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Aerosol effects over China investigated with a high resolution convection permitting weather model

Kristian Pagh Nielsen, Alexander Mahura, and Xiaohua Yang
Danish Meteorological Institute, Department of Research and Development, Copenhagen Ø, Denmark (kpn@dmi.dk)

We investigate aerosol effects in the operational high resolution (2.5 km) convection permitting non-hydrostatical weather model HARMONIE (HIRLAM-ALADIN Regional Mesoscale Operational NWP in Euromed). Aerosol input from the global C-IFS model is downscaled and used. The impact of using realistic aerosols on both the direct and the indirect aerosol effects is studied and compared with default simulations that include only the direct aerosol effect of climatological aerosols. The study is performed as a part of the MarcoPolo FP7 project for a selected region of China during the months January and July 2010, where in particular January 2010 saw several cases of high anthropogenic aerosol loads. We also investigate the impact of accounting for realistic aerosol single scattering albedos and asymmetry factors in the simulations of the direct aerosol forcing. In many studies only variations in the aerosol optical depth are accounted for. We show this to be inadequate, when the assumed aerosol types have different optical properties than the actual aerosols.