General comments:

The level of changes along the manuscript is large, including a change in authors order, removal of data, change in results and many modifications in the text. Nevertheless, the manuscript is now clearer. I am concerned that the high variability in the data and the low number of samples in some of the analysis could lead to non-robust results (please check the residuals of the statistical analysis). However, the authors are very transparent with this fact and the synthesis effort done is very valuable. Most of my comments are minor, and if achieved, my recommendation is to accept the paper.

Abstract:

- it would really improve by adding the gap in knowledge. I would suggest something like:

Seagrasses can act as carbon sinks, by buffering low pH values during the day and storing carbon in the sediment underneath their meadows. However, available data is scattered and collected using different methodologies making its interpretation and generalization very challenging.

Introduction:

Separate paragraphs in L40, L50, L61

L100 – missing closing bracket ")"
L101 – Add comma after increasing
L111 – sometimes oxygen appears as "O2" and other as "oxygen". Keep consistency when possible.

Methods

L127 – L129 I suggest the following change in order to increase clarity of the statement:

We compiled data from multiparametric sensors, which was collected during different periods ranging from 2011 to 2019 (for details see Table 1), and data using the benthic chambers methodology, which had a higher number of literature studies with a total of 12 publications for *P. oceanica* and/or *C. nodosa* meadows (for details see Table 2), and a wider temporal cover with studies carried out from 1982 to 2019.

Table 1
- caption: change text to: Characteristics of sampling stations with data for multiparametric sensors. Temperature and salinity represent average values during the deployment.

Table 2
- caption: change text to: Characteristics of sampling stations with data for benthic chamber deployments. Temperature and salinity represent average values during the deployment.
- Add NA to missing values. A lot of sites do not have depth info, is it possible to add this? If exact depth is unknown, is it possible to add a range? For instance, Barron et al. 2004 is (<2 m) and

Barron et al. 2006 is 7m. Does all metabolic data have depth data associated? This is especially relevant as depth is then analyzed as a fixed effect.

L131-132 move sentence "Data available as oxygen concentration over time was processed and analyzed to obtain the metabolic
parameters, when this was not available, we used the reported metabolic rates." to data analysis
L136 remove comma after study
L144 include deployed after were
L147 change Posidonia by *P.oceanica*

L178-L187 I suggest the following change in order to increase clarity in the text:

We compare metabolic data obtained between both methodologies, benthic chambers and multiparametric sensors. For benthic chambers, reported metabolic data in NCP, GPP and CR were extracted from literature as well as accompanying biotic parameters. In these articles metabolic data was generally estimated from changes in dissolved oxygen using the Winkler titration spectrophotometric method (Labasque et al., 2004). Benthic chambers enclose a section of the seagrass meadow, and flexible fitted plastic bags, not permeable for gases, assure the possibility of movement of the seagrass shoots inside, see details in the method section of each paper for the exact construction used. The benthic chamber methodology has been more generally used to assess metabolism of seagrass meadows and the database of this study contains a total of 100 NCP estimations. For multiparametric sensors data, we have calculated metabolism from raw oxygen profiles where possible (including for published and new data described in 2.1), and only used directly reported values for the data obtained from Champenois et al., 2012 and 2019.

L196 add dot after cite.
L277-278 How where the abiotic parameters analyzed? Is a simple linear regression? Are there random factors considered? Add these details.
L279 A common technique for handling negative values is to add a constant value to the data prior to applying the log transform. The transformation is therefore log(Y+a) where a is the constant.
L280 – did you check for normality/homoscedasticity in the residuals of the models?

Remove the part of methods related to pH. Unless I have missed it, pH is not used in any part of the manuscript.

Results

Table 1 – this is a great summary table. The word Annual needs correction. I also would suggest removing this row from the table or add annual values for all the cases where data for the four seasons is available. I would suggest including in the caption or in the table that the sensors can provide data for the 2 species together.

L303 – L309 split in two sentences

L323 It is unclear if the following sentence "tested in a mixed model with "Site" as random factor, including depth, region and seasons" means that the model used 3 fixed effects (2 categorical and 1

continuous "depth") in the form Y = Species + region + season + depth + (1|site). This could be described in the methods or by adding this info after seasons.

L324 change didn't to did not.

Caption of Figure 5 – include that there were no differences

Discussion

L412 change was to were
L413 add an S to quarter
L422 remove comma before masking
L438 for some reason for is strikethrough.
L456 -458 any potential explanation for this result? It is really surprising.
L510 use independently
L516 -520 Could you add cites for the lack of historical marked sites and temperature effect in *C.nodosa*?

Appendix and Supplementary

I cannot access these materials so I cannot evaluate them. What is confusing to me is if there are two supplementary files (an appendix and a supplement) or just one. I ask this because sometimes figures are referred as Fig 5A and others Fig1S