

Interactive
Comment

Interactive comment on “Measurement of ambient aerosols in northern Mexico City by single particle mass spectrometry” by R. C. Moffet et al.

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The paper by Moffet et al. and the associated comments are powerful reminders of the complexities surrounding the quantification of size-resolved particle chemistry in polluted atmospheres. For Mexico City's aerosols, an issue of particular importance is the relative contribution from biomass burning as opposed to other sources (e.g., fossil fuel use). Many instruments including the aerosol time-of-flight mass spectrometer (ATMOFMS) and the aerosol mass spectrometer (AMS) are providing a wealth of data from which sometimes diverging conclusions are drawn. Sampling at different locations and under different meteorological conditions can explain some of the differences, perhaps. But meaningful comparisons between measurements can only be made within the frame of carefully evaluated uncertainties. Such uncertainties are in

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dire need of quantification. They must encompass not only precision (e.g. from particle counting statistics) but also a multitude of possible instrument biases, as well as the robustness of complex data analysis methods (e.g., PMF and ART-2a, used to separate samples of high chemical and physical heterogeneity into a finite set of classes that can then be attributed to putative sources or atmospheric processes). Until such uncertainties are better understood and quantified, the interpretation of measurements must be viewed as suggestive rather than conclusive. Nevertheless, the study by Moffet et al. is quite evidently near the leading edge of the science, and the deep and novel insights on aerosol composition are important contributions to the ACP special issue on MILAGRO/INTEX-B.

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