

Atmos. Chem. Phys. Discuss., referee comment RC3
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Comment on acp-2022-162

Anonymous Referee #3

Referee comment on "Estimation of surface ammonia concentrations and emissions in China from the polar-orbiting Infrared Atmospheric Sounding Interferometer and the FY-4A Geostationary Interferometric Infrared Sounder" by Pu Liu et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-162-RC3>, 2022

The study estimated the changes of hourly NH_3 concentrations, surface NH_3 concentrations and NH_3 emissions in China using the polar-orbiting satellite (IASI) and Fengyun-4 geostationary satellite. The results show NH_3 concentration in daytime was generally higher than that at night. Satellite-based NH_3 emissions ranged from 12.99-17.77 Tg N yr^{-1} during 2008-2019. The manuscript is overall well organized and written. The analyses are neatly conducted and fit the scope of ACP. Before recommending publish the study, I have the following comments that I think the authors shall address to improve the manuscript.

Throughout the paper, there are issues with the use of plural vs singular and or verb tense, especially in the use of 3rd person, plural or singular. There is also extensive mixed use of past tense and present tense instead. I strongly recommend using unified tense instead, throughout the paper.

The feedback between surface NH_3 concentration and emissions was calculated by GEOS-Chem. Please describe the simulation process in detail and driven data in SI.

L56, Please further check if the value is 40%, if so, annual farmland NH_3 emission were estimated as 2.4 Tg N yr^{-1} by the IPCC tier 1 guidelines?

L29, 57, what's SO_2 , NO_x , NH_4^+ , and IPCC, etc.

L113, correct word 'is' to 'are', please check similar mistake throughout the manuscript.

L201, in Figure 1, check NH_3 concentrations (kg N ha^{-1}) or NH_3 concentrations (ppb).

L201, in Figure 1, the figure shows the 2019-2020 average or sum, please check similar mistake throughout the manuscript.

L282-283, need the data link or reference.