

The manuscript by Havas et al. (A comparative isotopic study of the biogeochemical cycle of carbon in modern redox-stratified lakes) provides a very detailed dataset of water column and near-surface sediments from four small lakes in Mexico. Three lakes are located in the Serdan-Oriental Basin, composed mainly of limestone, and one lake is further west is in the Michoacán-Guanajuato Volcanic field, which is mainly composed of andesitic rocks. The contrasting lithologies provide different sediment input into the lakes.

The manuscript is part of a much larger study that was previously submitted to Biogeosciences. I considered the previous manuscript to be a whale of a paper, so I was happy to see it cut into more palatable pieces. At least now it gives the readers a chance to follow through the story, but the present manuscript is still massive!

This is an excellent dataset and I don't have much to criticize on the data, except perhaps the missing error bars on the POC values in fig. 3.

General comments

- The language is acceptable, but sometimes I get the impression that there is still a bit of "Frenghish" in the text and that the word "the" is used somewhat randomly. Also, the text is sometimes going back and forth between past and present. Another issue is singular/plural and the use of the possessive "s" or the apostrophe in lieu of the letter. I would recommend a thorough revision by a professional language editing service or a colleague who is a native speaker.
- The discussion is divided into several parts, each dealing with a specific sub-topic. The parts are well written, although I sometimes felt that the authors got a bit carried away by the many details. I would recommend to take a hard look at the discussion and ask whether every detail is actually necessary to get the general story across.
- What I really liked were the little summaries at the end of some sub-chapters, e.g. 5.1.3 and 5.1.4. In each of the sub-chapters the final paragraph sums up the story. I would appreciate if the authors could add these little summaries to every part of the discussion so the readers get a clear take-home message.
- Quite a few datasets are presented both in figure and table, e.g. fig 5 and table 5. This is redundant. It is nice to have the actual numbers, but please put them into the supplement and just leave the figures in the text. Overall, I would avoid presenting data in tables in the main text. Tables are fine for the SI, so the readers can look up the actual numbers if they really need to, in the main text just use figures.

Specific comments

Line 31f: What do you mean by "varied correlatively"? Please rephrase the sentence

Line 36: ...we identified...

Line 80: ...allows for assessing the effects...

Line 81: What do you mean by "correspond to"?

Line 82:allows discussing their influence....

Line 85: ..on the lakes' stratification.....

Line 129:but cover a wide range of chemical compositions....

Line 131: ...in concentration stages....

Line 153: What influence does the temporary bottom water anoxia have on the lakes' systems? This should also be discussed in the discussion.

Figure 1: Please change the order of the photos to avoid the lines crossing over. From left to right: Alberga de los Espinos, Atexac, Alchichica, La Preciosa

Line 191: How did you dry the samples before grinding?

Figure 2: How can the ORP remain stable when oxygen becomes depleted? In all 4 lakes DO runs out at some depth and ORP remains absolutely stable down to much greater depths before it starts decreasing as well? I've worked on many lakes but usually ORP more or less follows DO, so please add an explanation.

line 262: Conductivity showed the same trend with values...

Table 2: Please move to SI, present data in figure in main text

Line 370: How does the groundwater flow? Your explanation is hard to follow. Could you add a sketch of the flow paths?

Table 3: Put into SI and make figure for main text

Line 422: What do you mean by ...one hand, those from.... I don't know what the "those" means

line 436: ...is lower than....

line 455: is the offset of a few permill actually relevant and/or is the accuracy of the measurements sufficient to detect this?

Line 461: What do you mean by ...relatively important storage....?

Line 469: Please add reference for the statement....degassing through higher pCO₂ (despite high pH values).

Line 474: another important sink of CO₂" ...you are talking about sources of CO₂ before, somehow I am missing the connection here

Line 475: ...microbialites and lake sediments. Please refrain from writing bottom lake sediments. Sediments are always at the bottom unless they are (re)suspended.

Line 475:alkalinities and resulting mineral saturation greatly influence....

Line 486: Why is the lake a sink for CO₂ when its surface waters are in equilibrium?

Table 4: Move to SI

Line 524: ...POM that ranged from 6 to 12 in....

Line 531: ...source of POC in the four lakes...

Figure 5, Table 5: This is redundant, same information

Line 614: Please add reference for your statement about sulfur-oxidizing bacteria

Line 665: Is Methane loss through degassing to the atmosphere realistic in these lakes? I don't think so but I might be wrong.

Line 709: ...size of phytoplankton... Also, what do you mean by large size of phytoplankton?

Lines 710/11: No! Please see Friese et al. (2020, Nature Communications, <https://doi.org/10.1038/s41467-021-22453-0>) or Vuillemin et al. 2016 (Frontiers in Microbiology, DOI: 10.3389/fmicb.2016.01007) and other literature about ferruginous lakes. It clearly shows that even at such low sulfate concentrations, sulfate reduction can proceed at appreciable rates due to reoxidation of reduced sulfur species.

Line 733: ...lakes does not.....

line 736: Move "instead" to the end of the sentence

Line 737: ...was highest in....

line 738: ...from water column to sediment will.....

Lines 748-750: Please rephrase that sentence