

Coupling atmospheric chemistry/aerosols to regional climate model

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Recent studies show considerable effect of atmospheric chemistry and aerosols on climate on regional and local scale and vice-versa. 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 this coupling, existing regional climate model and chemistry transport model are used. Climate is calculated using model RegCM while chemistry is solved by model CAMx. Meteorological fields generated by RegCM drive CAMx transport a dry/wet deposition. A preprocessor utility was developed on the department for transforming RegCM provided fields to CAMx input fields and format. As the first step, the distribution of pollutants can be simulated for long period in the model couple. There is critical issue of the emission inventories available. Monthly and yearly one way coupled climate/chemistry/aerosol model runs are scheduled in framework of on-going projects with further studies of on-line impact implementation in regional climate simulations. At this moment, one way coupling on lower resolution is compared with the high resolution simulation nested into the lower resolution run to have better boundary conditions both for meteorology and chemistry.