

Interactive comment on “Multiple scattering correction factor of quartz filters and the effect of filtering particles mixed in water: implications to analyses of light-absorption in snow samples” by J. Svensson et al.

Anonymous Referee #1

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The authors address the optical behavior of quartz fiber filters samples with BC. The topic itself is of interest for the AMT community, but also for others such as the climate modelling and climate impact community (e.g. regarding surface snow albedo feedback).

The methods used seem to be scientifically sound, but the presentations lacks my major concern is the structure and the “red line” throughout the manuscript. The manuscript is very hard to read and might gain quality if the whole text would be revised (therefore major revisions) to get it a bit more reader-friendly. Besides, a detailed

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discussion of the results is completely missing.

General comments:

Introduction: A short paragraph on the nomenclature should be added. BC as a carbonaceous fraction determined via optical measurement techniques but is strongly related to EC as main light absorbing fraction, but might also include other fractions. These differences should be more highlighted in the introduction.

Section 2.1: The description is a little misleading and hard to follow. A lot of questions arose during reading this section like: - What is the particle size range flowing into the chamber? Cut-off size? - mass ranges of the deposited aerosol - filter material - etc But all these things are getting answered in the subsequent sections. Authors may overthink this kind of structure to help the reader to follow through the rather complex experimental setup. Maybe divide Section 2 in 2.1 airborne sampling procedure and 2.2 liquid sampling procedure.

Section 2.3 Data processing I is very hard to follow the arguments of the authors. What is the message that readers should take or keep for the subsequent sections? Rewrite the section to be more explicit, thereby helping the reader to keep the red line and follow the arguments. Maybe think of reducing the amount of equations, they are not all necessary.

Section 3: Results and discussion A discussion of the results presented is completely missing. E.g. which single-scatterings albedo were found elsewhere? What is the main point authors would like to show in Figure 3? On which filter material and which aerosols were MAC values cited from literature measured?

Conclusion: The main result that the multiple scattering effect is enhanced by 20% with micro quartz filters compared to pallflex filters is not clearly presented.

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