

The manuscript "Measurement report: Hygroscopicity of Size-Selective Aerosol Particles at Heavily Polluted Urban Atmosphere of Delhi: Impacts of Chloride Aerosol" revealed the wintertime chloride emission in the Delhi region governing the enhancement of aerosol hygroscopicity and aerosol-bound liquid water that trigger Delhi's fog episodes. The manuscript is written well and within the interest of the scientific communities. However, there are many gaps in the quality of presentation and lack of clarity in the manuscript.

### **Major Comments**

- The author did not present the schematic of the experimental design. Therefore, it is difficult to understand the different instruments used in the study.
- There is a lack of clarity on the classification of different events e.g., H-BB, H-HOA, H-Cl and clean. For example, how was the event classification made based on the aerosol chemical compositions? There is missing information about these events in figure 1 caption. It is recommended that the author should add a table to the text to discuss the event classification explicitly.
- The mathematical equations used in the text should be cross verified.

### **Minor comments**

Page 1 and Line 27: Expand HTDMA

Page 1 and Line 33: Expand OA

Page 3 and Line 67: Expand IGP

Page 5 and Line 137: This is a repeated sentence.

Page 6 and Line 159: The equation is not correct.

Page 6 and Line 169: It is not clear the modified ion pairing scheme: what is the difference between SA and AS

Page 8 and Line 195: The author should discuss the source of the gas and meteorological data. At what height the met parameters were measured?

Page 8 and Line 196: The author talked about PNSD. It is not clear how they measured it? Is it from the HTDMA or additionally a size spectrometer was used. A detailed schematic experimental design is needed.

Page 8 and Line 205-207: Reference is missing.

Page 8 and Line 213: It is not clear how the intensity of biomass burning activities was determined.

Page 9 and Line 220: Author should explain the nighttime peak of SO<sub>2</sub>.

Page 9 and Line 235: It is not clear about MPSS. Is it a separate instrument associated with the experimental design? If so, why was the MPSS data not presented in this study?

Page 9 and Line 240: ... average mass concentration  $46.5 \pm 39.6$  ug/m<sup>3</sup> consistent with 112 ug/m<sup>3</sup>.... This is not clear.

Page 12: The y- axis of diel Cl plot is not clear.

Page 17 and Line No.398: Author should explain why two linear regressions are drawn in the correlation plot (example Fig. 5a).

Page 18 and Line No.418: Author should provide the ALWC vs mass fraction of AN and AS in the supplement.

Page 19 and Line No 434. The author should clearly mention the dates they consider for a relatively clean period.

Page 22 and Line No 505-507. Is it 39% of BBOA by mass? Figure 8 is not clear. The color coding should be clarified in the plot.

Page 22 and Line No 505-507. The dates and times of the event should be clarified in the figure 1 caption.

Page 23 and Line 535: The x-axis label is missing.

Page 25 and Line 583: However,...time in India...This statement is not true.

#### Supplements

Page 2 and Line 23: Author should present the time series data of MPSS during the study period.

Page 7 and Line 80: I don't see any difference in the probability distributions of BBOA, HOA and ACL. The Author should clarify it.