European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir*

COST Action TD1105

INTERNATIONAL WG1-WG4 MEETING on

New Sensing Technologies and Modelling for Air-Pollution Monitoring

Institute for Environment and Development - IDAD

Aveiro, Portugal, 14 - 15 October 2014

Action Start date: 01/07/2012 - Action End date: 30/06/2016 - Year 3: 2014-15 (*Ongoing Action*)

AIR QUALITY MODELLING IN LATVIA:

Challenges and Failures

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WG3, SIG4, Gender Balance

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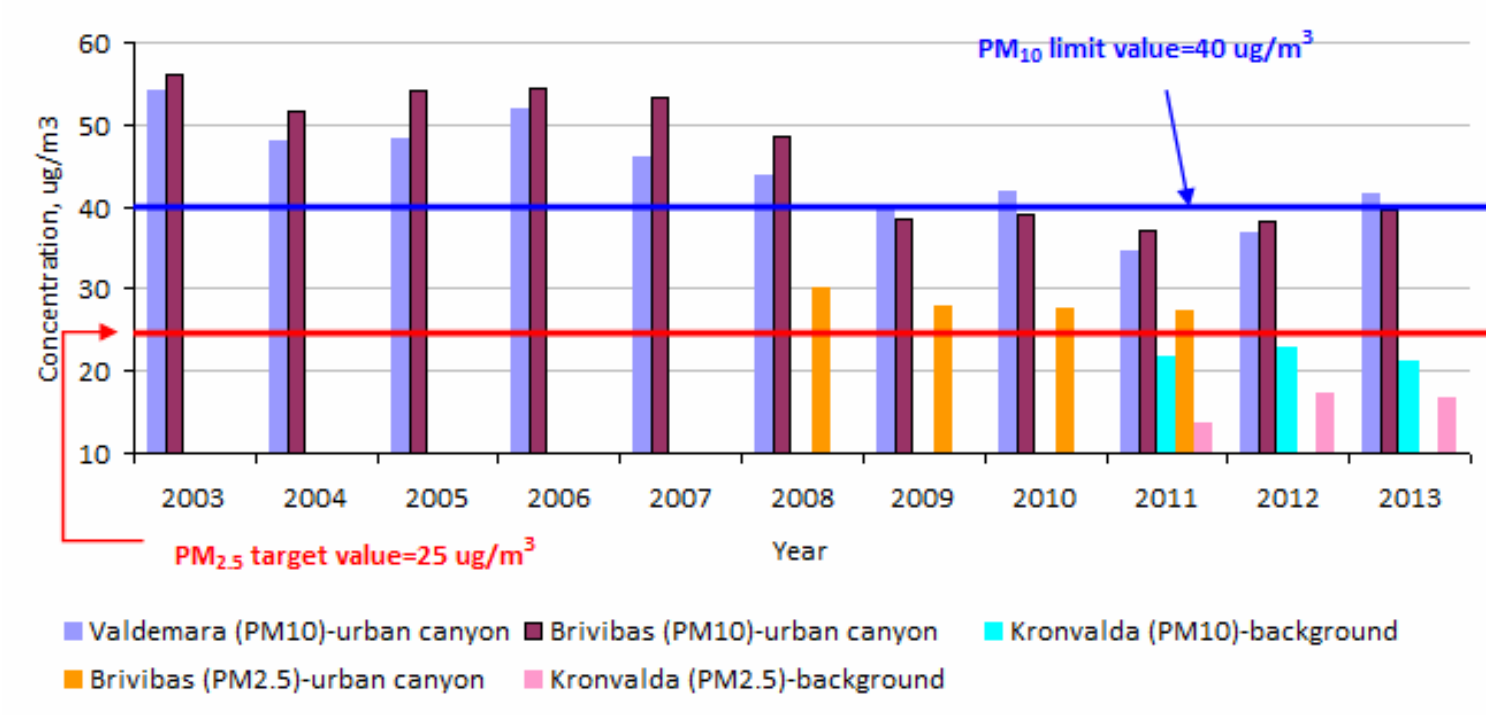
Main topics covered ....

- … why should we do modelling
- … what kind of models are used (from my experience) and processes covered
- … what we are expecting
- … uncertainties, lack of data
- … future development as conclusions

… why should we do modelling?



(1) modelling is much cheaper than monitoring;

(2) models could be used for spatial assessment of various pollutants;

(3) <u>models are often effectively used for planning purposes;</u>

(4) modelling is exercise for policy makers.

… because

Well known link between health effect & expected life time!

Money loss because of lost working days.

EU Commission claiming procedure for

400 000 EUR!!!

… but we are not alone, the same problem exist in another 17 countries.

Models, sources and processes

- Gaussian dispersion model
- Stationary (point, area) sources – public reports on annual activity
- Traffic sources – video counting and flow statistical distribution
- Totally more than 700 sources evaluated
- Exhaust and resuspension emissions – Coppert methodology, AP-42

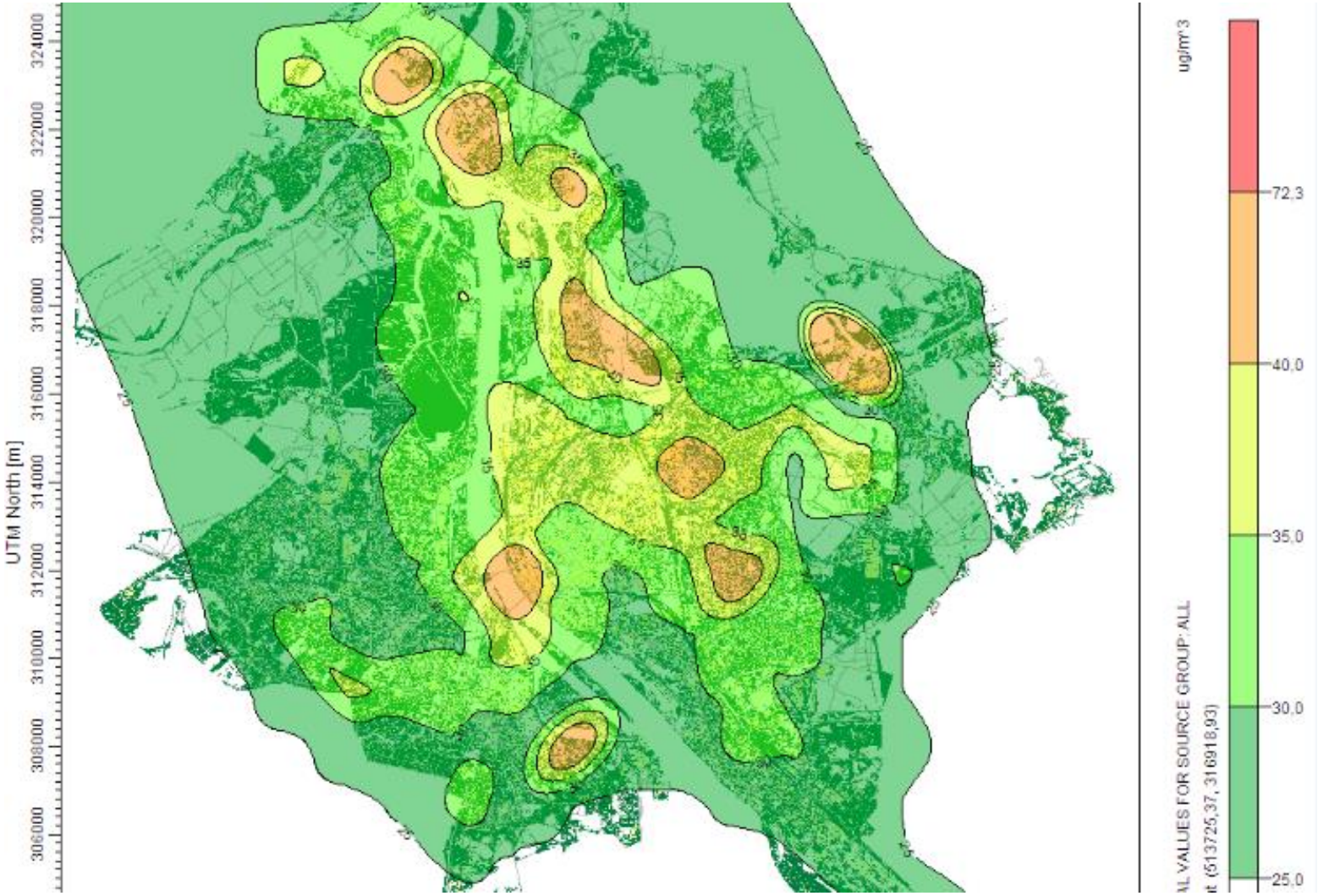
Expectations

1. Identifying of high pollution zones;

2. Introduce actions and plans for air quality improvement;

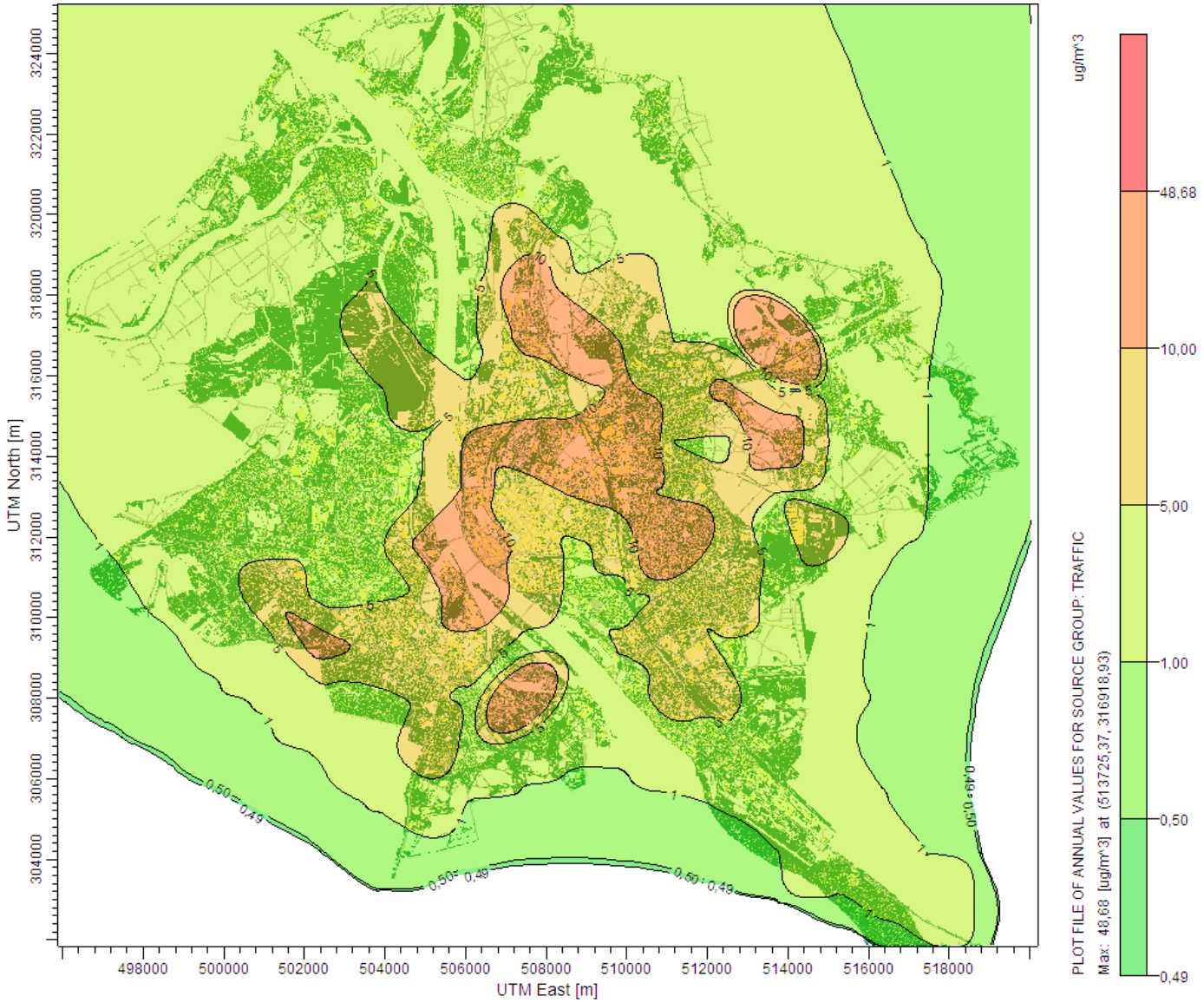
3. Establish legal instruments (at municipal level)
   - for existing source contribution revision
   - for arising of new sources

Modelling results (PM_{10}, annual)



All sources included

Source apportionment - traffic

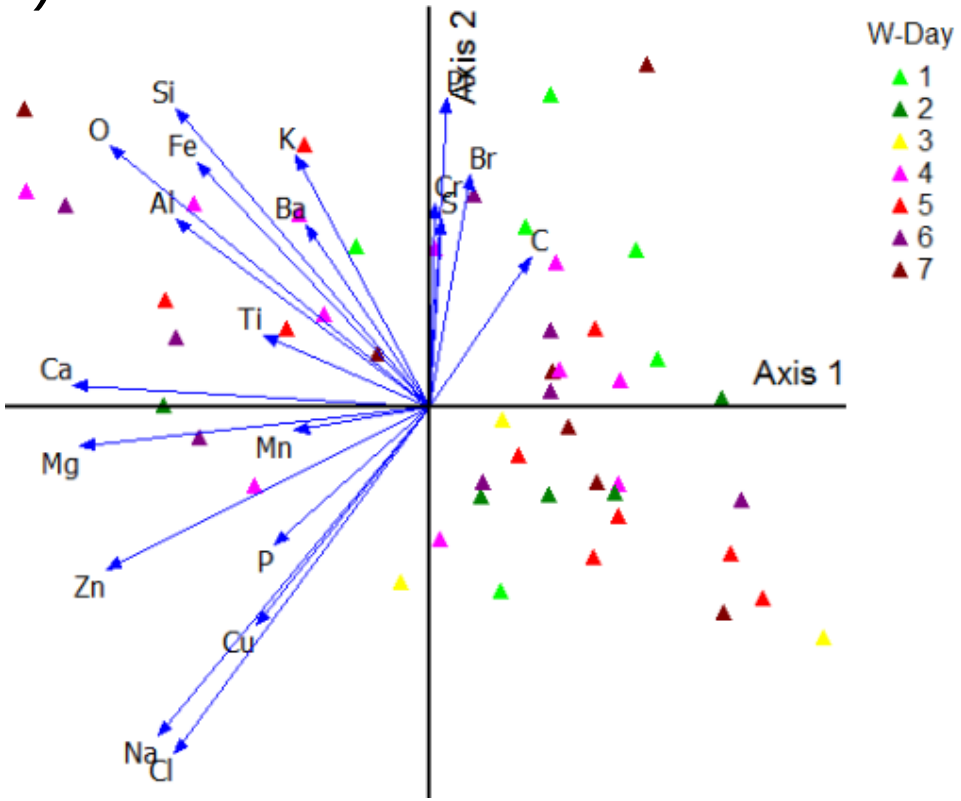


PCA of SEM-EDX for source apportionment

2 main sources (50/50) of PM_{10} in central part:

(1) natural origin

(2) exhaust

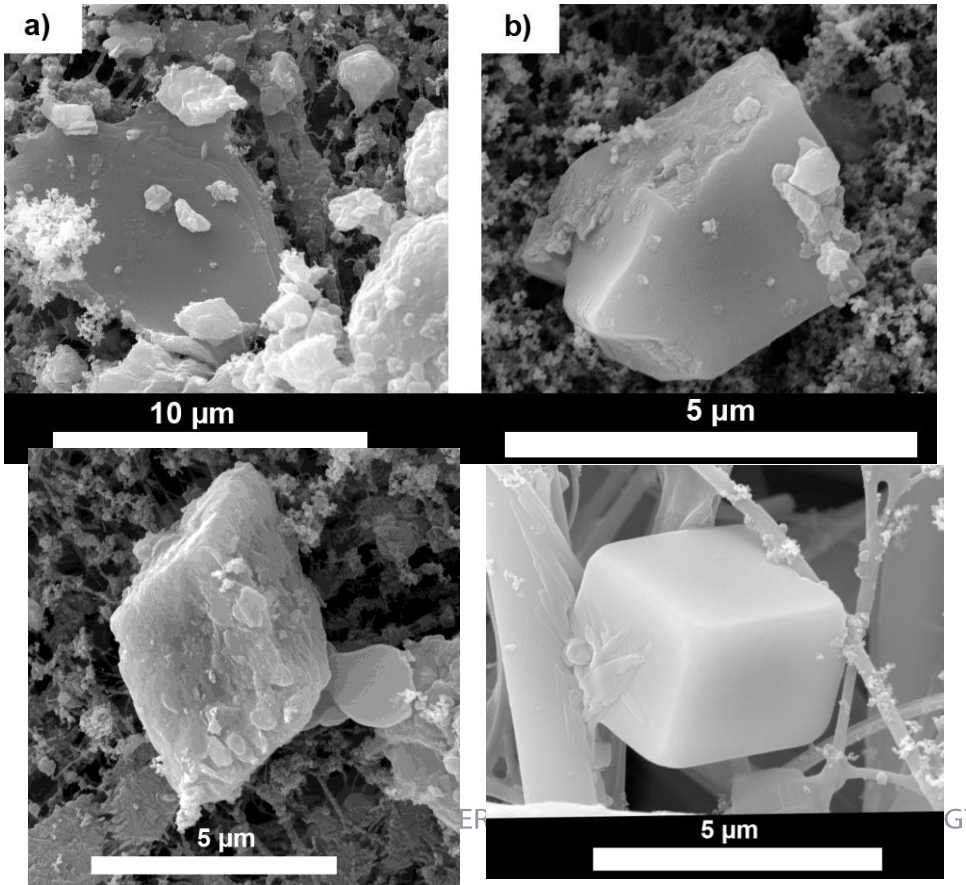


Natural origin vs Traffic = 50/50

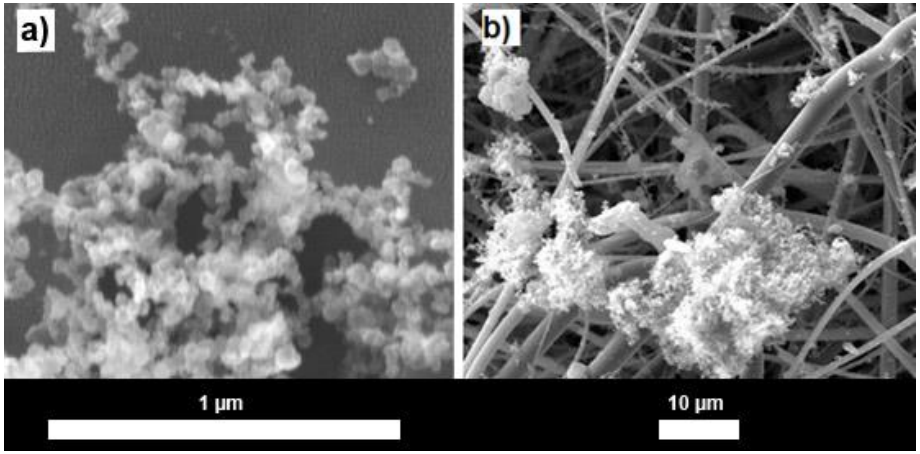
alumnosilicates (mica, quartz)

carbonates

sea salt



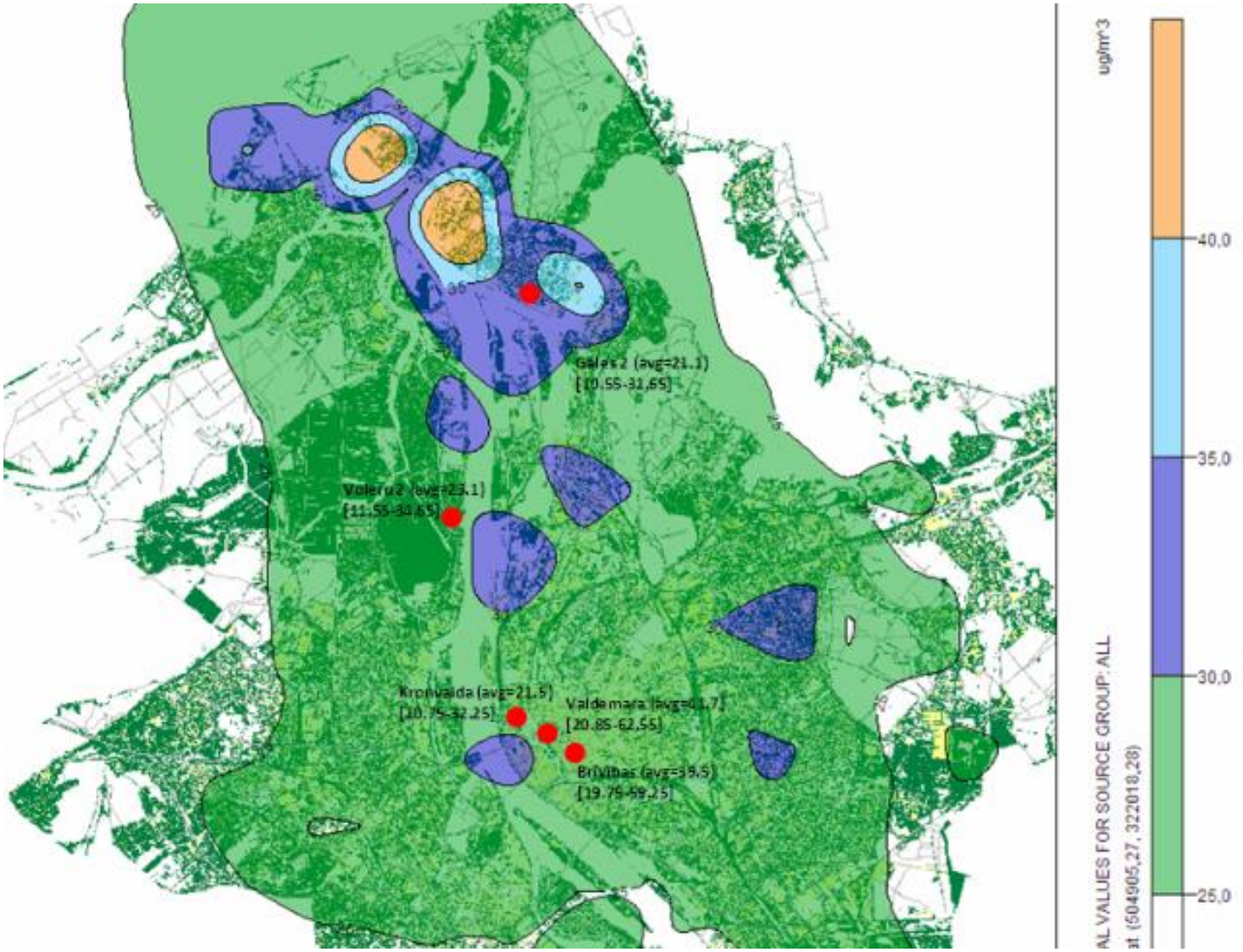
soot



Uncertainties and conclusions

- Source data
- Best available methods for emissions assessment
- Resuspension
- Model results validation

Validation of modelling results



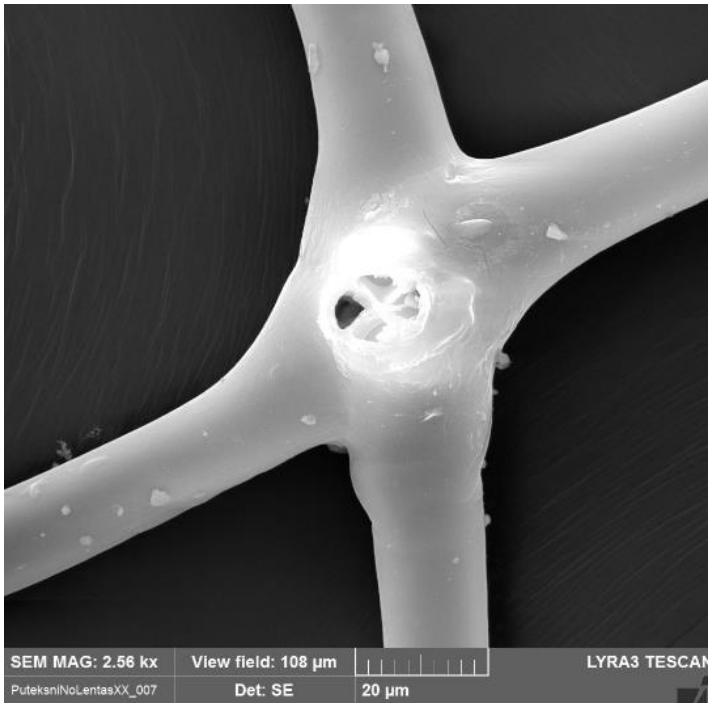
Uncertainties, conclusions & future

- Source data
- Best available methods for emissions assessment
- Resuspension
- Model results validation

Future tasks:

- **Odour dispersion (commercial odour sensors will be used for validation)**
- **Forecasting**

Thank you!



Cruciferae, syn. Brassicaceae