

The CityZen project – bridging the scales with focus on megacities

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The CityZen project (megaCITY – Zoom for the ENvironment) is funded through the 7th Framework Programme of the European Commission and focuses on the role of megacities and other emission hot spots on regional air quality and climate. 16 partners from Europe, Africa and Asia participate in CityZen. Air pollution and change are determined for the last decade and during the project duration (2008-2011) using extensive satellite and in-situ observations, and a series of different scale models (local-regional-global). The Eastern Mediterranean, the Po Valley (Italy), the BeNeLux region, and the Pearl River Delta (China) are chosen for intensive case studies.

Emissions, transport and transformation of pollutants in the troposphere are analyzed with focus on ozone, particulate matter, and their precursors. A set of chemical transport models connecting the different spatial and temporal scales is developed and used to quantify how the observed air pollution arises.

Climate change may cause changes in air pollution in and around emission hotspots, and hotspot pollution can change precipitation, temperature and albedo. These feedbacks are studied in a scale-bridging model system based on global climate model scenarios, and in two coupled chemistry-climate models. Potential future changes are calculated for various climate scenarios, including mitigation options, by the model system evaluated in the project. Best available technologies and sectoral changes are studied.

This paper reviews first results from the CityZen project with emphasis on climate-air quality interactions, and presents opportunities for collaboration with its sister project MEGAPOLI and potential collaboration with other partners throughout the world.