

**Response to Reviewers' comments on ms no: egusphere-2024-3273 "Marine carbon dynamics in a coral reef ecosystem of Southern Taiwan" (Meng, Chang, Chou, Fan, Hsieh, Mayfield, and Chen)**

**Anonymous Referee 2**

Minor comments:

1. *Line 12, "Yat-sen"*

**Thank you for the reminder. The correction has been made accordingly.**

2. *Line 191, average salinity of 35.6? Salinities were all below 35 in Fig.2.*

**Thank you for the reminder, and we apologize for the typo. The average salinity should be 34.1, and it has been corrected in the revised version (line 195).**

3. *The abstract does not fully capture the study's content. This study estimated  $p\text{CO}_2$  and the air-sea  $\text{CO}_2$  flux. Since the authors calculated the air-sea  $\text{CO}_2$  flux, the results should explicitly include it. Lastly, the authors should indicate whether this area is a source or sink of atmospheric  $\text{CO}_2$ .*

**Thank you for your valuable feedback. We appreciate your suggestion to explicitly include the air-sea  $\text{CO}_2$  flux results and clarify whether Nanwan Bay functions as a source or sink of atmospheric  $\text{CO}_2$ . In response, we have revised the abstract to better capture the study's scope by explicitly presenting the seasonal air-sea  $\text{CO}_2$  flux values (lines 43–44). However, given the dynamic nature of the region and the spatial resolution of the data, we have opted to de-emphasize a definitive characterization of the bay as a  $\text{CO}_2$  source or sink. This approach aligns with Reviewer #1's suggestion (please refer to their final comment). We hope this clarification is acceptable. Thank you again for your constructive input.**