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# Urban Air Quality Modelling with AURORA: Prague and Bratislava

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The European Commission, in its strategy to protect the health of the European citizens, states that in order to assess the impact of air pollution on public health, information on long-term exposure to air pollution should be available. Currently, indicators of air quality are often being generated using measured pollutant concentrations. While air quality monitoring stations data provide accurate time series information at specific locations, air quality models have the advantage of being able to assess the spatial variability of air quality (for different resolutions) and predict air quality in the future based on different scenarios. When running such air quality models at a high spatial and temporal resolution, one can simulate the actual situation as closely as possible, allowing for a detailed assessment of the risk of exposure to citizens from different pollutants.

AURORA (Air quality modelling in Urban Regions using an Optimal Resolution Approach), a prognostic 3-dimensional Eulerian chemistry-transport model, is designed to simulate urban- to regional-scale atmospheric pollutant concentration and exposure fields. The AURORA model also allows to calculate the impact of changes in land use (e.g. planting of trees) or of emission reduction scenario's on air quality.

AURORA is currently being applied within the ESA atmospheric GMES service, PASODOBLE (http://www.myair-eu.org), that delivers information on air quality, greenhouse gases, stratospheric ozone, ... At present there are two operational AURORA services within PASODOBLE.

Within the "Air quality forecast service" VITO delivers daily air quality forecasts for Belgium at a resolution of 5 km and for the major Belgian cities: Brussels, Ghent, Antwerp, Liege and Charleroi. Furthermore forecast services are provided for Prague, Czech Republic and Bratislava, Slovakia, both at a resolution of 1 km.

The "Urban/regional air quality assessment service" provides urban- and regional-scale maps (hourly resolution) for air pollution and human exposure statistics for an entire year. So far we concentrated on Brussels, Belgium and the Rotterdam harbour area, The Netherlands.

In this contribution we focus on the operational forecast services.

Reference

Lefebvre W. et al. (2011) Validation of the MIMOSA-AURORA-IFDM model chain for policy support: Modeling concentrations of elemental carbon in Flanders, Atmospheric Environment 45, 6705-6713