Reply to RC2

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Reviewer comments

Please check the annotated manuscript for revisions that are mainly about forms and light clarifications. The manuscript is well written and clear.

Thank you for your positive and constructive feedback. Please find our reply in bold.

Specific comments

1. suggestion: debris

We will use aligned terminology in the revised manuscript.

2. surface plastic concentration? please specify

We will correct this.

3. what was the smallest recognizable item detected by the camera ?

Assuming that 8-10 pixels are required to detect an item, the minimum detectable item size was 2.2-2.8 cm for the lowest ground sampling distance of 0.28 cm/pixel. We will include this.

4. at what place/station?

We will add the minimum detectable item size per location to Table 2.

5. pleade specify now the duration. Should be 310 seconds ?

We will include this. This was indeed 310 seconds, plus some time in between (7-8 minutes per measurement).

6. Could you explain the interest of this measurement in one sentence please ?

The Ground Sampling Distance is relevant as it estimates the size of each pixel, which determines the theoretical minimum detectable item size. We aimed to decrease the variation between d_g between locations to increase the comparability of the datasets. We will add this to the revised manuscript.

7. Could you specify in the caption what is annotated images and items and to what purpose ? In case the reader miss the beginning where it is writtent "training algorithm YOLOv8

Thanks for the suggestion, we will add this.

8. I count 9365 in Table 2 Please check the amount reported.

This refers to annotated objects in Table 3, we will clarify this in the text.

9.   is it related to what you explain in section 2.3.3. ? If yes, please indicate it, because it is the first occurrence of "resize" and we do not really understand why before 2.3.3.

We will clarify this.

10.   Pkease specify an order of magnitude. What is "low"? 10 cm, 1 cm ?

We will clarify this.

11.   Ok, very clear!

We will rearrange so that Table 3 comes after this.

12.   Expected regarding what you clearly explained in section 2.3.3. But it is not clear if you decided to use model resize to account for water hyacinths only, and model tiles to account for plastic debris only ?

The Model-resize is only for the water hyacinths, and the Model-tiles for the plastic items only. We will clarify this in the revised manuscript.

13.   you mean Wallis ?

Yes, we will clarify this.

14.   please specify again in the caption what is Cwh, C0 and Cr

We will clarify this.

15.   Schreyers et al. evaluated Cwh in similar river systems. So, I would be more cautious using Cwh 2.1 .10^5 #/km2 for other tropical systems.

We will add that the estimates of Schreyers et al. (2022) for the same river are based on visual counting measurements, and not images. We will clarify this.

16.   But is it a problem for accuracy of detection ? Is there any differences in size of plastic debris detected depending on the location \(i.e., height, cam parameters, etc.\)?

Not for the accuracy of detection, but this may introduce uncertainty in describing and understanding the system as a whole using the (equally) accurate data across locations. We will clarify this.

17.   yes. Here it would be interesting to put some quantifiable sizes. Because even a small difference in size detection might introduce large quantification biases if key size classes are concerned like mesoplastics that might represent a ve\ rgy high amount in number but also in mass.

We will add these to Table 2 and refer to the values in this section.

18.   I see a kind of contradiction in terms when writting : "3. The plastic trapping is stable \(...and...\) increased importance of wate\ r hyacinths in concentrating and carrying plastic pollution

[downstream]". If the concentration remain nearly stable, so the importance of W\ H would decrease with their decreasing coverage. Perhaps you should switch from relative to absolute quantification here ?

We try to make the point that the role of water hyacinths becomes more important in the downstream areas, as their relative concentration increases. The absolute concentration remains stable indeed, so we will clarify this in the revised manuscript.

19.   missing something between water and plastic ?

"on" is missing, we will correct this.

20.   Hmm those are very low... This might be the strongest limitation

We will further elaborate on this in the revised discussion.

21.   In text you refer to km2 Please make sure all conversions are good or harmonize

Here we use the river and water hyacinth surface to calculate a dimensionless number, so either m2 or km2 works. For consistency we will use km2 here too.

22.   Not mandatory suggestion Draw a schematic river \(for exemple like in fig 3\) to show the different variables in context

Thanks for the suggestion. We will consider including a figure as suggested.