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Ocean Science Discussions

Interactive comment on "Quality control of automated hyperspectral remote sensing measurements from a seaborne platform" *by* S. P. Garaba et al.

Anonymous Referee #3

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General Comments:

The article described four data quality flags used for automated and unmanned hyperspectral sensor that measures above-water spectrum. However, the emphasis was given to the sun glint mask, while the rest three meteorological flags based on solar irradiance were just briefly introduced. The measurement of sea surface and sky radiance spectrum is accompanied by simultaneous snapshots of sea surface and sky by a dual camera system, based on which subjective analysis was performed to classify the radiance data into two categories: data affected by sun-glint and data unaffected by sunglint. After that, numerous test has been performed using various spectral-minimum or

spectral-mean remote sensing reflectance or water-leaving radiance values and band ratios as the threshold to objectively classify the data. The previous subjective analysis results are then used as truth to evaluate the performance of the objective analysis. Among all the test performed, the authors found that the best results came from using spectrum-mean water leaving radiance of 2 mWmˆ-2nmˆ-1 or spectrum-minimum remote sensing reflectance of 0.01 Srˆ-1 as the threshold. The authors also concluded that valid optical measurements can be performed at any solar-sensor azimuth angle.

The title of the manuscript seems to be a little inappropriate, since it is focused on the sun glint mask. The three meteorological flags were just briefly introduced, to which no effort has been given and the authors seemed to just follow the previous studies. I will think an appropriate title will be something like "Sun-glint masking for an automated seaborn hyper-spectral remote sensing platform".

The work is interesting and unique in the way the authors used cameras and performed subjective analysis to form the basis or truth for the various objective sun-glint masking tests. The resulting thresholds can be of certain value for similar studies. However, I think some specific aspects need to be addressed satisfactorily before this article can be published in OS.

Specific Comments:

1. for the subjective analysis, no detail information has been given. It is a crucial process since it is a basis for all the objective analysis. Without detailed info on the criteria to classify the with-sun-glint and without-sun-glint data, it is impossible to confirm the reader the result from this test as truth data is justified.

2. Sometimes effect of sun-glint is not apparent by simply looking. There is a gray area of sea surface between sun-glint-affected and sun-glint-free. The data from this area is contaminated. Is these kind of data subjectively classified as with-sun-glint also? if so how is it identified?

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3. about the threshold for the sun-glint mask. It is a little bit confusing to me. Is the data affected by sun-glint have higher-than-normal radiance due to sun-glint from water-leaving radiance, or lower-than-normal due to subtraction of very high sky-radiance from sun? It had better be clarified in the manuscript.

4. about data normalization in Fig.5 and Fig.6. I don't believe normalization by maximum is justifiable since it lacks physics meaning. Normalization is generally used to remove effects that you don't want to include. For Lw, you can normalize it by Es (extraterrestrial solar irradiance) to remove effect of difference in solar irradiance. But that's just Rrs. Rrs itself should not be further normalized.

5. about the conclusion that valid optical measurements can be performed at any solar-sensor azimuth angle. As I just mentioned in point 2, there may be lots of data in "no sun-glint" group that is actually contaminated by sun-glint. Also what is the error introduced when the ship "pitch, row and yaw"?

Interactive comment on Ocean Sci. Discuss., 8, 613, 2011.