

BG Discussion: Reply to Reviewer 2 Comments (RC2)

Thank you for your comments and your efforts to improve this manuscript.

General Comments on the manuscript from Travis et al., Testing the influence of light on nitrite cycling in the eastern tropical North Pacific

In the manuscript *Testing the influence of light on nitrite cycling in the eastern tropical North Pacific*, Travis and colleagues present evidence of light influence in the accumulation of nitrite at the PNM. The manuscript is well written, containing a great set of figures and tables. While I am in support of the paper for publication, I have a few general comments.

General comments:

Line 37: There are random numbers at the beginning of the sentence.

Thank you for catching this error. Random numbers will be removed.

Line 39: What does CA mean? I suggest using the full name instead.

California will be written out fully instead of this abbreviation.

Line 67-68: This sentence is a bit unclear, needs revision.

This sentence can be re-written as, "When both nitrate and nitrite are available abundantly available as substrates for phytoplankton, nitrate uptake rates are typically higher than coincident nitrite uptake rates (Collos, 1998)."

Line 165: There is a misprint in the sentence.

Thank you. The citation will be fixed.

Line 173-174: I am not certain the incubation period used here is enough to determine an actual rate of ammonium oxidation. This different methodology is quite interesting and needs to be explained more in the methods section. I make this point because literature indicates that nitrifying organisms are slow growers, therefore can we be certain that these are actual rates or the rates themselves should be referred to as potential rates in the manuscript.

Yes, these rates should be considered potential rates due to the high likelihood that the ^{15}N additions would serve to enhance the rate measurements towards maximum community rates (per volume). Incubations were initially conducted using 8hr 16hr and 24hr lengths, but the 8hr incubation period was selected because it minimizes bottle effects (e.g. substrate depletion and grazer influence) and was long enough to adequately measure changes in ^{15}N substrate/product. While ammonia oxidizers are slow growers, we intend to measure the rate of

the existing population and minimize rate increases due to population growth. We will make sure to clarify that our measurements are considered potential rates.

Line 178: The table seems more like a repeat of the information already written in the methods section, if the authors deem necessary to include the table, I suggest moving the table to the SI document instead.

We will consider moving the table to the supplement to avoid redundancy.

Line 215: Should first define CV%.

Coefficient of variance will be defined here before use.

Line 225: Please comment at Line 173-174

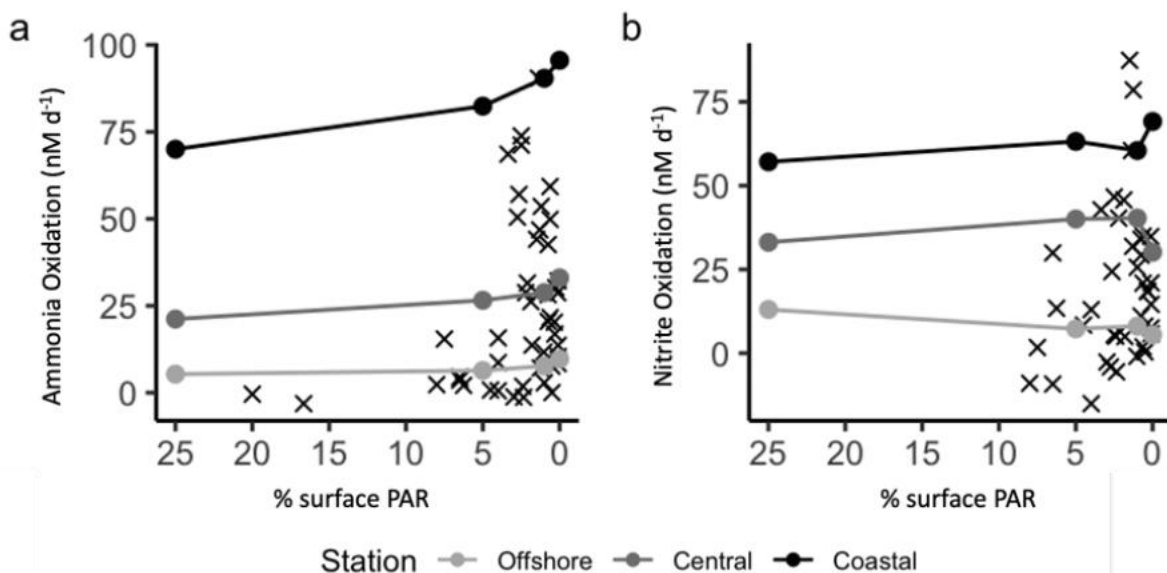
We will explain the caveats of our measurement method and refer to rates as potential rates.

Line 259-263: SigmaT should be define what it is, these numbers right now may not mean much to some people.

SigmaT will be defined before use.

Figure 7: Some data points are cut-off on the map.

Thank you. Figure 7 will be revised to show all points more clearly .



Line 576: nM d-1 needs a superscript.

This will be fixed and made consistent.