I think the paper is interesting and useful for the community. I suggest emphasizing the novelty of this study in the abstract/introduction, since there are similar previous studies. The authos must reorganized some part of the paper, infact some methodological part is present in the results and some discussion is in the results. Probably the authors must check well the units of the reflectances, in particular in the graphs.

Thank you for this observation. We have gone through and updated all figures that now have the proper reflectance unit labeling.

Some specific comments:

In lines 39-43: please add some references.

Please check all acronyms in the document; for example, Chlorophyll is written in three different ways.

We appreciate the consistency check. We have updated the acronyms and kept them consistent throughout the document.

In line 127: please clarify what “fr” is or, if it is an error, delete it.

Thank you for identifying this typo. It has been removed.

In line 293: please replace “sit” with “sites”.

The sentence has been updated for clarification from “The limited number of inland platforms sit on” to “The limited number of inland platforms were installed on…”

In lines 319-321: I suggest expanding on the section on optical water types. In particular, mentioning the different classes that are then shown in Figure 8.

In line 358: please check the punctuation.

Lines 366-369 "The green (B3) … (Pahlevan et al., 2021)”, I suggest moving them and expand on them in the discussion.

We have corrected the sentence and relocated it to 391-395 in the results section.

In section 4 “Research methods”: please add a couple of sentences describing the spectral resampling method that was performed for both in situ datasets. Also add the time window (in terms of hours) that was considered in the study between satellite observations and in situ measurements.

No spectral resampling of the in situ datasets was performed in this study. Instead, we selected the in situ Rrs values at wavelengths nearest to the Landsat OLI band center wavelengths. This approach was chosen to avoid introducing additional uncertainty

associated with spectral convolution or interpolation, which can be particularly sensitive to the shape of the in situ spectra and the accuracy of the sensor's relative spectral response (RSR) functions. While spectral resampling is often recommended for precise sensor comparisons, it can introduce its own uncertainties due to assumptions about spectral shape and instrument response. Given the relatively broad bandwidths of Landsat OLI and the high spectral resolution of our in situ data, the nearest-band approach was deemed sufficient for the objectives of this study. We have included this information in the methodology section of the manuscript at line 340.

We have also included the temporal window restriction and reasoning at line 315-317.

Before Figure 3, a couple of sentences introducing it are missing from the text. Also, check the reference axes, as they appear to be incorrect. “Reflectance”?

The axis labeling has been updated with the proper units for all figures.

For figures 5, and 6, it is not clear what unit is being used on the axes. Please clarify whether you are considering reflectance or Rrs. Make all graphs consistent with each other so that they are easier to interpret. Also, add the wavelengths (nanometers) to the graphs. For example, instead of using B1, I suggest to put 443 nm, and so on.

The axis labeling has been updated with the proper units for all figures. Additionally, we have changed the x-axis figures to include the OLI band center wavelength.

Lines 404-413: In this section, you discuss the protocols and methods used for the two in situ datasets. This section should be included in the methodology when you explain the datasets used in the work.

Thank you for this suggestion. We have moved this information to the methodology section for clarity.

Lines 413-414: This section should be included in the discussion. In addition, you could mention not only the uncertainties related to subjectivity in the choice of optical water types, but also briefly refer to some of the concepts mentioned above (404-413). For example, the fact that the AERONET dataset is consistent in its collection of measurements, unlike the GLORIA dataset. This could add more uncertainty to the analysis, and it would be better if you mentioned it in the discussion.

Lines 413-421: This part should be improved. It is a combination of results and discussion.

We have improved this portion of the section and have revised it in the updated results section.

I suggest adding a brief note at the beginning of the “Discussion” section regarding the results obtained in this work and the uncertainties associated with in situ measurements (as mentioned in points 13-14).

We have included a short summary in the discussion section regarding the results observed in the previous comment.

In line 531: Perhaps you are referring to criteria 3-4 and not 2-4. Please check.

Thank you for pointing out this typo. We are indeed referring to criteria 3-4, and have updated the sentence appropriately.