

## ***Interactive comment on “Dynamic allometry in coastal overwash morphology” by Eli D. Lazarus et al.***

### **Anonymous Referee #2**

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The authors utilize data from a set of laboratory experiments and a field case over several decades to document the dynamic allometry of overwash deposits. In particular, they show that from the collective growth (length and area) of the overwash deposits the final allometric relations emerge. In general, I enjoyed reading this manuscript and think it would fit within the scope of Earth Surface Dynamics. I appreciate the shorter length as well. The paper is well written and easy to read, however it is not always easy to follow the narrative. As far as I can tell I see no technical issues with the methods and results, however I recommend some revision related to narrative issues prior to publication to address a couple aspects. (1) It is not immediately clear what the utility of the results are and how one might use these going forward, in that being a non-expert on coastal morphodynamics the next steps are not apparent to me. (2) It

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feels like there is a narrative disconnect between the more philosophical elements and the analysis presented here. This discussion is interesting, but it also detracts from the results as these two elements don't quite sync up (more on this below).

A potential drawback of the manuscript in its current form is that it feels like there are two narratives throughout the paper. One on the allometry of overwash deposits, and the other is more philosophical. They don't quite come together, at the end I am left wondering what I learned about overwash deposits and how I might use this information going forward. As a reader I would appreciate more discussion on the particular datasets analyzed here and what this tells us about coastal barriers. An example of the two narratives is the transition between the results and the discussion section is a bit abrupt with the discussion of erosional mountain valleys and feels a little far afield from the methods and results section.

I would appreciate it if the authors could add a paragraph on how future research might use their results. Along these lines, it would be useful to add some discussion on what novel processes might have emerged from tracking the dynamic allometry of overwash deposits.

Specific Comments. Abstract. This is a nicely written abstract, but it is not completely clear what the results of the paper are. Some additional details on the analysis and conclusions would be welcome within the abstract. For example, could you be a little more specific about what the different patterns of change over longer time scales are? It would also help to add a line showing what the initial conditions were and what they became, this would help with the final sentence which is a bit broad at the moment.

Figure 1. Could you add the Ria Formosa data to 1a? This would be helpful as the experimental and Formosa data are never compared on the same plot.

Ln. 75. Should the parenthetical statement be inside the previous period?

Ln. 103. Consider including a photograph of the field site.

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Ln. 136. Could you comment on what causes the spacing converges at a faster rate than the slope to the length and area relation?

Figure 4a. Could you add an explanation as to why the final exponent is smaller than the observed global fit in Figure 1? Figure 4c. I am not quite sure what I should be taking away from this figure. Maybe add a line to the caption on what the reader should be focusing on in here.

Ln. 165-175. This (along with the patterns in Fig. 5 a & b) is really interesting. Is there evidence for the Ria Formosa to constrain why they (on average) got smaller over time? The discussion on vegetation growth is interesting, but it is not clear if the authors think this happened within their data.

Acknowledgments. I didn't see a data availability statement.

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