

## ***Interactive comment on “Organosulfates and organic acids in Arctic aerosols: speciation, annual variation and concentration levels” by A. M. K. Hansen et al.***

**A. M. K. Hansen et al.**

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We would like to thank the referees for their interest in our work and the helpful comments and suggestions to improve our manuscript. We have carefully considered all comments and the replies are listed below.

Sincerely Anne Maria K. Hansen and Marianne Glasius on behalf of all authors

Reply to Anonymous referee 1

General comment: This is an interesting study providing further evidence that (nitrooxy)organosulfates are ubiquitous in ambient atmospheric aerosols. What makes  
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this study very unique is that it shows the time series of (nitrooxy)organosulfates over the course of a year in the arctic region. Overall the manuscript is well written and the results are presented in a clear manner. I have a small minor comment about the usage of the word ‘tracer’; otherwise I recommend this paper be published in ACP.

1) P4751L15 The authors may want to consider a filter extraction procedure with a laboratory orbital shaker in future studies as the ultrasonication is known to degrade SOA compounds in the extract. See Mutzel et al., 2013.

A. Mutzel, M. Rodigast, Y. Iinuma, O. Böge, H. Herrmann, An improved method for the quantification of SOA bound peroxides. Atmos. Environ. 67, 365-369 (2013), Doi 10.1016/J.Atmosenv.2012.11.012.

Response: We thank anonymous referee 1 for this excellent advice and for drawing our attention to the problem using ultrasonication in filter extraction. In future work we will consider possible alternatives.

2) P4757L28 I feel the word ‘tracer’ should be reserved for those compounds that are known to originate from a certain source. Here, these organosulfates likely have multiple sources and it is more appropriate to state ‘. . .and OS 182 in the Arctic aerosols primarily originate from anthropogenic emissions. . .’.

Response: We agree with the referee and have changed the sentences on page 4757, line 28 to “we propose that OS 140, OS 154, OS 168 and OS 182 in the Arctic aerosols primarily originate from anthropogenic emissions from combustion of fossil fuels and biomass burning.”

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 4745, 2014.