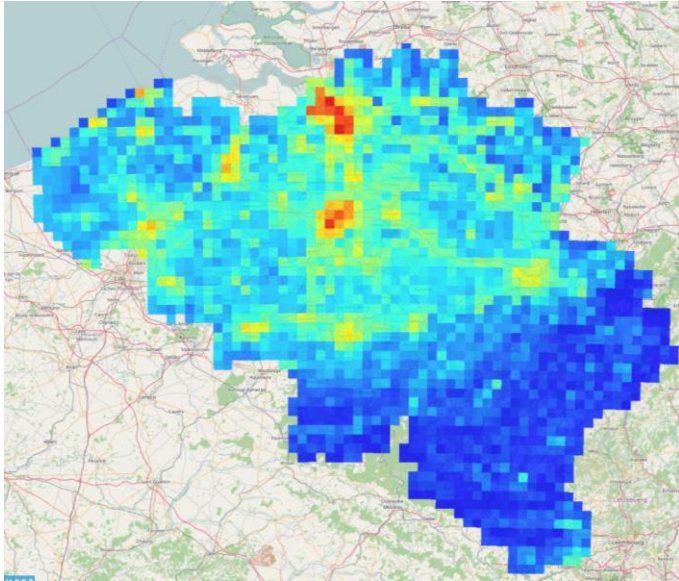
EUROPEAN COMPOSITE MAPS VIEWER

Cross sections: inconsistencies at borders



EUROPEAN COMPOSITE MAPS VIEWER

Cross sections: effects of scale

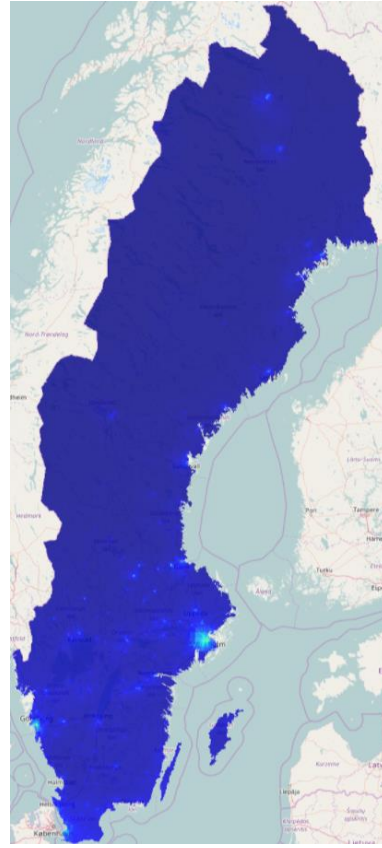


EUROPEAN COMPOSITE MAPS VIEWER

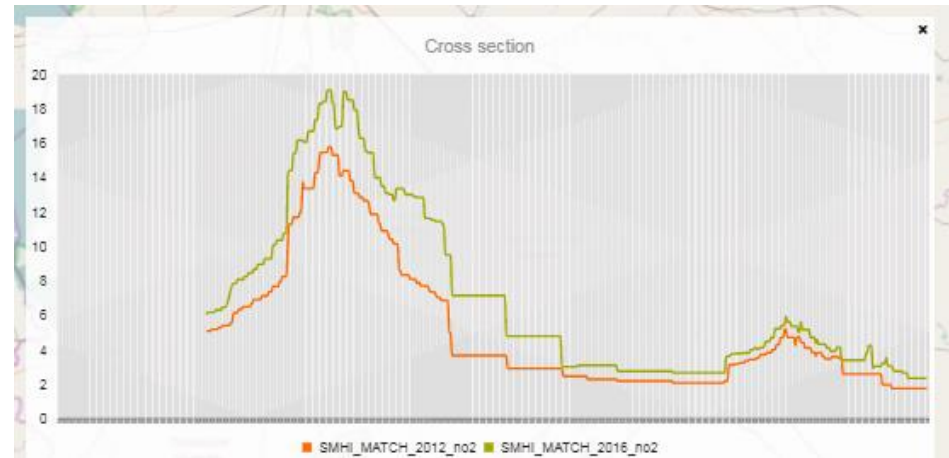
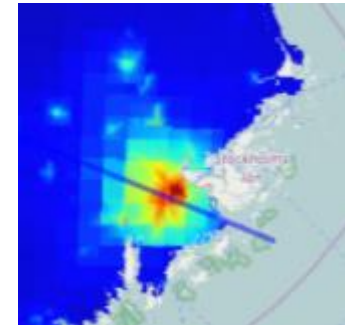
Cross sections: differences between years

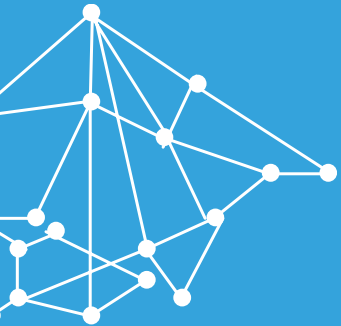


2012



2016





What's next

EUROPEAN COMPOSITE MAPS: NEXT STEPS

- » Further improvements based on user feedback
- » Composite mapping website:
 - » Somewhat difficult to find your way on the current web site
 - » now focused on concentrations: include emissions
- » Database
 - » Make metadata visible for everyone
- » Map Viewer
 - » AIRBASE stations
 - at all zoom levels
 - add data for more years (now only 2012)
 - Different symbol according to station types (traffic, ...)



Please register and submit your datasets!

All maps used in a “**policy context**” are welcome
Contributions are limited to the national, regional or local scale