This study examines long-term Hg records in sedimentary archives due to its sensitivity to centennial to millennial-scale environmental variations. Sediment analysis from two interconnected lakes, Lake Prespa and Lake Ohrid, over the past 90,000 years reveals distinct Hg patterns. Divergent Hg signals during the early and middle Holocene suggest that local factors significantly influence the Hg cycle's response to environmental changes, highlighting the role of sediment composition, lake structure, and water balance in determining the local versus global influences on Hg signals. It is a very interesting topic.

This paper contains dense content and thorough analysis with well-written explanations. I am curious about whether the biota species are the same in both lakes, as this could be another factor impacting the differences in Hg records between these two bodies of water. Additionally, the layout of the paper could be improved, such as placing tables and figures at the end of the manuscript, which would enhance its readability and organization.

Introduction

1. Line 35-44 In the first paragraph, I believe it would be good to emphasize the bi-directional pathway of Hg transportation. Hg can not only be emitted/released into the atmosphere but can also deposit into terrestrial and oceanic ecosystems.
2. Line 83, please remove this subtitle as there are no other subtitles in the Introduction section.
3. Line 112, it would be good to include the full name of Hg_{AR}, as this is the first instance of its mention in the manuscript.
4. Fig 2. Study map normally locates in “2. Site Description”.

Site Description

5. Line 148 to 149, delete the dashed line.
6. Line 259 to 265, I recommend merging and simplifying this content with the information found between lines 207 to 211 and lines 215 and 217.
7. Line 260 and 261, It appears that the same method is used to calculate TOC, but there are different references compared to lines 210 and 211. Is there a specific reason for this discrepancy?

Section 3.3 Mercury measurements

8. Line 292 and 293, why use different resolution to analyze Hg sediment samples from these two lakes?
9. Line 293 what is the size of the powered samples, homogenize of sediment samples are really important.
10. Line 296 Could you provide information relating to percent recovery for the standard material?
11. Line 299 Could you please specify the exact table or figure that indicates the calibration results here?
12. Line 303 I recommend removing the subtitle 3.3.1 since there are no other subtitles in this section.
13. Fig 4. The legend for MIS 3-5 in the figure is not easy to identify. It's up to your discretion whether to consider using different colors to improve clarity
14. Line 390, what is p-value for the relationship between Hg_T and TS for MIS 1?

15. I am wondering if biota species are the same between these two lakes Hg pool/accumulation, you have compared the hydrology, sedimentation regime, and geochemistry of them.