

Interactive comment on “Effects of free-air CO₂ enrichment (FACE) and soil warming on CH₄ emission from a rice paddy field: impact assessment and stoichiometric evaluation” by T. Tokida et al.

Anonymous Referee #1

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Comments:

CH₄ production in the paddy field is an microbial-involved biochemical process which is driven by substrate availability and redox potential. The authors did not find significant effect of elevated CO₂ on CH₄ emission, which is quite different from that of Xu et al. as the authors mentioned in the text. The SOC contents in current paper and in Xu et al. are 77.8 g kg⁻¹ and 14.9 g kg⁻¹, respectively. Supposing the enhancement of rice growth to elevated CO₂ is the same, due to the higher SOC availability in current experiment, the enhancement of CH₄ emission should be much smaller than that of

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Xu et al. Indeed the authors' results are the case.

The large CH₄ emission difference between ET and NT is just the reflection that higher temperature lead to higher decomposition of SOC and then lead to higher CH₄ emission. I don't think the calculation of SOM decomposition by N mineralization in situ can reflect the real SOM decomposition.

As for the relevance of Fe reduction and CH₄ emission, it is a worthy topic to be studied further.

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