



Modelling the impact of climate variability and change on air pollution over Europe using the MATCH model linked to regional climate scenarios and ERA40

Joakim Langner, Camilla Andersson, and Magnuz Engardt

Swedish Meteorological and Hydrological Institute, Norrköping, Sweden (joakim.langner@smhi.se)

Modelling the impact of climate variability and change on air pollution over Europe using the MATCH model linked to regional climate scenarios and ERA40

Joakim Langner, Camilla Andersson and Magnuz Engardt, Swedish Meteorological and Hydrological Institute, (SMHI), SE-601 76 Norrköping, Sweden.

E-mail: joakim.langner@smhi.se

Work on studying the impact of climate variability and change using the regional scale CTM MATCH has been pursued at SMHI since 2002. Here we report results from investigations using both climate scenarios from regional climate models and reanalysis data sets to investigate the importance of climate variability for air pollution in Europe. We have studied the importance of changes in meteorological parameters as well as changes in natural emissions, wet and dry deposition, including soil moisture effects in a series of recent studies (Andersson et al. 2007; Andersson and Engardt 2009; Hole and Engardt 2008; Langner et al. 2005, 2009). We will report further extensions of these studies to account for uncertainties in climate model input, changes in air pollutant emissions, and changes in background concentrations.

References

Andersson, C., Langner, J. and Bergström, R., 2007. Interannual variation and trends in air pollution over Europe due to climate variability during 1958-2001 simulated with a regional CTM coupled to the ERA40 reanalysis. *Tellus* 59B, 77-98. doi: 10.1111/j.1600-0889.2006.00196.x

Andersson, C. and Engardt, M., 2009. European ozone in a future climate: Importance of changes in dry deposition and isoprene emissions. *JGR*, Vol. 115. doi:10.1029/2008JD011690

Hole, L. and Engardt, M., 2008. Climate change impact on atmospheric nitrogen deposition in Northwestern Europe: A model study. *Ambio* 37, 9-17.

Langner, J., Bergström, R. and Foltescu, V. 2005. Impact of climate change on surface ozone and deposition of sulphur and nitrogen in Europe. *Atmos. Environ.* 39, 1129-1141.

Langner, J., Andersson, C. and Engardt, M., 2009. Atmospheric input of nitrogen to the Baltic Sea basin: present situation, variability due to meteorology and impact of climate change. *Boreal Environ. Res.* 14, 226-237.