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Air-Quality and Climate Interaction within Urban Environment

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Recent studies show considerable effect of atmospheric chemistry and aerosols on climate on regional and local scale with potential of urban environment effects on these processes, especially of urban heat island. 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 has been used within the past 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 performed for EC FP7 project MEGAPOLI assessing the impact of the megacities and industrialized areas on climate. New experiments in high resolution have been planned for Urban Heat Island studies within the OP Central Europe Project UHI. The selected methods of urbanization of the regional climate model are tested to assess the potential of including urban effects on local climate. TNO emissions are adopted for high resolution study of 10km resolution.