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Interactive comment on “Challenges associated with the sampling and analysis of organosulfur compounds in air using real-time PTR-ToF-MS and off-line GC-FID” by V. Perraud

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V. Perraud et al. describe analytical challenges associated with sampling and analysis of organosulfur compounds (OSC) in air using real-time PTR-ToF-MS and off-line GC-FID methods. OSC are naturally emitted reactive compounds forming MSA and sulfuric acid vapors that are important precursor gases for new particle formation (NPF). This manuscript shows that both techniques produce accurate and quantitative results for DMS. Fragmentation of DMDS and DMTS occurs in the real-time PTR-ToF-MS instrument resulting in fragment ions containing sulfur, which were identified due to the high mass resolution of the PTR-ToF-MS. Off-line canister sampling coupled with GC-FID

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provides excellent sensitivity for DMS, DMDS and DMTS. MTO was observed to react on metal surfaces producing DMDS and when H₂S is present even DMTS.

This manuscript is very well written, the methodology is clearly presented and the topic is within the scope of AMT. The manuscript provides useful and new information for the atmospheric community dealing with OSC. I recommend this manuscript for publication in AMT, following consideration of my minor comments and technical corrections.

Abstract, page 2, line 6 “Their oxidation to methanesulfonic and sulfuric acids leads to the formation and growth of atmospheric particles, which are known to have negative effects on visibility, climate and human health.”

Explain the “negative” effects of sulfate particles on climate – more cooling?

Introduction, page 3, lines 21 ff “These newly formed particles then grow to sizes able to scatter sun light and impact clouds...”

According to Kulmala et al. (DOI: 10.1126/science.1227385) Science 2013 (Fig.4) new particles are not “automatically” growing to larger sizes necessary for light scattering. The availability of other vapors than sulfuric acid, amines/ammonia seems important. Please comment or revise your statement.

Materials and methods, page 5, line 17 “Because of the low energy ion source, the ionization process is generally considered “soft”..

This is not the reason of being soft in PTR-MS!

Fig 1) Explain the high count rates of the grey peaks in Fig 1 d)

Fig 3) What are the errors of expected mixing ratios? Include these errors also in Fig 3.

The font size of labels used in the figure is too small.

Page 15, line 26 Please check the peak area ratio of MTO to DMDS. In Fig 6b this ratio

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does not look like 7.5!

Fig. 8 What is the reason to draw a line between symbols of individual bins?

In section 3.4 organosulfur emissions from waste bins were investigated. Please have a look at the following paper and consider including it as a reference.

Mayrhofer et al. ENVIRONMENTAL MICROBIOLOGY, Volume 8, Issue 11, Pages: 1960-1974 (2006), Microbial community related to volatile organic compound (VOC) emission in household biowaste. DOI: 10.1111/j.1462-2920.2006.01076.x

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