



## **The sensitivity of ozone and particulate matter concentrations over Europe to global change**

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We examine the sensitivity of ozone and particulate matter concentrations over Europe to global climate and anthropogenic emissions changes by performing a suite of simulations with an integrated model of global climate, gas-phase chemistry and aerosols. Where applicable we used the A2 2050s climate as a representative future climate, resulting in an increase in the global annual-average values of the surface air temperature by  $1.7^{\circ}\text{C}$ , the lower tropospheric specific humidity by  $0.9 \text{ g H}_2\text{O/kg air}$ , and the precipitation by  $0.15 \text{ mm day}^{-1}$ . The A2 2050s (overall Europe emissions increase) and B1 2050s (overall Europe emissions decrease) emissions were utilized for future emissions. The results from these simulations have been analyzed previously on a global-scale (Racherla and Adams [2006]), as well as for the United States (Racherla and Adams [2007]); we extend this analysis to Europe. This analysis, while providing insights to policy makers in itself, will serve as a useful starting point for more comprehensive analyses of global change impacts on air quality over Europe, utilizing combinations of global-urban air quality models.