



## **Regional climate change impacts on air quality in CECILIA EC 6FP Project: Preliminary model validation**

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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, the development of coupling of regional climate model and chemistry/aerosol model has been started recently on the Department of Meteorology and Environmental Protection, Faculty of Mathematics and Physics, Charles University in Prague, for the EC 6FP Project QUANTIFY and finally for EC 6FP Project CECILIA. One of the project objectives, aiming to study climate change impacts in Central and Eastern Europe based on very high resolution simulations using regional climate models (RCM) in 10 km grid, is dealing with climate change impacts on and interaction to air quality. For this coupling, existing regional climate model and chemistry transport model are used. Climate is calculated using model RegCM and ALADIN-Climate while chemistry is solved by model CAMx. Climate change impacts on large urban and industrial areas modulated by topographical and land-use effects which can be resolved at the 10 km scale, are investigated by CECILIA as well.

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. As the first step, the distribution of pollutants can be simulated off-line for long period in the model couple. There is critical issue of the emission inventories available both for present and scenarios runs as well as cross-boundary transport for regional simulations. The next step is the in-

clusion of the radiative active agents from CAMx into RCM radiative transfer scheme to calculate the changes of heating rates. Only the modification of radiative transfer due to atmospheric chemistry/aerosols is taken into account first, the indirect effect of aerosols will be studied later. Ten years time slices for present, control and scenarios runs for mid- and end of century are supposed in framework of the project. Some sensitivity runs will be run in present climate.