

Interactive comment on “Ship borne rotating shadow band radiometer observations for the determination of multi spectral irradiance components and direct sun products for aerosol” by Jonas Witthuhn et al.

Anonymous Referee #1

Received and published: 2 November 2016

There is much to like in the submitted publication- Ship borne rotating shadow band radiometer observations for the determination of multi spectral irradiance components and direct sun products for aerosol written by J. Witthuhn, H. Deneke, A. Make and G. Bernhard. I cannot, however, recommend that it be published at this time because I think it is incomplete. The authors make the assumption that the solar spectral irradiance at the top of the atmosphere is perfectly known. This is not true and this source of error needs to be taken into account in their analysis as was the case in Miller et al, 2004. Furthermore this new device needs a Langley calibration. I strongly disliked figure 12. I recommend keeping the land based measurements in one part of the fig-

C1

ure and the marine observations in another. I would also include designated regions for different aerosol types as was done. In section A of the figure plot the Cimel and GUVis data and in section B plot the Microtops and GUVis data. I found a discrepancy between the text and figure for figure 11. “Figure 11 shows the daily mean values of AOD obtained from the Microtops and GUVis measurements during the whole cruise. Shown also is the uncertainty estimate as described in Sect.4.1.” I don’t believe the uncertainty is shown. I would like to see the figure redrawn. I think it would be better without the lines and with points with errorbars for the GUVis data that can be clearly seen. A separate portion should be used to show the difference between Microtops and GUVis mean observations.

Miller, M.A., M.J. Bartholomew, and R.M. Reynolds, 2004. The accuracy of marine shadow-band sun photometer measurements of aerosol optical thickness and Ångström exponent, *Journal of Atmospheric and Oceanic Technology*, v21, p. 397 – 410.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-297, 2016.

C2