Open Access Earth System Science Data Discussions

Earth Syst. Sci. Data Discuss., author comment AC1
https://doi.org/10.5194/essd-2021-321-AC1, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Reply on RC1

Chuanmin Hu

Author comment on "Hyperspectral reflectance spectra of floating matters derived from Hyperspectral Imager for the Coastal Ocean (HICO) observations" by Chuanmin Hu, Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-321-AC1, 2021

First, I would like to thank Dr. Launeau for the constructive comments to help justify this work and to better interpret the spectral shapes. Below I address these comments, while the corresponding changes can be found in the revised manuscript.

On the choices of 3 channels to compose RGB: land remote sensing community often used (NIR R B), but then land appears reddish and therefore unnatural. Instead, (R NIR B) will make land appear greenish and also floating vegetation greenish. The NOAA OCView tool (https://www.star.nesdis.noaa.gov/socd/mecb/color/ocview/ocview.html, press "f" on the first page) also used FRGB to inspection of global images. Afterall, these images are used for quick looks to find spatial anomalies, so as long as they can serve for this purpose then either combination should be fine.

I added a reference on the NOAA OCView to further justify the use of FRGB.

On the origin of the red-edge reflectance and other reflectance features – I added more descriptions and references, as explained above. This addition should make the paper more informative although its focus is to demonstrate how to derive hyperspectral reflectance from mixed pixels and to provide such derived spectra for community use.

On the omission of the 673-nm band in calculating the SAM values: this was done on purpose. The reason is to make it easier to classify different floating algae types. When they form scums or mats, they all show similar red-edge reflectance and therefore similar reflectance trough at 673 nm. Therefore, the inclusion of 673 nm would lead to a lower SAM value, making different types appear more similar (as compared with the same SAM calculation without 673 nm). The justification is already included in the manuscript but I clarified it in both the text and the table caption in the revised manuscript.

On explaining the various pigment-induced reflectance features: I tried to organize results according to the floating matter types (macro, micro, non-living, etc) and explain them sequentially. But I see your point, so I added one paragraph at the end of the Results section to briefly mention the pigment-induced spectral features, while more details are provided in the section below.

On Sargassum/Ulva versus other brown/green algae: I totally agree that the original statement is an oversell – that type of differentiation only refers to the "endmembers" presented in this paper as opposed to *all* possible endmembers in nature. In the revision

this point is well taken, and the sentence is rewritten to clarify.

On reorganization chapter 4 to better justify the use of hyperspectral data – this is a good point. Now in the Introduction of the revision, more justifications are presented by citing relevant literature. On the other hand, it’s hard to present detailed descriptions of pigment absorption before reporting the spectra, so those descriptions are still kept in chapter 4.