Dear Editor,

We thank you very much for considering our chapter "Chapter 16: Particle-laden gravity currents: the lock-release slumping regime at the laboratory scale", by C. Gadal *et al*, for publication in a book for the *Geophysical Monograph Series*. We are grateful for the thoughtful referee reports, and for their comments and suggestions.

Please find below a detailed reply to each of the comments and questions by the referees. Additionally, places where the text has been correspondingly edited, appear in red (removed text) and blue (added text) in the file *diff.pdf*.

Sincerely,

The authors

1 Reply to referee 1

Referee: *The authors discuss gravity currents in the lock-release configuration, where the densest phase is represented by sediments subject to a progressive decrease in concentration during propagation. The work is supported by an extensive data set of three experimental configurations with varying bottom slope. Two of these configurations are simulated with an open source code to which a module, "SedFoam", published by some of the co-authors of this paper, has been added. This is followed by a description of the experiments and an interpretation of the results, categorising the effects of some of the many parameters controlling the physical process. The paper is of particular interest, even though it does not provide clear results for some of the investigations carried out.*

Reply:

- **Referee:** *Introduction – The literature, although rich, lacks a number of contributions of some importance, mainly because they are themselves experimental. See, for example, the work of Zemach et al. 2017, which deals with some more complex configurations, with non-rectangular geometry, with stratified fluid, possibly in the partial depth lock release configuration. The various contributions should be catalogued and described in an appropriate way.*

  Reply:

- **Referee:** *Figure 1 – the q-v panels look out of place and the sequence is horizontal while the experiments are vertical. It is recommended that they be placed in a separate figure.*

  Reply:

- **Referee:** *Figure 3a – Figure 3a is not meaningful due to the large amount of data shown. It is advisable to scale it down in dimensionless form, as is done in Figure 3b for 'selected runs', which should be specified.*

  Reply:

- **Referee:** *Figure 3b – the alpha symbol is flanked by an arrow which appears to be meaningless. I assume that the arrow should be reversed.*

  Reply:

- **Referee:** *References – the book by Ungarish should be better updated to the last edition.*

  Reply:

2 Reply to referee 1

Referee: *This is generally a good contribution with a lot of interesting results. The following are few comments the authors might want to make use.*

Reply:

- **Referee:** *Line 64 – Line 64 is unclear*

  Reply:

- **Referee:** *Line 78 – The sentence starting in line 78 is too convoluted. Needs restructuring.*

  Reply:

- **Referee:** *Line 102 – what does it mean by h_c can have different scaling?*

  Reply:

- **Referee:** *Lines 104–107 – It is unclear what the authors mean gt detachment. Also "similarly" may need to change to "similar"*

  Reply:

- **Referee:** *Section 1.1 – gives several different expressions for X_t. Some clarification as to where each apply will be useful.*

  Reply:

- **Referee:** *Lines 133-134 – where do length and time scale of particles play a role?*

  Reply:

- **Referee:** *Line211-212 – what does it mean 2D vertical and turbulence averaged? Are these 2D RANS simulations? Are the 2 coordinates horizontal, since vertical is averaged?*

  Reply:

- **Referee:** *In figure 2 – the color of the symbols outline must be the same. Otherwise it is hard to relate to the color legend*

  Reply:

- **Referee:** *figure 2 – some of the volume fraction data goes to 1.*

  Reply:

- **Referee:** *– Curve fits with such a large data scatter, requires some justification*

  Reply:

- **Referee:** *Line 461 – even even*

  Reply:

- **Referee:** *Line 466 – This should be an important. . . .*

  Reply: