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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Molecular characterization of urban organic aerosol in tropical India: contributions of biomass/biofuel burning, plastic burning, and fossil fuel combustion" *by* P. Q. Fu et al.

Anonymous Referee #1

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The purpose of the manuscript is to elucidate the chemical variability and concentration levels of 155 individual organic compounds associated with the organic fraction of PM10 for the daytime and nighttime for the winter and summer seasons in Chennai (tropical India), presumably for 2008 and determine the influence of biomass/biofuel burning, plastic burning, and fossil fuel combustion. The number and compounds quantified and the selection of potential source markers and indicator compounds is outstanding. But there are substantial issues that hamper the quality of the conclusions. First, a high volume PM10 sampler was employed for the sampling of semi-volatile and

particle-phase organic compounds. Semi-volatile compounds may be mainly lost during sampling from the particulate matter collected and quantification of the "left-over" semi-volatiles may only indicate the tip of the iceberg so to speak. Consequently, some of the conclusions may be invalid considering that losses of semi-volatiles are typically higher in summer versus winter and seasonal comparison therefore very limited. Another major issue is the definition of summer and winter seasons and the actual days of sampling. Winter (23 January – 6 February) is only two weeks long and summer (23-31 May) only one week long. Is the short sampling duration statistical significant to warrant seasonal implications? Most likely not. Many of the numerous figures differentiate winter into "early winter" and "late winter". With the sampling duration indicated in section 2.1 Aerosol sampling, this assumption seems to be very questionable. In conclusion, the manuscript presented highlights some episodically differences in distant source regions with major limitations due to sampling setup and sampling duration.

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