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Dear Editor,

Thank you for accepting our manuscript, *"Fucoidan carbon is stored in coastal vegetated ecosystems"*, pending technical corrections. We are grateful to both reviewers for their thoughtful and constructive feedback, which has significantly strengthened our work.

We have carefully addressed all your comments and those of the reviewers and provide a detailed point-by-point response below.

Sincerely,

Inga Hellige, Aman Akeerath Mundanatt, Jana C. Massing and Jan-Hendrik Hehemann

Response to editor

We thank the editor for their scientific assessment and have addressed their comment below.

1) microphytobenthos is an important primary producers in all intertidal systems, with or without macrophytes. They are not mentioned, yet they exudate large quantities of carbohydrates and there are many studies on this.
2) your overall conclusion that external algal material is found in these systems confirm what has been well documented by 13C data in the 90 and 2000ies.

Thank you for addressing these points. We have addressed both, by stating the following in lines 342-351: "The consistent signal of algal-derived polysaccharides across the different ecosystems and locations and the higher abundance in coastal vegetated ecosystems reached by tidal waters compared to unvegetated areas and high saltmarsh areas (**Fig. 4**) highlights the importance of algae as donor ecosystems to blue carbon (Krause-Jensen et al., 2018; Krause-Jensen and Duarte, 2016). This finding corroborates previous evidence from stable carbon isotope ($\delta^{13}C$) studies, which demonstrated substantial inputs of externally derived microphytobenthic and other algal sources to sediment organic matter in these environments (e.g. Kennedy et al., 2010; Moncreiff and Sullivan, 2001; Volkman et al., 2008). Microphytobenthos are known to exude large quantities of extracellular carbohydrates, contributing largely to sedimentary organic matter pools (e.g. De Brouwer and Stal, 2001; Smith and Underwood, 1998). The widespread presence of algal-derived polysaccharides observed here is therefore consistent with the isotope evidence, while providing complementary molecular-level confirmation of algal carbon inputs to coastal vegetated ecosystems."

Response to reviewer 1

We appreciate the reviewer's positive assessment and provide responses to the minor comments below.

line 38 and line 350: use greek delta and superscript for d13C

Thank you, we have changed this in lines 38 and 350.

line 120: is it possible to turn the 500 rpm into G units?

It is possible to turn the 500 rpm into G units, corresponding to 14G. We have addressed this in line 120.

line 151: 3500G for consistency

Thank you for pointing this out, we have changed it to match consistency.

line 134: RT replace with room temperature

We have changed RT to room temperature.

Response to reviewer 2

We thank the reviewer for their positive assessment and have addressed their minor comments below.

As a comment, while authors indicate that BAM7 detection does not correlate the mannuronic acid content, this would be useful to indicate that the guluronic acid content was not measured, so the reader knows why this specific correlation is not discussed.

Thank you for pointing this out. We have addressed this in lines 239-240, where we state: "Guluronic acid, the other principal monosaccharide of alginate, was not measured in this study."

Line 245 mind typo on 'galacatose'

Thank you, we have changed this.