

Review on Zheng et al., *essd*-2022-30

The authors have addressed the points raised by the previous reviewers well. The significance and novelty of the manuscript is clear and the quality of the manuscript is improved. I only have some minor suggestions to be checked before publications.

L8-9: “We combined our new measurements with the last published database of CH₄ isotopic signatures, as well as with additional literature, and present a new global database.”

→ “We combined our new measurements with the previously published database of CH₄ isotopic signatures, and present a new global database.”

L55: “database can be completed” → “database can be improved”

L73-74: “We also searched the literature for more measured CH₄ source signatures to add to the dataset.” → “We also included the measured CH₄ source signatures from other literature.”

L354: “The new data” → “The new dataset”

L362: “utilizing both $\delta^{13}\text{C}$ and $\delta^2\text{H}$ for CH₄”

Do you perhaps mean “utilizing both $\delta^{13}\text{C}$ and $\delta^2\text{H}$ of CH₄ measurements”, “utilizing both $\delta^{13}\text{C}$ and $\delta^2\text{H}$ for CH₄ emission estimates” or something else?

Notations: Sometimes you use “ $\delta^{13}\text{C}_{\text{CH}_4}$ ”, and sometimes “ $\delta^{13}\text{C}$ ” (similarly for $\delta^2\text{H}$). Unless you intended, please remember to synthesize all the notations.

Figure 5: Could you replace labels (a) and (b) to e.g. bottom/top of the panels? Now it looks as if (a) for top-left and (b) for top-right only, rather than columns. Alternatively, you could consider adding (c) and (d).