

Interactive comment on “Quantifying organic matter and functional groups in particulate matter filter samples from the southeastern United States, part I: Methods” by A. J. Boris et al.

A. J. Boris et al.

aboris08@gmail.com

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Referee comment:

Based on a series of previous studies (such as Takahama), the author improved the current FTIR measurement method for quantifying organic aerosols. The research topic is of great significance. It can be used not only to quantify the mass concentration of organic compounds, but also quantify the chemical functional group information of organic aerosols.

Author response:

C1

Thank you for your kind summary of, and comments regarding, our work.

Referee comment:

Here is a suggestion to improve this paper. It is hoped that the author can analyze and determine the functional groups in at least a few different samples by other instruments, such as NMR or HR-AMS. The results were used to confirm that the author's FTIR method for the determination of functional groups can be matched with the non-conventional analysis methods.

Author response:

We appreciate this insightful suggestion. Although a comparison to other direct measurements of OM in the same sampling time periods and locations such as NMR or AMS was not possible for this work, we have compared to various southeastern US aerosol measurements: AMS measurements of O/C and H/C ratios (using the van Krevelen space; Section 3.4.4), various measurements of OM/OC, as well as residual OM and TOR OC measurements (Sections 3.4.1 and 3.4.3). In addition to these comparisons, our introduction mentions the work of previous studies directly comparing AMS fragment and FT-IR spectrometry functional group abundances. We have responded to a similar comment made by Reviewer #1, and respectfully request that Reviewer #2 also view our response to Reviewer #1.

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