

Interactive comment on “Maritime Aerosol Network as a component of AERONET – first results and comparison with global aerosol models and satellite retrievals” by A. Smirnov et al.

Anonymous Referee #2

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This paper presents unique and valuable results from first analyses of aerosol optical depth (AOD) measurements acquired with ship-borne handheld Microtops sunphotometers that comprise the Maritime Aerosol Network (MAN). At the time of writing, more than 80 cruises had either been completed since 2004 or were ongoing. The authors analyze the latitudinal dependence of AOD by grouping the data into six geographical regions: Atlantic Ocean, Pacific Ocean, Indian Ocean, Southern Ocean, the inland seas (Baltic, Black, Mediterranean), and the Bering and Beaufort Seas. They present frequency of occurrence graphs for these regions for daily averaged AOD, Angstrom

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parameter, and coarse mode fraction, in addition to composite values for all oceans excluding the inland seas. Finally, they investigate the latitudinal dependence of AOD differences between various global aerosol transport models and the sunphotometers, and between various satellite sensors and the sunphotometers.

The manuscript is extremely well-written and should require very little revision before final publication. Reviewers are often quick to suggest elimination or consolidation of figures, but I have the opposite view in this case. Although certainly not critical, the authors might consider adding a figure that plots latitude vs. Angstrom parameter – that is, comparable to their Figure 3 for AOD. In the first paragraph of Section 4 (Page 12), the authors note that the MAN Level 2.0 data “were spectrally adjusted using log-linear interpolation to the ‘validation’ wavelength of 550 nm.” Why the choice of log-linear instead of log-log interpolation, which seems more in keeping with an assumed Angstrom spectral dependence? It is doubtful that this would make much difference over this wavelength range.

Prior to final submission, I suggest the following minor edits:

Page 4, Line 4: Change “Measurements” to “Measurement”

Page 6, Line 14: Replace “changes” with “change”

Page 6, Lines 18-20: Is it feasible to label some of the South Indian Islands in Figure 2 for those of us who are geographically challenged?

Page 7, Line 18: change “ucts however fine and...” to “ucts; however, fine and...”

Page 8, Line 4: Replace “between three oceans” with “among three oceans”

Page 9, Line 8: Add a comma after “However”

Page 9, Line 18: Replace “0.65 however it is...” with “0.65; however, it is...”

Page 9, Line 23: Add a comma after “Overall”

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Page 10, Line 9, and various figure captions: Do the authors really want to use the plural in “frequency of occurrences” or is “frequency of occurrence” preferable?

Page 10, Line 19: “fist” should be “first”

Page 11, Line 2: Replace “comparable with. . .” with “comparable to. . .”

Page 11, Line 12: Replace “basis of comparison” with “basis for comparison”

Page 11, Line 13: May want to substitute “Although” for “While”

Page 11, Line 14: Add a comma after 0.06-0.08, and also change “comparable with” to “comparable to”

Page 11, Line 15: Replace “by approximately of a factor of 1.5 to 2” with “by a factor of \sim 1.5 to 2”

Page 11, Line 20: Move the Greek alpha after “in the majority of cases”

Page 11, Line 23: Replace “(Fig. 4e,f) however AOD” with “(Fig. 4e,f); however, AOD”

Page 11, Line 24: “Fig. 4f” should be “Fig. 4e”. The authors may want to rephrase this as follows: “. . .higher AODs in the Baltic, Black, and Mediterranean Seas (Fig. 4e) and towards smaller AODs in the Bering and Beaufort Seas (Fig. 4f).”

Page 11, Line 27: Replace “is presented” with “are presented”

Page 12, Line 8: Replace “0.10 for vast majority” with “0.10 for the vast majority”

Page 14, Line 27: Change “higher AOD and difference” to “higher AOD and this difference”

Page 15, Line 2: The positive bias actually seems to be evident south of about 45 deg S.

Page 15, Line 12: Add a comma after “however”

Page 15, Lines 20-21: Use plural for “product” in “data assimilation product”; then

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replace “shows a significant” with “show significant”

Page 16, Lines 2-3: Add a comma after “Rather” and remove the comma after “and” in “and in what. . .”

Page 16, Line 6: Delete (or don’t delete) the commas and move “at least partly” to follow “can be explained”

Page 16, Line 13: If the authors change “frequency of occurrences” to “frequency of occurrence” elsewhere, then need to change it here also.

Figure 7 caption: Append “for oceanic areas excluding the inland seas” to the end of the sentence.

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