

Working Group 1 - Assessment

» Stijn Janssen & Philippe Thunis

FAIRMODE Technical Meeting, 24 & 25 June 2015, Aveiro, Portugal

Agenda

- » Session 1 – Guidance on Model Quality Objectives (MQO)
- » Session 2 – AQ Composite Mapping
- » Session 3 – CCA Forecast
- » Session 4 – CCA Modeling & Monitoring
- » Session 5 – CCA Spatial Representativeness

08:30-09:00	Registration			
09:00-09:30	Introduction			
09:30-10:30	Guidance on MQO		Intercomp. Exercise	
10:30-11:00	Coffee break			
11:00-12:30	AQ Mapping		Intercomp. Exercise	
12:30-14:00	Lunch Break			
14:00-16:00	Forecast Mod & Monit	Benchmarking	Intercomp. Exercise Feedback on Protocol	
16:00-16:30	Coffee Break			
16:30-17:30		SPECIEU		
17:30-18:30	Mod & Monit		Perf. Indicators Modelling protocol	Brainstorming on dynamic evaluation
09:00-10:30		Guidance on traffic emissions		Benchmarking
10:30-11:00	Coffee break			
11:00-13:00	Sp. Represent. Future activities	Future activities Mod & Mod Forecasting	Future activities	Future activities
13:00-14:30	Lunch break			
14:30-17:30	WG overviews, future activities & conclusions			

	WG1
	WG2
	WG3
	WG4
	Common

Guidance Document

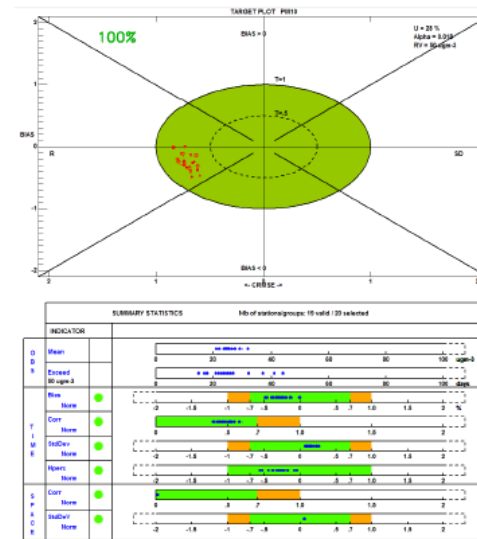
Guidance Document

- » Edited by VITO (Peter Viaene)
- » Cases provided by 7 different modelling teams (CERC, ARPA Emilia Romagna, IRCEL, Univ Aveiro, Univ Brescia, Ricardo AEA, NILU)
- » Reviewed by 15 FAIRMODE experts

Guidance Document on Model Quality Objectives and Benchmarking

Peter Viaene, Stijn Janssen, Philippe Thunis, Cees Cuvelier, Elke Trimpeneers, Joost Wesseling, Alexandra Montero, Ana Miranda, Jenny Stocker, Helge Rørddam Olesen, Cristina Guerreiro, Gabriela Sousa Santos, Keith Vincent, Claudio Carnevale, Michele Stortini, Giovanni Bonafè, Enrico Minguzzi and Marco Deserti

Version 1.1 - April, 2015



Guidance Document

- » First version (V1.0) released during Plenary Meeting February 2015
- » Updated version (V1.1) released in April 2015
 - » NILU Case study
 - » Minor textual changes
- » Available at the FAIRMODE website:
<http://fairmode.jrc.ec.europa.eu/>
 - » WG1 → Related Documents

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

JOINT RESEARCH CENTRE
The European Commission's in-house science service

European Commission > JRC Science Hub

FAIRMODE

Forum for air quality modelling in Europe

[Home](#) [Contact](#)

WG1 - Assesment [view website](#)

Lead: VITO **Co-lead:** JRC **Co-ordinator:** S. Janssen

Assesment

In this WG a methodology to benchmark model performances according to a common scale and common template has been the focus for several years.

In this context, model quality objectives (MQO) based on observation uncertainty have been discussed and the methodology is consolidated in the so-called DELTA tool. Currently the methodology is extensively tested by the FAIRMODE community.

In the coming years, time will be devoted to extend the methodology to

- [About FAIRMODE](#)
- [terms of reference](#)
- [steering committee](#)
- [national experts](#)
- [roadmap](#)
- [strategy](#)
- [Δ - benchmarking tool](#)

Related Documents

- [Draft guidance document on MQO and Benchmarking V1.1 \(April 2015\)](#)
- [MQO in the framework of the FAIRMODE project \(Apr 2014\)](#)
- [MQO Template performance report & DELTA updates \(Mar 2012\)](#)
- [The Delta tool and benchmarking report template \(Apr 2011\)](#)
- [A procedure for air quality models benchmarking \(Feb 2011\)](#)

Content of the Guidance Document

1. VERSION HISTORY	5
2. INTRODUCTION	6
3. BENCHMARKING: A WORD OF CAUTION	7
4. SCOPE AND FOCUS	8
5. OVERVIEW OF EXISTING LITERATURE	9
5.1. Introduction	9
5.2. Literature on how these model performance criteria and model quality objectives are defined.	9
5.3. Literature on the implementation and use of the Delta tool	11

Content of the Guidance Document

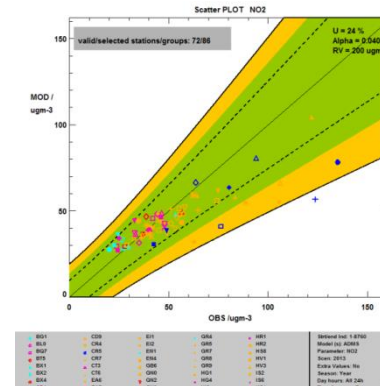
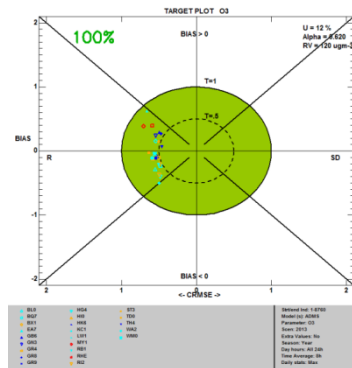
6. MODEL QUALITY OBJECTIVE (MQO)	13
6.1. Statistical performance indicators	13
6.2. Model performance criteria (MPC) and formulation of the model quality objective (MQO)	14
6.3. Additional model performance criteria (MPC) for Bias, R and standard deviation	15
6.4. Observation uncertainty	16
6.4.1. General expression	16
6.4.2. Derivation of parameters for the uncertainty	17
6.5. Open issues	19
7. REPORTING MODEL PERFORMANCE	23
7.1. The proposed template	23
7.1.1. Hourly	23
7.1.2. Yearly average	26
7.2. Open issues	28

Content of the Guidance Document

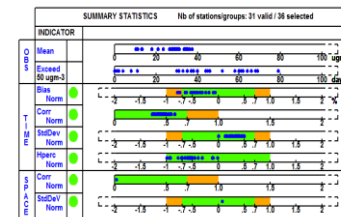
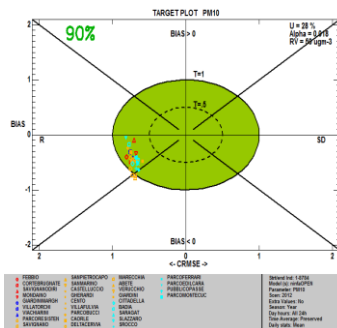
8. EXAMPLES OF GOOD PRACTICE	29
8.1. CERC experience	29
8.2. Applying the DELTA tool v4.0 to NINFA Air Quality System	34
8.3. JOAQUIN Model comparison PM10 NW Europe	38
8.4. UAVR experience with DELTA	43
8.5. TCAM evaluation with DELTA tool	46
8.6. UK feedback Ricardo AEA	48
8.7. Norway feedback NILU	50

Examples of Good Practice

» CERC (Jenny Stocker) → ADMS-Urban application for London

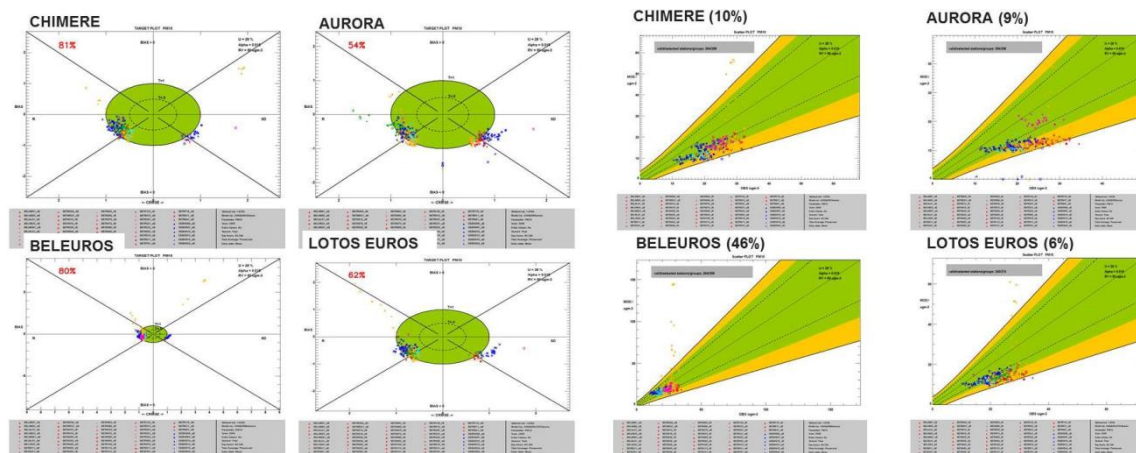


» ARPA Emilia Romagna (Michele Stortini) → NINFA Air Quality System for Northern Italy



Examples of Good Practice

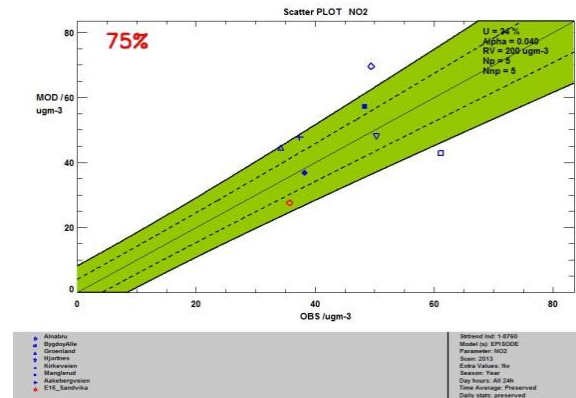
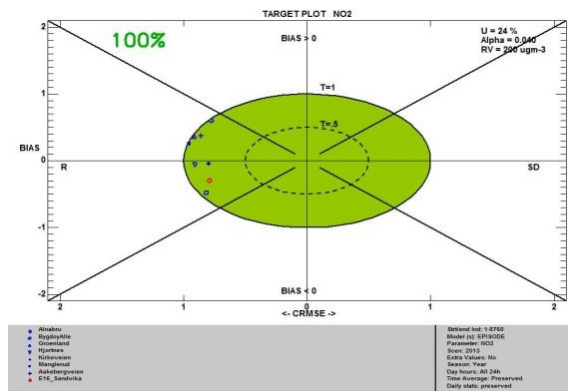
- » IRCEL (Elke Trimpeneers) → JOAQUIN Model comparison for NW Europe



- » UAVR (Alexandra Monteiro) → EURAD-IM, CHIMERE, CAMx, TAPM applications over Portugal and Porto and Lisbon urban areas

Examples of Good Practice

- » UNIBS (Claudio Carnevale) → TCAM evaluation over Northern Italy
- » Ricardo AEA (Keith Vincent) → PCM results as part of the annual AQ compliance for the UK
- » NILU (Gabriela Sousa Santos and Cristina Guerreiro) → urban air dispersion model EPISODE for Oslo



Joint publication

- » Idea of a joint publication based on the examples of good practice
- » Many interested parties so far
- » Work for Autumn 2015
- » Someone interested to take the lead (and be first author)?

Open Issues

- » 6.5.1. Data assimilation → **CCA M&M**
- » 6.5.2. Station representativeness → **CCA SR**
- » 6.5.3. Handling changes in observation data uncertainty → **Joost Wesseling**
- » 6.5.4. Performance criteria for high percentile values → **Elke Trimpeneers**
- » 6.5.5. Data availability → **Elke Trimpeneers**
- » 6.5.6. MPC fulfilment criteria: improved statistical basis for the MQO → **Joost Wesseling**
- » 6.5.7. Application of the procedure to other parameters → **any new feedback?**