Atmospheric
Chemistry
and Physics
Discussions

Interactive comment on "Submicron aerosol composition in the world's most polluted megacity: The Delhi Aerosol Supersite campaign" *by* Shahzad Gani et al.

Anonymous Referee #2

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This manuscript presents analysis of PM1 (sub-micron) concentrations from a measurement campaign in Delhi, covering more than 1 year and multiple seasons including peak winter time episodes. Authors presented in this manuscript a detailed chemical analysis of the PM1 fraction using an online ACSM, investigated contributions of primary and secondary components in various seasons and for some specific episodes. Authors also presented an understanding of the role of meteorological conditions to observed shares of various chemical species. For Indian cities and especially for Delhi, this is a unique study. The methodology, location of interest (Delhi), analysis, and presentation of the results, fit the scope of ACP journal. I recommend this study for publication.

Minor comments:

PM1 is a subset of PM2.5 and the later is routinely monitored in Delhi. Section 3.1 discusses PM1 to PM2.5 fractions and concentrations are presented in Fig 2. Is it possible to add PM1 to PM2.5 ratio to the plot to see its variation over months? The lines are too close to decipher this.

An open ended conclusion in the study is source for chloride - is it biomass burning or an industrial source or both? Authors assumed that the region is ammonia rich - can this be corroborated with some ground measurements? Is the cluster for steel pickling large enough to support the peak concentrations?

Fig.11 suggests consistently high contribution of secondary PM fraction. While the PMF study (not included in this manuscript) might suggest more conclusions to its origins, given the information on wind speeds, wind directions, and secondary pm formation time scales, is it possible to hypothesize source regions (page 11, lines 5-10)?

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-1066, 2018.