

Authors' response

The reviewers suggested a major revision of our initial manuscript “A comparative isotopic study of the biogeochemical cycle of carbon in modern stratified lakes: the hidden role of DOC” and notably recommended to split this study in two different manuscripts.

Following their recommendation, we split the manuscript in two and followed an outline that was presented in detail in our public answers to the reviewers (available in the interactive discussion dedicated to our study) and validated by the associate editor.

Following this outline, we now submit the first of these two manuscripts entitled: “A comparative isotopic study of the biogeochemical cycle of carbon in modern redox-stratified lakes”. In brief, it will present and discuss the DIC and POC results of the initial manuscript, while the second manuscript (“The hidden role of DOC in the biogeochemical cycle of carbon in modern redox-stratified lakes”) will tackle the DOC dataset. Both will be submitted to Biogeosciences journal.

As a consequence of this major reworking, the first reviewer did not provide a detailed review of our work and thus, we do not report here a list of specific answers. Nevertheless, we took all the reviewers' comments into consideration during the reformatting processes.

We considered the comment made by the second reviewer on the introduction section (and responded in the online public reply) and modified the corresponding text accordingly. In the “author's track-changes file”, we addressed and answered the minor comments brought up by the reviewer and which will belong to the presently submitted revision of the first manuscript.

Since there was no major disagreement from the reviewers with our datasets nor their interpretation, there was no major change made to the flow of argumentation within the discussion parts. However, we slightly reorganized the discussion sections according to the reviewers' suggestion, that is, centered around the sources and sinks description of DIC and POC reservoirs. Additionally, in a way to make the manuscript as a stand-alone piece of work, we discuss in more details than in the previous version the sinks of DIC – and notably the precipitation of sedimentary carbonates and their C isotopic compositions.

Overall, we think that the modifications applied to this new version markedly improve its consistency and clarity, and thus easier to catch the important messages from. We hope the reviewers and the editorial board will also see the benefits of these changes.

Yours sincerely,

Robin Havas, on behalf of all co-authors

Answers to the comments made by reviewer 2 (as there was no detailed review of the manuscript by reviewer 1) and belonging to the first resubmitted paper.

Line 161: What semi-calibrated means? We clarified this sentence: “The ORP signal was not calibrated before each profile and is thus used to discuss relative variations over a depth profile.” (Line 145, new manuscript)

Line 165: Why different volumes? Different volumes were filtered depending on the volume that would reach clogging of the filters. Now explained in the text (Lines 149-150).

Line 166: Does pre-ashed mean pre-combusted? Add temperature and time if this is the case. Done, and changed pre-ashed to pre-combusted (Line 148).

Line 171: Please provide details on the transport from the lake to the laboratory. Done (Lines 157-158).

Line 175: Was the water filtered, stored in a container and then, put in the Exetainer? Or the filter went directly into the exetainer? The water was first filtered at 0.7 μm and poured into a container. Then, the filtered-water was filtered again at 0.2 μm and poured directly into an exetainer. Now clarified in the text lines 171-172.

Line 197: The name of the laboratory should be written in either French or English throughout the manuscript, and the city in which the laboratory is located should be mentionned. Currently we have a mix of French and English. Modified throughout the manuscript.

Line 265: Place into brackets and move “between 34.5 and 35 mM” after “throughout the water column”. This sentence was rearranged (Line 248).