

Manuscript changes in Ozone Impacts of Gas-Aerosol Uptake in Global Chemistry Transport Models by Scarlet Stadtler et al.

We have modified the manuscript as described in our replies to the two referees. The major changes are described below. These changes (and also minor changes in text for clarification) are highlighted in the pdf with a blue colour for new additions, and a red crossed-out text for deletions.

The main changes can be summarised:

1. A new discussion Section 5.4 was added to address the comments of both referees concerning comparison to other global model studies and current model limitations for reactive uptake parameterizations. There also the technical limitations mentioned in the introduction are explained. (As a result of this we have deleted some of earlier comments about model limitations, since these are now addressed in Sect. 5.4.)
2. Section 5.2 was adjusted to include Tables 4 and 5 in percentage changes as requested. Therefore, the text also includes percentage values. As we think our original Tables with absolute concentration changes are still valuable, we have moved these to a new Supplementary information document.
3. Section 5.2 was expanded to include EMEP tests using different γ values for N_2O_5 and NO_2 as requested by Referee #1.
4. Equation (3) in Section 3.1 was moved from text to Table 2, since in hindsight this makes the formulation clearer.
5. Plots in Section 5.3 were adjusted to be consistent with Tables 4 and 5 in terms of sign of the differences between the runs.
6. An updated EMEP model version (rv4.16) was used to produce the results used for this revised manuscript. The main results and conclusions are still the same, but all plots were adjusted showing the new EMEP data. This also led to minor changes in the text describing Table 4. (In the Reply to Referees we had suggested moving this text to a new Appendix, but in revising the manuscript it seemed more logical to simply include the update details in the EMEP model description, Sect. 2.1.)
7. We added a supplementary material including tables with absolute differences, consistent with Table 4 and 5 in the manuscript. Furthermore, tables for new EMEP tests in Section 5.2 and a Table like Table 4 for 2011 can be found there. Also a plot showing annual mean surface $\gamma_{\text{N}_2\text{O}_5}$ values was added.