

Interactive comment on “Global and regional trends of aerosol optical depth over land and ocean using SeaWiFS measurements from 1997 to 2010” by N. C. Hsu et al.

Anonymous Referee #2

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Review of “Global and regional trends of aerosol optical depth over land and ocean using SeaWiFS measurements from 1997 to 2010” by Hsu et al., submitted to Atmos. Chem. Phys.

The authors study trends in total aerosol optical depth as retrieved from the SeaWiFS instrument over the period 1997–2010. This is good paper. Links with the ENSO and NAO indices are interesting, and the comparison to AERONET trends is useful. I recommend publication after the following comments have been addressed.

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1 Main comments

- As listed by the authors in the introduction, change in sampling can affect the trend analysis. In section 4.2, we are told of changes in sampling affecting AVHRR trends. Is SeaWiFS sampling of optical depth stable? Are there no regional trends in clear-sky pixel counts over the period?
- It would be useful to replicate Figure 9, but for a measure of interannual variability, for example the standard deviation of the timeseries corrected for the linear trend. Such a map would highlight regions of large interannual variability more clearly than statistical significance.

2 Other comments

Page 8468, lines 16–18: A reference would be useful to support that statement. Note that it is not valid over land, although it does not affect the point the authors want to make.

Page 8468, line 24: For the reader to judge on the "extraordinary level" of SeaWiFS calibration, can you give corresponding numbers for a less exceptional instrument?

Page 8483, line 4: Since trends nearer the biomass-burning sources are not significant, does that imply that there has been a change in transport pathways?

3 Technical comments

Page 8474, line 16: Remove extra “between”

Page 8484, line 5: “decrease in”

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Figures 3 and 9: "Dots indicate significance at 95% confidence level." Dots are not easily visible on those maps.

Figure 7, bottom panel, and Figure 10: Could you add the zero-line on the anomaly timeseries?

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