

## ***Interactive comment on “Morphology, Chemical Composition and Mixing State of Atmospheric Aerosols from Two Contrasting Environments in Southern India” by C. R. Hariram et al.***

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We thank the reviewer for the comments and overall summary evaluation.

1) In p.2 L 34 and 35 two types of measurement system units are presented, one of the metric decimal, when writing the sampler was operated about 1.5 m above ground level, and another when mentioning the flow as at a flow rate of 40 Cubic Feet per Minute (CFM), which refers to the English system. So one or the other should be used

The units are corrected, as suggested

2) It does not present information on how to prepare the samples for analysis in the

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SEM and EDX.

The filter loading and the process of sampling were done following the usual protocols. All operations were done with gloves and forceps to ensure that no external contamination has happened. The collected samples were stored in ziplock covers and stored in airtight desiccator.

The sample loaded filter papers were then prepared for SEM analysis by shredding into squares of area  $\sim 1$  cm<sup>2</sup>. These samples were then carefully adhered to aluminium stubs using conductive carbon tape and were lined with conductive silver paste. In order to avoid charging tribulations and to make the sample conductive, a very thin film ( $\sim 15$  nm) of Gold (Au) was overlaid on the surface of the samples using a sputter coater under Argon gas atmosphere. Similar samples were prepared for SEM/EDX analysis from different portions of each sampled filter paper.

All operations were done in the clean room facility of Micro and Nano Characterization Facility (MNCF) located at CeNSE, IISc, Bengaluru, funded by NPMAS-DRDO and MCIT, MeitY, Government of India following proper standards and regulations. These changes are incorporated in the revised manuscript.

3) Furthermore, it does not indicate each time the sampling was carried out. The details were included only in the table.

Sample name – Place – Date – Start time-End time (IST hours) – No. of particles examined

BLR0 – Bengaluru – 08-08-16 – 18:00-23:00 – 21

BLR1 – Bengaluru – 19-08-17 – 09.45-16.45 – 41

BLR2 – Bengaluru – 19-08-17 – 22.30-06.30 – 47

BLR3 – Bengaluru – 20-08-17 – 09.30-15.30 – 59

BLR4 – Bengaluru – 20-08-17 – 19:00-03:00 – 37

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BLR5 – Bengaluru – 30-08-17 – 18:00-02:00 – 44  
CHK1 – Challakere – 16-08-17 – 14:00-19:00 – 34  
CHK2 – Challakere – 17-08-17 – 00:30-06:30 – 24  
CHK3 – Challakere – 17-08-17 – 09:00-15:00 – 26  
CHK4 – Challakere – 17-08-17 – 18:00-23:30 – 31  
CHK5 – Challakere – 18-08-17 – 03:00-10:00 – 36

Details (date, duration and number of particles analysed) about sampling carried out at Bengaluru (BLR) and Challakere (CHK). The samples BLR1, BLR3, CHK1 and CHK3 are collected during the cleaner hours of afternoon, while the remaining ones are collected during the relatively polluted hours. The aforementioned details about sampling are added in the revised version of the manuscript.

4) It does not explain why it was chosen to place the sampler at a height of 1.5 m, what would be the advantages of this placement.

The main constraint in the sample collection in our urban location was the availability of open space. Thus, in order to avoid the influence of the orography we had to carry out the sampling from the rooftop of a building at a height  $\sim 15$  m above the surface. The height was mentioned as 1.5 m in the ms and has been corrected in the modified version. The sampling site has proper rain protection (in addition to the sampler rain shield) and the obstruction due to the orography was negligible.

5) They speak of the Aethalometer which is not mentioned in the summary, nor does it indicate the use that was given in the course of the work nor the data obtained by the use of it; there is no information on the theoretical aspects of the body of work, it is not explained in what other research has been used, as the advantages offered by its use in this type of research, nor are the aspects of its use in the section described of methodology.

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It has been pointed out by other reviewers too. We have added a short section in the revised manuscript. We have used the aethalometer data mainly to measure the mass concentration of BC in the atmosphere. It will tell us whether the amount of BC itself is changing or not and provide a scale to determine whether the changes in the composition is directly associated with the changes in BC concentration. But this cannot be used as a quantitative scale for the changes in the composition as we are trying to understand the coating of BC over other particles mainly dust.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-745>, 2018.

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