Supplement to Revisiting the contribution of land transport and shipping emissions to tropospheric ozone

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S1 Average contributions for July (Tagging)

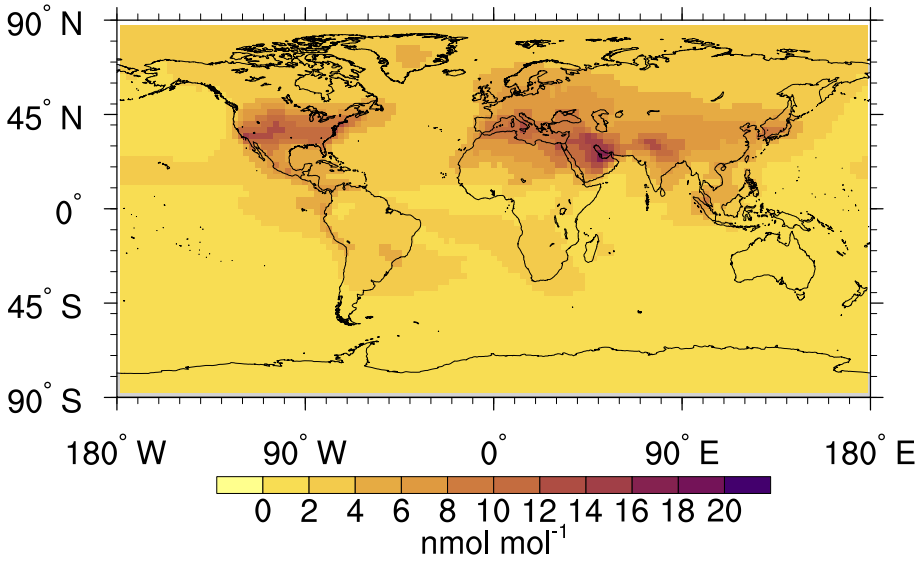

Figure S1: Multi-annual average (2006–2010) of the absolute contribution of land transport emissions (O_3^{tra}, in nmol mol^{-1}) for July.

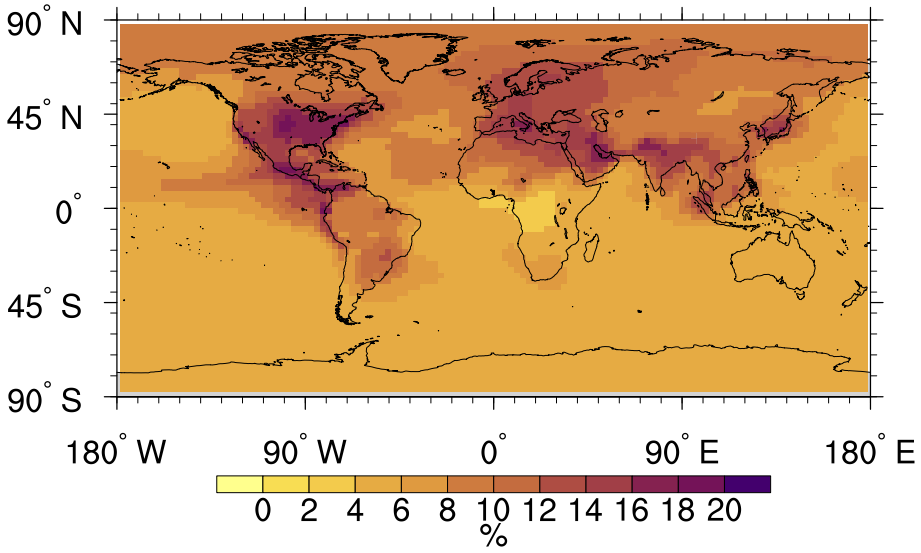

Figure S2: Multi-annual average (2006–2010) of the relative contribution of land transport emissions (O_3^{tra} in %) for July.

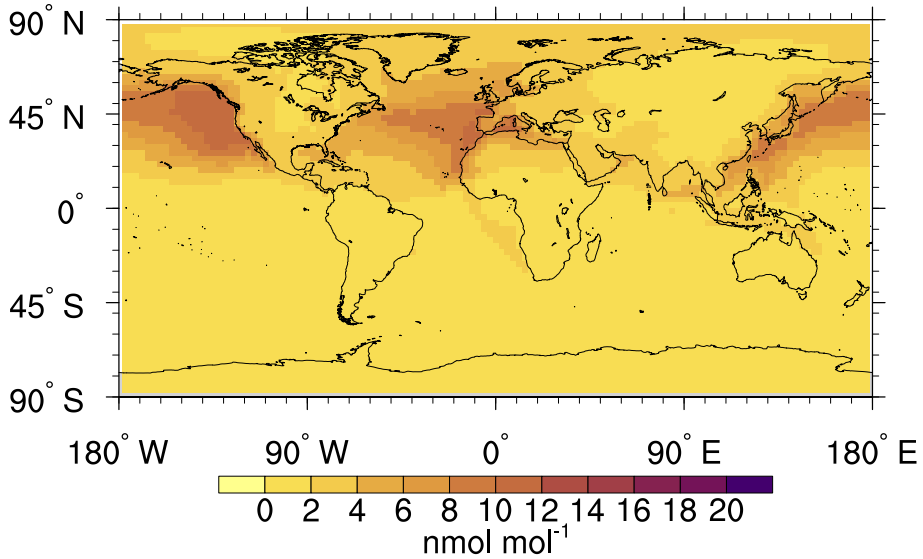

Figure S3: Multi-annual average (2006–2010) of the absolute contribution of shipping emissions (O_3^{shp}, in nmol mol^{-1}) for July.

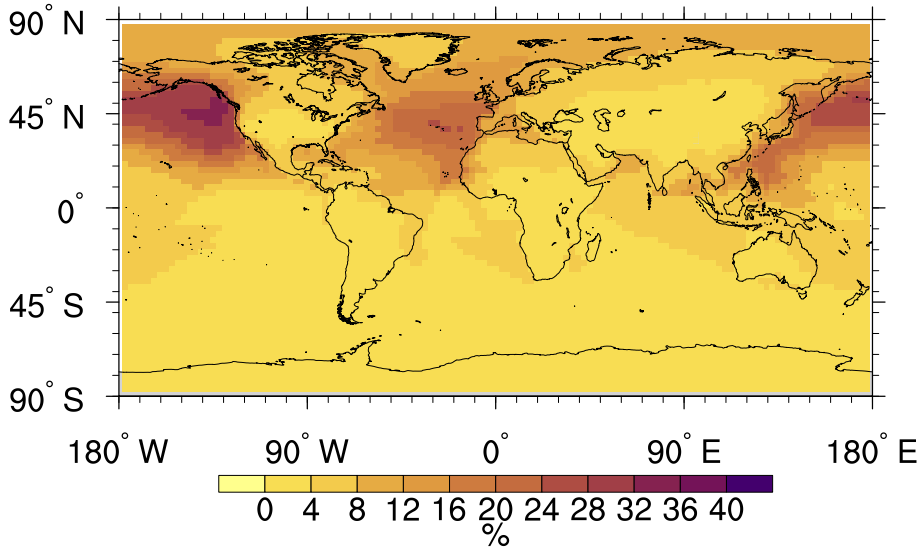

Figure S4: Multi-annual average (2006–2010) of the relative contribution of shipping emissions (O_3^{shp}, in %) for July.

S2 Average Impacts for July (Perturbation)

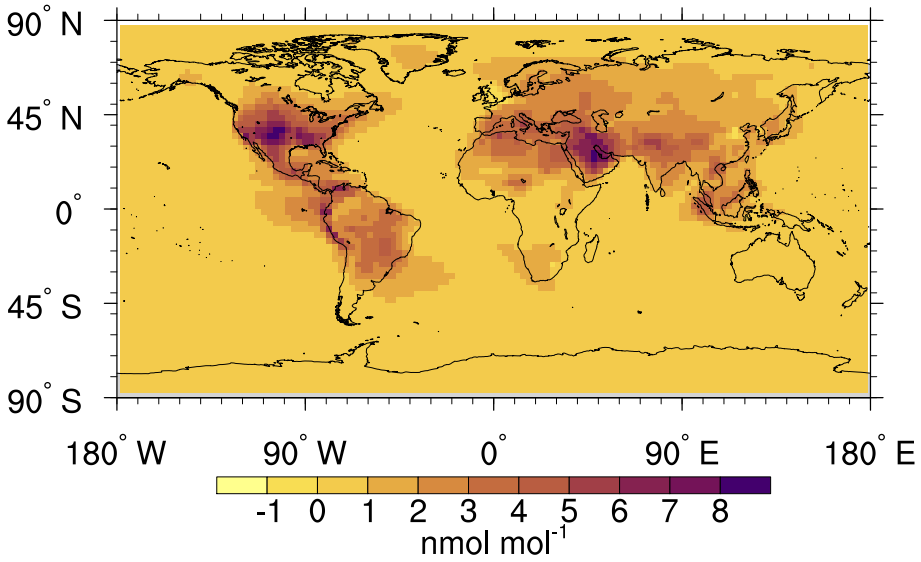

Figure S5: Multi-annual average (2006–2010) of the absolute impact of land transport emissions (in nmol mol^{-1}) for July. Values are diagnosed using a 5 % perturbation.

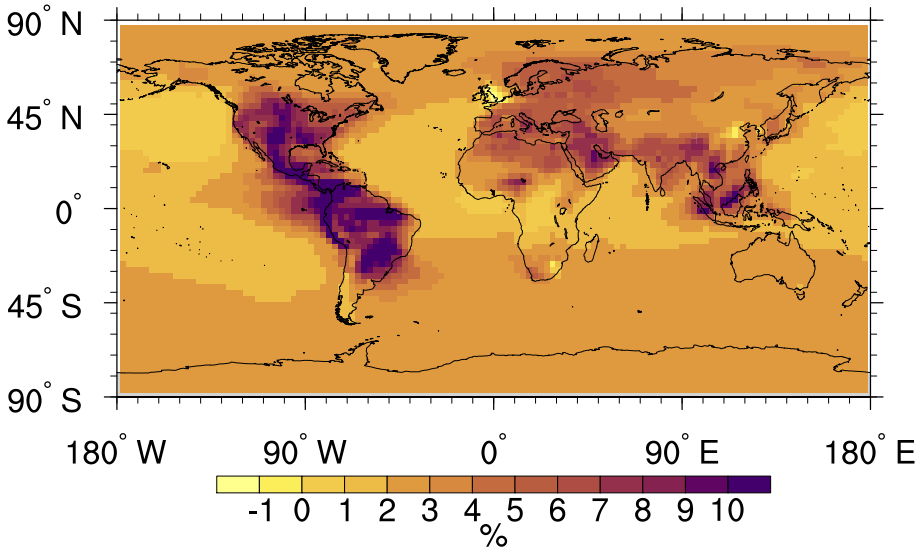

Figure S6: Multi-annual average (2006–2010) of the relative impact of land transport emissions (in %) for July. Values are diagnosed using a 5 % perturbation.

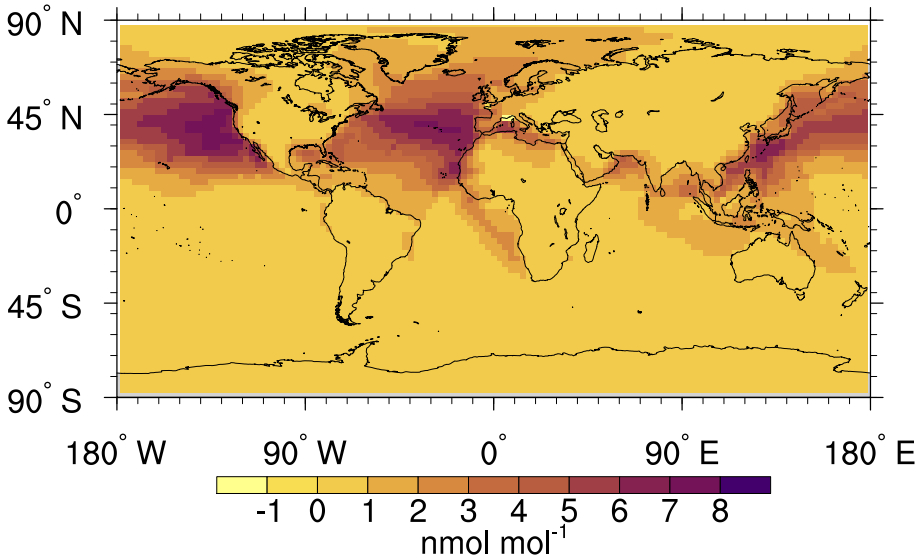

Figure S7: Multi-annual average (2006–2010) of the absolute impact of shipping emissions (in nmol mol^{-1}) for July. Values are diagnosed using a 5 % perturbation.

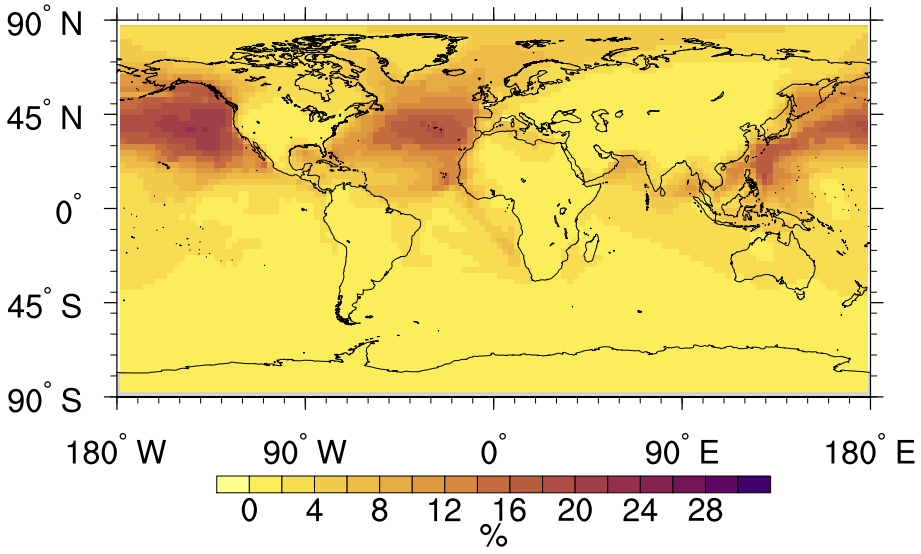

Figure S8: Multi-annual average (2006–2010) of the relative impact of shipping emissions (in %) for July. Values are diagnosed using a 5 % perturbation.

S3 Comparision to RC1SD-base10a simulation

The following figures show the difference between the *BASE* simulation and the *RC1SD-base10a* simulation described by Jöckel et al. (2016). Shown are average values (2005–2010) of the temperature as well as mixing rations of CO, NO_x and O_3. Both simulations differ only slightly. A detailed comparison to observations of the *RC1SD-base10a* simulation is given by Jöckel et al. (2016).

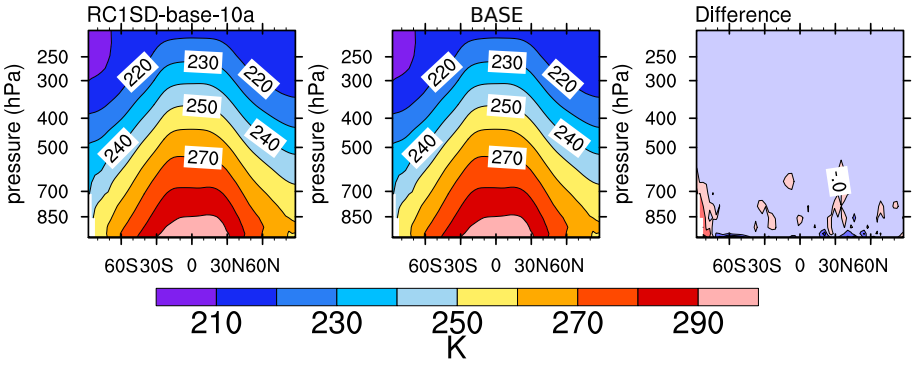

Figure S9: Zonal averaged temperature (in K) for 2005–2010. The left plot shows the value for the *RC1SD-base10a*, the middle plot the value for the simulation *BASE* and the right plot the absolut difference between the two fields. The colour bar indicates only the values for the first two plots.

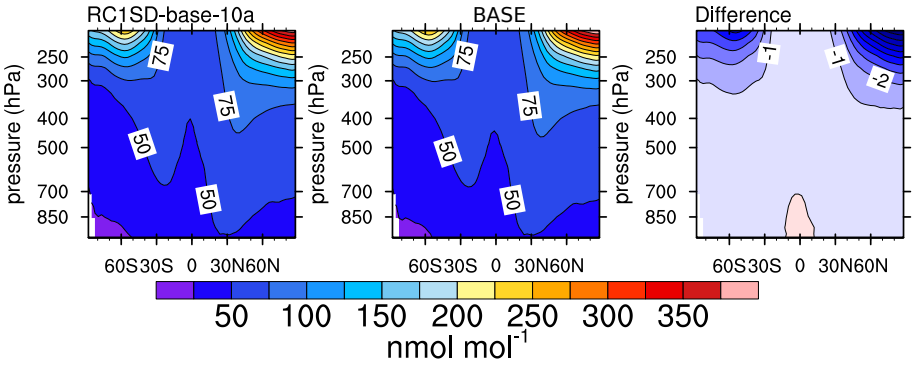

Figure S10: As figure S9 but for O_3 (in nmol/mol).

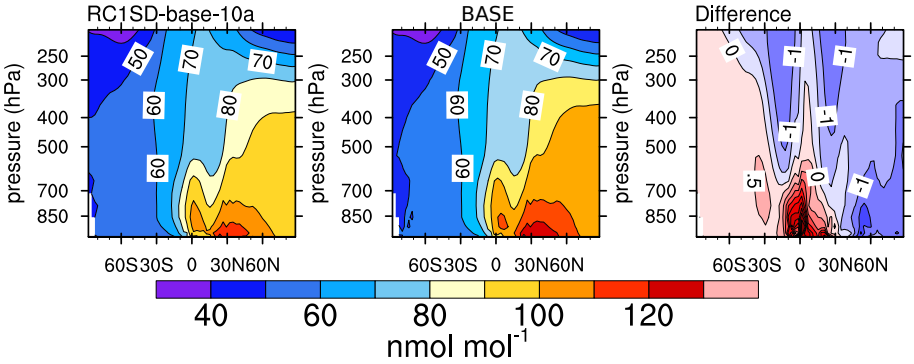

Figure S11: As figure S9 but for CO (in nmol/mol).

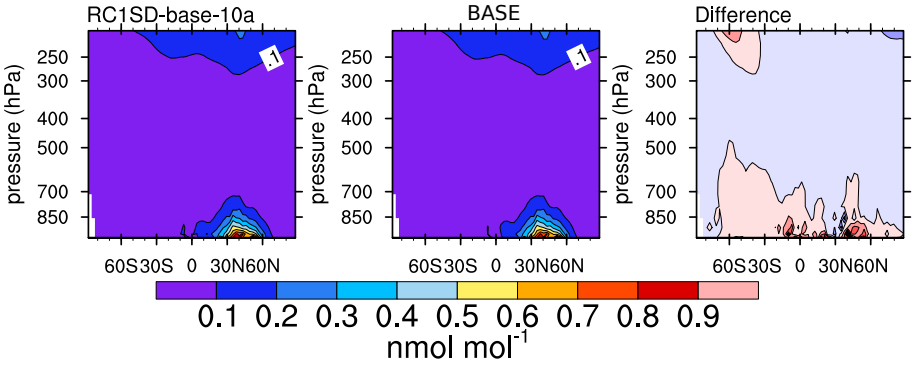

Figure S12: As figure S9 but for NO_x (in nmol/mol).

S4 References

References

Jöckel, P., Tost, H., Pozzer, A., Kunze, M., Kirner, O., Brenninkmeijer, C. A. M., Brinkop, S., Cai, D. S., Dyroff, C., Eckstein, J., Frank, F., Garny, H., Gottschaldt, K.-D., Graf, P., Grewe, V., Kerkweg, A., Kern, B., Matthes, S., Mertens, M., Meul, S., Neumaier, M., Nützel, M., Oberländer-Hayn, S., Ruhnke, R., Runde, T., Sander, R., Scharffe, D., and Zahn, A.: Earth System Chemistry integrated Modelling (ESCiMo) with the Modular Earth Submodel System (MESSy) version 2.51, Geosci. Model Dev., 9, 1153–1200, doi:10.5194/gmd-9-1153-2016, URL `http://www.geosci-model-dev.net/9/1153/2016/`, 2016.