Biogeosciences Discussions

Biogeosciences Discuss., referee comment RC3
https://doi.org/10.5194/bg-2022-77-RC3, 2022
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Comment on bg-2022-77

Anonymous Referee #3

Referee comment on "Rapidly increasing sulfate concentration: a hidden promoter of eutrophication in shallow lakes" by Chuanqiao Zhou et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2022-77-RC3, 2022

This manuscript introduced a story on the driving process and mechanism of the rapidly rising SO_4^{2-} concentrations as a crucial contributor to the eutrophication in shallow lakes. Authors successively demonstrated the massive production of ΣS^{2-} and the enhancement of iron reduction under the condition of rapid increase of SO_4^{2-}. The Fe^{2+} released from the iron reduction process was captured by ΣS^{2-}, and the combination of iron and P was reduced, promoting the release of endogenous phosphorus. This experiment is relatively complete and novel, only some formatting issues need to be adjusted.

1.The introduction provided few quantitative data. For example, L76-79, "SO_4^{2-} concentration in seawater reaching 28mM" was mentioned to support the SO_4^{2-} concentration was the important influence factor of sulfate, what is threshold and why not make a comparison? And how is it related to SO_4^{2-} concentration in eutrophic lakes.

2.L85 "the SO_4^{2-} concentration in Lake Taihu has increased from 30mg/L to 100mg/L"

L146 "Φ75mm, length 180mm, volume 500ml"

Kindly add a space between number and unit except % in the whole manuscript.

3.L129 "a fine-mesh plankton (250 meshes)"Inaccurate units, "es" should be deleted.

4.L224 "the highest ΣS^{2-} concentrations at 7 d were 0.14, 0.61, 1.14, 1.55, 2.15, and 3.15 mg/L, respectively." There is one more punctuation mark before "and".

5.Table 1, Table 2 and Figure 2 "0mg/LSO_4^{2-}" Kindly add a space between unit and "SO_4^{2-}".

6.Figure 6, Part of the text is obscured.