



EGUsphere, referee comment RC2
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Comment on egusphere-2022-466

Vanessa Wong (Referee)

Referee comment on "Masked diversity and contrasting soil processes in tropical seagrass meadows: the control of environmental settings" by Gabriel Nuto Nóbrega et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-466-RC2>, 2022

Masked diversity and contrasting soil processes in tropical seagrass meadows: the control of environmental settings

Gabriel Nuto Nóbrega et al.

This study describes the environmental drivers for differences found in sub-aqueous soils in seagrass meadows at three sites on the Brazilian coast. The study addressed some key knowledge gaps in pedogenesis and pedological processes in these soils in Brazil. The study sampled sites located in the NE, S and SE coastlines of Brazil, and presents an detailed analysis of cores to identify the key environmental factors and processes which influence pedogenesis in these regions. The study finds distinct differences in soil characteristics at the three sites, which are driven by differences in the environmental characteristics of each site (geology, salinity, vegetation) and the processes that occur (hydrodynamics). It is a comprehensive study which adds to our understanding of these sub-aqueous soils in tropical seagrass environments.

General comments

The title suggests that the focus on soils in seagrass meadows, however, I would suggest that the seagrass meadows is secondary here – and the study is largely focused on sub-

aqueous soils, so I suggest removing the reference to seagrass meadows

Given that organic matter is a key driver of the soil properties in terms of Fe reduction, the density estimates should be given (Lines 64-68).

The description of the Fe-partitioning in the methods could be made a little clearer and described in the sequence of steps that this analysis was undertaken. It's unclear when HF was used to remove Fe from phyllosilicates. It would also be useful to include why the Fe in this extraction wasn't quantified, as this will give the total Fe concentrations, and not just the near-total concentration as reported. The naming of Oxy-Fe and Py-Fe as pseudo-total is misleading because the HF-extracted Fe and other Fe fractions have not been quantified (see Claff SR, Sullivan LA, Burton ED, Bush RT (2010) A sequential extraction procedure for acid sulfate soils: Partitioning of iron. *Geoderma* **155**(3-4), 224-230.)

There should be some discussion on the role of Fe-monosulfides, as it is likely that this fraction is most likely present, but was not quantified and would have been extracted together with the Py-Fe and is not considered in the discussion on the role of Fe.

It would be useful to describe briefly the role of the tidal regimes in influencing the physical properties of the soils at each of the sites in the discussion.

The discussion describes the processes and evidence for gleization and sulfidization separately, however, these two processes do not occur independently. It would be useful to link the two processes to the evidence from cores in a short paragraph.

Specific Comments

Line 54: Quaternary should be capitalized (here and elsewhere)

Figures 1-3: identify the horizons in b) in each case so that the descriptions that follow can be related to the whole core

Table 2: Include column headings for each site