

Atmos. Chem. Phys. Discuss., referee comment RC3
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Comment on acp-2021-464

Anonymous Referee #2

Referee comment on "An integrated analysis of contemporary methane emissions and concentration trends over China using in situ, satellite observations, and model simulations" by Haiyue Tan et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-464-RC3>, 2021

The authors integrated emission inventories, GEOS-Chem simulations, in-situ, and GOSAT satellite retrievals to investigate CH₄ concentrations, sources, and sinks over China. Such an analysis is very important because CH₄ is the second most important GHG and China is the largest emitter of anthropogenic CH₄ in the world. However, we lack a comprehensive study to focus on China's methane concentrations and budget at present. This study is a good first step, and I recommend this paper for publication in ACP. My main suggestion for the authors is that they can consider including the TCCON XCH₄ data to evaluate their GEOS-Chem simulations as well. Besides, I suggest adding more figure legends to clarify that the global and regional CH₄ budgets (except those from GCE and GCC) and China's CH₄ emissions data plotted in Figs. 3-5 are derived from previous literature, not the estimates of this study.