

Ocean Sci. Discuss., referee comment RC1  
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## Comment on os-2021-67

Anonymous Referee #1

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Referee comment on "Nutrient ratios driven by vertical stratification regulate phytoplankton community structure in the oligotrophic western Pacific Ocean" by Zhuo Chen et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-67-RC1>, 2021

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This manuscript reported the effect of vertical stratification on phytoplankton community structure in the western Pacific Ocean. The topic is interesting, especially under the current situation of global warming. Although the authors accumulated a large amount of data, they fails to provide a convincing story and a novel conclusion. The results and discussions are not closely related. The authors described a lot on the differences among four groups, but they did not discuss much on this point. In turn, some discussed points lacked the supporting results. The whole discussion part lacked depth and logic. It is more like a review rather than a discussion based on the obtained results. There are many errors in the figure legends. There are many errors in the figure legends. Also, there are lots of typos and format and gramma errors in the whole manuscript and need to be carefully checked and corrected.

P2L1-2: Please revise the English in this sentence. "WPO is not only... but also suffer the highest number of ...."

P2L2: "Marine changes"?

P2L9-10: Gramma mistake. Please re-write this sentence

P2L10-12: "Because of typhoon, upwellings and various kinds of physical mixing processes, vertical stratification of subtropical Pacific seawater" Gramma mistake. The sentence is missing a verb.

P2L14-16: Please re-write the sentence. "wind-induced" is an adj, not a noun.

P2L16: "Therefore, it is characterized by SCM regions by latitude." How did the authors draw this conclusion?

P2L16-18: Please provide the reference. Moreover, "the TTS.." should be "The TTS.."

P2L18-19: What is ternary input? Please explain.

P2L19-20: "The SCM in the tropical WPO is 80 m (Dandonneau, 1979)." Please provide more evidence. I believe the SCM should be different in different regions in WPO.

Method:

Section 2.2: Although the authors cited some references, the method should be still described briefly.

Result:

I suggested the authors adding a paragraph to introduce the hydrographic features of the study area during the sampling years.

Fig 1: The figure legend is not correct. There are no red, yellow and green triangles, and black dots in the figure. I guess fig b,c,d are sampling maps in 2016, 2017, and 2018, respectively?

Fig 2: I suggest the authors adding the taxa information in the Fig. 2. The figure legend is confusing. There were no subregions in the figures, but only three years. Also, a scale bar should be added.

Fig. 3: How did the author average the phytoplankton community structure? By depth integration?

Table 1: Please add the standard deviations.

P5L19-20: PCoA analysis cannot explain the relationship between the environmental parameters and phytoplankton community structure.

Fig. 5: What are differences among the panels a,b,c,d? Please add the description for each panel.

Fig. 6&7: I think these two figures only included surface temperature and salinity. Please add this information in the figure legend.

P8L16-17& Fig.7: This figure did not make much sense, and it was not discussed in the discussion part.

## Discussion

P9L12: statistical analysis is needed to prove the “significant differences” in phytoplankton community structure across groups.

P12L11-13: “It can be seen that the density of Trichodesmium in Kuroshio region was very high..”. I did not see the data of trichodesmium in the Kuroshio region. I suggest the authors providing the detailed phytoplankton community structure.

P13L35-37: The result part did not show the change of VSI and phytoplankton community structure with latitude. If this is an important point of this paper, the relevant result should be added.

P13L40-42L: Those results should be presented in figures and described in the result part.

P13L43-44: Please provide the reference.