



Climate and air pollution modelling in South America

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Natural as well as anthropogenic emissions determine the aerosol and chemical composition of the atmosphere. This has a major impact on cloud formation, on the hydrological cycle and on air quality. In many South American regions the effects of mega cities - such as Buenos Aires, Rio de Janeiro, etc. - are crucial and have an impact on a regional scale. In other regions the emissions are dominated by natural sources as well as by land-use change and biomass burning. The goal of the study is to estimate the impacts of different emission sources.

In South America the Andes have a significant influence on the atmospheric circulation and on the transport of chemical species, because of the pronounced orographic features. An adequate representation of the Andes within a climate model is only possible with the relatively high horizontal resolution of a regional climate model.

For this study the regional climate model REMO is used, including an on-line chemistry model. The model calculates the meteorological processes directly together with photochemistry and tracer transport. The advantage over off-line chemistry-transport models - which are using the, e.g., hourly output from a RCM - is the direct coupling of meteorological and chemical fields, which both are available for each model timestep.

First results of meteorological and chemical quantities will be presented.