

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 μ M 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

C2105

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 nanmoles 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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