

## ***Interactive comment on “Microbial community structure in the Western Tropical South Pacific” by Nicholas Bock et al.***

### **Anonymous Referee #2**

Received and published: 30 March 2018

Journal: BG Title: Microbial community structure in the Western Tropical South Pacific  
Author(s): Nicholas Bock et al. MS No.: bg-2017-562 MS Type: Research article  
Special Issue: Interactions between planktonic organisms and biogeochemical cycles across trophic and N<sub>2</sub> fixation gradients in the western tropical South Pacific Ocean: a multidisciplinary approach (OUTPACE experiment)

This MS describes picophytoplankton abundance in Western tropical south Pacific, where such information is strictly limited. I hope that my comments are helpful to improve the MS.

1) ANOVA results 1-a: Please show the summary table of Two-way ANOVA. Authors analyzed two-way ANOVA, but I am not sure two factors, and the aim of the analysis. If authors will show the summary table in the Result section and mention the strategy

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of two-way ANOVA in Materials and Methods section, these are helpful for readers.

1-b: ANOVA assess the difference among the multiple assemblages (groups) and cannot determine which is higher than others. However, authors sometimes mentioned that one assemblage is significantly higher than others. For example, “values for %HNA were significantly greater at LDB relative to the mesotrophic and oligotrophic stations (ANOVA,  $p < 0.01$ )” in lines 6-7 of page 6. In the Materials and Method section, please describe the multiple comparison after ANOVA.

2) Bottom-up and top-down control of microbial communities Authors analyzed top-down or bottom-up control of microbial communities using counting data of various planktonic groups. In the analysis, author used heterotrophic bacterial counting data. However, I wonder that Prochlorococcus should also be included for this analysis, as the Prochlorococcus was numerically abundant, and the cell size is also overlapped with heterotrophic bacteria. Is there any data that heterotrophic flagellates grazed only on heterotrophic bacteria?

3) phagotrophy of PPE I think it is too much to say the possibility of phagotrophy of PPE under nitrate limited condition. Authors cannot make any concrete conclusion, I recommend that last two paragraphs (lines 16-32 of page 11) should be shorten.

4) NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub> Page 3, line 33, PO<sub>4</sub>, NO<sub>2</sub>, and NO<sub>3</sub>. Authors used PO<sub>4</sub>, NO<sub>2</sub>, NO<sub>3</sub> in other sentences. Also, nitrate and nitrite are used instead of NO<sub>3</sub> and NO<sub>2</sub>. Please correct them appropriately.

5) HNF abundance Authors mentioned that depth integrated abundances of HNF were greater in the Zu than the ZI at mesotrophic and oligotrophic stations (lines 15-16 of page 6). But, as far as I understood, HNF abundance in oligotrophic site is low in Zu (0.41) than that in ZI (0.43, Table 1).

6) Reference list Below papers are not included in the reference list;

Introduction Brum et al., 2015 Huang et al., 2015 Campbell and Vaultot, 1993 Karl,

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1999 Denis et al., 2010 Blanchot and Rodier, 1996

Materials and methods Duhamel et al., 2014 Vazquez-Dominguez et al., 1999 Motoya et al., 1996 R core team, 2013

Results Gasol 1994

Discussion Herbland and Voituriez, 1979 Dore et al., 2008 Painter et al., 2014 Pérez et al., 2006 Van Wambeke et al., this issue Ducklow, 2002 Gasol, 1994

Below two papers, which are in the reference list, are not cited in the MS. Moutin et al., 2017 Tillson et al., 2004

7) Figures Fig. 3 are hard to see. It is preferred that axis color is changed to black, and size of labels is larger than the present. In my printing environment, axes of Fig. 4 are almost invisible.

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-562>, 2018.

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