

Meteorological variability, climate trends and emission source regions affecting air pollution in Europe

Camilla Andersson

Department of applied environmental research, Stockholm University

A regional scale off-line chemistry-transport model called MATCH was used for scenario calculations over Europe. The model calculates e.g. ozone, primary particulate matter, secondary inorganic aerosol, and acidifying and eutrophying deposition. ERA40 (reanalysis meteorology from ECMWF) was used in one scenario to study inter-annual variability and trends in the present and recent past situation. The climate data RCA3 was used in scenario calculations to determine the change in concentrations of air pollutant in the future. In these two studies anthropogenic emissions were constant from year to year to separate the variability and trends due to meteorology. Sea salt and isoprene were emitted on-line; dependent on the state of the input meteorology. In a third study scenario calculations were conducted to determine the source region and relative human health impacts of different particulate components in Europe. In this study the anthropogenic emissions were allowed to vary.

Comparisons and explanations will be made to the future changes in air pollution and important physical processes governing the changes and the distribution in Europe will be discussed.

- Russell and Dennis, 2000. General review on regional scale chemistry-transport modelling (a little old, but good anyway, especially for someone not familiar with modelling on the regional scale, cited 130 times):
- Langner et al. 2005.: More detailed article on one of my research topics, by one of my supervisors (application of regional chemistry transport model for impact scenarios of climate change):