

Dr. Adame,

We thank you for your valuable comments on this manuscript, which we generally agree with and believe will improve the manuscript. We address these comments below.

### **Title**

We agree, and plan to change the title to more explicitly address the region under study (e.g., “Blue Carbon Stocks and Exchanges in California Coastal Habitats)

### **Introduction**

The definition of Blue Carbon will be added, for clarity, using the reference Lovelock and Duarte 2019, *Biology Letters* as suggested by the reviewer.

### **Methods**

#### *Core depths & comparison to other studies*

The lack of core depth standardization across studies makes comparing stocks across studies difficult and is a challenge with the field at large. In many cases, each study’s raw data would be needed to re-do calculations based on a common core depth – something that isn’t always available. This point has been acknowledged in the literature (e.g. Kauffman et al. 2020). To account for this and for clarity, we will add in a description of the core depths over which each value in Table 3 was extrapolated from. Additionally, we will add language acknowledging that when comparing across studies, variation in core depth can lead to variation in carbon stock estimates over the same apparent area due to the extrapolations beyond the sampled depth.

In some of the studies referenced in Table 3 (Rohr et al. 2018; Prentice et al. 2020, and to a certain extent Fourqurean et al. 2012), the core collection depths were similar to those in the presented study, making these more appropriate comparisons. The cores in these papers were also extrapolated over 1 meter for standardization purposes, leading us to follow suit for our own comparison. Additionally, the global median reported from Fourqurean et al. (2012) includes data from many short cores (“Of the 219 core sites in our database that contained data on  $C_{org}$  and/or DBD at multiple depths, only 41 cores contained data as deep as one metre”). Their methods vary however, due to the fact that rate derived from the full 1-m cores were applied to extrapolate across all other cores that did not reach 1-m, to determine this global median. To acknowledge these aspects, we intend to clarify methodological details and differences in text in Table 3. We will also add carbon stock ranges when available in addition to the reported means or median, to ensure we are transparent with the application and comparison of these values.

### **Results**

#### *SOC degradation with depth*

We appreciate the alternative explanations provided by the reviewer, to which we generally agree. We will include these explanations, and remove language definitively attributing the changes in SOC to degradation.

### *Isotope mixing models*

We agree with the comments provided here, which were also echoed by Reviewer 2. We believe it may be more appropriate to re-run the mixing models, pooling C3 and diatom sources given their overlap. This idea was tested (we re-ran models) and the results seems consistent with what reviewers suggest. This 3-source, 2-tracer model will be used to explicitly account for the fact that in reality, we mean sediment contributions from diatoms “AND/OR” C3 plants. To further address this, language will be changed to acknowledge other possibilities in sediment contributions.

Thank you again for your contribution to this work,

Melissa Ward on behalf of all co-authors

### **References**

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