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Comment on egusphere-2022-466

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Referee comment on "Masked diversity and contrasting soil processes in tropical seagrass meadows: the control of environmental settings" by Gabriel Nuto Nóbrega et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-466-RC1, 2022

Masked diversity and contrasting soil processes in tropical seagrass meadows: the control of environmental settings by Nobrega et al.

Subaqueous soils profiles (two for each places) have been studied in three different parts of Brasil: a) NE under Tropical wet and dry or savanna climate (Aw) and Hot semiarid climate, seagrass meadows Halodule, and Miocene-Pliocene extensive sedimentary deposit (fine to coarse sand, conglomerate and kaolinite matrix) b) SE Monsoon influenced subtropical climate seagrass meadows Halodule, and granitic/gneiss formation c) Humid subtropical climate, seagrass meadows Rupia and Sandy deposits.

The test of paper is very clearly written: the introduction is exhaustive; the design setting is complete of important information to know the three study areas and also the analytical methods both filed, and lab was very well written.

Generally, I think that the description of horizons sequence according to McVey et al. (2012), and, consequently, the USDA classification were better than FAO description, used in this paper. I'm going to accept it yet.

In particular in field analysis is very important to determine the presence of monosulfides were observed though the color response of the matrix after adding some drops of 3% H_2O_2 and by recording the odor description of each soil horizon (Fanning and Fanning, 1989, Fanning et al., 2002). Furthermore, I suggest that pseudototal elements (i.e. S, Ca and K, besides of course Fe) could be analysed; S is important to understand the dynamic processes with organic C.

The total carbonate amount lacks in the paper.

Other information to add, if possible, to the sites' description was the height of the water column at the time of sampling and the tidal movements of the water at the three study sites.

How long were the underwater soils studied in contact with the air?

Does the height of the tides affect the amount of water present in the water column above the soils? Did it vary in the time (seasons/year)?

Table 1: Where the table is interrupted for the page change it is necessary to re-enter the name of the variables.

I see that the structure of soils was classified as massive or single grained, farther the massive structure was classified even in all A horizons rich in organic C (NE). What do the authors think it is due to?

Table 2 is unreadable.

To make it readable I suggest you also see the chapters of the results to which it is possible to match the data, thus breaking down the large table into three smaller ones.

The chapter Soil physicochemical conditions:

- Soils redox and pH conditions
- CEC, salinity and sodicity of investigated soils
- Organic C and iron partitioning

These could be the paragraphs to link the data to, all solutions are welcome.

Before the line 260: Organic C results. In NE both soils an organic C accumulation was detected, Also from Table 1. In NE1 Crz2 at 37-56 cm an increase of OC was observed. Is it possible that this could be a buried horizon? The change of lithology would make this. Also in NE2 3Cmz1 at 47-91 cm, the lithological discontinuity is marked, but can it a

buried A horizons? Different pedogenetic cycles could be develop these soils?

In this late case 3Cmz1 horizon changed the CCE and Na exchangeable amount.

In table 2 what does V represent? I have not seen the explanation in the materials and methods.

I do not think it is correct to call the sum of the two forms of Fe extracted pseudo totals.

The literature is not very clear on the DOP parameter, but it brings it back to the sum and it is not called pseudototal.