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Biogeosciences Discussions

Interactive comment on "Biogeochemical controls and isotopic signatures of nitrous oxide production by a marine ammonia-oxidizing bacterium" *by* C. H. Frame and K. L. Casciotti

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O2 concentrations were give in uM in parentheses in the abstract and in the materials and methods sections under the section "culture maintenance and experimental setup"

A title was added to Appendix A. The Appendix information was included here because the calibration methodology for Site Preference measurements has been the subject of some recent discussion. We wanted to be as transparent as possible about how our reported site preference numbers were obtained, in case the accepted methodology changes.

page 3022 lines 19-21 (page 2 line 50): this sentence was removed

page 3024 lines 10-12: We've included a new Figure 1 to help clarify where the oxygen atoms come from in NH2OH, NO2-, and N2O. The d18O of N2O from nitrifier denitrification depends on the d18O of NO2- which in turn, depends on the d18O of H2O and, to a less extend, the d18O of O2.

page 3034 lines 1-6 (page 11 lines 349-350): The sentence was changed to make it less general and keep the focus on ammonia oxidation and nitrification: "The bulk d15N of N2O from nitrification depends on the d15N of the substrate nitrogen and any kinetic isotope effects associated with the enzymes that produce the N2O."

page 3034, lines 22-25 (page 11 lines 367-369): The statement was removed and replaced with "Decoupling nitrifier-denitrification from the NH2OH decomposition pathway is difficult to do with intact C-113a cells because the bacteria require NH3 to support their respiratory electron transport chain."

Section 3.3 (page 11 line 376): M was defined as Mass

page 3035 Figure 3: The range of masses of N2O included in Figure 3 (now Figure 4) is quite large because the X-axis is 1/Mass. On the left hand side of the X-axis, the largest masses of N2O were 50-100 nanomoles and on the right hand side, the smallest masses were just over 1 nanomole.

page 3039-3040 section 3.4: In the supplementary material I've now included two tables with an estimate of how the value of SPnd changes when we change the best-fit values of End, Enh2oh, and SPnh2oh by +/- one standard error in both labeled and unlabeled water.

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