

Responses to the comments from Anonymous Referee-1

We appreciate and are thankful to the summary observations on the importance of this work and positive recommendation of both the reviewers. There are several comments intended to improve the clarity of the work and its quality. We have addressed all these comments carefully and our point-by-point responses to these are given below. The referee comments are shown in red font and our responses to these are given below in black font.

Comment 1: The manuscript title needs to be clear to understand the readers. At present, it is not clear the region where they have conducted the study. Authors have included the campaign name (SWAAMI), but that also abbreviation and not mention even full in abstract.

Complying with this, we have modified the title of the manuscript as follows.

'Assessment of Regional Aerosol Radiative Effects under SWAAMI Campaign – PART 2: Clear-sky Direct Shortwave Radiative Forcing using Multi-year Assimilated Data over the Indian Subcontinent'

The present research has been performed as a part of South West Asian Aerosol Monsoon Interactions (SWAAMI), a joint Indo-UK field campaign, which was focused at understanding the variabilities in aerosol properties and aerosol–monsoon links over the Indian region. The basic information regarding the research campaign, SWAAMI (South West Asian Aerosol Monsoon Interactions) is now briefly mentioned in the abstract of the manuscript (Page No. 1, Line No. 2-5), as indicated by the reviewer.

Comment 2 : Figure captions: I can also recommend to include more details (e.g., study region, abbreviations) in most of the figure captions. There are many abbreviations, and some places short information so hard to read for general readers.

Thanks a lot for this valuable suggestion. We have now modified the captions of Figures 1-9 on the lines suggested by the reviewer. The study region as well as full-forms of necessary abbreviations are now included in the captions of Figures 1-9.

Comment 3: Page 3, Line 13-17: I think authors want to say section 4 rather than section 3. Instead, I can suggest removing the name of sections (i.e., section 3.1, section 3.2, and section 3.3) as it is understandable that included in the result and discussion.

We agree. It should be “section 4.1, section 4.2 and section 4.3” instead of “section 3.1, section 3.2, and section 3.3”. However, the names of the sections are removed from Page No. 3, Line No. 13-19, as suggested by the reviewer.

Comment 4 : Page 4, lines 6-7, which figure?

The correct reference to Figure 1 has been included on Page No. 4, Line No. 10.

Comment 5 : Page 4, line 7-12, please add references to support

The reference to Kompalli et al, (2014) has been included in Page No. 4, Line No. 12 in order to support the statement regarding the seasonality in relation between the mixed layer height and vertical distribution of aerosols. They had analysed the temporal variation of Black Carbon aerosol characteristics and its relation with mixed layer height over central India using balloon based

measurements.

Further, the reference to Moorthy et al., (2005, 2007), Jethva et al., (2005) and Niranjana et al., (2007) have been included in Page No. 4, Line No. 14-15 in order to support the statements regarding seasonal variation in aerosol species observed over the Indian region.

Comment 6 : Page 4, line 12, again which figure?

The reference to Figure 1 has been included on Page No. 4, Line No. 16 from the modified manuscript.

References

Kompalli, S. K., Babu, S. S., Moorthy, K. K., Manoj, M., Kumar, N. K., Shaeb, K. H. B., and Joshi, A. K.: Aerosol black carbon characteristics over Central India: Temporal variation and its dependence on mixed layer height, *Atmospheric research*, 147, 27–37, 2014.

Moorthy, K. K., Sunilkumar, S. V., Pillai, P. S., Parameswaran, K., Nair, P. R., Ahmed, Y. N., Ramgopal, K., Narasimhulu, K., Reddy, R. R., Vinoj, V., Satheesh, S. K., Niranjana, K., Rao, B. M., Brahmanandam, P. S., Saha, A., Badarinath, K. V. S., Kiranchand, T. R., and Latha, K. M.: Wintertime spatial characteristics of boundary layer aerosols over peninsular India, *Journal of Geophysical Research: Atmospheres*, 11, <https://doi.org/10.1029/2004JD005520>, <http://dx.doi.org/10.1029/2004JD005520>, d08207, 2005.

Moorthy, K. K., Babu, S. S., Satheesh, S. K., Srinivasan, J., and Dutt, C. B. S.: Dust absorption over the “Great Indian Desert” inferred using ground-based and satellite remote sensing, *Journal of Geophysical Research: Atmospheres*, 112, <https://doi.org/10.1029/2006JD007690>, <http://dx.doi.org/10.1029/2006JD007690>, d09206, 2007.

Niranjana, K., Sreekanth, V., Madhavan, B. L., and Krishna Moorthy, K.: Aerosol physical properties and Radiative forcing at the outflow region from the Indo-Gangetic plains during typical clear and hazy periods of wintertime, *Geophysical Research Letters*, 34, <https://doi.org/10.1029/2007GL031224>, <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2007GL031224>, 2007.