

Apologies for the delay in getting these comments to you. I think that you have done a good job of responding to the reviewers' comments, and that the paper is not far off being acceptable for publication. However, I am suggesting some minor revisions that would help to draw together the two different experimental components, and there are still some areas that would benefit from further clarification and signposting for the reader. I look forward to seeing the revised paper.

Page/line

1/17: Change 'provide' to 'provides'

1/18: Change to 'mean biostabilisation effect'

1/20: Clarify that the critical erosion threshold are of colonised sand

2/1: Measured range of what?

3/11: I think that three author papers should be 'et al' in the text, not written in full.

3/13: Consider rephrasing – for example 'sediment stability measured as the threshold for erosion'.

3/17: 'Yet' is not needed.

4/5: Clarify that you are referring to dynamics at the scale of the entire estuary.

4/16: Consider changing to 'sediment settling rates'.

5/4: At some point you need to clearly explain what you mean by extracted EPS – this could be here, or in line 4/11.

5/11: Somewhere in this paragraph you need to mention the natural biofilm experiments, e.g. by saying that you will be comparing the extracted EPS results to natural biofilms in complementary experiments. Otherwise the natural biofilms are not mentioned until aim 1, and then it's not clear where they have come from.

6/10: This paragraph also needs some restructuring for clarity. Be explicit that there are two sets of experiments being reported; one using natural biofilms, and the other using extracted EPS. For example: 'In the first set of experiments... In the second set...' Don't use the word 'auxiliary'; this means supplementary, whereas you have identified the extracted EPS experiments as being the main aim of this research. I would also be consistent with how you label the sections headings so that there are clearly two sections of the methods and results.

7/4: Figures are placed near their first occurrence in the text. Consider moving Figure 1 to here, or removing this reference to it.

7/7: You don't refer to the 1 mm and mixed channels anywhere else in the paper, so no need to include them in the methods.

7/12: Replace 'auxiliary'

8/6: Consider rephrasing: the flume was inoculated using

8/12: 'From the top 0.01 m' could be interpreted as being from the furthest upstream 0.01 m of the channel. Clarify that you are referring to 0.01 m in the vertical, and explain how the sampling sites were selected. Did you specifically target locations with visible biofilm, or sample from all channel locations?

8/13 and elsewhere: Where section titles have been inserted into the text there is a missing space afterwards. Remove the title and just leave Section 2.1.1 (in this case).

10/10: It's still not entirely clear how this works. Do you just increase the applied force until the surface is eroded? How do you decide when to stop? Figure 10 has a transmission %, but you don't explain anywhere what this is. How do you go from the datasets in Figure 10 to a single erosion threshold value?

10/14: 'Enabling' is a better word than 'allowing for'.

10/18: Start this paragraph with words or a sentence to tell the reader that you are now moving onto the second set of experiments.

12/15: The start of this line is awkwardly phrase; rephrase.

12/16: Use °C rather than writing out in full.

12/17: What liquids were used to give these pHs?

13/1: Add a subheading to explain that this section is referring to the natural biofilms experiment.

13/4: Delete 'a' before darker

14/14: How is this theoretical entrainment threshold determined? Delete 'applied'.

14/15: How many of these samples came from sections of the flume where no biofilm was present? Without knowing the sampling strategy, this isn't clear. You could use the EPS content values to say something about this.

15/3: There is clearly more in these data than you currently present, but I agree that these data are not the key point of the paper. However, as these data are compared to the extracted EPS data, it would be helpful to explore them a little more. Could you add the time data onto Fig 2, for example by colouring the points by week? How did variation over time compare to the spatial variation within and between the flumes at any given time? For all the extracted EPS data you plot shear stress against amount of EPS. Why not also plot the natural biofilm data like this?

16/6: Make it clear that this section is moving onto the extracted EPS experiments. For example, refer to the 'second set' of experiments (or whatever you call them), rather than just small scale experiments (a phrase that I don't think you've used before).

17/1: This paragraph mainly seems to repeat what you have already said in the methods. 17/5 onwards seems to be new information, which should be moved to the methods.

18/Fig. 4 and other figures: Add space between = and following number.

18/Table 1: How many replicates?

20/Fig 5: A good way of comparing the natural and extracted EPS shear stress values would be to add dashed lines for the mean (and median/standard deviation?) of the shear stresses measured for the natural biofilms. This applies to all figures like this (5/7/8/9).

Also, is mixing different to stirring?

22/1: Rephrase to clarify that you are referring to the extracted EPS experiments.

22/Fig 7: The caption refers to tap water, but distilled water was referred to at the end of 2.3.2.

26/5: Explain how a mean biostabilisation index is calculated.

26/13: Quote some figures to support this claim that the index is similar.

26/14: Change to 'more suited for replicating'

27/Table 2: The caption still doesn't really explain the biostabilisation index. This table could be clearer. It's a bit confusing that the top row of headings doesn't apply all the way down the columns. What statistic is quoted for the extracted EPS results (mean/median)?

27/4: Give some values.

27/7: I think that you're saying that this technique doesn't measure all of the EPS that is in the sample?

29/Fig 10: See earlier comment about explaining what transmission is.

30/17: Is the change over time primarily from the sediment drying, rather than any sort of degradation of the extracted EPS?