Atmos. Chem. Phys. Discuss., 14, C4774–C4775, 2014
www.atmos-chem-phys-discuss.net/14/C4774/2014/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Size distribution, mixing state and source apportionments of black carbon aerosols in London during winter time" *by* D. Liu et al.

D Baumgardner (Referee)

darrel.baumgardner@gmail.com

Received and published: 13 July 2014

This manuscript introduces a new approach to apportionment of black carbon in a major urban area. It represents a significant contribution to a growing body of techniques for extracting information from the SP2 measurements and complementary data from the aethalometer.

Given that the study is presented in a logical, orderly sequence, with detailed explanations at each step accompanied by sufficient examples to convince the reader of the veracity of the technique, I have very few comments to make. There are several

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

places in the manuscript where I felt some clarity was needed and my comments may be found in the annotated file that I have uploaded with this review.

There is one suggestion that I will make that the authors are free to ignore or test at some other point. An effective way to extract even more information from complementary measures of size distribution and angstrom exponent is to calculate absorption coefficients from the SP2 size distributions of rBC and a subsequent angstrom exponent. It may be that the size range of the SP2 is too limited to extract an AE that can be meaningfully compared to that from the Aethalometer. On the other hand, closure of this type helps to better understand the sources and might also shed light on the source of the background that at times is quite large.

As I said, the paper is certainly complete as it is. The closure study would just be an extra nugget of information that I don't believe anyone else has attempted yet.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/14/C4774/2014/acpd-14-C4774-2014-supplement.pdf

---

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 16291, 2014.