Atmos. Chem. Phys. Discuss., 14, C6874–C6875, 2014
www.atmos-chem-phys-discuss.net/14/C6874/2014/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "WRF-chem model predictions of the regional impacts of N_2O_5 heterogeneous processes on nighttime chemistry over north-western Europe" *by* D. Lowe et al.

Anonymous Referee #2

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The newly implemented model representation of parameterized N2O5 heterogeneous hydrolysis reaction in the WRF-Chem model was tested against a recent measurement campaign over north-western Europe in summer conditions. The model results showed the importance of the heterogeneous reaction for the overall domain aerosol loading. As for the impact of the reaction on tropospheric oxidative capacity, only slight changes were observed. This work suggested that future improvements of N2O5 heterogeneous hydrolysis parameterization would require better model prediction of relative humidities and corresponding aerosol water content loading in the domain.

One point that would be good for the authors to address is the issue of grid resolution.

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Interactive Discussion
Discussion Paper

What is the justification behind the choice of 15x15km in the horizontal directions? The results from flight measurements seem to indicate that narrower pollutant plumes were observed, could the model be able reproduce those plumes if the resolution was finer?

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 20883, 2014.

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