

Atmos. Chem. Phys. Discuss., referee comment RC2  
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## Reply on AC1

Anonymous Referee #1

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Referee comment on "Methane emissions responsible for record-breaking atmospheric methane growth rates in 2020 and 2021" by Liang Feng et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-425-RC2>, 2022

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This reviewer appreciates the quick response from the authors. Although I would like to clarify one point in case it was not well articulated in my initial review.

It is this reviewer's understanding that previous work arguing for a role of chemistry claims that chemistry **could** explain some large fraction of the methane growth. My reading of this manuscript is that the central conclusion is that methane emissions **are responsible** for the methane growth. The former claim that a process **can** explain a phenomenon is justified through forward simulations. In this reviewer's opinion, arguing that a process **is responsible** for a phenomenon requires a higher burden of proof. This reviewer was unconvinced that the numerical experiments presented in the initial manuscript meet the standard to justify the latter claim. This is why I suggested either reframing the conclusions to include appropriate caveats or presenting additional numerical experiments to fully justify the central claims. Apologies for any confusion in my initial review.