

Interactive comment on “Organically fertilized tea plantation stimulates N₂O emissions and lowers NO fluxes in subtropical China” by Z. Yao et al.

Anonymous Referee #1

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The study of Yao et al. provide a good insight on the emissions of N₂O and NO from Chinese tea plantations in subtropical area. This issue is of very importance and so far less investigated. This manuscript is well written, and the experimental and statistical methods are reliable. Before its acceptance for publication in BG is given, the following concerns need to be considered.

The authors aimed to emphasis organic fertilization contributes to the higher N₂O and lower NO as compared with common urea application in the tea field. As noted in Section 4.2, they have ascribed the differential impacts of urea and organic fertilization on the emissions of N₂O and NO partly to the differences in NH₄⁺ and DOC contents between these two treatments. However, it is very difficult to tell the differences in NH₄⁺ and DOC contents between TUN and TOM treatments in Fig. 2, even during the

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peak emission periods of both gases. The corresponding statistical results are thus strongly required to support their explanations.

When they evaluated the underlying mechanisms for the high background emissions of N₂O and NO in the tea field, long-term high N input and subsequent soil acidification being proposed is insufficient. However, it is well recognized that soils with vegetable cultivation are also characterized by high N input and favorable conditions for intensive nitrogenous gases production in China. Thus, this explanation needs to be reconsidered. I may suggest that it is the high uncertainties of meta-analytic results, rather than the specific properties of the studied soil, contributing to the differences of background emissions of N₂O and NO between the current study and previous studies.

Some minor problems are as follows. P626 L4: Please take care of '2-year or 2 years' as well in other places in this manuscript. P626 L15: respectively. P640 L1: Given the context of this section, the subtitle would be replaced by 'Fertilizer type influencing annual N₂O and NO emissions'.

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