

Interactive comment on “Implications of MODIS bowtie distortion on aerosol optical depth retrievals, and techniques for mitigation” by A. M. Sayer et al.

Anonymous Referee #3

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The authors of this manuscript discuss the “bowtie effect” - the effects of the increasing distortion of the MODIS pixels with its increasing scan angles - on the MODIS aerosol products. Given the wide use of the MODIS aerosol products over the world, I think it is necessary to bring up the issue at this time as many users of MODIS aerosol products are not aware of the issue and sometimes complain about the strange feature and relatively low resolutions MODIS aerosol products near the edges of MODIS scans when they plot the maps of the MODIS aerosol products. The manuscript is very well written. The authors concisely discuss the issues related to the bowtie effect and provide potential solution for the operational MODIS aerosol products to reduce the impact of the distortion. I believe the topics and the methods of this study are appropriate for Atmo-

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spheric Measurement Techniques (AMT) and I would like to recommend publication of this manuscript in AMT. I have minor comments as provided below.

In section 3.1, it would be great if authors can explain more details on how reordering L1B data can be done. Was it done by simply rearranging the L1B pixels in increasing/decreasing order of latitudes at each column of MODIS data array and by providing new row indices to the corresponding L1B pixels?

I believe that the aggregation of number of L1B pixels for aerosol products have an effect to reduce the noise in aerosol retrievals. So, reducing the number of pixels to aggregate toward the both edges of MODIS scan may have an effect on the retrieval noise level. It would be great if authors can address such possibility and present any suggestion on relevant data quality control methodology.

Do the potential mitigation methods suggested in the manuscript have any impact on the aerosol size parameters such as Angstrom exponent? Also, it would be great if authors can mention about the implication of the methods on the L3 data processing (or resultant aerosol statistics)?

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