

## Comment on bg-2021-347

Anonymous Referee #2

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Referee comment on "Spatial and temporal dynamics of suspended sediment concentrations in coastal waters of the South China Sea, off Sarawak, Borneo: ocean colour remote sensing observations and analysis" by Jenny Choo et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-347-RC1>, 2022

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Dear Editor,

Thanks for the opportunity to review the manuscript titled "Spatial and temporal dynamics of suspended sediment concentrations in coastal waters of South China Sea, off Sarawak, Borneo: Ocean colour remote sensing observations and analysis", authored by Jenny Choo et al. My general observation is that the manuscript does not contain any significant flaw in terms of the scientific methodology. The approach is sound, the analysis is clearly explained, and the inferences are supported by the results. The manuscript, as a whole, is written well and is easy to follow.

Inasmuch as the manuscript is scientifically solid with regard to the methodology and analysis, the results and inferences are not anything new. The manuscript does not present any new information that is not previously known. It is generally understood that sediment concentrations tend to follow precipitation and river discharge amounts, though there may be some lags and discrepancies in the patterns due to a number of factors. The authors mention the possible factors causing the lags and discrepancies but do not go on to investigate and ascertain the factors – perhaps that is beyond the scope of this manuscript. Nevertheless, the manuscript does present a fairly substantial analysis of spatial and temporal variations in sediment concentrations in the study area over a long period of time and could be potentially useful for natural resource managers and environmental policy makers in the region.

My overall assessment is that this manuscript is worth publishing, though the methodology and the results are neither innovative nor new, provided the authors address the following comments.

The following are some specific comments, which are few because the manuscript does

not focus on the methodology but on the discussion of spatial and temporal patterns of sediment concentrations:

#### **Comment #1:**

The approach undertaken for retrieving sediment concentrations is not new. Empirically parameterized spectral band ratio algorithms have been around for a long time. Nevertheless, this, in and of itself, is not a disqualifying factor because if the band ratio algorithm gives the best results then it does not matter that the algorithm or its basic approach is not new. However, it would have been better to see a comparative analysis of a few different algorithms. Are the same spatial and temporal patterns captured by more than one algorithm? Are there differences in the spatio-temporal patterns across various algorithms? I believe that these are important questions and, if addressed, would add significant value to the manuscript. The authors have mentioned – on page 9, above Eqn. (2) – that they tried a variety of models; however, no results are shown. It would be helpful to see results of this analysis, showing what other models were tried and how each performed.

#### **Comment #2:**

In general, the description is a bit too long. There is a lot of discussion about the spatial and temporal variations in sediment concentration, with observations made regarding discrepancies from expected patterns. However, the reasons attributed to the discrepancies are presented more as reasonable conjectures rather than confirmed facts. It might very well be the case that there is not enough data to make anything more than a reasonable conjecture, and that is understandable. In this case, it would be helpful to tighten up the discussion, focusing on what is important. Do the results indicate anything new or surprising? If not, focus on the main inferences that might be of value to regional environmental managers and decision makers, and shorten the discussion.

#### **A Few Minor Comments:**

The manuscript is written well, in general. However, there are a few instances of minor issues with the grammar and sentence structure that need to be corrected:

- In the Abstract, for the sentence starting towards the end of line 21, consider something like the following: "The average TSS concentration in these coastal waters was in the range of 15 – 20 mg/L".
- In the Abstract, on line 27, "Map of relative..." => "**A** map of relative..."
- In page 7, Section 2.2, line 169, the phrase "TSS measurements data" sounds a bit awkward. Consider rephrasing it as either "TSS measurements were taken from..." or

"Data of TSS concentrations were taken from..."

- On page 8, line 182, consider replacing "high-sun elevation angle condition" with "high solar elevation angles".
- On page 8, line 192, "apply regional" => "apply **a** regional".
- On page 8, lines 192 and 193, it might be better to replace "a total number of 35 TSS datasets" with "a total of 35 different datasets of TSS concentrations" in order to make it clear that you mean 35 different datasets and not one dataset with 35 data points.
- On page 10, line 231, "Equation (3), (4), and (5)" => "Equations (3), (4), and (5)" (add an "s" to make equations plural).
- On page 11, line 250, the sentence is rather awkwardly phrased. Please consider rephrasing it to something like the following: "...waters of this type do not have the same spectral characteristics as phytoplankton-rich waters" or "this type of waters is not spectrally similar to phytoplankton-rich waters".
- On page 14, line 310, the word "part" or "region" should be added in between "northeast" and "of the study area".
- On Page 14, line 312, "temporally average" => "temporally averaged"
- On page 16, line 348, it's not clear what the authors mean by "6192 time steps" – are these 6192 images taken of the same area at different times?
- On page 31, line 593, the authors probably mean figure "13d", not "15d".
- On page 34, line 644, "impede" => "impedes"
- On page 35, line 677, "reported a low" => "reported low"