



Photochemical model calculations concerning climate change with different spatial resolutions

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Within the EU-FP6-project CECILIA (Central and Eastern Europe Climate Change Impact and Vulnerability Assessment) photochemical model calculations were performed under present and future climate conditions in order to investigate the impact of a changing climate on the concentration of air pollutants. CAMx with the CB4 chemical mechanism was used as the model. The calculations were performed for several periods, each with the length of a decade. The results for the periods 1991-2000 (representing present day) and 2091-2100 (end-century) are compared in this contribution.

Between the calculated decades only the meteorological input files from regional climate model runs were changed. Other input data as the emissions from anthropogenic sources or the lateral boundary concentrations were kept constant. In this way, the results were reduced to the direct effects of climate change.

The meteorological input data were taken from model runs with RegCM3. One data-set had a spatial resolution of 50 km covering most of Europe. This has been calculated at ICTP, Trieste. The other from the Eotvos Lorand University in Budapest had a resolution of 10 km and covered a part of Central Europe only.

A comparison of the results for the two decades showed consistent results for the different spatial resolutions. When ozone concentrations are compared as example, these will increase in the future due to the changed meteorological conditions supporting more ozone formation. A comparison of the two resolutions showed, that a higher resolution differentiates these changes in more detail.

However, the comparisons also reveal, how strongly the results of a photochemical model depend on the quality of the meteorological input data.