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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Intercomparison of satellite retrieved aerosol optical depth over ocean during the period September 1997 to December 2000" *by* G. Myhre et al.

G. Myhre et al.

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Response to Reviewer 1. We thank the reviewer for many constructive suggestions for improvement of our paper

The paper could be better presented. Despite a number of English speakers in the author list, the language is not better than mine ˇE There is a very large number of figures, and some of them are not realy needed (Fig 1c, Fig 2b, 2c). Fig 8 is hard to read.

Response: Some of the co-authors have helped with improving the language and Fig 2b and Fig 2c are deleted

P8204 l25: POLDER, MODIS and MISR are well suited to monitor aerosols, but they have other objectives. They are not dedicated to this task. P8206 l25: to convert TOMS AOD from the UV to the visible, which monthly mean at 550 is used ? P8207 l22-24: Not clear. This paragraph discusses the accuracy of sunphotometer AOD measurements. Sunphotometer measure directly the AOD and are not affected by particle shape or size distribution as these sentences indicate.

Response: P8204, L25: changed from 'dedicated to investigate aerosols' to 'especially suited for monitoring of aerosols'. P8206, L25: We have added that the data used for the scaling are TOMS data. P8207, L22-24: This paragraph has been deleted

P8208 l19. The limited coverage is not due to orbital drift, but rather to low sun at the local time of observation which limits aerosol retrievals. The fact that measurements are available for given years and not for others at mid latitudes is due to a different time of observation, which is a result of orbital drift.

Response: P8208, L19: The original sentence is replaced by 'The spatial coverage in different AOD in products is limited to those areas which get enough solar illumination to generate sufficient reflected energy to be detected from a satellite in a specific orbit'

P 8208 l27: It should be easy to tell whether aerosol in Northern Pacific are predominantly pollution or sea salt from the Angstrom coefficient.

Response: P8208, L27: The following sentence is added: 'The Ångström Exponent is higher than in most of the other oceanic regions. The gradual decrease from the Asian Continent in this parameter indicates a combination of industrial pollution and sea salt aerosols.'

P 8213 l24 to P!214 l 11: There is a discussion on the effect of water vapor and clouds on the AOD and how it may affect its spatial variation. This discussion is not clear, and I did not understand the conclusions. If there is no conclusion, one may simply say that aerosol-cloud interactions may affect the AOT, leading to biases in the point

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measurement of the photometer and the area-averaged of the satellite product.

Response: P8213, L24 - P8214, L11: This is an important issue in satellite aerosol retrievals. The paragraph has been rewritten and reorganized to make the discussion clearer. The conclusion given in the paper is that further investigations are needed.

P8214 l24: A low value of SeaWifs monthly averaged compared to the satellite product is expected as large optical depths are removed before computing the monthly mean.

Response: P8214, l19: The following sentence is added: 'This is what can be expected since this retrieval has a threshold value for AOD.'

P8215: One discusses the number of Sunphotometer measurements used to compute a monthly mean. One should make a similar discussion for the satellite products that may also be based on a limited number of measurements.

Response: P8215: Sufficient data for such an analysis have unfortunately not been available for this investigation

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Interactive comment on Atmos. Chem. Phys. Discuss., 4, 8201, 2004.