

FAIRMODE WG2

Urban Emissions Working Group

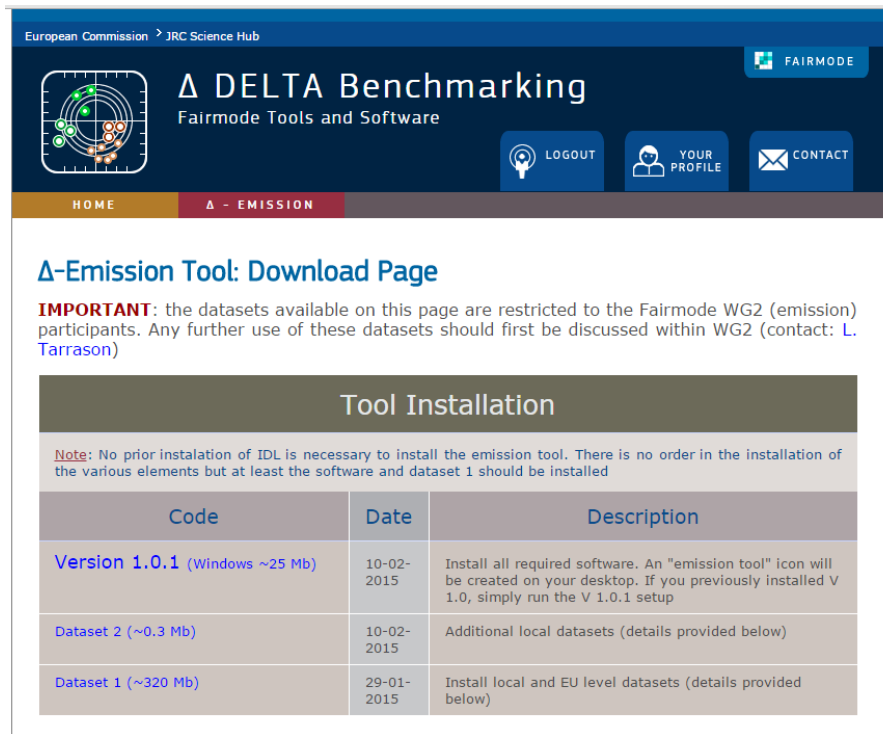
Leonor Tarrasón (NILU) and Marc Guevara (BSC)

Agenda WG2

- **Session 1**: The JRC benchmarking emission tool
- **Session 2**: SPECIEU – common session with WG3
- **Session 3**: Guidance on Traffic Emissions in FAIRMODE – best practices
- **Session 4**: Future activities, links to models and measurements & forecasting & other WGs

IMPORTANT MILESTONE!

<http://aqm.jrc.ec.europa.eu/DELTA/emission/emission.aspx>



The screenshot shows the 'DELTA Benchmarking' website. The header includes the European Commission and JRC Science Hub logos, a 'FAIRMODE' logo, and navigation links for 'HOME', 'DELTA - EMISSION', 'LOGOUT', 'YOUR PROFILE', and 'CONTACT'. The main content area is titled 'Δ-Emission Tool: Download Page'. It contains an 'IMPORTANT' notice stating that datasets are restricted to Fairmode WG2 participants and should be discussed within WG2. Below this is a 'Tool Installation' section with a table listing available tools and datasets.

Code	Date	Description
Version 1.0.1 (Windows ~25 Mb)	10-02-2015	Install all required software. An "emission tool" icon will be created on your desktop. If you previously installed V 1.0, simply run the V 1.0.1 setup
Dataset 2 (~0.3 Mb)	10-02-2015	Additional local datasets (details provided below)
Dataset 1 (~320 Mb)	29-01-2015	Install local and EU level datasets (details provided below)

Purpose of the JRC benchmarking tool

1. Compare bottom-up and top down emission inventories
2. Enhance communication between national and city authorities by understanding main features of the comparison

IMPORTANT MILESTONE !

FAIRMODE WG2 SUPPORTING MATERIAL

A novel approach to screen and compare bottom-up vs. top-down emission inventories

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Abstract

A methodology is proposed to support the types of emission inventories, and more versus top-down approaches. The strengths are presented and discussed based on an e "diamond" diagram useful to flag out and inventories and to get insight on possible "diamond" diagram is shown to provide r discrepancies between the total emissions contribution of each macro-sector to the t pollutant, and the identification and quant the discrepancies between total emissions allow investigating the relative contributi factors. A practical example in Barcelona relevant information for the analyzed emi capability of the proposed methodology b inventories. The proposed methodology s urban inventory developers as an initial e inventories.

Keywords: Bottom-up emission inven Activity data, Emission factors

A benchmarking tool to screen and compare bottom-up and top down emission inventories

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Abstract

This paper describes the details of the Δ-Emis tool for emission inventories, recently developed in the framework of FAIRMODE (Forum for Air Quality Modelling in Europe). The Δ-Emis tool consists in a set of indicators and diagrams that support the evaluation and comparison of different types of emission inventories. Four different comparison methods are proposed as part of the tool, primarily addressed to the comparison of bottom-up versus top-down emission inventories. Those include: 1) pollutant emission comparisons across sectors (i.e. Bar-Plot); 2) evaluation of the differences between inventories allocated in terms of activity data and emission factors (i.e. Diamond diagram); 3) emission per capita comparisons (i.e. Per-capita diagram) and 4) comparison of pollutant ratios (i.e. Pollutant-ratio diagram). The methodology has been tested for an urban emission inventory in Barcelona and results show the capability of the system to flag inconsistencies in the existing inventories. The proposed methodology system may be useful for regional and urban inventory developers as an initial evaluation of the consistency of their inventories.

Keywords: Bottom-up emission inventories, Top-down emission inventories, benchmarking emission

2 PUBLICATIONS CIRCULATED

1. One focussing on the diamond diagram (Thunis et al.)
 2. The other explaining the Delta tool (Guevara et al.)
- All 4 diagrams
- Bar plots
 - Pollutant ratio diagrams
 - Per-capita diagrams
 - Diamond diagrams

FAIRMODE Emission Benchmarking

6 Feedback presentations on the Emission Delta Tool

- ❑ Oslo, Bergen, Stavanger - Norway
- ❑ Stockholm - Sweden
- ❑ Havana- Cuba
- ❑ The country UK – UK
- ❑ Madrid – Spain
- ❑ Porto and Lisbon - Portugal



European Commission > JRC Science Hub

Δ DELTA Benchmarking
Fairmode Tools and Software

FAIRMODE

LOGOUT YOUR PROFILE CONTACT

HOME Δ - EMISSION

Δ-Emission Tool: Download Page

IMPORTANT: the datasets available on this page are restricted to the Fairmode WG2 (emission) participants. Any further use of these datasets should first be discussed within WG2 (contact: [L. Tarrason](#))

Tool Installation

Note: No prior installation of IDL is necessary to install the emission tool. There is no order in the installation of the various elements but at least the software and dataset 1 should be installed

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The Delta Emission Benchmarking Tool

FEEDBACK – Main issue	Proposed corrective action
WEB page <ul style="list-style-type: none"> - Improve access to the tool - Add links to supporting information (see below) 	Revised webpage – NILU+BSC + JRC
SUPPORTING INFORMATION <ul style="list-style-type: none"> - Include a User Manual with images as simple cook-book - Add DETAILED information on the TD inventories and contacts - Add links to guideline publications on the use of the tool 	NILU + BSC TNO + INERIS JRC
MAP SNAP CORRESPONDANCES <ul style="list-style-type: none"> - Main sources of problems for interpretation of TD vs BU - Map the conversion from NFR to SNAP - Make the mapping information available in the web 	Mapping team - Voluntaries ???

The Delta Emission Benchmarking Tool

FEEDBACK – Main issue	Proposed corrective action
<i>SHIPPING EMISSIONS</i> <ul style="list-style-type: none"> - Correspondance with SNAP8 not useful - Identify means for meaningful comparison 	TNO +NILU+ BSC+ JRC – Mapping team
<i>INDUSTRIAL EMISSIONS</i> <ul style="list-style-type: none"> - Identify means for meaningful use of teh diamond diagram when we do not have A*EF 	NILU + BSC + JRC Mapping team
<i>ADDITIONAL VISUALISATION</i> <ul style="list-style-type: none"> - Shape files for the are used in TD and BU - Emission maps for the data provided - requires additional information provided 	JRC
<i>REVISION TO THE TOOL</i> <ul style="list-style-type: none"> - Filter out division by too small numbers (Ratios diagram) - Check division of exhaust and non-exhaust sources 	JRC

The emission benchmarking tool

Further work

1. Mapping team – Susana (NO), Jeroen (NL), Joana (PT), Agniewska (PL)
2. Further testing of the tool – MACC III 2000-2011
Most groups interested in further testing
3. Planned publication documenting the usefulness of the tool (lessons learnt) – contributions in Baveno
 - Problems with VOCs in MACC/EC4MACS in Stockholm
 - Problems with S9 in MACC for Porto and Lisbon
 - More examples of improvement of TD
 - More examples of improvement of BU

It is good to see many contributions!

Cross-cutting activities (CCA)

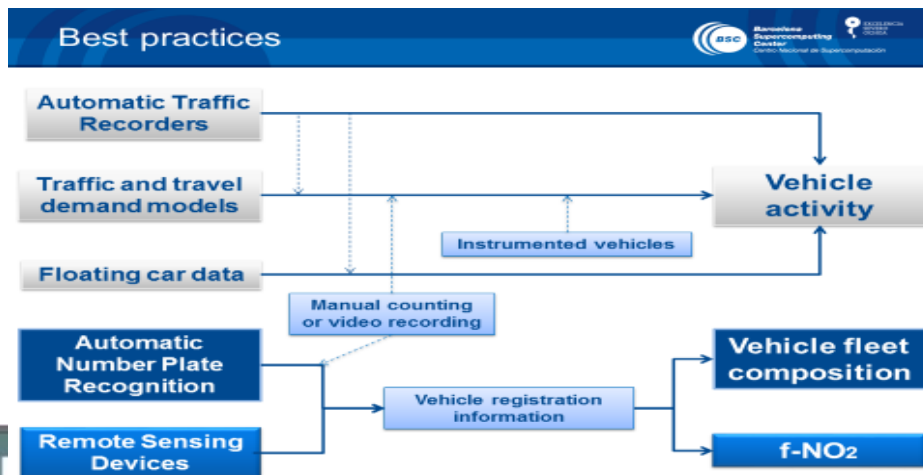
1. How WG2 can use SPECIEU ? → More discussion (Baveno)
2. Modeling and monitoring approach to estimate traffic emissions
 - Application for improving resuspension emission factors (Stockholm)
3. Use of satellite data in order to improve:
 - Biomass burning emissions
 - Agricultural ammonia emissions
 - Volcano emissions
4. Importance of SVOC in wood combustion
5. Use of Bottom-Up inventories to improve spatial distribution of Top-down inventories → Needs harmonization

Traffic emissions – Discussion

Work on mapping current practices was very well received

1. Useful overview of current practices
2. Necessary overview for further work

Vehicle Activity data	Fleet composition	Emission factors
Manual counting	Official vehicle registration data	Laboratory measurements
Automatic Traffic recorders	Vehicle owner and parking lot surveys	On-board measurements
Traffic and travel demand models	RSD . Remote sensing devices	Emission factor models (COPERT, HBEFA)
Instrumented vehicles and Floating car data	Automatic Number Plate recognition (ANPR)	Flux measurements



Traffic emissions

1. Activity Traffic Volume

Vehicle Activity data	Currently used	Future use
Manual counting	7	
Automatic Traffic recorders	7	
Traffic models	Stockholm, Helsinki, NL, Dublin, NO, Lisbon, Porto, Milan, Coimbra	
Instrumented vehicles and Floating car data (FCD , xFCD)	NL, UK	XX

Traffic emissions

2. Fleet composition

Fleet composition	Currently used	Future use
Official vehicle registration data	Lisbon, FI, NO, PL, Dublin, Porto	
Vehicle owner and parking lot surveys		
RSD . Remote sensing devices	UK	
Automatic Number Plate recognition (ANPR)	+OFV UK, Stockholm, NL, Coimbra	X

Traffic emissions

3. Emission factors

Emission factors	Currently used	Future used
Laboratory measurements		x
On-board measurements		x
Emission factor models (COPERT, HBEFA)	Mostly used – many questions to these models	x
Flux measurements		

Traffic emission current practices

Further work

1. Questionnaire to
 - *map current current practices*
 - *identify the main problems with current practices*
 - *identify experts to contribute to EFM work*
 - *Identify links with GHG emission for 2016*
2. Working group to test/analyse emission factor models – HBEFAvs COPERT – links to ERMES
3. Working group to evaluate SPECIEU used for WG2

Thank you



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