



Informing you on ambient air quality  
in the Belgian Regions

## Flanders



VLAAMSE MILIEUMAATSCHAPPIJ

[www.vmm.be](http://www.vmm.be)

## Brussels



[www.ibgebim.be](http://www.ibgebim.be)

## Wallonia



[airclimat.wallonie.be](http://airclimat.wallonie.be)

# Belgium feedback MQO

# Outline

- 1. BE Feedback on the guidance model quality objectives**
- 2. Model quality and objectives threshold exceedances**

# BE Feedback on the guidance MQO

Minimum **data availability** should be **in line with the data coverage** as set in the **IPR (2011/850/EU)** and the guidance:

‘The data quality objective for minimum data capture to be used for compliance checking should therefore be taken as **85%** instead of 90% for all **measurements**, with the exception of ozone measurements during the winter, where the data quality objective for minimum data capture should be taken as 70% instead of 75%’

Data availability (MQO) is **still set to 75 %**

Possibility that **measurement data (capture) not fit for compliance checking used for validation models**

## **BE Feedback on the guidance MQO**

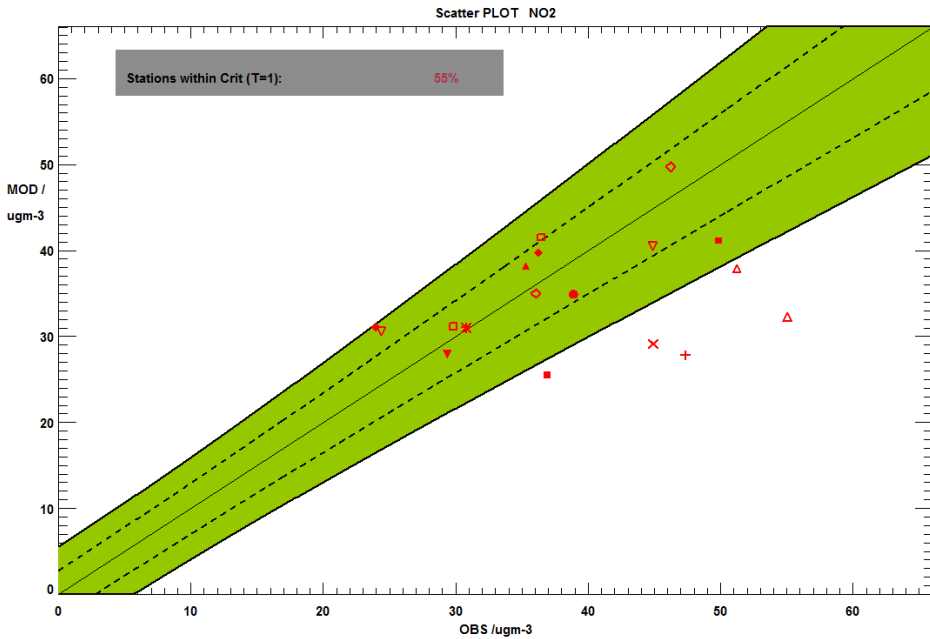
**Station representativeness: no objective criteria yet (often : expert opinion )**

**Important impact on attaining criteria of the MQO**

# SCATTER PLOTS NO2 ANNUAL MEAN

## RIO-IFDM

all stations **55 %**

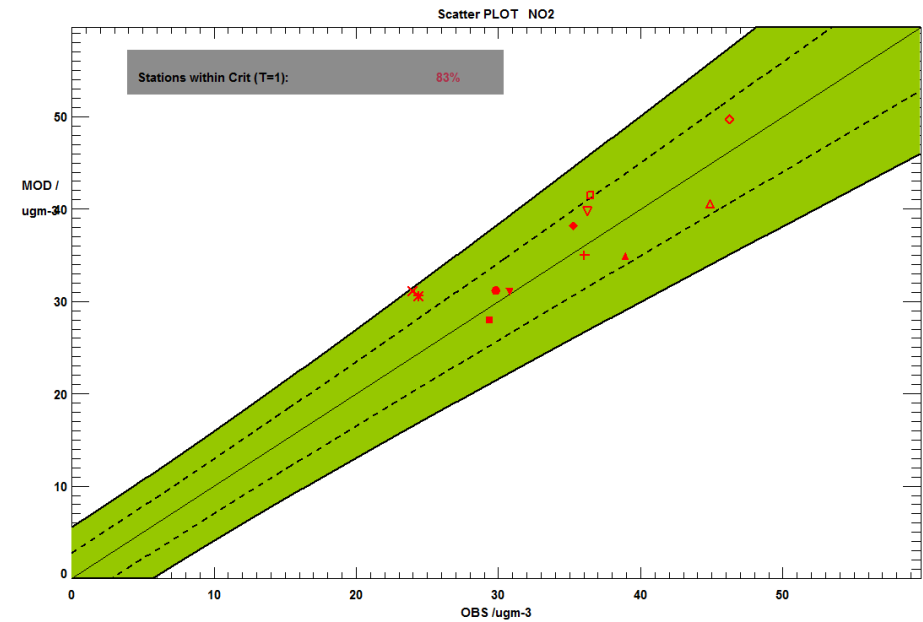


Info about plot data---

◇ AT29	◇ GN27	Site/nd Ind: 1-8780
△ AT30	◇ GN28	Model (s): RIOIFDM
△ AT31	× GN29	Parameter: NO2
▽ AT32	◇ GN30	Scen: 2013
▽ AT33	◇ GN31	Extra Values: No
▽ AT34	△ GN32	Season: Year
▽ BB26	◇ OS08	Day hours: All 24h
▽ BB26	◇ OS09	Time Average: Preserved
▽ BB27	◇ OS10	Daily stats: preserved

## RIO-IFDM

without street canyon measurements **83 %**



Info about plot data---

◇ AT29	◇ GN31	Site/nd Ind: 1-8780
△ AT30	◇ OS08	Model (s): RIOIFDM
△ AT32	◇ OS09	Parameter: NO2
▽ AT33		Scen: 2013
▽ BB26		Extra Values: No
▽ BB26		Season: Year
▽ GN27		Day hours: All 24h
▽ GN28		Time Average: Preserved
▽ GN30		Daily stats: preserved

## 2. Model quality and objectives threshold exceedances

**ATMOSYS: PM10 daily mean 2009 model comparison 3 models:**

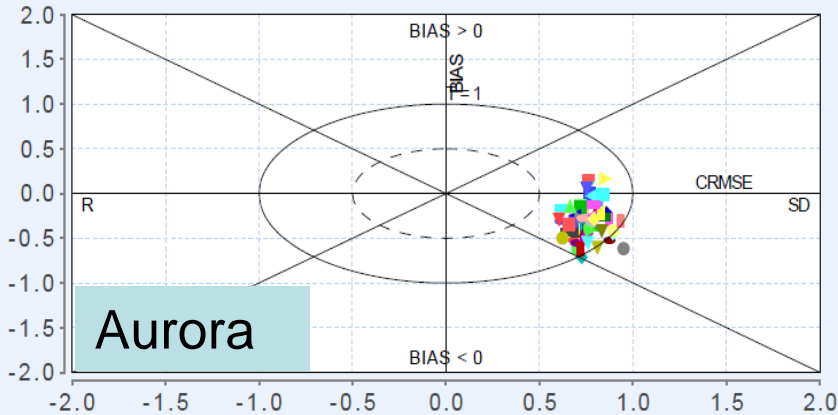
- Aurora (Eulerian model)
- Aurora data assimilated  
(-> + optimal interpolation)
- RIO (*intelligent* interpolation)



# TARGET PLOTS PM10 daily mean

## Target plot

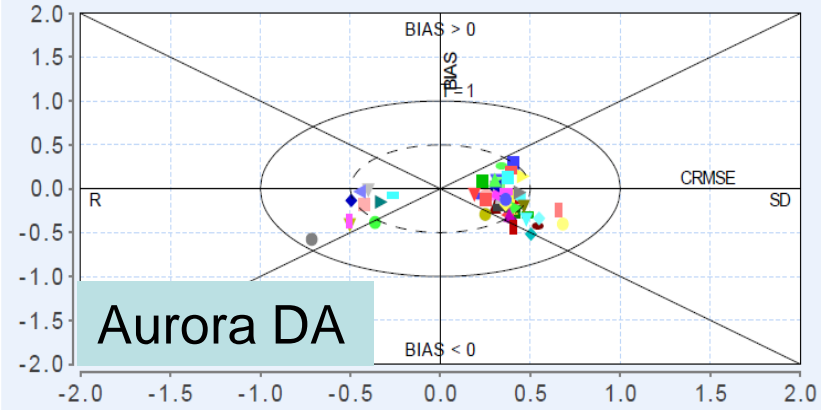
Stations within crit ( $T=1$ ): 93.22%  
PM10, Daily average, 01-01-2009-01-01-2010



- 40AB01 ● 40AB02 ▲ 40AL01 ◆ 40GK06 ■ 40GK09 ▼ 40HB23
- 40ML01 ► 40MN01 ■ 40OB01 ◄ 40RL01 ■ 40SZ02 ● 41B011
- ▲ 41MEU1 ◆ 41N043 ■ 41R001 ▼ 41R012
- 42N016 ◄ 42N035 ■ 42N045 ● 42R811
- ▼ 42R815 ● 42R832 ► 42R832
- 43N063 ● 43N066 ▲ 43N070 ◆ 43N100
- 43N113 ■ 43N121 ◄ 43R222
- ◆ 43R223 ■ 43R240 ▼ 44N052
- ◄ 44R701 ■ 44R710 ● 44R710
- 45R501 ▼ 45R502 ● 45R510 ► 45R510

## Target plot

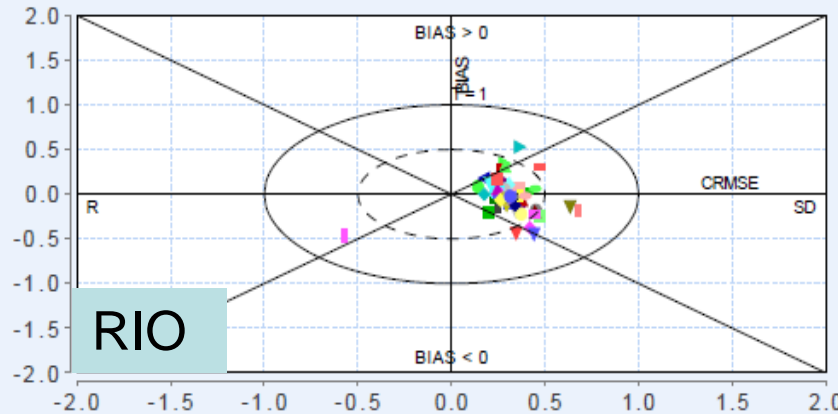
Stations within crit ( $T=1$ ): 100%  
PM10, Daily average, 01-01-2009-01-01-2010



- 40AB01 ● 40AB02 ▲ 40AL01 ◆ 40GK06 ■ 40GK09 ▼ 40HB23
- 40ML01 ► 40MN01 ■ 40OB01 ◄ 40RL01 ■ 40SZ02 ● 41B011
- ▲ 41R012 ● 41W0L1 ► 42M802
- 42N054 ▲ 42R020 ◆ 42R801
- 42R841 ■ 43H201 ◄ 43M204
- 43N073 ■ 43N085 ▼ 43N093
- 43N132 ■ 43R201 ● 43R221
- 4M705 ● 44N012 ► 44N029
- 4R731 ▲ 44R740 ◆ 44R750
- 5R511 ■ 45R512

## Target plot

Stations within crit ( $T=1$ ): 100%  
PM10, Daily average, 01-01-2009-01-01-2010

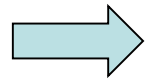


- 40AB01 ● 40AB02 ▲ 40AL01 ◆ 40GK06 ■ 40HB23 ▼ 40ML01
- 40MN01 ► 40OB01 ■ 40RL01 ◄ 40SZ02 ■ 41B011 ● 41MEU1
- ▲ 41R001 ◆ 41R012 ■ 42M802 ▼ 42N016 ● 42N035 ► 42N045
- 42N054 ◄ 42R020 ■ 42R801 ● 42R811 ▲ 42R815 ◆ 42R832

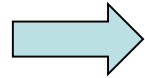


**assessment modelled/measured  
exceedances:  
PM10 daily mean > 50  $\mu\text{g}/\text{m}^3$**

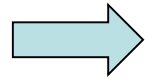
**considering all stations 2009**



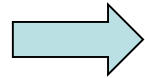
**measured**



**modelled AURORA**

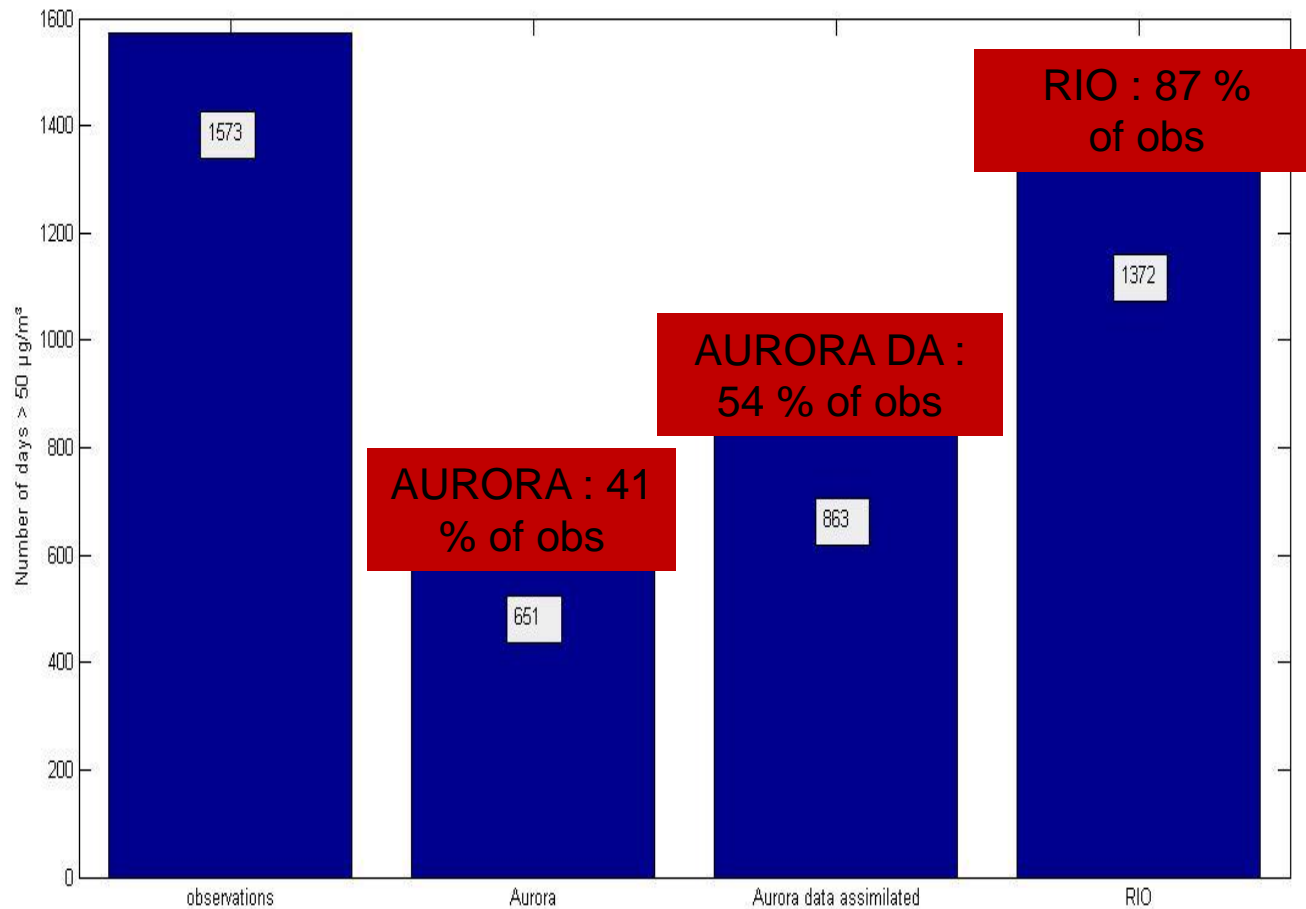


**modelled AURORA DA**



**modelled RIO**

# PM10 daily mean exceedances for all monitoring stations



## 2. MQO performance criteria for high percentiles values : is my model able to reproduce extreme events ?

**JOAQUIN : PM10 daily mean 2009 regional model comparison 4 models:**

**-Chimere**

**-Beleuros**

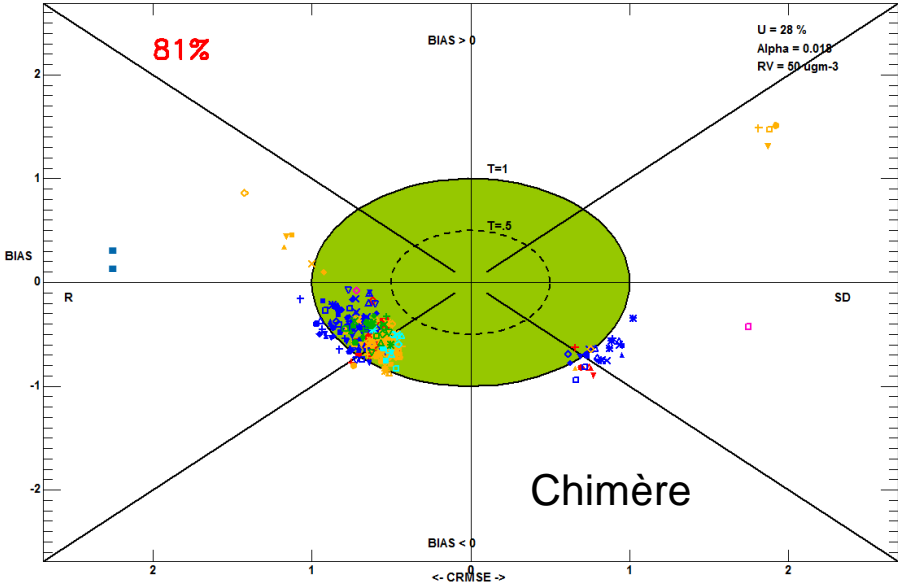
**-Lotoseuros**

**-Aurora**

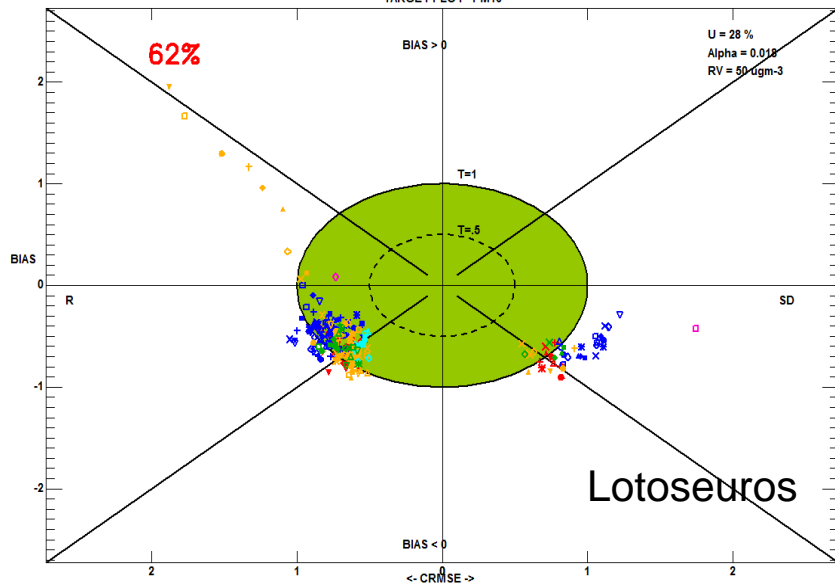
**JOAQUIN**



TARGET PLOT PM10



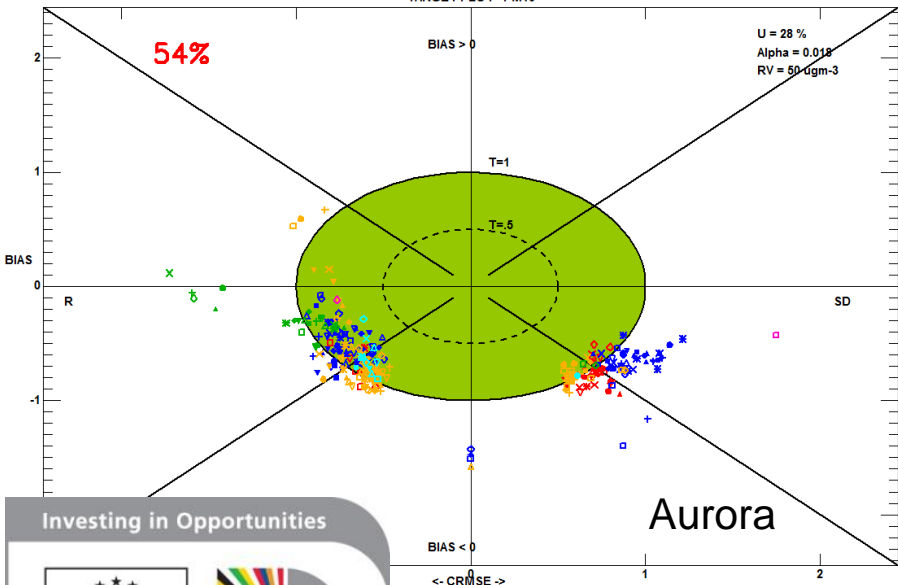
TARGET PLOT PM10



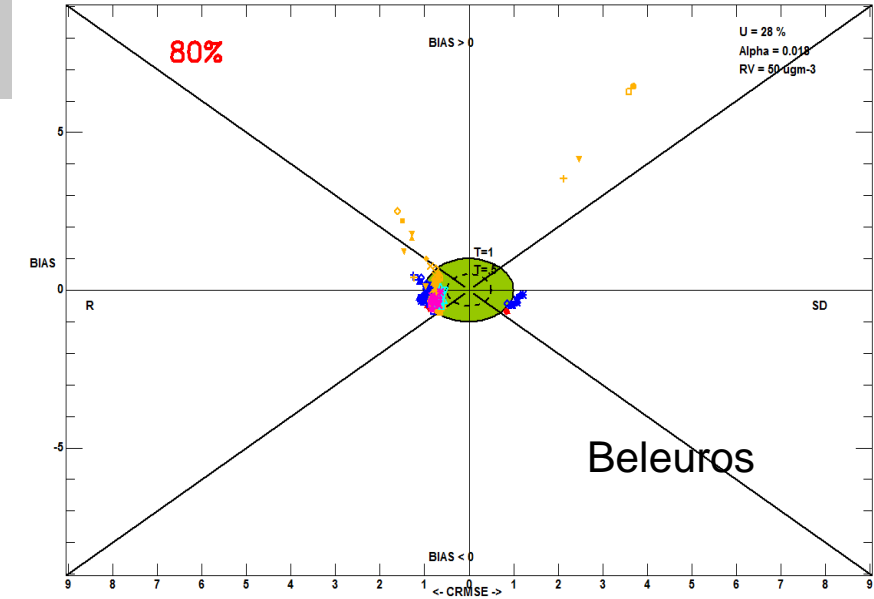
- |              |              |              |              |              |                           |
|--------------|--------------|--------------|--------------|--------------|---------------------------|
| • BELAB01_sB | • BETM204_sB | • BETN063_rB | • BETN132_rB | • BETR710_sB | SiteInd: 1-8760           |
| • BELAB02_sB | • BETMEU1_sB | • BETN066_rB | • BETR012_sB | • BETR011_sB | Model (s): JOAQUINChimere |
| • BELAL01_sB | • BETN012_rB | • BETN070_sB | • BETR201_uB | • BETR041_sB | Parameter: PM10           |

- |              |              |              |              |              |                            |
|--------------|--------------|--------------|--------------|--------------|----------------------------|
| • BELAB01_sB | • BETM204_sB | • BETN063_rB | • BETN132_rB | • BETR710_sB | SiteInd: 1-8760            |
| • BELAB02_sB | • BETMEU1_sB | • BETN066_rB | • BETR012_sB | • BETR011_sB | Model (s): JOAQUINBeleuros |
| • BELAL01_sB | • BETN012_rB | • BETN070_sB | • BETR201_uB | • BETR041_sB | Parameter: PM10            |

TARGET PLOT PM10



TARGET PLOT PM10



- |              |              |              |              |
|--------------|--------------|--------------|--------------|
| • BETN132_rB | • BETN062_rB | • BETN132_rB | • BETR710_sB |
| • BETR012_sB | • BETN066_rB | • BETR012_sB | • BETR811_sB |
| • BETR201_uB | • BETN070_sB | • BETR221_uB | • DEBW006_uB |
| • BETR222_sB | • BETN088_rB | • BETR222_sB | • DEBW007_uB |
| • BETR002_rB | • BETN093_rB | • BETR502_sB | • DEBW010_sB |
| • BETR010_sB | • BETN100_rB | • BETR510_sB | • DEBW013_uB |
| • BETR011_sB | • BETN052_sB | • BETR511_sB | • DEBW019_uB |
| • BETR701_rB | • BETN121_rB | • BETR701_uB | • DEBW024_sB |

- |              |              |              |              |
|--------------|--------------|--------------|--------------|
| • BETM204_sB | • BETN062_rB | • BETN132_rB | • BETR710_sB |
| • BETMEU1_sB | • BETN066_rB | • BETR012_sB | • BETR811_sB |
| • BETN016_sB | • BETN070_sB | • BETR221_uB | • DEBW006_uB |
| • BETN029_rB | • BETN088_rB | • BETR222_sB | • DEBW007_uB |
| • BETN035_sB | • BETN093_rB | • BETR502_sB | • DEBW010_sB |
| • BETN045_sB | • BETN100_rB | • BETR510_sB | • DEBW013_uB |
| • BETN052_sB | • BETN113_rB | • BETR511_sB | • DEBW019_uB |
| • BETN054_sB | • BETN121_rB | • BETR701_uB | • DEBW024_sB |

SiteInd: 1-8760  
Model (s): JOAQUINBeleuros  
Parameter: PM10  
Scen: 2009  
Extra Values: No  
Season: Year  
Day hours: All 24h  
Time Average: Preserved  
Daily stats: Mean

Investing in Opportunities

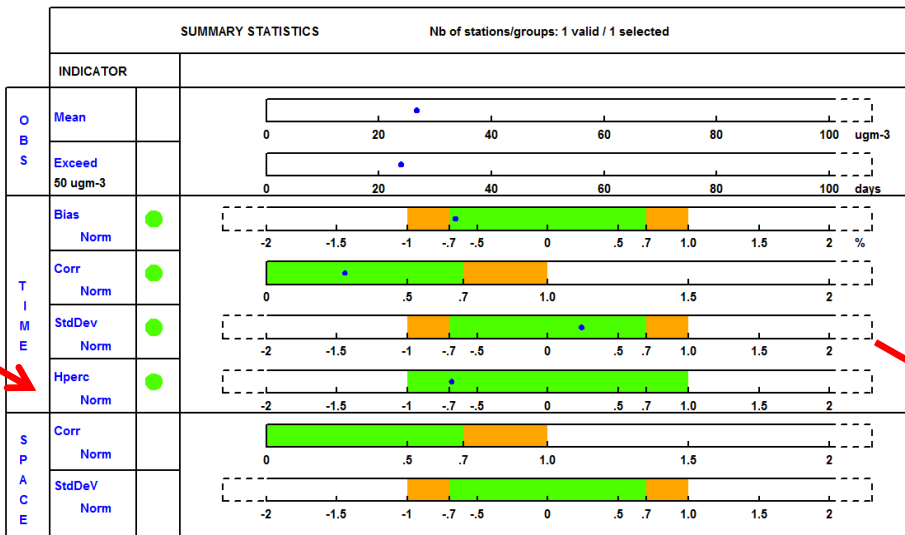


This project has received European Regional Development Funding through INTERREG IV B.

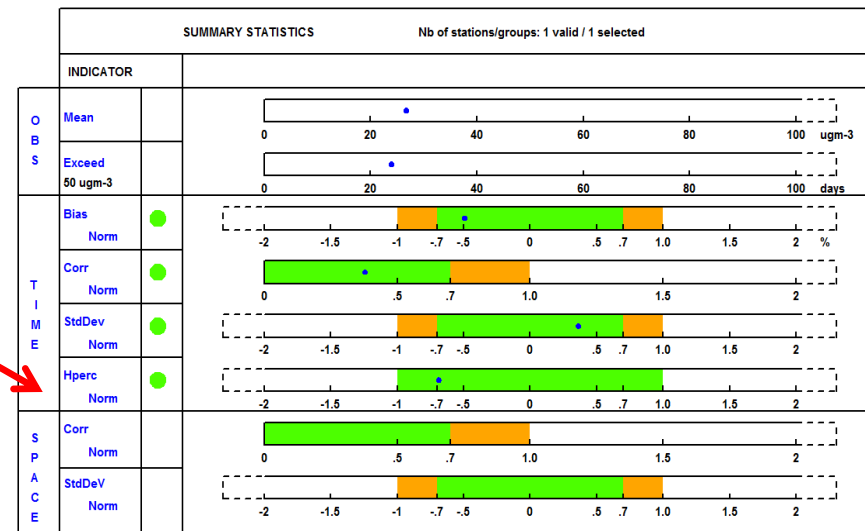
INTERREG IV B



# 2. Considering suburban backgroundstation in Belgium BETR012 complies MQO (90.4 perc)



Chimère



Beleuros



Corresponding Indicator  
Criteria  
Criteria  
Criteria



■ Performance Criteria satisfied  
■ Performance Criteria satisfied; Error dominated by corresponding Indicator  
● TIME: >90% of stations fulfills the Performance Criteria  
● SPACE: Dot fulfills the Performance Criteria  
● TIME: <90% of stations fulfills the Performance Criteria  
● SPACE: Dot does not fulfill the Performance Criteria



# Background monitoring site in Belgium BETR012 measured daily PM10 (50 µg/m<sup>3</sup>)

24 exceedances measured



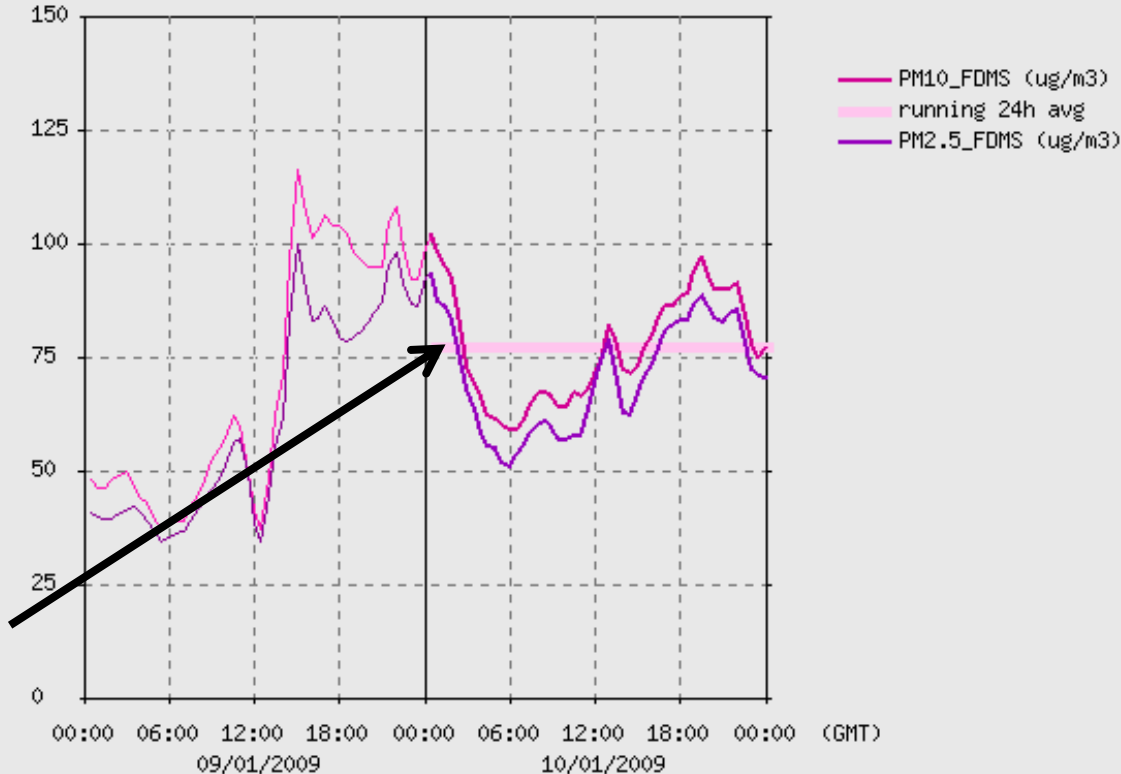
# 10/01/2009: smogday : BETR012 daily PM10 (>70 µg/m<sup>3</sup>)



Daily

evolution of 1/2 hour PM measurements :  
41R012 (Ukkel)

10/01/2009



Daily average  
(microgram/m<sup>3</sup>)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 70
- 71 - 100
- 101 - 150
- 151 - 200
- 201 - MAX

- measuring station :  
filled color represents  
the measured concentration
- data not available

met

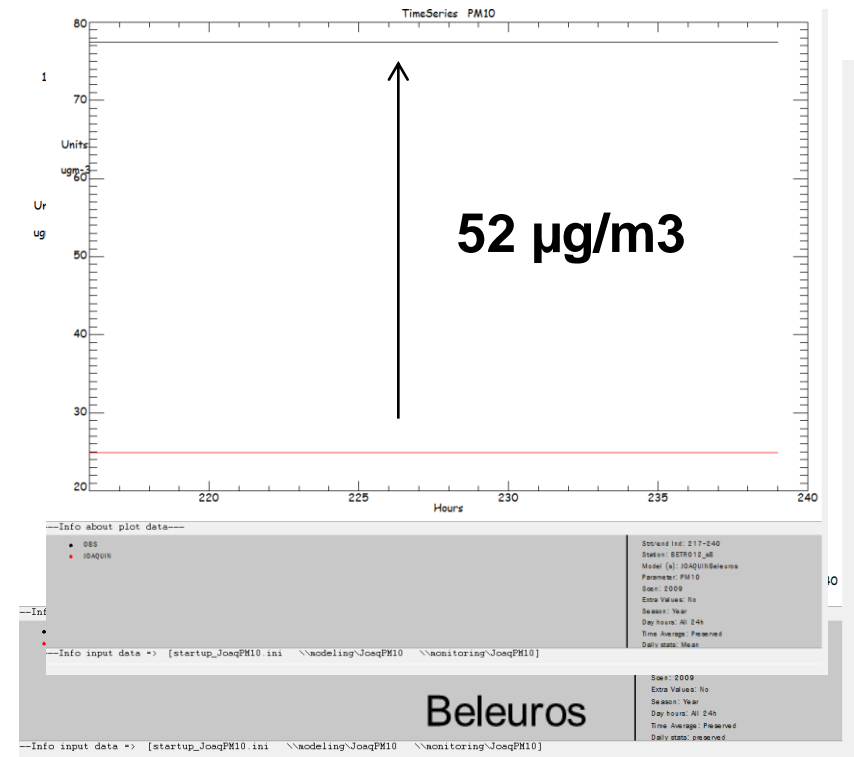
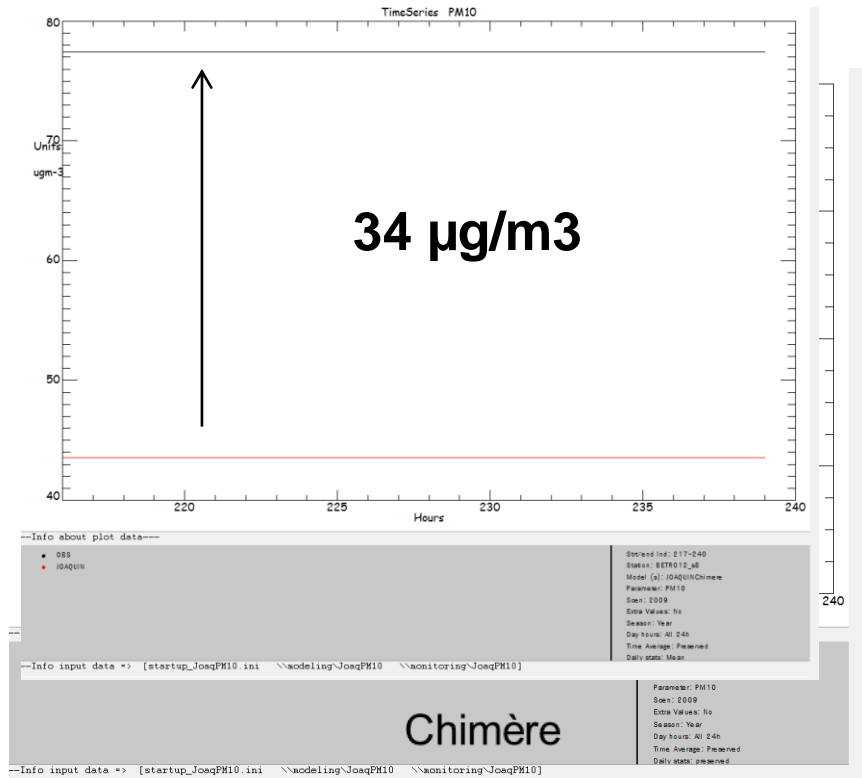
6.9

Max T : 0.0 °C

Min T : -10.3 °C

# 10/01/2009: smogday : BETR012

## Daily mean PM10 (>70 $\mu\text{g}/\text{m}^3$ )





# Questions and conclusions

1. **MQO High percentile values highly affected by the measurement uncertainty: are the MQO severe enough ?**
2. **Not obvious to explain** (to policy makers) that models can comply MQO for daily/hourly averages but not for yearly averages
3. Possibility to harmonise data capture IPR and data capture Deltatool ?

# Thank you for your attention !

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