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## Air-quality and climate interaction in RegCM/CAMx couple: Urban effects in high resolution

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Recent studies show considerable effect of atmospheric chemistry and aerosols on climate on regional and local scale. For the purpose of qualifying and quantifying the magnitude of climate forcing due to atmospheric chemistry/aerosols on regional scale and climate change effects on air-quality the regional climate model RegCM and chemistry/aerosol model CAMx was coupled on the Department of Meteorology and Environmental Protection, Charles University, Prague, within the EC FP6 Project QUANTIFY and EC FP6 Project CECILIA. Climate change impacts on air-quality were studied in high resolution of 10km in the latter, later on with interactive two-way coupling of the effects of air-quality on climate. The experiments with the couple have been prepared for EC FP7 project MEGAPOLI assessing the impact of the megacities and industrialized areas on climate. New experiments in high resolution are prepared for Urban Heat Island studies within the OP Central Europe Project UHI. Meteorological fields generated by RCM drive CAMx transport, chemistry and a dry/wet deposition. A preprocessor utility was developed for transforming RegCM provided fields to CAMx input fields and format. In addition to previous Central Europe region new domain have been settled for MEGAPOLI purpose in 10km resolution including all the European "megacities" regions, i.e. London metropolitan area, Paris region, industrialized Ruhr area, Po valley etc. There is critical issue of the emission inventories available for 10km resolution including the urban hot-spots, TNO emissions are adopted for this sensitivity study in 10km resolution for comparison of the results with the simulation based on merged TNO emissions, i.e. basically original EMEP emissions at 50 km grid. The sensitivity test to switch on/off Paris area emissions is analysed as well. Preliminary results for year 2005 are presented and discussed to reveal whether the concept of effective emission indices could help to parameterize the urban plume effects in lower resolution models. Interactive coupling is compared to study the potential of possible impact of urban air-pollution to the urban area climate.