

Biogeosciences Discuss., referee comment RC2
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Comment on bg-2022-39

Anonymous Referee #2

Referee comment on "Episodic N₂O emissions following tillage of a legume–grass cover crop mixture" by Alison Bressler and Jennifer Blesh, Biogeosciences Discuss., <https://doi.org/10.5194/bg-2022-39-RC2>, 2022

The manuscript is well written and assessing interesting question regarding the effect of cover crop (and mixtures) incorporation on soil nitrous oxide emissions.

At KBS site measurement length seems to be appropriate for the question asked, at the CF site, however, the post-incorporation peak emissions have not finished before the last measurement (e.g. Fig 2). Thus, cumulative emissions calculated for the CF cycle likely underestimated. This problem can be addressed, at least partially by additional analysis of the existing data.

I think that authors should include analysis of post-incorporation emissions from the KBS LTER site since, I guess CF site doesn't have long-term soil N₂O emissions data. Within existing data authors can find times of cover-crop incorporation across the KBS dataset. By finding measurements of post-incorporation emissions and compare them to total annual/seasonal emissions, authors can prove that post-incorporation emissions indeed contribute significant amount of N₂O emissions. This will improve the manuscript and make it more suitable for publication.

I agree with the first reviewer comments and don't want to repeat them, however, I think that incorporation of additional analysis will make this manuscript suitable for publication, despite limited novelty pointed by the reviewer 1.

Two technical comments: 1. please use appropriate decimal numbers in current version you use non, one, and two decimal numbers sometimes in the same paragraph (L237, section 3.2). 2. Figure 2, please do not use smoothing line or connection line - you have not measured continuously.