

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

COST Action TD1105

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New Sensing Technologies for Air Quality Monitoring

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Summary of research and Innovation needs from WG3: Env. Measurements & Air-Pollution Modelling



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Priorities and roadmap

- What do we want to provide on long term - in relation to routine monitoring & public inform.?
- Micro-sensors should not substitute but supplement routine monitoring devices
- Future routine networks may look very different from today's & include low cost sensors!?
- The green route through the city or access to inform. about pollutant load at address might be future goals - **the latter exists but need refinements**



Priorities and roadmap

- Still many unknowns regarding health effects - e.g. what in PM is causing negative health effects - constituents, ultrafine?
- Airborne allergens also an issue of interest - >20% suffer from hay fever but monitoring still based on 1950/1960 technology
- Assessment of health effects of emissions from agricultural sources (fungal spore, animal material, ammonia, pesticides)
- Assessment of health effects from wood stoves - 700.000 wood stoves in DK (biggest single source of PM) **but also other countries**



- Many air pollutants (chemical & biological) have strong urban components. Robust urban models (not street canyon models) lag behind compared with LRT models & this limits understanding on urban air quality.
- This also relates to robust foot print modelling methods that can work on both urban and regional scale.
- Citizens involvement projects should also in the future be encouraged



- An consequence of the limited use and a focus on forward modelling (e.g. the approaches used in Citisense but also in other systems at Aarhus, Cambridge, Bulgaria) is that the model systems are very difficult to expand to other air pollutants as they are highly dependent on one of two things: 1) high quality and very detailed emissions inventories or 2) access to low cost sensors in a dense network. Here it seems as only a few components can be measured.

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- Observations seem mainly fixed to stationary stations on ground. Use of portable observations (e.g. on busses) should be explored much more. **We should summarize experience from citisense etc.**
- This also includes the use of drones. Secondly there is a great need of observations that are obtained away from the surface and in the free atmosphere. Both in relation to campaigns but also on the more routine basis.
- Need for best practice regarding exposure modelling - which models for which purposes - scale, type etc



- PM monitoring strategies should be
- improved - complementary by particle counts not only mass measurements, - this is now common
- even more PM measurements in more than 2 channels (PM_{10} , $PM_{2.5}$) should be investigated.
- EC/OC measurements in 1h?
- discertization should be considered



From the talks in Prague

- DK: new public information system providing AP levels at address level
- Poland: Plant may be used to clean air. Remember to bring flowers to your home
- Bulgaria: tools to provide information in case of nuclear releases
- Hungary: emphasize assessments based on combined measurements & modelling
- Citisense project: different devices - some worked well in lab but worse in ambient air
- Latvia: public request both AP & noise info. New measurements. Indoor & outdoor assessment. Pollen modelling

