Response to Reviewer #1

We thank the reviewer for helpful comments. Our responses to the reviewer's specific comments are listed below. The reviewer's concerns are in bold italicized font and our responses are in regular font. The page numbers and line numbers given in our responses below are in reference to the revised version of the manuscript.

The manuscript titled "OMPS-LP Aerosol Extinction Coefficients And Their Applicability in GloSSAC" by Kovilakam et al. evaluates and compares two different aerosol extinction coefficient products from the Ozone Mapping and Profiler Suite (OMPS) – OMPS(NASA) and OMPS(SASK) – along with other available space-based measurements (such as OSIRIS and SAGE III/ISS). The article aims to assess the performance of these products, particularly following significant stratospheric aerosol events like volcanic eruptions, and to determine the best retrieval approach for integrating OMPS data into the Global Space-based Stratospheric Aerosol Climatology (GloSSAC). Additionally, the article seeks to identify potential limitations of using these datasets for understanding future volcanic and smoke events and their impacts on climate. Their findings help inform decisions about which aerosol data products are suitable for integration into the GloSSAC, ensuring that the climatology remains robust and reliable.The article identifies potential limitations and areas for improvement in aerosol retrieval methods, guiding future research efforts to enhance data accuracy and reliability.It is recommended for publication after considering minor suggestions.

Specific comments

Page 1, L14, and here after: Update any instances of "40OS" and "40ON" to "40^0S" and "40^0N" throughout the document to accurately represent geographical coordinates using degree symbols.

Done. Thanks.

Page 9, L223, 224, Review and modify all occurrences of "2.13 X 10^{-2} and similar expressions. Replace them with "2.13×10^{-2}" , ensuring consistent use of the multiplication symbol ($\times$) and superscript for exponents for clear scientific notation.

Thanks. We have ensured consistent use of multiplication symbol ($\times$) and superscript for exponents in the manuscript.

Page 23, L372, "overestimation of extinction coefficient poleward of 40^0S and 40^0N as shown in Figure 3d". Is it in Figure 3d? It seems the OMPS(SASK) data are shown in Figure 3b. If it is misreferenced, update it to refer to the correct figure.

It is now corrected to Figure 3b (line 365). Thanks.

And, it would be beneficial to expand on the discussion related to Figure 3, incorporating insights about the "overestimation of extinction coefficient poleward of 40^0S and 40^0N." This could involve explaining what the overestimation indicates and any relevant implications in this area.

As noted in the manuscript (lines 265-269), the overestimation poleward of 40^0S and 40^0N may be due to cloud contamination in the OMPS(SASK) data and a seasonal cycle influenced by changes in scattering angle and assumptions about particle size. The OMPS(NASA) retrieval uses a gamma size distribution, while the OMPS(SASK) retrieval employs a log normal size distribution, which likely contributes to the differences in the seasonal cycles. We understand that the OMPS(SASK) team is currently investigating this issue and considering of moving the retrieval wavelength to 869 or 997 nm, which could help mitigate these problems.

Page 24, check Figure 9 for panel markings. Add labels such as (a), (b), (c), etc., to each panel if they are not already present.

Labels are now added. Thanks.