

General comments

Authors significantly improved the manuscript. It is an important contribution into methane dynamics in highly heterogenous system of river delta and thorough modification of manuscript by authors allowed to emphasize main assets of this study. I strongly recommend it to be published as it adds important piece into the knowledge about spatial and temporal variability of CH₄ in delta system. However there are few minor points, which still needs to be addressed before the publication.

Specific Comments

Abstract

Overall, the abstract reads well.

Specific comment:

We found large to extreme diel cycles: The “extreme cycles” doesn’t sound correct: What is an extreme diel cycle? Very variable? Please specify

Response: Correct, a diel cycle that has a large gradient change overnight. In our case a diel cycle that has a great change in CH₄ concentration overnight compared to that of the starting concentration.

Introduction:

Introduction was shortened. Selected parts which distracted the reader from the main path of the manuscript were removed.

Overall it reads smoothly and sets a good background and motivation for this study. Authors significantly improved this part.

Response: Thank you!

Specific comments:

Line 30: Please reformulate part of the sentence: “Due to their significant source strength...” It doesn’t read well in English

Response: Changed from ‘Due to their significant CH₄ source strength, inland waters have seen an increase in attention (...’ to ‘Inland waters are known to have a significant CH₄ source strength and therefore, have seen an increase in attention (...’

Line 40-41: Sentence “In the anthropogenically....” Fits more to the method section than to the introduction section. I would suggest to remove it from introduction.

Response: This has been moved.

Line 62-73: Authors nicely emphasized the importance of this study, good job!

Response: Thank you!

Methods:

The method section is clear and together with references and implemented improvements provides sufficient information about studied area and methods used.

The figure (Fig. 1) which describes the studied locations with distinction into channels, river and lakes

provides clear overview of the investigated area.

Also, additional information, including streams velocity or information about quasi-stagnant waters, which occur in the delta, provide sufficient justification for implementation of Cole and Caraco gas transfer model to obtain CH₄ flux estimates.

Results and discussion:

Many points have been clarified, redundant information has been removed and multiple sentences have been rewritten. This allows the reader to follow this section more easily. Result and discussion section reads well, however several parts still need to be addressed.

Specific comments:

Figure 4 provides informative overview of CH₄ concentrations in Delta system

Line 151: letter “t” is missing in the word “Throughout”

Response: This has been implemented

Line 169-180: This section has been clarified regarding the extrapolation, it is clear now how authors performed the extrapolation.

Line 176: word “estimated” is missing letter “e”

Response: This has been implemented

Line 224-227: Despite the attempt made by authors to clarify this sentence, it still needs to be rephrased as it is difficult to grasp the main message of this sentence.

Response: Changed from ‘Given the dramatic change within the concentrations and properties of the water, such as the water temperature decreasing the further away from the channel we travelled into the ‘hot spot’, even within summer, this would further provide evidence from cooler groundwaters or potential waters from the reed beds also suggested by Maier et al. (2021).’ To ‘Given the dramatic change within the concentrations and properties of the water, i.e. water temperature decreasing the further inwards we travelled, this would further provide evidence of influence from cooler groundwaters or potential waters from the reed beds also suggested by Maier et al. (2021).

Line 236: word “were” is missing letter “e”

Response: This has been implemented

Line 251: Please change from ‘hot spot’ measured the largest concentrations” to “the largest concentration was measured.....”

Response: This has been implemented

Line 258: Please rephrase: Oct by itself cant have median and percentiles, fluxes can.

Response: Changed from ‘Comparing Oct to May and Aug for rivers, it had the largest percentile range and median’ to ‘Comparing fluxes from Oct to May and Aug fluxes for rivers, it had the largest percentile range and median’

Line 264: The sentence seems not complete: Higher median than where?

Response: Changed from ‘Overall our calculated mean flux for all months of the three campaigns from the fluvial delta was 594 ± 525 $\mu\text{mol m}^{-2} \text{h}^{-1}$, within the diffusive mean from the overall literature (342.5 ± 1062.5 $\mu\text{mol m}^{-2} \text{h}^{-1}$; Sanley et al., 2016). However, we found a far higher median of 473 $\mu\text{mol m}^{-2} \text{h}^{-1}$ (compared to 33.3 $\mu\text{mol m}^{-2} \text{h}^{-1}$).’ To ‘Overall our calculated mean flux for all months of the three campaigns from the fluvial delta was 594 ± 525 $\mu\text{mol m}^{-2} \text{h}^{-1}$, within the diffusive mean from the overall literature (342.5 ± 1062.5 $\mu\text{mol m}^{-2} \text{h}^{-1}$; Sanley et al., 2016), yet with a far higher median of 473 $\mu\text{mol m}^{-2} \text{h}^{-1}$ (compared to 33.3 $\mu\text{mol m}^{-2} \text{h}^{-1}$).’

Line 264: Are you sure about this number (2030) ?

Response: Rounded to 3 figures, yes

Line 287: “as the CH₄ due to being quickly oxidized” : This sounds like authors actually measured CH₄ oxidation (which was not the case). Please rephrase

Response: Changed from 'This inflow was only visible on the edges of the lakes and although had influence on the overall concentration, were seen as outliers as the CH₄ due to being quickly oxidized (Fig. 6)' to 'This inflow was only visible on the edges of the lakes and although had influence on the overall concentration, were seen as outliers as the CH₄ appeared to potentially be quickly oxidized (Fig. 6)'

Line 307: Please indicate correct letters for the fig.7

Response: This has been implemented

Line 307-315: Please use past tense while reporting results, for example "diel cycle showed" instead of "diel cycle shows". It is important to be coherent with other parts of manuscript where past tense was used to describe the results.

Response: This has been implemented throughout

Line 311: (Fig9): Numbering of the figures needs to follow description in the text. Thus, if this Fig appears in the text for the first time at this point, it should be Fig. 8, not Fig.9. Please change accordingly in following parts of the manuscript.

Response: Figures have been re-arranged

Line 327: Please change "is" to "was"

Response: This has been implemented

Line 330-343: Please use past tense while reporting results to be coherent with other parts of manuscript

Response: This has been implemented and checked throughout

Line 349: Fig. 8: Nice visualization! However, where is this fig discussed in the text? Please clarify

Response: Thank you and this has been implemented

Line 396-397: This sentence sounds like finding of the study (which I don't think it is). Please rephrase

Response: Changed from 'The diel cycle within the lake was consistent with stratification over the day, where vast amounts of organic carbon from macrophytes created anoxic subsurface waters, which slowly and steadily mixed during the night' to 'The diel cycle within the lake was consistent with the potential stratification over the day, where potentially vast amounts of organic carbon from macrophytes created anoxic subsurface waters, which slowly and steadily mixed during the night'.