



The relative importance of impacts from climate change vs. emissions change on air pollution levels in the 21st century

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The distribution and concentrations of air pollutants depends strongly on the biogenic and anthropogenic emission of chemical compounds. Moreover the meteorological conditions determine the transport, deposition and chemical transformation processes. Today air quality legislations are based on projected emission scenarios of the future. Thus the impacts of climate change on air pollution levels has not yet been encountered which might contribute significant to the future air pollution levels. In order to do this, the first step is a quantification of the signal from climate change relative to the signal from emission change. In this study we investigate the signal from climate change vs. the signal from the predicted emission change in the 21st century. Our model system consists of the meteorological data from the ECHAM5/MPI-OM model simulation forced with the SRES A1B emission scenario. The Danish Eulerian Hemispheric Model (DEHM) calculates the concentration and deposition of 58 chemical species and the model is driven on the ECHAM5/MPI-OM meteorology. Furthermore DEHM is forced with the newly developed Representative Concentration Pathways (RCP) 4.5 scenario in order to simulate the future air pollution levels. We investigate the signal from climate change and the signal from emission change separately for ozone and its precursors and particles including both secondary inorganic particles and primary particulate matter like e.g. black carbon. The model domain covers the northern hemisphere, however in this presentation we will focus on Europe and the Arctic.