Abstract

Line 25 – This sentence does not read well. Please consider rephrasing into "Study **of the** temporal TSS variation provide**s** …." (i.e., add 'of the' and a final 's' in the verb).

Line 30 - This sentence does not read well. "study on the" should be "study **of the**"

Line 34 – "**The** results"

Keywords

Comment: I find it interesting that 'Open Data Cube' is listed as a keyword but it does not appear at least once in the Abstract.

Introduction

Line 92, is there a reason why the Authors are focussing on US satellites only, and why is there only one example mentioned as a (worse) alternative to MODIS? How about the ESA Sentinel-2 MSI and Sentinel-3 OLCI sensors, for example? They may be European, but they are used for global applications.

Line 98 – "less satisfactory" than what? There is no comparison. Perhaps the Authors mean "**unsatisfactory**", which is demonstrated by their validation with in-situ data.

Line 101 - the Authors introduce the notion of a 'water class type', without explaining it. If this paper is addressed to policy makers and water resource managers, this type of term should perhaps be clearly defined. If the readership is expected to be scientists only, then you may leave it as it is.

Line 114 – "of **a** band ratio TSS model **when** applied **in**…" (i.e., add 'a', replace "to be" with 'when' and replace "within" with 'in').

Line 120 – "at river mouths" in general? Or of your study area? If so, I would specify with names or at least say "at **the** river mouths **located within the study case area**".

Methodologies

Line 122 – "**The** figure below"

Line 123 – "using **an** atmospheric**ally**-corrected". (i.e., you need an article and correct it to read 'atmospherically').

Figure 1: Box 5 - as above for line 123. Box 6 - Readers may be confused here by the choice of terminology. Did the Authors retrieve GPM datasets, or source/extract them? Retrieval in remote sensing is generally used to describe the process when one applies a model to remote sensing data to estimate (i.e., retrieve) a parameter value. But as they describe below, they sourced ready-made GPM products for this study, in which case I would replace the noun "retrieval" with the verb "source" or the noun "extraction" (the latter is also used later on in the text, see Line 305).

I find ODC mentioned a couple of times already before it is introduced and described in Line 285. I believe it would greatly improve the paper if ODC was introduced much earlier, i.e., a sentence in the Abstract and some background context in the Introduction before it is fully described in the Methods.

Line 161 – "which comprise**s**" (please add final 's' to the verb)

Line 162 – “consists **of a tidal** river channel”

Please replace “oil palm” with “**palm oil**” throughout the manuscript.

Line 174 – “Sadong river **is** about 150 km **long** and…”

Line 185 – “prior to **the** weighing process”

Line 186 – “Full details of **the** water sapling and TSS analysis **are** available…”

Line 199 – Isn’t the “visible/ultraviolet” part of the spectrum already mentioned when you say “covers the spectrum of ultraviolet and visible light” earlier in the same sentence? It looks like an error here and I think the authors probably mean the ‘near-infrared’, which starts approx. at 800 nm and goes beyond their measured 950 nm. Please revise accordingly.

Line 205 – “to MODIS-Aqua product” should be revised. Do the Authors mean ‘to MODIS-Aqua data’? The **product** would be the output of the Authors’ new TSS retrieval model after it is applied to the satellite **data**. So, “MODIS-Aqua data” is your satellite data used to retrieve the “MODIS-Aqua TSS product”.

Line 207 – “convolved to generate MODIS-Aqua data” – please explain. Do the Authors mean that they used the in-situ remote sensing reflectance measurements to simulate MODIS-Aqua wavebands? If so, can they please (1) describe how the simulation was performed and (2) correct this sentence so that it refers to the in-situ spectral data (now it mentions the in-situ TSS concentrations, i.e., the samples). From reading the manuscript, it looks to me that they derived a model by correlating in-situ remote sensing reflectances and TSS sampling data (boxes 1-2 in Fig 1), and then applied that model to MODIS-Aqua. If so, can they please mention (1) which Aqua wavebands were used instead of the original (very narrow) TriOS-RAMSES spectral bands in the application of the model to the satellite images, and (2) what implications this approach may have on the final outputs and the output accuracy? If the Authors did not take this approach, can they please explain the benefit of using in-situ reflectances to build their model instead of using directly satellite data for the model development?

Line 212 – “of **the atmosphere** and irradiance ...”.

Line 216 – “as **the** dependent variable”

Line 217 – “logarithm**ic** functions”

Line 242 – “the log-transform**ation**”

Table 2 - “a log-transform**ation**” and “**The p**ower function model is selected…”

Comment: The authors used 35 samples to develop their model, which is quite low number for statistical significance.

Figure 4 is concerning. Are these 35 measured TSS points the same as the ones used to train the model (model TSS points)? One would naturally expect a good fit given that the modelled TSS points are based on these observed 35 points! This figure should be removed.

I very much welcome the discussion in lines 259-272 to explain the limitation of non-transferability of this empirical model.

Line 277 – please refer to the input data as “data” not “products”. The products in this manuscript are the TSS estimates based on the Authors’ power function model. Please apply this throughout the manuscript, where needed.

Line 430 – “there **are** no apparent patterns …”

Lines 507-521 are a repetition of Lines 496-506. I propose the Authors merge these two paragraphs into one and delete all repetitive statements.

Line 580 – the Authors should mention that uncertainty in their TSS retrievals mean that this small trend cannot be interpreted as fake or real, because such small variability in TSS retrievals lie within the error of their power function model (see table 2).

Conclusion – I would like to see a paragraph talking about the limitations of the Authors’ model, e.g., it is not transferable to other water optical types, it was developed on very few sampling points from only two months in the year (June and Sept), more data points should be used to train the model, more seasons covered, more vigorous validation would be required. Also, what are the Authors’ future plans to overcome some of these limitations? This is not an approach that can yet be relied upon by policy-makers, according to my opinion, but would first require improvements.