

*Air Quality Assessment for Europe: from local to continental scale*

# AIR4EU

**TNO Environment, Energy and  
Process Innovation**



# I) Introduction

- AIR4EU is a 6<sup>th</sup> FP project "in support of the CAFE-programme"
- AIR4EU is a Specific Targeted Research Project
- The aim is to provide recommendations on integrated AQ assessment for all relevant temporal and spatial scales
- Integrated means: by monitoring and modelling
- Focus is on cities

# **AIR4EU started by 1-1-2004 and is a 3 year project**

*Its end products will be:*

- **A guidance document on best practices for the combined use of monitoring and modelling**
- **Maps of Air Quality as examples**

**Scales covered are from hot spots untill continental scales,  
and from hourly to annual**

**Covered are the EU-Directive species: PM 10 ( 2.5), NO<sub>2</sub>, O<sub>3</sub>,  
CO, SO<sub>2</sub>, Pb, Benzene**

# The project team consists of 6 research partners and 8 user partners

## *Research Partners:*

- TNO
- NILU
- Aristotle Univ. Thessaloniki
- Univ of Stuttgart
- Univ of Hertfordshire
- Univ of Aveiro

*User partners:*

- Paris
- Rome
- London + UK
- Prague
- Athens
- Rotterdam + Rijnmond area
- Oslo

**In the project: Major role for the users**

**Close Cooperation with City-Delta, Street Emission Ceilings,  
MERLIN and many others**

## II) Structure of the project

The following tasks will be performed- and have partly started:

- **Identification and analysis of the user needs:**
  - What is current practice in AQ assessment ?
  - What are the major problems?
- **Review and analysis of current monitoring and modelling at hotspots, at urban and at regional scale, and for all relevant time-scales**

## Special attention to:

- Emissions (anthropogenic, biogenic and natural) and meteorological input data
- Determination of uncertainties for monitoring and modelling (including model validation)
- Determination of representativeness of monitoring and model results
- Scale interactions in the modelling approach
- Data assimilation

# The review and analysis will lead to:

First recommendations for AQ assessment by monitoring and modelling

*Then to test these first recommendations:*

- Formulation of a protocol for case studies
- Performing case studies for all cities, using the first recommendations, followed by improving the recommendations based on the results of the test

## Finally:

- Formulation of the guidance document with the final recommendations
- Preparing maps of air quality as examples

9th Harmonisation Conference  
Garmisch-Partenkirchen

**AIR4EU is more on reviewing methods for monitoring and modelling, then on developing new methods**

**AIR4EU is more on defining the current AQ, the state of the environment, then on Action Plans and scenario's**

**The major new issue is the integration of monitoring and modelling by data-assimilation techniques  
(AIR4EU is not a model Olympics exercise)**

### III) Some first results, ideas

- A first analysis on current practice of AQ-assessment by the cities showed:  
The problems faced can/should be distinguished in general problems and city-specific problems

#### *General Problems:*

- Definition of Boundary Conditions (Scale interactions)
- Appropriate siting of monitors, including spatial representativeness
- Different model results when using different models

# City specific problems

## *Examples:*

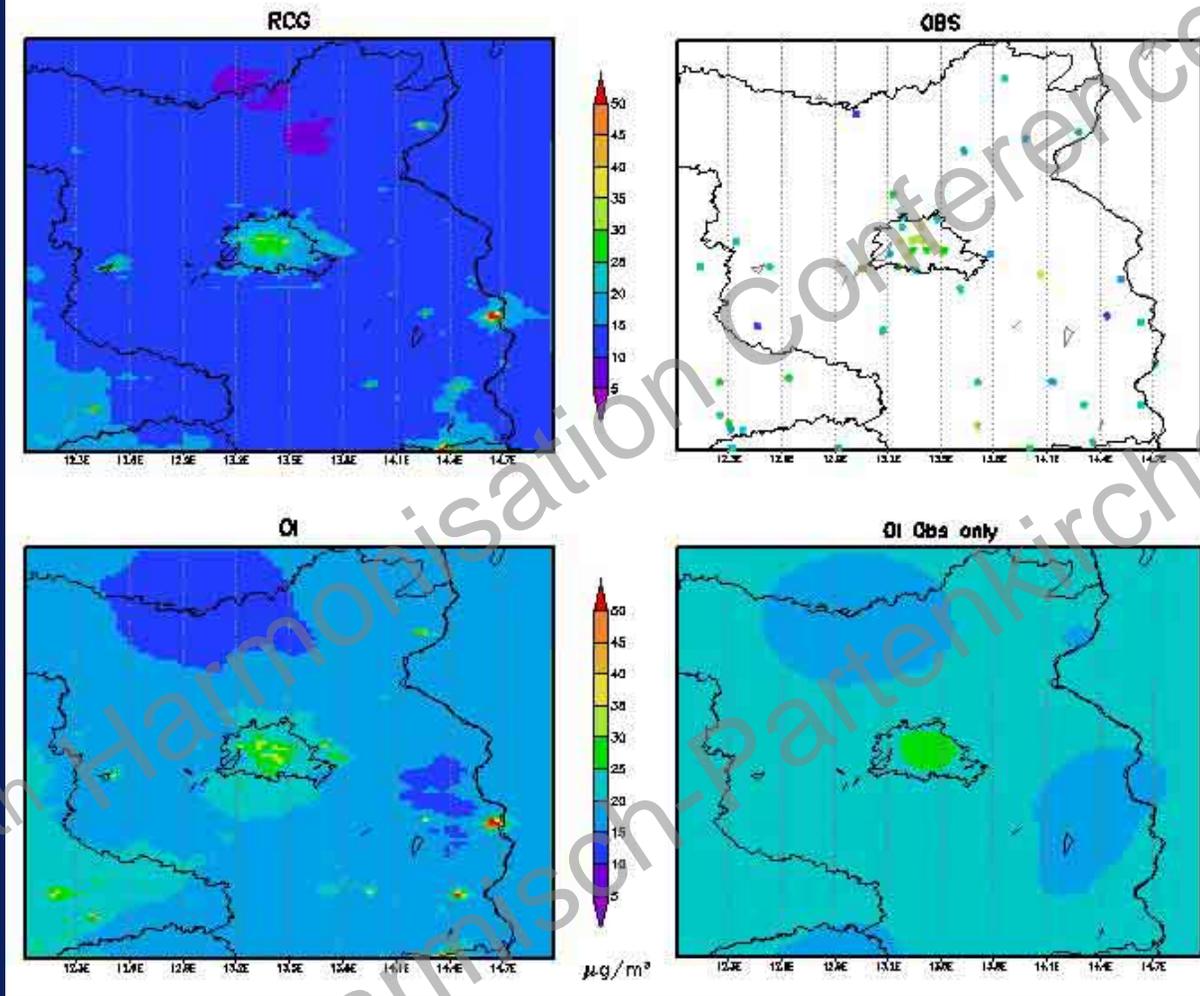
- **Mopeds in Rome**
- **Orography in Athens**
- **Studded tyres and woodburning in Oslo**

9th Harmonisation Conference  
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## First ideas:

- Using ensemble modelling , instead of one model
- Solutions for problems should be generic (general population exposure), and not focussed on a local exceedance only
- Possible use of Optimal Interpolation: example Berlin:

# PM10 MEAN 1999 BERLIN/BRB



Jahresmittelwert der PM10-Konzentration für Berlin\Brandenburg aus der kleinräumigen Modellrechnung (links, oben), der OI-Methode aus Modell und Beobachtung (links unten) und der Beobachtung (rechts oben) und der OI-Methode ausschließlich aus Messungen für das Jahr 1999.

## IV) Summary

Hope to be able to show real results in the near future

Hope that you got interested in AIR4EU

For more information:

[www.mep.tno.nl/AIR4EU\\_test/index.html](http://www.mep.tno.nl/AIR4EU_test/index.html)

*Thank you for your attention*