

Interactive comment on “The effect of fatty acid surfactants on the uptake of nitric acid to deliquesced NaCl aerosol” by K. Stemmler et al.

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We would like to thank this reviewer for his positive feedback to our work.

Indeed, the findings of our study are fully in line with results obtained for acetic acid, as well as those for water evaporation, including the one by Lawrence et al. (2005) on the effect of butanol. As discussed in the text, the reason seems to be the structure of the monolayer. Only well ordered monolayers are able to impede the transfer of water or HNO₃. Both butanol and octanol do not form well ordered layers spontaneously, i.e., without external compression. Therefore, also the study by Clifford et al. is in line with our results, we also observe no inhibition of phase transfer for HNO₃ for the smaller fatty acids nonanoic and dodecanoic acids. For N₂O₅, the picture from presently available studies is not entirely identical to that for HNO₃, even though the most recent studies by the Bertram group appear to show similar results (Cosman et al., 2008).

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We will add an update of the discussion with the two recent studies by Clifford et al. and Cosman et al. in the revised version and also include Lawrence et al. (2005) in the list of other studies on water evaporation.

References

Cosman, L. M., and Bertram, A. K.: Reactive Uptake of N₂O₅ on Aqueous H₂SO₄ Solutions Coated with 1-Component and 2-Component Monolayers, *J. Phys. Chem. A*, 112, 4625-4635, 2008.

Clifford, D., Bartels-Rausch, T., and Donaldson, D. J.: Suppression of aqueous surface hydrolysis by monolayers of short chain organic amphiphiles, *Physical Chemistry Chemical Physics*, 9, 1362-1369, 2007.

Lawrence, J. R., Glass, S. V., and Nathanson, G. M.: Evaporation of Water through Butanol Films at the Surface of Supercooled Sulfuric Acid, *J. Phys. Chem. A*, 109, 7449-7457, 2005.

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