

# ***Interactive comment on “Excess nitrogen as a marker of intense dinitrogen fixation in the Western Tropical South Pacific Ocean: impact on the thermocline waters of the South Pacific” by Alain Fumenia et al.***

**Anonymous Referee #2**

Received and published: 20 July 2018

General: The manuscript presents measurements of dissolved inorganic, dissolved and particulate organic N and P from the OUTPACE experiment in the oligotrophic South Pacific. Elemental ratios, and in particular N\*, are related to measurements of N2-fixation (from a companion paper) and other basic data from the cruise, and set into context of GLODAPv2 data from the South Pacific. Along the OUTPACE track two very different regions are identified (MA and GY waters).

The presentation of the material is highly descriptive, in particular the results section is excessive in its low to details. Overall the manuscript is a data report and not a

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scientific paper.

BGD

Large parts of the text (Intro and Discussion in particular) are characterized by awkward and ambiguous sentences. This partly seems to be a language problem, hence I strongly suggest to make use of appropriate editing from a person (co-author ?) with appropriate knowledge of the subject and the English language. Please note that the review process is not a substitution of proper preparation of a manuscript.

I provide an annotated manuscript, with 540+ comments and corrections. This is by far the largest number of annotations I ever had with a manuscript. Given this huge number of issues, there is no meaning to select major vs. minor points.

In the current form the manuscript can only be rejected, with the possibility to resubmit to BG. I suggest that the authors collectively work on an improved new version of this manuscript.

A few overall things, just that they are not lost in front of the huge number of comments in the annotated file.

I strongly suggest to add a table with accronyms to the paper since you use them a lot. Also make sure to keep accronyms free of typos, e.g. p13 TKR instead of TKG (Fig. 2b)

Results: This section is unreadable. You repeat basically every single number you show in the tables 1-3. Reduce to 1/3 or less. Point the reader to patterns, differences. Otherwise the paper your paper has the nature of a data report and not a scientific paper. BG does not publish data reports.

Discussion This section is characterized by many awkward and ambiguous sentences.

P13, 516ff. This is clearly a wrong interpretation of the Gruber 2016 paper!! Please read and understand a paper before citing it. Gruber (2016) is a commentary on the paper by Knapp et al. from the same PNAS issue. Gruber does not provide any new results, but just introduces the uncertainties related to both the Deutsch (inverse

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model) study and the Knapp observational study. The results of Knapp should be cited here, which are in line with Bonnet et al. 2017. Don't be misguided by the tone of the Gruber paper, which tries to rescue the 'spatial proximity' hypothesis. But this is only for the reason that he himself introduced the general hypothesis in a paper in 2001.

Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2017-557/bg-2017-557-RC2-supplement.pdf>

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-557>, 2018.

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