

## ***Interactive comment on “Improved chloride quantification in quadrupole aerosol chemical speciation monitors (Q-ACSMs)” by Anna K. Tobler et al.***

### **Anonymous Referee #1**

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The manuscript provides the pathway for chloride quantification in the ACSM measurements. It is very timely and needed paper as, currently, despite the caveats listed in the paper, the Cl quantification is normally taken for granted. The manuscript is very well structured and nicely written, real pleasure to read. However, I have a major concern with the lack of method validation. The corrected Cl data were not compared or validated to anything. Indeed, the signal does become positive after the corrections, however, there is no indication that that positive signal is quantitative. Since it is very important to show that the method works quantitatively, I would strongly suggest including a corrected Cl comparison with an independent measurement. Speciated Cl measurements would be ideal, but might not be readily available, so, at least,

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an improvement of total volume/mass measured with ACSM and independent instrument/instruments should be shown. Subject to this validation, I deem this manuscript suitable for the AMT.

Another important aspect, but, maybe, not as crucial as the one above, is higher than standard vaporiser temperature for this instrument. Why was this implemented, how does this compare to the standard t-re measurements? There are some indications, that 720C might still be comparable to standard 600C for some m/z, but better discussion around this is required. With some information on why this temperature was selected provided in the methods section as well. Were ambient measurements performed at this temperature as well?

Finally, the assumption that it was indeed NH<sub>4</sub>Cl contributing to Cl signal is still not fully convincing. Better discussion on NH<sub>4</sub>Cl origins and potential sources in this region is required, also discussing the potential lack of other salts (why other salts are not likely) in the region. Correlation with Na is still significant, why?

Minor: Line 79: provide details for salts (sources, purity);

Line 82: provide info for drying (type of dryer, humidity after drying, RH stability);

Line 148: 'likely to suppress the m/z 36 signal and enhance the m/z 35 signal' – do you mean background, not diff? specify.

Lines 197 very high (~40%) variability of RIECl, was that temperature dependent? Discuss it. Also, discuss the exceptionally low RIE<sub>NH4</sub>. Was humidity stable during calibrations?

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