

Interactive comment on “A geometry-dependent surface Lambertian-equivalent reflectivity product for UV/Vis retrievals: Part II. Evaluation over open ocean” by Zachary Fasnacht et al.

Anonymous Referee #2

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The current study derives the geometry-dependent surface Lambertian-equivalent reflectivity (GLER) using VLIODRT model by considering water leaving radiance for Case I water and polarized Cox-Munk water surface BRDF model. The calculation of GLER also makes use of satellite wind speed, MODIS ocean chlorophyll products, and GEOS-5 wind speed and direction datasets. Though validation against the OMI-derived LERs, the GLER data show consistent geometry dependency as well as low bias. Authors also investigated the sensitivity of GLER to potential error sources, including the presence of aerosols, wind speed, and chlorophyll concentrations. Overall, the study is reasonably designed and the paper is well written. It demonstrates that GLER is an improvements over climatological surface LER datasets, which is valuable

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for implementation in the coming ocean missions such as the PACE. I only had a couple of comments listed as below.

Page 7, line 34-35 reads “We select sun glint scenes when the difference between the measured LER at 354 nm and 388 nm is less than -0.05.” How is the threshold value chosen? Is there any reference or evidences indicating this number represents a good threshold? And why not define sun glint based on the co-scattering angle (or sun-glint angle)?

Page 17, line 3-5: “There is also a seasonal variation in GLER due to the changing viewing geometry of satellite measurements as the SZA changes through the year.” Can the authors add more evidence to prove this statement? It seems to the sun glint may play an import role in the seasonal variation. I also curious if the seasonal variation is also related to any seasonal changes in wind speed or chlorophyll concentration. So it would be helpful if the time series for, sun glint angle, wind speed, and chlorophyll concentration are also provided (at least examined by the authors).

Ok. Continuing my last comment, the sensitivity analysis in section 3.5 indeed confirms that changes in chlorophyll concentration will not be able to cause the GLER seasonal variation.

Page 22, line 18: “lambda” is . → “lambda” is the wavelength.

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