

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-464

Anonymous Referee #1

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-RC1>, 2021

The manuscript describes the recent methane budgets and concentrations over China, and contains comparisons and analyses of the model results from a global chemical transport model with three observation datasets. The authors elucidate the contributions of region-sector-specific methane emissions to methane concentrations and trends which allow to better diagnose and understand the drivers of methane changes in China. The topic of the manuscript is certainly within the scope of ACP. Over all, the manuscript is well written and easy to follow, so it can be accepted after a minor revision.

- In Section 2.3, the GEOS-Chem model setup is described. But I cannot find the description about how long the simulations spinup or the statement about initial methane concentrations. Additional brief information about how it conducted would be welcomed.
- The description of CH₄ mixing ratio or concentration should be consistent. The former is used in the abstract and the latter in most other parts. The "mixing ratio" often collocates with the unit of "ppbv" such as methane in this paper and "concentration" with "molec/cm³" such as OH.