Biogeosciences Discussions

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Comment on bg-2020-448

Anonymous Referee #3

Referee comment on "New constraints on biological production and mixing processes in the South China Sea from triple isotope composition of dissolved oxygen" by Hana Jurikova et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-448-RC3, 2021

Review of "New constraints on biological production and mixing processes in the South China Sea from triple isotope composition of dissolved oxygen" by Hana Jurikova, Osamu Abe, Fuh-Kwo Shiah and Mao-Chang Liang

Summary:

In this manuscript, the authors present triple oxygen isotope data from the SouthEast Asian Time-series Study (SEATS, 18Ë□N, 116Ë□E) in the South China Sea. The samples were taken during three different years and three different states of the monsoon in the area. Based on this data and O2/Ar measurements, they determine gross primary production and net community production rates.

General Comments:

There are a number of severe points that need to be addressed before a possible publication. Most of these are covered by the two already submitted, detailed referee comments. Generally, this study lacks detailed description about how the sampling and analysis was conducted (e.g. the missing Chl a sampling in the methods section) and a proper error analysis.

The other main critique point, that I want to stress, is that this study is lacking a discussion about whether or not the sampled profiles are representative for the region and the season. This study is based on triple oxygen isotope measurements from three different seasons and three different years: 1 cast in October 2013 (11 samples from 5 to 500m), 2 casts on consecutive days from August 2014 (24 samples between 5 and 3500m) and 2 casts on consecutive days in April 2015 (21 samples between 5 and

3500m). O2/Ar data is only available for the stations in 2014 and 2015.

This is a very small amount of data to base such a study on. The authors need to give a detailed discussion about why they think that the presented profiles are representative for the area and the season. This could for example be done by comparing the measured profiles of temperature, chlorophyll and dissolved oxygen with previous observations in the area.

Minor comment:

Figure 4 needs to be changed. Especially for the shown oxygen data, the chosen diagram type and colorbar is not suited. It would also be interesting to see oxygen saturation data.