

## ***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 #1**

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Interesting paper, describing the evolution of a restoration project based on a nice data set.

Remarks p2 line 11: sedimentation rates: this is not the same as accumulation rate or aggradation. The latter is the net elevation change (= sedimentation minus compaction or subsidence). These terms are mixed in the paper. E.g. in table 1, it is not clear if aggradation or sedimentation is shown. The results of this paper show aggradation data: change in elevation based on bathymetric surveys in the channels, both also sedimentation data based on cores on the flats. This difference is not properly discussed. This sedimentation rate might be higher than the elevation change due to subsidence.

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Table 1 show in the header "Turbidity", while often suspended matter concentrations are shown.

p2 line 14: the authors describe that sedimentation is controlled by frequency and duration of inundation, SPM concentration in the feeding channel. However, none of these data are shown for the study site! The latter would be very interesting to show, especially because table 1 shows this for other sites.

p3: description of the study site is not accurate enough. It is described as a tidal wetland. I interpret this as a wetland where water flows in and out, twice a day, based on the tidal cycle. The site has however an inlet upstream and an outlet downstream. Is there no change in current direction, causing inflow during flood at the downstream opening? In a tidal wetland, I would expect channels, bare flats and tidal marshes. Are there no marshes? The terrestrial zone is mowed to reduce hydraulic roughness: this indicated the area can be flooded. No information on this flooding (frequency, height, duration) is given.

p4 line 28: there seems to be a big heterogeneity in the thickness of the deposited sediments. Using an average is probably very inaccurate to calculate the total sediment budget. Why not using a model, using elevation. The authors describe that sedimentation is significantly correlated with elevation.

p5: Terrestrial zone: only erosion is described here. But from the introduction, I derive that this part floods occasionally? Given the large surface of this part (>50% of the total area), even a very small sedimentation during winter can have a significant effect on the total budget.

p5 line 17. No information on how the incoming load was calculated, is given. This is however important information. For the River Rhine some info is given: 10 minute intervals for discharge, daily SSC concentrations, between 2008 and 2015. Is this done with the same accuracy for the inflow in the area? Is there no inflow at the downstream opening during flood (see previous remarks)? Measurements of SSC at inflow and

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outflow would be a good way to calculate a trapping efficiency. The paper often refers to the total load of the river Rhine at the German border. How relevant is this? It is so far away from the site, after many branches and tributary rivers. I am more interested in knowing the total load of the Nieuwe Merwede that feeds the site with water and sediments: SSC and discharge in this river and SSC and discharge entering the study site. Unfortunately this information is not given. P8 line 7: how is this 46% calculated? P10 line 22: is there seasonality in the sedimentation? What is the seasonality in discharge, in SSC, in tidal amplitude? How much do peak events contribute to the budget? The peak in 2011, was it only a peak in discharge or did this event also had higher SSC?

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