

Interactive comment on “Refining temperature measures in thermal/optical carbon analysis” by J. C. Chow et al.

Anonymous Referee #1

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The manuscript represents an important contribution to the hot issue of OC/EC thermo-optical analysis, especially with regard to the differentiation between various carbon sub-fractions. In short, the paper seems to increase the complexity of the whole issue, and may seriously undermine the confidence in carbon “bulk speciation” studies. At the first sight, the paper may look purely technical which might rather be placed into a more specialized journal. However, the message of the paper is more than merely a suggestion for making temperature corrections in thermal analyzers because of obvious physical reasons (slow response of thermocouples, distance between thermocouple tip and sample, etc.). It points to the importance of a previously overlooked factor in the interpretation of a wealth of carbon analysis data obtained in long-term measure-

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ments. In other terms, it suggests standardization of the measurement of the most important parameter in OC/EC analysis, temperature. The use of temperature-indicating liquids as certified standards is a clever idea that helps overcome most of the difficulties normally encountered in high-temperature measurements. However, temperature calibration is valid only for a given type of instrument and for a fixed temperature program. This complicates the issue since any change in the temperature program requires new calibration. Apart from this, I would have loved to see in the manuscript a comparison of results corrected for "real" temperatures obtained by different instruments (unlike in Fig. 5 which shows the effect of calibration for a single instrument only). In other terms, demonstration of the fact that temperature correction does help bring OC1..y fractions, or the OC/EC split measured by different instruments closer to each other would have been highly beneficial. This would increase our faith in the atmospheric relevance of various carbon sub-fractions when interpreting long-term observations from various aerosol monitoring networks.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 4477, 2005.

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