Dear Sir/Madam,

Thank you for your valuable comments. We tried to do our best for all the suggestions. According to your comments, you can find the point-to-point replies below.

Best regards,

İsmail Akçay

**Detailed Comments**

1. Line 47: a reference to figure 1 would be helpful here.
R: We added Fig.1 for reference.

2. Line 51: “The Marmara Sea ecosystem”
R: We corrected.

3. Line 59: with a permanent pycnocline at 15-20 m I would like to know what the effect of shipping is in the region, as the whole area is a busy thoroughfare (as far as I know) and ship wakes can reach to these depths (e.g. Nylund e al, 2020). Does the traffic volume affect the pycnocline and vertical mixing?
R: We added some information according to result of Nylund e al (2020).

4. Line 60: “Thus a major oxygen source”
R: We corrected it.

5. Section 2.1: can the authors say anything about how representative the year 2019 was for the area? And I miss a description of the sediments themselves here: are they sandy or muddy, is the medium gran size known, are there differences between the three areas in terms of sea bed composition?
R: We include about some physical properties of the obtained sediment core samples.

6. Line 97: “CTD probe that was coupled to”
R: We checked and corrected.

7. Line 131: “indication a significant fraction of the TN pool”
R: We corrected this sentence.

8. Lines 232-236: please rephrase, too long and grammatically incorrect.
R: Grammar was checked and the sentence was rewritten.

9. Line 237: “In all sites ”
R: It was corrected.

10. Line 239/241: “Porewater diffusive PO4,NH4 and Si fluxes” is repetitive, please rephrase
R: We rephrased

11. Line 244: are the increases in the diffusive fluxes of reactive iron and manganese derived from figure 7 or from unpublished results?
R: This sentence was rewritten.

12. Line 246: “mixing across the basin, intensifying during winter”
R: We corrected it.

13. Line 248: “The corrolation between”, I see no correlation parameters provided anywhere for this statement.
R: We wrote relationship instead of correlation for this sentence.
14. Figure 5: please provide a 0 line for the NOx plots
R: We revised this graph based on your comments.

15. Line 269: if these results are not shown please state so clearly, otherwise indicate the relevant table or figure.
R: We have rewritten this sentence.

16. Line 274: “core samples and decreased”
R: We corrected the expression.

17. Line 280: “İzmit Bay”, and they had higher TOC levels compared to what? Previous studies, or the third region under study?
R: We changed this sentence. Our study and other studies mentioned in the manuscript showed higher concentrations of TOC in the Sea of Marmara.

18. Line 285: “results further show”
R: We corrected it.

19. Lines 285-287: I don’t quite see the evidence for this statement as the manuscript does not contain accumulation rates or previous results for İzmit Bay.
R: This sentence was rewritten.

20. Line 287: “results also report”
R: Corrected.

21. Line 294: “results altogether show” and it seems only stations IZ-30 and IZ-2 have elevated levels. Of TOC and TN, not the other stations in the same bay. Also please provide a reference for the Baltic statement.
R: This sentence was revised and we added a reference for the Baltic Sea.

22. Line 300: I see no difference in figure 6 between the TOC and TN levels of southern Marmara and Çınarcık Basin.
R: For some stations high concentrations of TOC/TN were recorded in the Çınarcık Basin.

23. Line 304: “caused accumulation of excess amounts of ”
R: Corrected.

24. Figure 7: the markers for stations IZ-2 and 8 are practically identical
R: The graph was revised.

25. Line 336: “nitrogen (NO3) through denitrification”
R: Corrected.

26. Line 343: what is N.A.F.?
R: We added the long version – ‘North Anatolian Fault’.

27. Line 355: “core samples in this study were taken by”
R: Corrected.

28. Line 377: the figure 7 results for Mg seem the same everywhere?
R: This sentence was rewritten.

29. Line 390: as there are no observational data for primary production anywhere in this manuscript (only Chla) I suggest the authors rephrase this statement
R: This sentence was revised.

30. Line 393/396: the manuscript has not introduced actual sedimentation rates before, so this information should be presented in the discussion. No new evidence should be included in the conclusions.
R: This sentence was removed from conclusion and added to results and discussion section of the manuscript.

31. Line 396-400: overly long sentence making it unclear what the “respectively” actually refers to. I suspect it refers to the areas (Çınarcık Basin/İzmit Bay vs southern Marmara Sea) but on initial reading it seems linked to sink and source.
R: This sentence was rewritten.

32. Line 411: as this refers to primary production I would assume that the process of higher nutrient fluxes to the deep water is gravity driven, not gradient (diffusive) driven
R: We revised this sentence.

33. Lines 428-431: as states way above I would like to see some perspective for this, in the discussion section. How important is this process compared to for instance climate change impacts on nutrient inputs, increased stratification, etc.? And is there any natural (background) eutrophication occurring in this region? It doesn’t have to be long or extensive, but as marine management is touched on here I think it is relevant.
R: Thank you for your suggestions. We added new text about the climate change and possible effects on marine eutrophication and on the benthic nutrient dynamics.

**Added References**

Albayrak, S., Balkis, H., Zenetos, A., Kurun, A., and Kubanç, C.: Ecological quality status of coastal benthic ecosystems in the Sea of Marmara. *Marine Pollution Bulletin, 52*(7), 790-799, https://doi.org/10.1016/j.marpolbul.2005.11.022, 2006.

Nylund, A.T., Arneborg, L., Tengberg, A., Mallast, U., Hassellov, ¨ I.M.: In situ observations of turbulent ship wakes and their spatiotemporal extent. Ocean Sci. 17(5), 1285–1302. https://doi.org/10.5194/os-17-1285-2021, 2021.
van Helmond, N.A., Robertson, E.K., Conley, D.J., Hermans, M., Humborg, C., Kubeneck, L.J., Lenstra, W.K., and Slomp, C.P.: Removal of phosphorus and nitrogen in sediments of the eutrophic Stockholm archipelago, Baltic Sea, Biogeosciences, 17(10), 2745-2766, https://doi.org/10.5194/bg-17-2745-2020, 2020.