

# ***Interactive comment on “Mesozooplankton structure and functioning in the western tropical South Pacific along the 20 parallel south during the OUTPACE survey (February–April 2015)” by François Carlotti et al.***

## **Anonymous Referee #2**

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**GENERAL COMMENTS** The present manuscript is part of the OUTPACE Experiment, a multidisciplinary effort to study the functioning of the western tropical South Pacific ecosystems and associated biogeochemical cycles. In that sense, the work presented by Carlotti et al. matches the scope of Biogeochemistry, since it includes the description of the mesozooplankton compartment as part of the studied ecosystems. It presents valuable information about mesozooplankton abundance, diversity and biomass, including a stable isotope analysis and estimations of carbon demand, grazing impact and zooplankton excretion rates in a poorly studied area, adding value

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to the results presented here. However, the manuscript is often too descriptive, relying excessively on other analyses included within the same Special Issue and in other previous studies, masking the meaning of the present dataset. I think that the manuscript could be accepted for publication in Biogeosciences but only after major revisions.

**SPECIFIC COMMENTS** Grammar mistakes and poor editing are evident throughout the whole manuscript, while reading is difficult because of wordiness. Hypothesis are missing, and conclusions are not clear for the reader. I strongly recommend 1) reducing and rewriting the Discussion section, focusing on the results from this study, and also 2) balancing the story as well as the number of tables (e.g. including some of the latter as supplementary material). Some detailed comments: Abstract: (P1, L25) It would be more accurate to use “secondary consumers”, rather than “mesozooplankton”. (P1, L25-29) Please split up this sentence in two. (P2, L20). Please correct ingestion rates units. (P2, L21 and throughout the text)  $\text{NH}_4^+$  and  $\text{PO}_4^{3-}$  are a charged cation and anion, respectively; please correct. It is difficult to extract the main conclusions of the study from the Abstract. Introduction: (P3L5) This is the first time that the authors name ENSO, please define the acronym as El Niño Southern Oscillation (ENSO) here and not in Section 2.1. (P3L13) Please provide more details about the filamentous cyanobacteria biomass after summer blooms or link this paragraph with the following one. (P3L16) when referring to “productivity of zooplankton”, do the authors refer to an increase in zooplankton biomass? Please correct. (P2L21-22). I assume there are some brackets missing here. (P4L10) Authors do not use quotation marks but the Spanish “ñ” when referring to El Niño, please be consistent when referring to La Niña. Material & Methods: (P5L2-9) Authors refer to Table 1 from Moutin et al (2017) for all general characteristics of the stations. However, a list of acronyms and main environmental features that could be relevant for the present zooplankton study would help the reader in a substantial way. (P5L17) Authors mention that station SD-13 was not sampled for zooplankton. Any reason for that? Please specify. (P5L22 and throughout the text) Please correct units and be consistent. In this case, the correct for would be  $\text{m s}^{-1}$ . (P5L25) I guess that something is missing here, do you mean  $0.3 \text{ m}^3 \text{ rev}^{-1}$ ?

Please correct. (P5L30) Please rewrite; do not use symbols (+) in the description and include a formula for the sake of clarity. (P6L6 and throughout the text) Please correct to ind m-3. (P6L6) Why to use the Shannon-Weaver diversity index amongst others to estimate zooplankton diversity? Please provide a short explanation. (P6L23) Please add the word “software” after “Identifier”. (P7L17-24) Please split up this paragraph in two sentences. (P8L8) Results: (P11L1). Chaetognaths are considered as gelatinous zooplankton, so it is wrong to consider this group apart during the analyses. Same is valid for Fig3B and Fig 9A. Unless there is a reason to consider chaetognaths separately – in that case, please specify – please correct this point throughout your manuscript. (P11L5) I think that authors refer to early life stages, rather than larval forms. Copepod larval forms are nauplii, while copepodites are copepod juveniles, both with their corresponding stages depending on the copepod species. Please differentiate both properly and correct accordingly in this paragraph and throughout the text. Discussion: (P17L14) Which group do the authors refer to when using the term “small zooplankton”? Please clarify. (P20L1-4) Why do authors refer here to the study from Caffin et al. (2017) and not to their own dataset (Fig 10)? Please correct accordingly. (P20L29-34) The fact that daily grazing pressure of zooplankton represents >100% (234%) of primary production calls for an argumentation of this result. According to the authors, which are the reasons of such a difference between their result with those from Dam et al. (1995)? (P21L33-34) This is the first time that authors mention the (possible) trophic link between the plankton community studied along the manuscript and the tuna marine food web and needs clarification.

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