

*We thank the Associate Editor for their thoughtful comments. Please find our responses to those comments below in green italic.*

Thanks for submitting your revised version of this paper and for addressing the reviewer's comments. I am happy to recommend that the paper is accepted for publication subject to some minor revisions as outlined below. Line numbers refer to lines in the tracked changes version of the paper.

36: Explain what a quadrant 4 event is? You define them later on, but an earlier explanation might be useful for some readers.

*We have added a brief explanation of quadrant 4 and 1 events to the introduction.*

Throughout the intro, check reference formatting. A number have missing brackets around the dates.

*We have fixed these errors.*

47/49/61: Address question marks in the text.

*These question marks only appear in the track changes file. They represent references not found in the version of the .bib file we were using. We have fixed this mistake in the track changes file as well as the newest version of the manuscript.*

50 and 56: Make it clear throughout this section if the work you are referring to was physical or numerical experiments.

*We have added the terms "physical" and "numerical" where it is unclear.*

67: Do you mean the difference between transport over a step and dune, or between lee and stoss sides?

*We mean the difference between transport over a step versus and dune. We have added more text to make this distinction more obvious.*

Fig 1: Text in the insert is a bit small.

*We have revised the figure and made the text in the inset larger.*

93: It wasn't entirely clear to me from the text if the sand was added just to the stoss side, or to the stoss and lee sides.

*Just the stoss side was loaded with sediment. We have added this clarification to the text.*

95: 3 should be in superscript not subscript. Throughout this section, make sure that units are not in italic font and that there is a space between numbers and units.

*We have fixed this typo as well as revised all units to be unitalicized and have a space between numbers and units.*

141: Add a brief explanation of the two different methods – it wasn't clear to me why they gave opposite results in a later figure.

*We have added a brief explanation of the two different methods of calculating flow exuberance.*

Fig 4: Add a dashed line to show the flow reattachment location as in the previous figure.

*We have added a dashed line to indicate flow reattachment.*

191: Do you mean quadrant 1 and 3 events?

*No, we mean quadrant 2 and 4 events as those are associated with low/near-zero values of exuberance.*

Fig 10: Axes labels are very small.

*We have revised the figure to make the axis labels bigger.*

343: The results up to this point highlighted the occurrence of quadrant 2 & 4 events. What is the evidence for quadrant 1 events occurring?

*The evidence for quadrant 1 events comes largely from previous research, namely Leary & Schmeckle (2017), which we cite at this location. Essentially, from analysis of numerical experiments of fluid and sediment dynamics downstream of a backstep, the authors found that the octants associated with splat events were overwhelmingly octants 1, 4, and -4. We have added a sentence to the conclusions that addresses Quadrant 2 events: "Analysis reported herein also suggests the importance of quadrant 2 events near flow reattachment but it is unclear how they play a role in splat events."*