

Reply to comments

The authors claim that SOC typically has a log-linear relationship with depth. This may be true for terrestrial soils, but certainly not for tidal wetlands. In many tidal wetlands, SOC density is relatively stable with depth (those are mostly organogenic systems). I know that there are reports from minerogenic systems that show marked declines in SOC with depth, but I am not aware of any typical/generalizable SOC patterns in tidal-wetland soils (by the way, you do not provide reference for the newly cited reports in your reference list). This line of reasoning should be avoided and the authors should instead only argue with the new data they included from the Kingham thesis because this seems to be applicable to their study system (also I find this data almost too interesting for just bringing it in the supplement - but your call!).

*Thank you for pointing out that the log-linear relationship of SOC with depth cannot be generalised to all blue carbon systems. We have altered the text so that this relationship refers to minerogenic saltmarshes, with a focus on the Kingham dataset for quantifying the relationship between SOC and depth in UK saltmarshes (and used in this paper). In the previous paragraph, lines 371-374, we point out that our results would not necessarily be applicable to organogenic salt marshes dominated by *Spartina* species and common in North America. Bai et al. (2016) is included in the reference list, Drake et al. (2010) has been added. The reference to Fourqurean et al. (2012) has been removed as this refers to a seagrass ecosystem.*

You removed considerations on grazing from your discussion. I see that you now worked with a model that included grazing, but grazing was not significant. I think this is interesting and should be briefly stressed in the discussion (since you also mention grazing in the introduction and the topic recently gained some more attention in the literature). The authors have already provided the relevant literature in their previous version (Davidson 2017, Mueller 2017, ...) so this shouldn't be a problem.

Thank you for this point. We have now added text to the Discussion (lines 328-333) to highlight the fact that grazing intensity (grazed vs. un-grazed) was not indicative of surface SOC stock in this study, despite being related, in part, to plant community type. For the Davidson et al. (2017) meta-analysis a relationship between grazing and SOC stock was found, but only for American marshes. As the focus here is on European marshes we have used this paper to argue that our results are in line with those of other European marshes (75 in this meta-analysis).