

Interactive comment on “Physical constraints for respiration in microbial hotspots in soil and their importance for denitrification” by Steffen Schlüter et al.

Anonymous Referee #1

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This is an excellent study that provides a very important insight into drivers of N₂O production in soil. Systematic analysis of the hot-spots of N₂O production is badly needed, and this study is a great example of how it can be done. It involves a very clever and creative experimental work, thoroughly conducted experimentation and data collection, and in-depth data analysis. The manuscript is very well written.

My only comment is that the novelty of the study and the significance of the study findings are not sufficiently highlighted in the manuscript. The conclusions, for once, do not do the due credit to the exciting results on differences between the hotspot architectures. I can see why someone might have said that this study is not novel enough by

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just looking at these conclusions. To me the hotspot architecture findings are the most important and should be emphasized. For that, I would suggest to clearly describe the two architectures early-on and to rephrase the objective/hypothesis statements in the Introduction. As of now, they are rather confusing and do not clearly convey what the authors are trying to do and what they expect to see. E.g., to this reviewer it all remained rather blurry until Discussion. Some of the things that are very well put in the Discussion, e.g. lines ~380-395 or line 400, should have made it into Introduction and Methods as hypotheses and expectation wording.

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