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June 5, 2026

Dr. Mark Lever
Handling Associate Editor
Biogeosciences

Dear Dr. Lever,

We are grateful to resubmit our revised manuscript "Experimental assessment of benthic foraminifera as salinity bioindicators: Integrating morphological and eDNA approaches" (Manuscript ID egusphere-2026-196) to *Biogeosciences*.

We sincerely thank you for your careful re-evaluation and constructive guidance. We have now addressed all remaining comments from both reviewers and you. In addition, we have thoroughly re-reviewed the manuscript and made further minor corrections, as well as added a Data and materials availability statement. All corresponding revisions have been marked **in blue** in the revised manuscript. Please see the following pages for our point-by-point responses.

Again, thank you very much for your continued support and for recommending our manuscript for publication. Please do not hesitate to contact me if you have any further questions.

Best wishes on behalf of all authors,

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Response to Reviewers

egusphere-2026-196 (author) - manuscript needs minor revisions
From: editorial@copernicus.org
to: <caoyifei@qdio.ac.cn>
cc: editor@mailarchive.copernicus.org

You are receiving the following email copy due to your co-authorship of egusphere-2026-196. The original message was sent to the contact author. Please contact us in case of any discrepancies.

Dear Yanli Lei,

We are pleased to inform you that the associate editor report for the following BG manuscript is now available:

egusphere-2026-196
Title: Experimental assessment of benthic foraminifera as salinity bioindicators: Integrating morphological and eDNA approaches
Author(s): Yifei Cao et al.
MS type: Research article
Iteration: Minor revision

The associate editor has decided that minor revisions are necessary before the manuscript can be accepted. Please log in using your Copernicus Office user ID to find the associate editor report at: https://editor.copernicus.org/BG/ms_records/egusphere-2026-196

We kindly ask you to revise your manuscript accordingly and to upload the revised files, a point-by-point reply to the comments, and a marked-up manuscript version showing the changes made no later than 16 Jun 2026 at: https://editor.copernicus.org/BG/review-file-upload/egusphere-2026-196

Please find all information on manuscript submission at: https://www.biogeosciences.net/for_authors/submit_your_manuscript.html

Your revised manuscript will be reviewed again and you will be informed about the outcome by separate email.

Besides adjustments requested by the associate editor or referees, please check your manuscript carefully for typos, missing co-authors and their affiliations, terminology,

updates of data in tables, or updates of variables in equations. All these have to be clarified with the associate editor and therefore have to be included before you submit your revised manuscript. Should your manuscript be finally accepted it will not be possible to include such rather substantial changes anymore when your manuscript is in final production (proofreading).

Please note that all referee and editor reports, the author's response, as well as the different manuscript versions of the peer-review completion (post-discussion review of revised submission) will be published if your paper will be accepted for final publication in BG.

You are invited to monitor the processing of your manuscript via your MS overview at: https://editor.copernicus.org/BG/my_manuscript_overview

In case any questions arise, please do not hesitate to contact me. Thank you very much for your cooperation.

Kind regards,

The editorial support team
Copernicus Publications
editorial@copernicus.org

Editor's comments:
by Svenja Lange
Notification to the authors:
Regarding figure 1: figures based on proprietary mapping services (e.g. Google Maps) must include complete and visible source attribution and copyright information. The attribution provided for this figure is missing or incomplete. Please ensure that the full copyright statement is clearly indicated in the figure and/or caption (e.g. "Imagery © 2025 NASA; © Google, Map data © YEAR Google and respective data providers").

Response:
We thank Dr. Svenja Lange for her careful review and for pointing out the missing copyright attribution in Figure 1. In response, we have revised the caption of Figure 1B

as follows **(page 4, line 82-84):** "(B) Close-up map view of the sampling site, with the sampling location indicated by a yellow star (Imagery © 2026 Airbus; Map data © 2026 Google and respective data providers; Image date: May 18, 2025)." The in-figure copyright watermark has also been retained as required.

Reviewer 1

Anonymous referee #1 Suggestions for revision or reasons for rejection:

The authors have addressed most of my comments, but they appear to have (accidentaly?) not added the references I suggested (DOI: 10.1126/sciadv.adt2147 , doi.org/10.1038/s41396-020-0708-1) for the eRNA citation on lines (277–280) in the revised manuscript. I presume it was an accident because they wrote in their response:

"Answer: Thank you for providing the references; they are greatly helpful for our manuscript and future research. We have incorporated the suggested content and made the following revisions (page 15, line 355–363)"

This is just a minor problem however and if the authors make this change I would recommend for publication.

Response: Thank you for re-checking our manuscript and for pointing out our inadvertent omission of the two recommended references. We have now added both citations into the main text **(page 15, lines 357–360)** and the reference list, as shown below:

“Although eRNA methodology in foraminiferal research is still evolving and not yet standardized, recent studies, such as those revealing anaerobic metabolic adaptations in subseafloor foraminifera and the role of primary production in shaping benthic eukaryotic interactions, highlight its potential to uncover physiological and ecological responses inaccessible to traditional approaches (Mills et al., 2025; Orsi et al., 2020).”

The respective references have been added to the reference list as follows:

“Mills, D. B., Vuillemin, A., Muschler, K., Coskun, Ö. K., and Orsi, W. D.: The Rise of Algae promoted eukaryote predation in the Neoproterozoic benthos, Science Advances, 11(8): eadt2147, https://doi.org/10.1126/sciadv.adt2147, 2025.

Orsi, W. D., Morard, R., Vuillemin, A., Eitel, M., Wörheide, G., Milucka, J., and Kucera, M.: Anaerobic metabolism of Foraminifera thriving below the seafloor, The ISME Journal, 14(10): 2580-2594, https://doi.org/10.1038/s41396-020-0708-1, 2020.”

We apologize for the oversight and are grateful for your understanding and recommendation for publication.

Reviewer 2:

Referee #2: Christopher Lowery, cmlowery@utexas.edu
Suggestions for revision or reasons for rejection:
Dear editor,
Thank you for this opportunity to re-review this interesting manuscript by Cao et al. on living foraminifera response to salinity change in Qingdao Bay. I appreciate the authors' thorough and thoughtful responses to my comments on their original submission. I particularly appreciate the detailed methods they have added; I feel like I have a much clearer understanding of what the authors did. In my opinion this manuscript is now ready for publication. I have a few very minor comments below.

Best,
Chris Lowery
University of Texas

Line 31 – I'd add "evaporation" to this list

Response: Thank you for the constructive suggestion. We have added "evaporation" to the sentence as suggested **(page 2, line 30-31)**. The revised sentence now reads: "The mixing of freshwater and evaporation alter the physicochemical properties of seawater, thereby influencing the growth of foraminiferal populations and the preservation of their tests."

Line 77 – a 48 micron mesh would also remove most fine to medium silt particles, too.

Response: Thank you for pointing out that a 48 μm mesh also removes most fine to medium silt particles. We accept this correction and have revised the sentence accordingly **(page 4, line 77-80)**. The revised text now reads:
"Prior to aliquoting, the sediment was wet-sieved through a 300-mesh (~48 μm) silk screen using ambient seawater. This pre-treatment removed clay and most fine to medium silt particles, as well as excess organic detritus, thereby improving pore-water oxygenation and preventing bacterial overgrowth during the subsequent static culture."

Line 160 – do you mean 66.52% of the total species or the total population? I have the same question for the other percentages in the rest of this paragraph, it's not clear what they're referring to.

Response: We thank you for the clarification. The percentages refer to the proportion of total specimens (individual counts). We have revised the paragraph by adding "of the total specimens" after each percentage to eliminate ambiguity **(page 7, line 161-164)**. The revised sentences:
"The Rotaliida group comprised nine species, accounting for 66.52% of the total specimens. The relative abundance of these species peaked at 15 PSU, where they constituted 84.70% of the total specimens. The Miliolida group comprised one species, accounting for 30.59% of the total specimens. At its highest relative abundance, it reached 45.20% at a salinity of 55 PSU. The Textulariida group comprised three species, accounting for 2.89% of the total specimens."

Line 213 – same question for this paragraph – 56.06% of the total what?

Response: We thank you again for raising the same clarity issue for this paragraph. Here, the percentages refer to the proportion of total reads from the molecular analysis. We have revised the paragraph by explicitly adding "of the total reads" after each percentage **(page 11, line 213-219)**. The revised text is as follows:

"Additionally, a portion of taxonomically unresolved taxa were grouped as 'Others'. Monothalamiids exhibited the highest read count, accounting for 56.06% of the total reads. The maximum relative abundance recorded for this group was 76.19%, which was achieved under the 50 PSU salinity gradient (Fig. 3C). The Rotaliida constituted 34.65% of the total reads, achieving a maximum relative abundance of 80.34% under the 0 PSU salinity gradient. The Textulariida class accounted for 1.67% of the total reads, with a maximum relative abundance of approximately 3.43% at the 30 PSU salinity gradient. The Milioliida class constituted 0.66% of the total reads, exhibiting a maximum relative abundance of 4.70% at the 10 PSU salinity gradient."

Line 277 – not sure "formation" is the right word for a biological organism. How about "growth"?

Response: We thank you for the suggestion. We agree that "growth" is a more appropriate term for a biological organism **(page 13, line 277-278)**. We have revised the sentence:
"This environment is conducive to the growth of Miliolida, characterized by compact structures and disordered calcium carbonate crystal arrangements."

Line 286-7 – I would qualify this sentence with "in Qingdao Bay"

Response: We thank you for the suggestion. We have added "in Qingdao Bay" to qualify the sentence as you recommended **(page 13, line 287-288)**. The revised sentence now reads: "Our quantitative data directly show that, in conditions of low salinity, there was a sharp decline in the abundance of foraminifera in Qingdao Bay."

Line 299-303 – these two sentences are repetitive

Response: We thank you for pointing out the redundancy between these two sentences. We agree that they convey a similar message and have therefore merged them into a single, more concise sentence **(page 13, line 300-302)**. The revised text now reads:
" Furthermore, when employing foraminifera as paleo-oceanic thermometers in geological studies, we recommend conducting faunal composition analyses beforehand to enhance the accuracy of results, a necessity further underscored by the fact that salinity influences Mg/Ca-based thermometry (e.g., Lea et al., 1999; Katz et al., 2010)."

Line 304 – a specific reference framework *for Qingdao Bay*

Response: We thank you for this important clarification. We agree that "robust linear models" may imply a degree of generalizability that our data do not support. We have therefore replaced this phrase with "a specific reference framework for Qingdao Bay" as you suggested **(page 13, line 304-305)**. The revised sentence:
"While our experimental results establish a specific reference framework for Qingdao Bay, we acknowledge that local environmental factors (e.g., temperature, substrate) vary across global estuaries."