

## ***Interactive comment on “Effects of sterilization techniques on chemodenitrification and N<sub>2</sub>O production in tropical peat soil microcosms” by Steffen Buessecker et al.***

**Anonymous Referee #1**

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The article, Effects of sterilization techniques on chemodenitrification and N<sub>2</sub>O production in tropical peat soil microcosms, is well written and details a useful methodological study. Abiotic N<sub>2</sub>O production processes and links between N and Fe cycling are often overlooked but potentially important processes in some environments. More clear and consistent methodologies to measure such processes are needed and this article does a good job outlining potential limitations of different sterilization methods and the use of EEMs to characterize changes in organic matter was a novel addition. The article is suitable for publishing with minor edits. L23-25: suggest splitting into two sentences and making the second sentence a more concrete statement of the reactants/conditions necessary for chemodenitrification, similar to that of L84-87.

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Not all readers readily familiar with chemodenitrification. L34: Consider adding, “of NO<sub>2</sub>- consumption” to the sentence, “dominant process...” L34-35: Consider defining abiotic N<sub>2</sub>O production as one endpoint of chemodenitrification. L50-52: Example of use of ‘non-enzymatic’ and ‘abiotic’. Please define and then be consistent with use of non-enzymatic vs abiotic. Suggest using just one term, abiotic is more common, I believe. L56-58: Check equations. Are H<sub>2</sub>O and H<sup>+</sup> flipped? L60: Cu<sup>2+</sup>? Should this be Fe<sup>2+</sup>? L66-L72: Found this section a bit confusing. A sentence or two introducing and/or contextualizing these reactions would help readers who are not familiar with these processes. Suggest adding an explanation of how these processes could be affected by sterilization techniques, if indeed that is the point of this part of intro... L73-74: Equations absent L124: Were all treatments prepared in an anaerobic glove box prior to incubation? L175: N<sub>2</sub> or H<sub>2</sub> glove box? Not sure if it would matter, just checking for consistency L268: Zn data is shown in Fig. 3, referring to another figure or a typo? L292: increased the FI relative to what? Suggest reminding readers of what the baseline and controls were for Table 1, or maybe I missed this explanation earlier. Not sure if referring to a change in time or change relative to live or relative to +/- nitrite etc. L307: where is r<sup>2</sup> value coming from, was there a regression analysis done? L327: However, to me many of the NO<sub>2</sub>- consumption lines do not look highly linear in first 48 hrs (Fig. 5). L380: none -> no L392: delete ‘accompanied by’? or check grammar of this sentence

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-282, 2019>.

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