

Interactive comment on “Wave attenuation potential, sediment properties and mangrove growth dynamics data over Guyana’s intertidal mudflats: assessing the potential of mangrove restoration works”

Uwe S. N. Best et al.

Dear Edward Anthony,

Thank you for your comments and suggestions as well as the time spent during the review process for the manuscript. It’s most appreciated and refined the quality of the overall paper. Kindly see the text below for our detailed responses to each comment/suggestion.

Warm regards,

Uwe

On behalf of the co-authors

Detailed responses to the comments of Reviewer #1

- The article proposed by Best et al. is appropriate to support the publication of a data set aimed at assessing the potential of mangrove restoration works in Guyana, where largescale removal has been followed by a mangrove restoration project. This dataset is diversified and multi-facetted with complimentary items and corresponds to a state-of-the art acquisition and treatment of information on waves and their attenuation across muddy substrates and mangroves, the associated sediment properties of the substrate, as well as mangrove characteristics and vegetation density. The dataset proposes some common standards for comparison and the establishment of interesting new norms of determining mangrove vegetation density. The dataset is significant, unique, and useful. There are no inconsistencies in the dataset and the supporting article and the dataset itself are of good quality, especially in the light of the difficult muddy environment of the Guianas.

We would firstly like to thank you for the validation of the value of the dataset along the Guyana coastline. Given your expertise in coastal morphodynamics and applications along the Guianas coast, we are pleased by your overview of the acquisition and the findings of the measurement campaign. Indeed, the use of common standards was intentional to allow for comparisons to similar sites regionally and internationally.

- My comments are minor and essentially concern better referencing with due attention to previous works that have been forerunners on the theme developed within the dataset:

Line 55-58: the significant removal of mangroves on the Guyana coastline and the potential deleterious effects on coastal risks and stability were treated by Anthony and Gratiot (2012)* who noted in particular the potential difficulties and pitfalls of mangrove restoration following removal. In a similar vein, the large-scale removal of mangroves in French Guiana, which lies on the mud-bank belt updrift of Guyana, has been shown to result in a considerable reduction in the capacity of mud banks to become attached to the coast (Brunier et al., 2019)*, a process important in attenuation of wave energy, thus further strengthening the rationale for this dataset paper.

*Anthony, E.J., Gratiot, N., 2012. Coastal engineering and large-scale mangrove destruction in Guyana, South America: Averting an environmental catastrophe in the making. *Ecological Engineering*, 47, 268-273. <https://doi.org/10.1016/j.ecoleng.2012.07.005>

*Brunier, G., Anthony, E.J., Gratiot, N., Gardel, A., 2019. Exceptional rates and mechanisms of muddy shoreline retreat following mangrove removal. *Earth Surface Processes & Landforms*, 44, 1559-1571. <https://doi.org/10.1002/esp.4593>

Thank you for highlighting the connections to the mentioned articles which are certainly key references for the implications of mangrove removal and the importance of mangrove restoration. We have reviewed the entire article for the inclusion of similar works and have included the works mentioned above.

- Other minor points:

Line 173: Satellite coverage is not the only alternative remotes-sensing method for monitoring bed level elevation within mangroves in the Guianas. Proisy et al. (2009)* used dense clouds of data points generated by LiDAR to monitor bed topography under mangroves in neighbouring French Guiana.

*Proisy, C., Gratiot, N., Anthony, E.J., Gardel, A., Fromard, F., Heuret, P., 2009. Mud bank colonization by opportunistic mangroves: a case study from French Guiana using lidar data. *Continental Shelf Research*, 29, 632-641. <https://doi.org/10.1016/j.csr.2008.09.017>

Thank you for mentioning this. Definitely, the use of LiDAR techniques have been quite instrumental in progressing the bed topography capture within mangrove fringes. However, the intent behind line 173 was to justify the use of one particular ‘traditional surveying’ instrument (Precision Automatic Level / theodolite) over another (Differential GPS). We have amended the sentence to ensure the meaning is made clear and the reference mentioned has been included.

- Lines 181, Lines 303-310: Sediment samples (instead of soil samples, and mud substrate instead of soil). The study does not have a pedological objective.

This is most helpful. We agree and have adjusted the text within the document accordingly.