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

COST Action TD1105

1ST TRAINING SCHOOL

Universitat de Barcelona, Spain, 13 - 15 June 2013

organized by UB, MIND-IN2UB - Dept. of Electronics and CSIC-IDAEA

Action Start date: 01/07/2012 - Action End date: 30/06/2016

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COST is supported by the EU Framework Programme

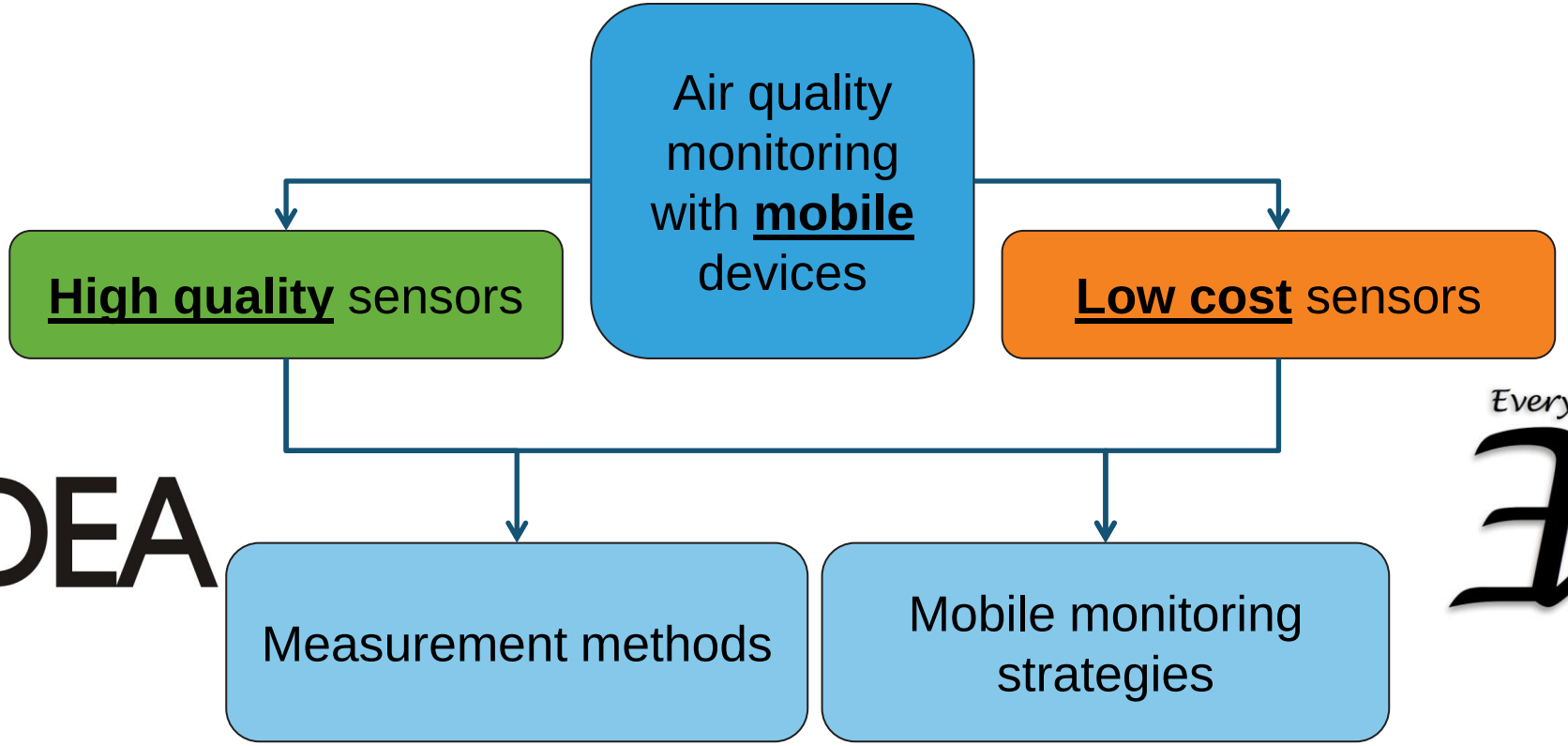
ESF provides the COST Office through a European Commission contract

Expertise of the Trainee related to the Action

- **Master of Science in Bioscience Engineering: Environmental Technology**
- **PhD student (second year):** at VITO and Ghent University (Department of Mathematical Modelling, Statistics and Bioinformatics)
- **Topics:** urban air quality, Black Carbon, low-cost gas sensors, mobile monitoring, machine learning

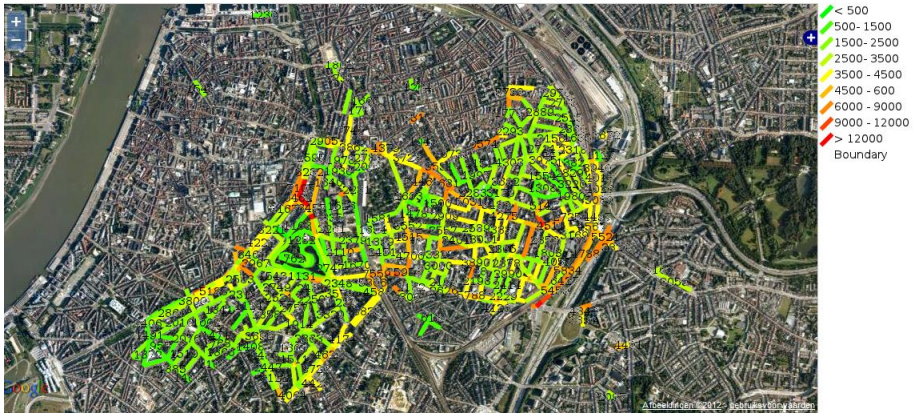
Current research activities of the Trainee (1/2)

- **Dynamic exposure assessment**



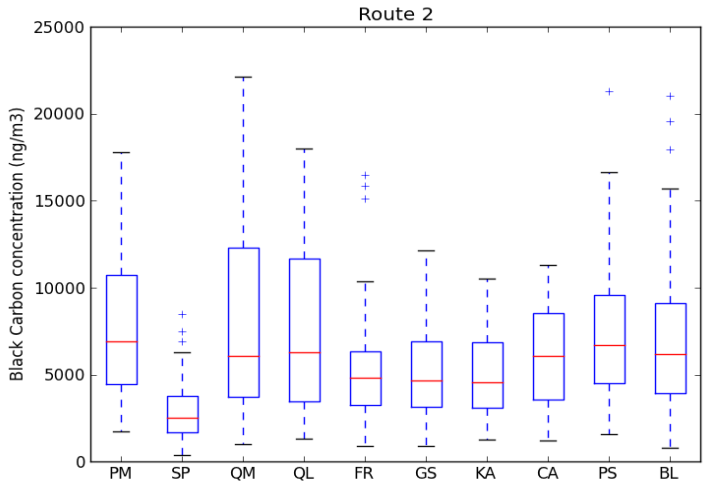
Current research activities of the Trainee (2/2)

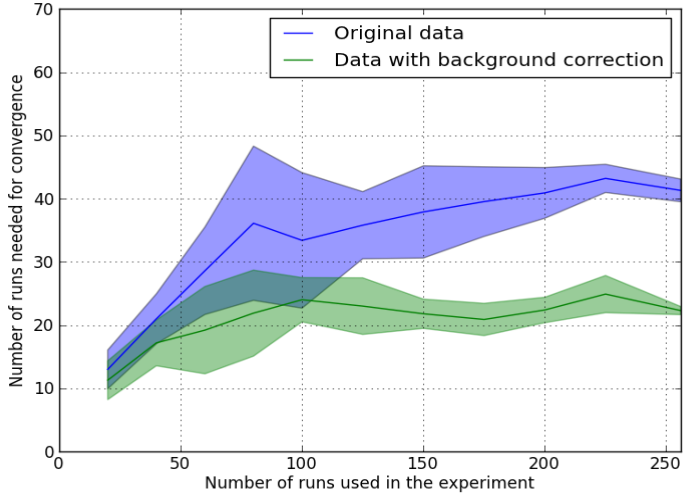
- Use of the micro-aethalometer to measure high time-resolution urban BC data
- The use of a mobile platform for high resolution mapping of urban UFP and BC concentrations
- Calibration of a low-cost mobile sensor system for participatory measurements of urban air quality (EveryAware)



Achieved RESULTS and future activities (1/2)

- Extensive, dedicated mobile monitoring campaign (256 runs of one route)
  - Significant differences between streets in the same neighbourhood
  - Number of needed repetitions!

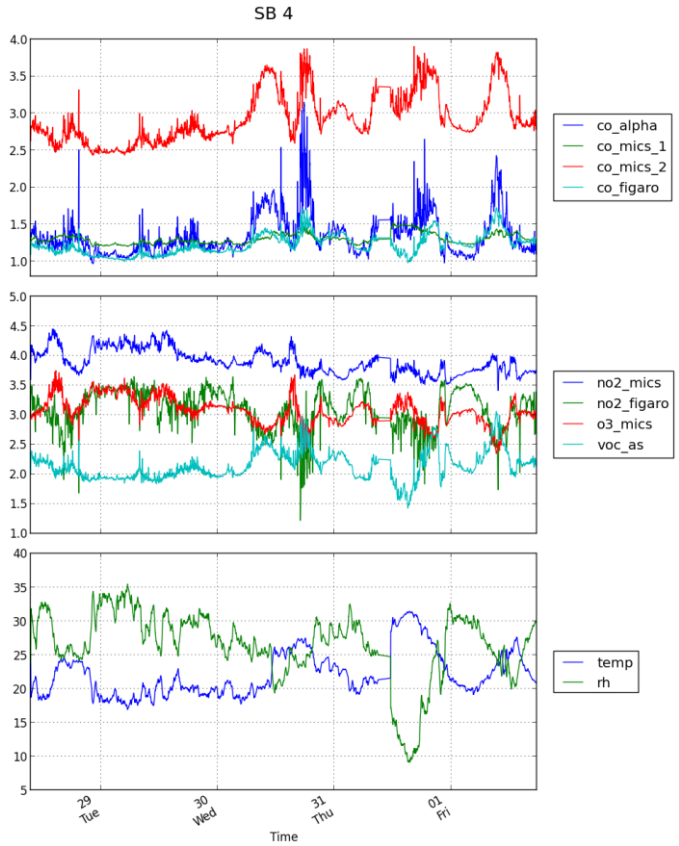


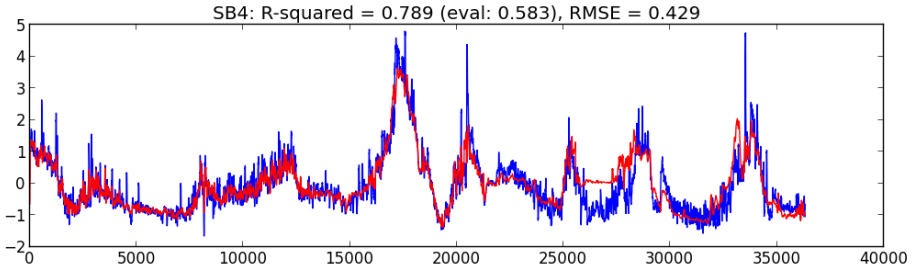


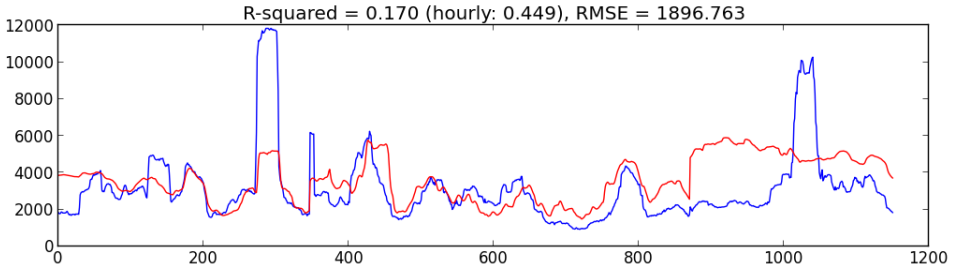
- Participatory measurement campaign: city guards monitor urban air quality in Antwerp

Achieved RESULTS and future activities (2/2)

- First results of calibration (Support Vector Machine regression) of the EveryAware SensorBox
  - Difficulties with local (short-term) variations







CONCLUSIONS

- Mobile measurements:
  - Potential to map urban air pollution
  - Mobile measurements are comparable to the average of stationary measurements in the same street
  - Attention has to go to the methodology: repetitions are needed to get a representative image
- Use of off-the-shelf low-cost gas sensors remains a challenge
  - (Variable) interference of temperature and humidity on gas sensors
  - Difficulties to go to shorter time resolution