Biogeosciences Discussions

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Comment on bg-2021-359

Anonymous Referee #1

Referee comment on "Sedimentary blue carbon dynamics based on chronosequential observations in a tropical restored mangrove forest" by Raghab Ray et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2021-359-RC1, 2022

This is an interesting and relevant study that applies a chronosequence approach to study carbon accumulation in relation to time since mangrove restoration. The study reports that, based on isotopic signatures, the contribution of mangrove plant material was higher at older sites while younger sites have a higher contribution from riverine inputs. In general the paper is nicely written and uses standard physico-chemical analysis.

My concern is that the sample size is very limited; only 5 cores were used to study the chronosequence and no replicate cores were taken. I would agree that this can show some trends and differences between the ages, but a robust statistical quantification or test of the hypothesis is challenging. The study does not report results of statistical tests or uncertainty ranges. In short, I found it difficult to understand heterogeneity and uncertainty and this is really important as it defines the limits of interpretations. In my opinion, the authors should address this basic but critical issue.

Line 78: could use an additional sentence that links problem statement with hypothesis

Line 127: This seasonal collection doesnt match with what is shown in Figure 1 and Figure 8(ie BS but not YM?) Please check

Line 227: Are this mean values for the whole core? If so, add this to the figure caption.

Line 400+: Consider adding an overview table where you summarize literature and your own data

Line 450: I like this section as it justifies the chronosequence approach. This could be presented a bit earlier in the ms?