

## ***Interactive comment on “Establishing a sediment budget in the newly created “Kleine Noordwaard” wetland area in the Rhine-Meuse delta” by Eveline Christien van der Deijl et al.***

### **Anonymous Referee #2**

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The authors present results of a comprehensive study on the morphological development of a recently opened wetland, based on an extensive data set.

First of all, I completely agree with the questions raised by Reviewer #1.

The text cites a paper as to be in preparation, by the authors, which is not in the list of references. That, and conference abstracts by the authors, suggest the availability of potentially more data on SSC and current velocities at the entrance to the wetland, which are, in here, deeply missed. I guess, there is a good reason for the suspected splitting of the data set.

So, since no more information is presented here on the forcing, tide-driven dynamics,

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etc., the focus should be on the analysis of geospatial information. In this, I think the data source is not (yet) presented to the reader in a proper way. From the suggested high quality of MBES and LIDAR data, I had expected simply better plots, e.g., from one flat in the center of the wetland and surrounding channels, showing more details of aggradation and erosion patterns.

The color scale in Fig. 1 doesn't help. The interesting elevation range, -2 m to 1 m, is essentially not resolved.

There are quite some simple methods around, based on gridded spatial data, e.g., the maximum bed elevation range to differentiate between more and less active regions, or, vertical dynamic trend analysis to show - what is already in the text - stagnation of morphological change with time at specific locations. The DEMs could have also been used to extract cross-sections of channels, or longitudinal transects from some channel thalweg, all means to give the reader a good impression of morphological changes. I'm just suggesting. How to proceed, and what to change, depends on the focus.

Tja, what is the actual focus? The determination of the budget? Analysis of transport both into and inside the area? Geomorphological changes of flats, banks, channels? Analysis of the sedimentology, including transport of the coarse and cohesive fractions?

I find the focus unclear and the Introduction and Discussion symptomatically unspecific, e.g., page 9 line 24: “cut bank retreat does not significantly contribute to the total sediment budget”. If the paper was about the budget, why is the statement, cut banks would not contribute to that budget, followed by a detailed comparison of cut bank dynamics with literature? That is a question of the focus. The same could be said regarding sand deposition in the deeper channels.

The discussion essentially remains on the level of a comparison. In each part of the discussion, process based considerations are used to explain the situation at the specific location. Which is cool. But I asked myself at the end of each paragraph, what

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could be concluded from this discussion for similar geomorphological settings? I had the impression, and maybe I'm wrong, that the discussion did not lead to the conclusions.

The Conclusion is essentially a summary of Results.

On one hand, it is said that the wetland is a trap for sediments. On the other hand, it is deduced at least for the channels that the domain is approaching some kind of equilibrium, which certainly didn't exist from the beginning. So, trapping occurs only because of the non-equilibrium state at the opening of the wetland? Which grain sizes could actually be trapped? Is it realistic that sand is transported into the wetland? If trapping was the goal (Paola et al., 2011, is cited in the Introduction), should we conclude that, to efficiently trap sediments, we would need to open new wetlands every once in a while? Ok, seriously, I find this important, as, e.g., around many estuaries we are having this discussion right now, everywhere in Europe.

So, in summary, I hope for a shorter text, with a clear focus. The plots should reflect the data quality. The Discussion should lead to the Conclusions.

Minor comments:

P6 L7 An interesting aspect is that "channels cannot migrate freely". Any ideas what this could mean for small-scale morphodynamics and the distribution of sediments? What is that "bank protection"?

P6 L23 Any particular reason, why the term "morphodynamic equilibrium" is persistently avoided, using "equilibrium state between their geometry and the flow conditions", instead?

P4 L14 "whether changes . . . had been . . . years"

P8 L17 "Yet . . . channels" example of many sentences which can simply be deleted without changing anything in the text

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P9 L25 "Wind waves . . . fetch" common knowledge, not required

P10 L3 Entire paragraph: example for text with too many assumptions, for my taste, since in the end this does "not allow drawing conclusions"

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Interactive comment on Earth Surf. Dynam. Discuss., <https://doi.org/10.5194/esurf-2017-22>, 2017.

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