

Erlangen, 3 November 2022

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Dear Sebastian Naeher and Editorial Team of Biogeosciences, dear Reviewers,

thank you again for the handling of the manuscript and for providing us your comments. We did our best to address them.

Please, find our answers in the table on the next page. We also uploaded a new version of the manuscript with tracked changes and another one with all tracked changes removed for further processing.

With kind regards and on behalf of all co-authors,

Marlene Dordoni (PhD student)

## Reviewer 2

<p>The revised manuscript has been improved a lot by the author, but I still feel that the results and discussion part could be more straightforward and concise. Besides, I have some minor suggestions as below. Once these changes have been made, I fully support publication of the manuscript in Biogeosciences.</p>	<p>We thank the reviewer for his suggestions.</p> <p>We now provided a better structure of the Result and Discussion section, with smaller paragraphs and references to figures (as substructured in for instance figure 2(a), (b) and (c) ).</p>
<p>L24-25: Put “(0.01 to 1.3 <math>\mu\text{mol L}^{-1} \text{d}^{-1}</math>)” after “calculated turnover rates”.</p>	<p>Done.</p>
<p>L42: Please make a definition of OM here, organic matter? L46: Also, OM here.</p>	<p>Done.</p>
<p>L145: Again, the isotope mass model could be explained in more details, e.g., how the equation (2) was deduced ?</p>	<p>Equation (2) in the main text is a re-arrangement of the following mass balance:</p> $\delta^{13}\text{C}_s = \frac{(n_t \times \delta^{13}\text{C}_t + n_{fromOM} \times \delta^{13}\text{C}_{OM})}{(n_t + n_{fromOM})}$ <p>Here the subscript <math>\delta^{13}\text{C}_s</math> refers to isotope compositions at any given sampling after time 0; the subscript “t” refers to time 0 concentration and isotope values; the subscript “OM” refers to organic matter sources (auto-POC, DOC, SED or allo-POC).</p> <p>This information was added to the main text and further details regarding equation (2) are provided in the supplementary material S1.</p>
<p>L188: Is it DIC concentration?</p>	<p>Yes; we now made it clear in the text.</p>
<p>L295: The conclusion of significance of this study is weak and could be improved.</p>	<p>We think that the conclusions offer to valid and new points</p> <ul style="list-style-type: none"> <li>a) That the isotope method is able to produce plausible turnover rates;</li> <li>b) That our study outlines the fragility of the system especially in case of higher carbon loads.</li> </ul> <p>Both of these points have been formulated more clearly. In addition, future work based on our results are recommended in the Conclusions.</p>