

Author's Response

Manuscript Title: Seasonal variations and controlling factors of nitrogen fluxes at the sediment-water interface in a semi-enclosed inland sea

Manuscript ID: EGUSPHERE-2025-6187

Journal: Biogeosciences

Dear Associate Editor,

We sincerely thank you for your time and effort in handling our manuscript throughout the review process. We are also grateful to the reviewer for the careful re-evaluation of our revised manuscript and for the positive assessment.

We have carefully addressed all of the reviewer's comments and suggestions in this revision. The corresponding changes have been incorporated into the revised manuscript, and a detailed point-by-point response is provided below.

We greatly appreciate your consideration and hope that the revised manuscript is now suitable for publication in *Biogeosciences*.

Sincerely,

Xinyu Guo, on behalf of all authors

Reviewer:

We sincerely thank the reviewer for the careful reading of our revised manuscript and for the positive evaluation. We are pleased that the reviewer considers the manuscript acceptable for publication. We have carefully addressed all of the suggested grammatical and editorial corrections. Our point-by-point responses are provided below.

Comment 1:

L42: In semi-enclosed inland seas....

Response 1:

Thank you for the suggestion. The sentence has been revised to "In semi-enclosed inland seas..." to express the intended general statement more accurately.

Revision in manuscript 1:

Section 1, Page 3, Line 42

Comment 2:

Table 2 includes D_{sur} , but i think this parameter is now redundant.

Response 2:

Thank you for pointing this out. This was an oversight during revision. The parameter symbol in Table 2 has been corrected to be consistent with the notation used in Equation (14), which represents the effective surface mixing coefficient accounting for sediment mixing processes such as bioturbation and resuspension.

Revision in manuscript 2:

Section 2, Page 17, Table 2

Comment 3:

L288: The exchange of solutes...

Response 3:

Thank you. The wording has been revised accordingly.

Revision in manuscript 3:

Section 2.3, Page 19, Line 288

Comment 4:

L294: the thickness of the diffusive boundary layer...

Response 4:

Thank you. The description has been revised using the recommended terminology.

Revision in manuscript 4:

Section 2.3, Page 19, Line 294

Comment 5:

L331: Do not start a sentence with "And". Please rephrase.

Response 5:

Thank you. The sentence has been rephrased to improve the academic writing style.

Revision in manuscript 5:

Section 2.4, Page 21, Line 330

Comment 6:

L343: The units, for consistency, should be expressed in the negative exponent notation.

Response 6:

Thank you for pointing that out. The unit here has been revised and the unit format has been kept consistent throughout the manuscript.

Revision in manuscript 6:

Section 3.1, Page 21, Line 342 – 345

Comment 7:

Fig. 5 caption last sentence. I think the panel referred to is (d), not (c).

Response 7:

Thank you for catching this error. The panel reference has been corrected.

Revision in manuscript 7:

Section 3.2, Page 24, Line 404 – 405

Comment 8:

L438: Do not start a sentence with "And". Please rephrase.

Response 8:

Thank you. The sentence has been rephrased accordingly.

Revision in manuscript 8:

Section 3.3, Page 25, Line 439 – 440

Comment 9:

L450: Change to "Overall, bioirrigation is much weaker than the diffusive flux of solutes...

Response 9:

Thank you. The sentence has been revised following the reviewer's suggestion.

Revision in manuscript 9:

Section 3.3, Page 26, Line 451 – 453

Comment 10:

L515: Therefore, the NO₃...

Response 10:

Thank you. The sentence has been revised by adding the definite article as suggested, and we have also checked the manuscript for consistency in similar expressions.

Revision in manuscript 10:

Section 4.1, Page 28, Line 517