Scientific publication

Contents

2 papers?

How to organize the writing?

Journal?

Title possibilities

- How to compute long-term average air pollutant concentration map in urban hot spots using dispersion models? An intercomparison exercise for a case study in Antwerp
- How good are the modelling applications for computing long-term average air concentration pollutant map in urban hot spots? An intercomparison exercise for a case study in Antwerp
- Intercomparison exercise of modelling applications for computing long-term average air pollutant concentration map in urban hot spots.
- The FAIRMODE CT4: Intercomparison Exercise of Urban Microscale Models and Methodologies for deriving annual pollutant concentrations distribution with very high spatial resolution

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Introduction

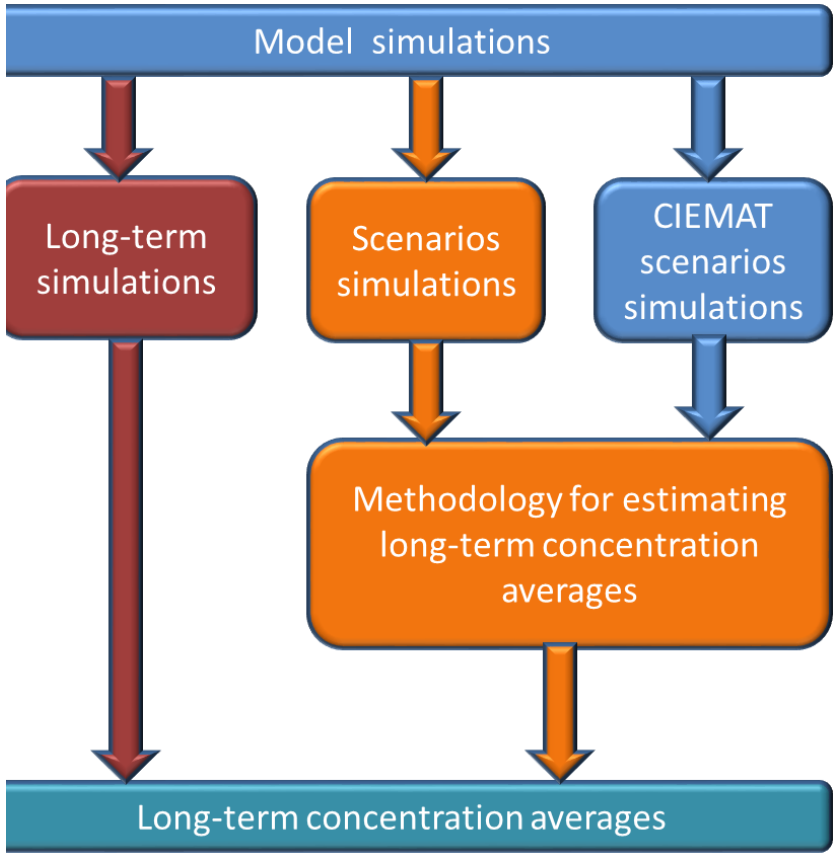
- State of art of microscale urban modelling
- Short description of FAIRMODE
- Short description of WG4 Microscale Modelling
- Motivation (related to AAQD, need of good urban microscale modelling tools for AQ assessment, etc)
  - **Motivation and the novelties of this study**

Objectives

- In the framework of FAIRMODE, an intercomparison exercise of high spatial resolution air quality modelling applications has been carried out for an urban district of Antwerp (Belgium). **The objectives of this exercise** are:
- To describe the main approaches/methodologies for computing long-term average air pollutant concentration maps in urban hot spots
- To find out what methodologies provides more reliable long-term average air pollutant concentration maps in urban hot spots focused on air quality assessment following AAQD and their limitations.
- Applications of these methodologies to estimate air quality standard exceedance area and spatial representativeness area of air quality stations at high spatial resolution in real urban hotspots.

Methodology

- Description of the modelling domain and measuring campaign data
- Passive Samplers
- Description of the modelling applications – 10 groups participating:
  - ENEA, VITO, NILU, RICARDO, CERC, University of West Macedonia (UOWM), Széchenyi István University (SZE), UPM, AIR-D and CIEMAT
- Models and methodologies: How detailed information? Model names?
- Ways of participating in the exercise

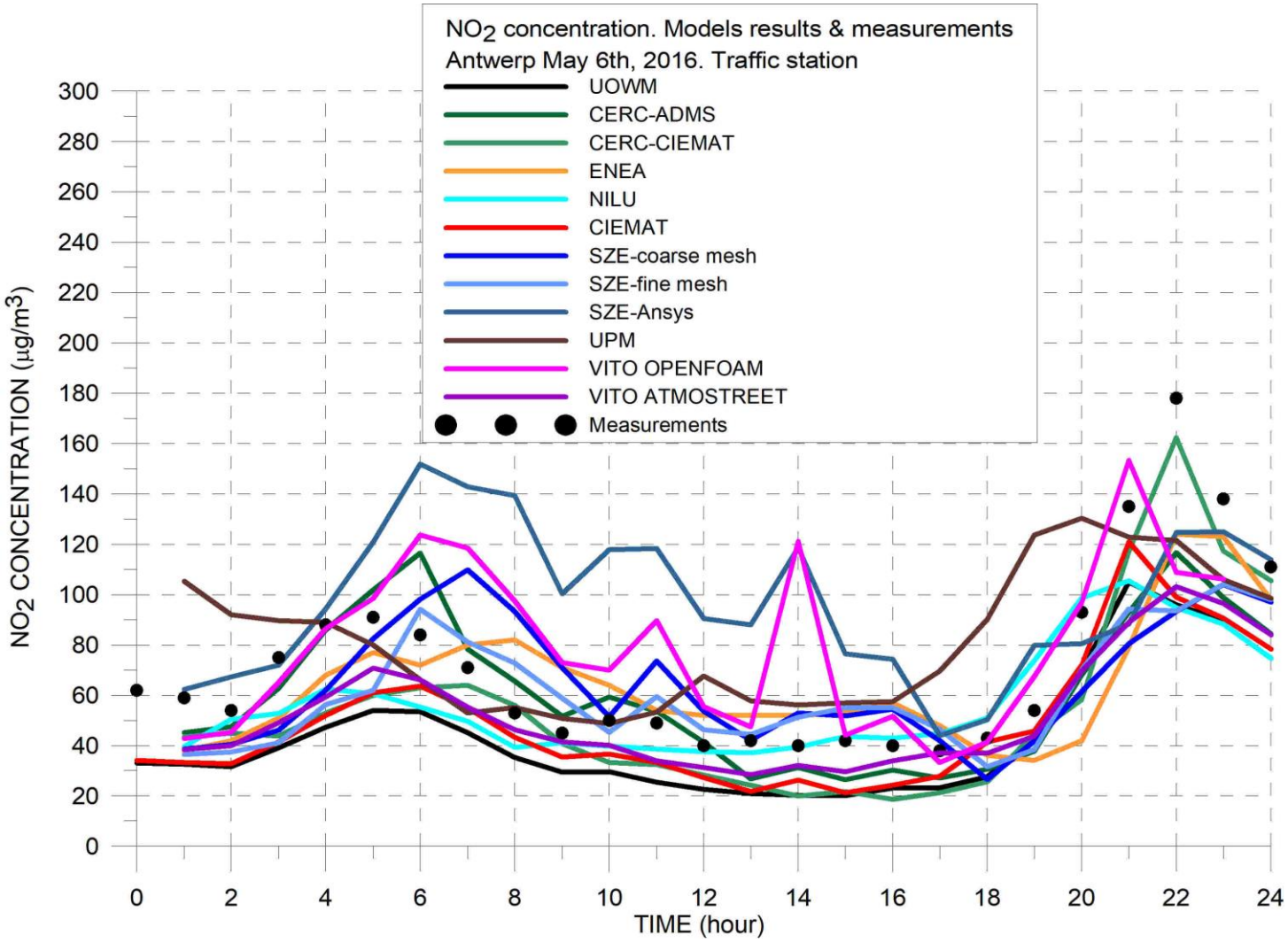


Description of the intercomparison exercise

- **Step 1:** To simulate one day from the one-month passive sampler campaigns. May 6th, 2016 selected to simulate. The model results would be compared with AQ stations data. Models results would be intercompared.
- **Step 2:** To compute averages (concentration maps) for the campaign period (April 30 – May 28). Comparison with passive samplers' data and AQ station data Intercomparison among models results (2D maps).
- **Step 3:** To compute averages (concentration maps) for 2016 year applying the methodologies of each group. Intercompare results from every methodology (2D maps).
- **Step 4:** To intercompare the NO_2 annual limit exceedance areas computed from the obtained NO_2 annual concentrations maps coming out of the modelling applications.
- **Step 5:** To intercompare the representativeness areas of the two air quality stations computed from the obtained NO_2 annual concentrations maps coming out of the modelling applications.

Results

- **Step 1: Hourly data for a day with high NO2 concentration**
  - Traffic station
  - Background station
- **Step 2: Monthly data of NO2 concentrations**
  - **Concentration**
  - **Gradients**
- **Step 3: Annual NO2 concentration maps**



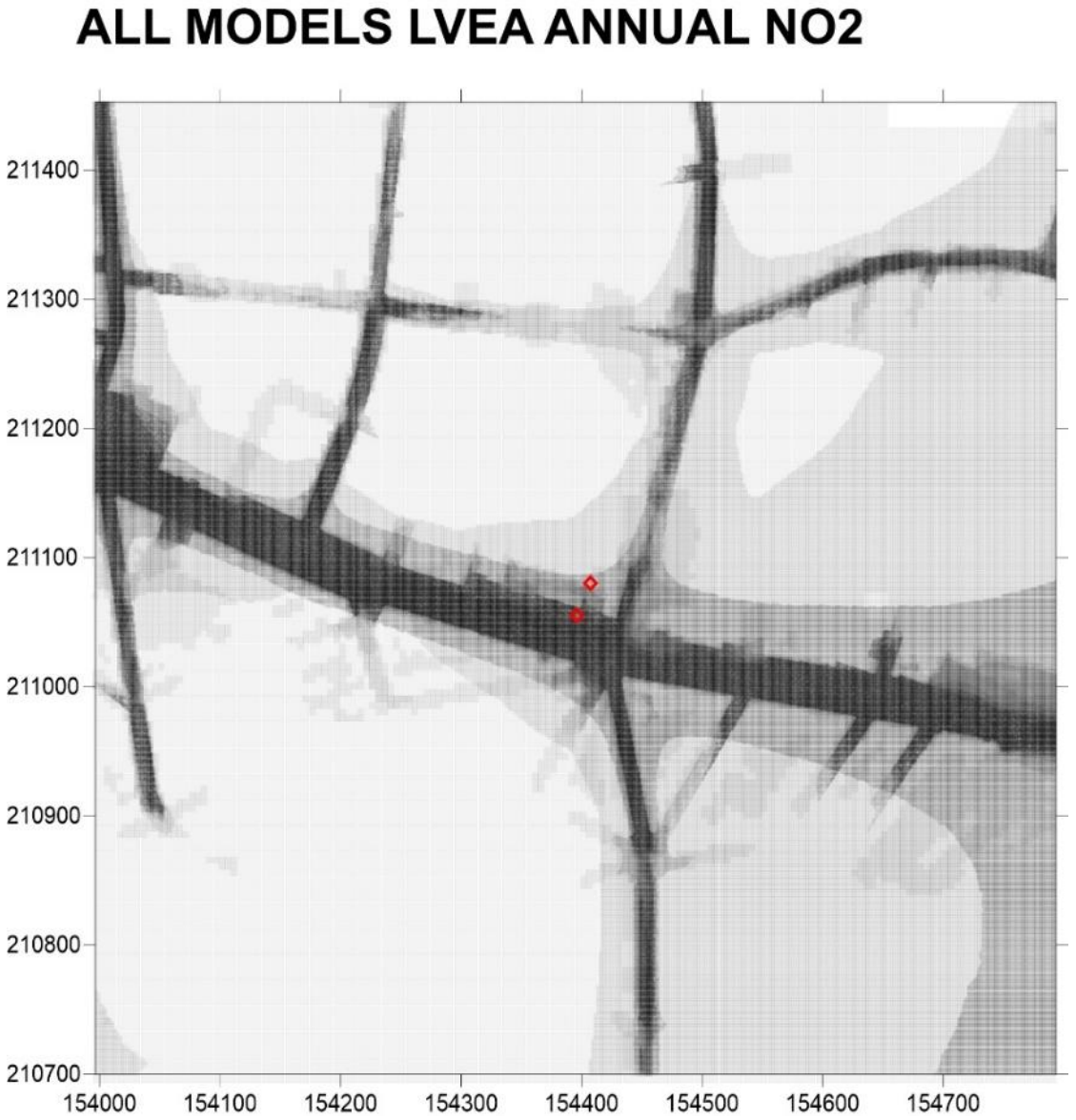
Results: discussion

- **What is the impact of the emissions data?** *Lack of emission data in some streets strongly influences on the CFD model performance but no in NOCFD model one*
- **What type of models are more suitable?** *Gaussian, NO Gaussian?*
- **How many simulations (scenarios) could be needed to provide good results?** *4, 8, 16, 32*
- **Long term simulations versus methodologies based on limited scenarios?** *Analysis of last SZE results*
- **Other questions?** *Chemistry?*

Results

- **<u>Step 4:</u> NO2 annual limit value Exceedances**
- **<u>Step 5:</u> Spatial representativeness of air quality stations**

Should we go for a 2nd paper on this topic?



Discussion & Conclusions

- Timeline?
- Contributions from each partner?
  - We will send to all participants a table to be filled with the description of their model and methodologies. *In the next weeks, months.*
  - We also have all this information but probably it would be good that it is updated.