Author's Response to Editor Comments on: "Six years of continuous carbon isotope composition measurements of methane in Heidelberg (Germany) – a study of source contributions and comparison to emission inventories"

We thank the editor for the detailed and constructive comments. We will revise the manuscript according.

General Comments:

[Editor] Dear Dr Hoheisel
Many thanks for your revised manuscript.
I'd be happy to accept it for publication in Atmospheric Chemistry and Physics subject to the revisions detailed below, which I will oversee myself.
Sincerely
Jan Kaiser Editor ACP

[Editor] Abstract: The abstract should be revised in line with the guidelines detailed here:https://www.atmospheric-chemistry-and-physics.net/policies/guidelines_for_authors.html
Please ensure you identify the status of scientific understanding, the gap in knowledge being addressed and comment on the importance and implications of the results.

[Hoheisel and Schmidt] We revised the abstract in accordance with the above guidance.

[Editor] Conclusion: The conclusions do not make clear the implications of the results mean for our understanding of the state and/or behaviour of the atmosphere and climate. These implications and the revised abstract will help me decide whether the manuscript can be designated a "Research article" or whether it should be a "Measurement report" (https://www.atmospheric-chemistry-and-physics.net/about/manuscript_types.html).

[Hoheisel and Schmidt] We have revised the conclusion to better highlight the implications of this study. Emphasis has been placed both on pointing out differences with the EDGAR emission inventory and on the annual variation of biogenic CH_4 emissions. In particular, this annual cycle of CH_4 emissions has not been shown in other atmospheric studies and can therefore make a unique contribution to the understanding of the CH_4 cycle.

Technical corrections and minor revisions:

[Editor] Eq 1: Please write the letter R in italics and define R using appropriate quantity symbols, e.g. R = n(13CH4)/n(12CH4) or R = C(13CH4)/C(12CH4).

[Hoheisel and Schmidt] We have changed Eq. 1 in the revised manuscript.

[Editor] l. 85, 156 and 338: Please add a space before "N", "E" and "m" and spell out "above sea level".

[Hoheisel and Schmidt] We included the suggestions in the revised manuscript.

[Editor] Figure widths: Please make all figures double-column width (16 cm) except Fig. 9. The copy-editing team should be able to help with this.

[Hoheisel and Schmidt] We changed the figure widths in the revised manuscript as suggested by the editor.

[Editor] Data availability: Please ensure all data are in the online repository and the DOI is working before uploading the revised manuscript. The data must be available permanently and not on request. Therefore, the text "and on request from the data owner (martina.schmidt@iup.uni-heidelberg.de)" should not be necessary and be removed.

[Hoheisel and Schmidt] The data will be accessible from 19 January 2024 with the DOI (https://doi.org/10.11588/data/OXKVW2) on heiDATA, the institutional repository for Open Research Data from Heidelberg University.