Response to Reviewers

We are grateful for the revision suggestions. Below, we repeat all of the comments and follow each comment by our response.

1- Introduction length

The introduction, while comprehensive and well-written, is now quite long (7.5 pages). I recognize that my own comments requesting more detail on carbonate chemistry, bioturbation, and early diagenesis during the first review round contributed to this expansion. However, the introduction now risks overloading the reader with extensive details before they reach the specific context of this study and its objectives. I suggest the authors to focus on important points rather than exhaustive coverage.

We appreciate the reviewer's recognition that the initial expansion of the Introduction stemmed from the additional theoretical background requested in the previous review. In the revised manuscript, we carefully shortened the Introduction by approximately two pages. We streamlined descriptions of carbonate chemistry and respiration–calcification processes, reduced repetitive examples of environmental drivers, and condensed the literature review into broader syntheses rather than individual study summaries. These edits retain the essential theoretical context while improving readability and ensuring that readers reach the study's objectives more efficiently.

2- Management application

The authors may consider adding few sentences on how their finding (predictive relationships) could inform restoration effort of environmental prediction. The is mentioned but could be expanded. That would broaden the manuscript's impact.

We thank the reviewer for this helpful suggestion. In the revised manuscript, we expanded the Conclusion to include a concise statement on the management and restoration relevance of our predictive relationships. Specifically, we note that linking benthic biomass to measurable environmental indicators can inform habitat restoration and water-quality management by identifying areas where improvements in oxygen and sediment conditions are most likely to enhance benthic productivity.

3- Figure Quality

The resolution of Fig. 3 and 5 is low in the submitted manuscript. While this may be an artifact of the file conversion to pdf, I recommend the authors to check for figure quality during the final submission process to ensure all results are clearly legible.

We appreciate the reviewer's attention to figure quality. The resolution of Figure 3 has been improved in the revised manuscript, and we verified that all labels and axes are now clearly legible. The issue with Figure 5 resulted from the PDF conversion process, and we will ensure that both figures meet publication-quality resolution standards in the final submission.