

First SmartAQnet Results from Accompanying Air Quality Modelling

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Smart Air Quality Network [1] monitoring activities are accompanied by efforts to provide seamless area-wide and temporally resolved PM by modelling using measurements. The accurate and small-scale spatio-temporal representation of fine dust is a highly challenging task, particularly for fine-dust. Even in alpine valleys and basins, the urban fine-dust is dominated by transport and complex transformation processes outside the urban area of interest [2]. Therefore, multi-scale modelling techniques or precise measurements of the inflow of fine-dust at the model boundaries are necessary to capture one major part of the burden. The other major part is related to strong localized near surface sources such as traffic or residential heating using solid fuels and potentially rapid transformation processes. Moreover, these sources are highly variable in time and space. In order to represent this “localized” part adequately, emphasis is placed on high resolution emission processing, a proper representation of flow and microenvironments such as street canyons, appropriate emission release levels etc. In order to validate emission data, a modelling chain is used and compared with different measurements. First results from the emission procession are shown as well as validation work carried out with the Lagrangian particle model GRAL.

At a later stage, the new PALM4U model will be used to estimate as well rapid transformation processes related to atmospheric chemical processes and aerosol dynamics even at the street canyon scale.

References

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