We are grateful for reviewer #3 efforts in reviewing the manuscript and for the constructive and valuable comments. We highlight our responses to the comments and explain the revisions we will make to the paper accordingly. The reviewer's comments are shown below in italics writing while our response is marked in red.

Anonymous Referee #3 Received and published: 5 January 2021

I found this paper very interesting and worthy of being published in BG because it describes with great clarity and yet simply how the OMZ of the Arabian Sea is sensitive to upper-ocean warming and monsoonal changes. It should be of great utility especially to non-modelers especially observational researchers who want to understand how their data falls into the big picture.

We thank the reviewer for the positive comment and the encouraging assessment of the paper.

ABSTRACT: Although I finally did understand this sentence "This is because surface warming enhances vertical stratification, thus limiting ventilation of the intermediate ocean, while summer monsoon wind intensification causes the thermocline depth to rise in the northern AS and deepen elsewhere, thus contributing to lowering O2 levels in the upper 200 m in the northern AS and increasing it in the rest of the AS' it should be improved as its part of the Abstract which is what most researchers will read.

This statement will be rewritten for more clarity.

INTRODUCTION:
Mechanisms for deoxygenation should be described better. The authors should clarify where oxygenation vs deoxygenation takes place. The biology of the Arabian Sea is vastly different in the north vs the south of the Arabian Sea. Also page 3 and the two paras comprising lines 23-30 could be better organized

These two paragraphs will be rewritten for more clarity. We will also expand the discussion of regional deoxygenation in the Arabian Sea and its controlling mechanisms.

RESULTS: The authors contend that biological productivity contributes only minimally to deoxygenation, because stratification decreases input of nutrients and so reduces primary productivity. Conversely, enhanced summer winds will increase biological productivity. However, Goes et al. (2020) has shown that in spite of warmer, winter monsoonal winds, decreased convective winds and consequent increased stratification, winter Chlorophyll a has seen an increase (Fig. 1c) because of the rise of Noctiluca scintillans blooms which have high biomass on account of the large populations of photosynthetic endosymbionts that they harbor and their tight nutrient recycling mechanisms that allow them to survive in spite of lowered nutrient concentrations. It would be interesting to see how this recent change in biodiversity of winter blooms plays into the role of deoxygenation.

Goes, J.I., Tian, H., Gomes, H.d.R., Anderson, O.R., Al-Hashmi, K., deRada, S., Luo, H., Al-Kharusi, L., AlAzri, A., and Martinson, D.G. (2020). Ecosystem state change in the Arabian Sea fuelled

We thank the reviewer for pointing us to this important recent study also showing evidence of enhanced stratification with potential consequences for the Arabian Sea ecosystem. We will refer to this work in the revised manuscript.