

Interactive comment on “Evaluation of anthropogenic CH₄ emissions over China using bottom-up inventories” by Xiaohui Lin et al.

Anonymous Referee #2

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This manuscript compared several bottom-up CH₄ emission inventories, investigated the spatial-temporal patterns of CH₄ emissions in China, and tried to explain the discrepancies between different data products to evaluate those emission inventories. However, I think the authors did not successfully achieve their research aim.

First, the comparison between different inventories did not provide any more information on the CH₄ emission characteristics in China. The previous bottom-up emission inventories have already presented what this study has shown here. This research has produced very few new findings.

Second, the authors just compared the emission values between different inventories, however, such a simple analysis and comparison cannot provide us an evaluation of anthropogenic CH₄ emissions inventories (mentioned by the paper title). Many expla-

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nations of the discrepancies between different inventories did not provide any evidence and cannot fully convince me.

Third, the analysis of emission spatial distributions did not make sense because the global and regional inventories listed in Table 1 typically allocated the country- and province-level emission estimates to grid cells to create emission maps. Some of the selected spatial allocation proxies are rather arbitrary in my opinion, which cannot provide us accurate emission mapping results. Therefore, the comparisons shown in Figures 2 to 4 cannot give us any useful information.

Finally, I do not agree that the authors said “This study, to the best of our knowledge, provides the first quantitative analysis of the amount and spatiotemporal patterns of CH₄ emissions in China” in the conclusion section because of my comments above.

Overall, I don't see much scientific significance in this paper though it summarized plenty of data and did some analysis. The paper is not well written and needs lots of editing. I fear I cannot recommend this paper for publication in its current form.

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