

Interactive comment on “Black Carbon physical and optical properties across northern India during pre-monsoon and monsoon seasons” by James Brooks et al.

Anonymous Referee #2

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Reviewer Comments to Author(s):

This manuscript presents the physical and optical properties of black carbon (BC) over northern India using a single particle soot photometer (SP2). The study mainly focusses on the Indo-Gangetic Plain (IGP) during the pre-monsoon and monsoon seasons. The ms brings detailed information about spatial and vertical distribution of BC aerosols that can help to improve understanding of the role of BC in radiative forcing and climate models.

The work presented in the manuscript well fits into the scope of the journal. Overall, the article is well-structured; however, needs some attention to improve the value/quality

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of the manuscript.

General comments: The authors need to discuss more details about the coating of black carbon, dust particles. How the current work is relevant and implements to climate models over the study area? Also, authors need to use more abbreviations like IGP, BC, SP2 throughout the manuscript.

I am listing below some specific suggestions that can help to improve the quality of the manuscript.

Abstract – The abstract need to revise as the current description is very general, some information possible to move (line 2-10) in the introduction section. – Use abbreviation of Indo-Gangetic Plain (IGP) as it repeated in several places (line 11, 14, 18, 21, 23, 24 and 27). – Please use shorter sentences instead of a long sentence (line 19-24).

Introduction – Page 3: line 2, need references to support the sentence – Page 3: line 13-24, the second paragraph need to revise with good connection with earlier sentences. Also possible to discuss studies which are mainly focusing on BC source apportionment over South Asia. – Page 4: line 19-21, possible to combine these two sentences

Methodology This section is too descriptive so better to move some information is supplement information, this will make more space for results and discussion.

Results – Page 7, line 2, Please start this important section with topic sentences rather than measurements – Page 7, line 18-19, use IGP abbreviation – Page 7, line 15-18, Please explain this in more details – Page 8, 1-2, Need to add more details to support this statement

Conclusions Please revise this full section with more specific outcomes.

Author contributions Please write a full description of SWAAMI project.

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Figures Figure 1, 2 and 3: Use the different color font for text in the figure

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-505>, 2019.