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Atmospheric Measurement Techniques Discussions

Interactive comment on "A sea surface reflectance model for (A)ATSR, and application to aerosol retrievals" *by* A. M. Sayer et al.

Anonymous Referee #2

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Sea surface reflectance is a crucial parameter needed in optical oceanography. This manuscript presents a sea surface bi-directional reflectance model in the visible and near-IR bands which accounts for contributions from water-leaving radiance, sun glint and whitecaps. By taking advantage of the dual-viewing capability of the (A)ATSR instrument, the model has extended meaningful retrievals into the glint-contaminated area. The model is applied to aerosol retrieval algorithm and the results are compared with MODIS-Tera measurements and two in-situ observations. The authors suggest that the higher aerosol optical thickness values retrieved by MODIS in high-wind regions may be caused by assumptions made in MODIS algorithm. This work will be of great interest to the atmospheric and ocean optics community and definitely merits publication in AMTD. I have several minor comments as follows.

1. Page 1207, lines 4 and 5: "Mischenko" should be "Mishchenko". 2. page 1042, 2nd paragraph. The authors focus on case I waters which are usually open (deep) oceans and thus the bottom reflectance formulations on page 1043 are not necessary. 3. The authors adopted the Cox-Munk wind-anisotropic glint model in this work. Is there any wind-direction effect in this sea surface BRDF model? For example, if one plots directional-hemispherical reflectance as a function of wind angle (with respect to sun or viewing azimuth, for example) and solar zenith angle (similar to Fig. 5), is there any regular pattern? 4. For Figs. 11-14, I would like to see more specific information such as geo-locations, sun-sensor geometry and wind speed to assist the reader. For example, a table indicating the typical or maximum/minimum wind speed accompanying each plot will be helpful.

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