

Interactive comment on “Cross-shore gradients of physical disturbance in mangroves: implications for seedling establishment” by T. Balke et al.

T. Balke et al.

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Response to reviewer 1:

Thank you very much for your feedback. Please see our detailed comments below:

Reviewer1: In lines 58-62, the authors may also wish to mention the importance of elevation, alongside the other parameters (inundation stress, salinity, predation on propagules or seedlings and pre-dispersal frugivory) they have outlined. This is an important criterion, distinct from inundation stress, in terms of both the methodological approach (topography rather than hydrology) and the importance of elevation in various substrate characteristics relevant to mangrove colonization. The importance of elevation is, in fact, implicitly mentioned elsewhere in the paper (lines 298-299). For

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the elevation criterion, see the following references: 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. Gensac, E., Gardel, A., Lesourd, S., Anthony, E.J., Proisy, C., Loisel, H., 2011. Short-term prediction of the evolution of mangrove surface areas: The example of the mud banks of Kourou and Sinnamary, French Guiana. *Journal of Coastal Research*, Special Issue 64, 388-392. 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.

Response: We are grateful for these suggestions and added ‘tidal flat elevation and morphology (Proisy et al., 2009)’ in line 64

Reviewer1: Please give a brief description of the hydrodynamic conditions (lines 148-151, waves, tidal range, etc).

Response: We agree that more detail can be given and added: Lines 161-165: The tidal amplitude near the fieldsites is between 1-3 m and wave measurements by Horstman et al. (2012) near transect B and D showed that typical incident wave heights at the mudflat fronting the forest did not exceed 10 cm with wave periods of 3 - 5 s during the measurement campaign. During a stormy period wave heights of up to 30 cm were measured near transect B (Horstman et al., 2012).

Reviewer1: Line 149, what are Dugongs (mangroves?). Please define briefly.

Response: We wanted to raise the point that this coastal area is very valuable, and a large marine mammal population is supported by the nearby seagrass beds. We added line 153: ‘with one of the largest populations of the threatened Dugong in Thailand’

Reviewer1: In lines 237-244 (and subsequently 256-260) regarding the discussion of sedimentation in mangroves, the authors may want to mention a paper on mangroves in West Africa that enriches your examples on sedimentation rates and variations in

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grain-size hinged on hydrodynamics cited almost exclusively from Asia. At least it provides a reference from another part of the world! Anthony, E.J., 2004. Sediment dynamics and morphological stability of an estuarine mangrove complex: Sherbro Bay, West Africa. *Marine Geology*, 208, 207-224.

Response: We had overlooked this reference and added it to the discussion on sediment grain size inside the mangrove: Line 294: Anthony 2004

Reviewer1: Please add geographical coordinates on your location map. Show locations (Mandai, Sungei Buloh, Singapore in figure 1).

Response: Coordinates have been added to the fieldsite map, we also point out the location of Singapore in the figure legend. Lines:472-473 'Singapore is located at the southern tip of the Malay peninsular.'

Minor changes:

Reviewer1: Lines 26-27: "Mangroves grow in an active sedimentary environment and are therefore closely linked to physical coastal processes". Not all mangrove sedimentary environments are active. Some are very much sheltered and subject to little change. Therefore, I suggest a more conditional statement: "Mangroves may grow... "

Response: We agree and changed accordingly

Reviewer1: Line 33: "passing a surface erosion thresholds of". Please correct as: "above a surface erosion threshold of".

Response: We agree and changed accordingly

Reviewer1: Line 39: "and are therefore" (instead of "and is therefore").

Response: We agree and changed accordingly

Interactive comment on *Biogeosciences Discuss.*, 10, 5361, 2013.

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