

Response to editor to minor revision request:

Public justification (visible to the public if the article is accepted and published):

Dear authors,

I have now reviewed the referee reports and your response to them.

I am overall happy with your revisions, but still want to request some changes.

Referee 2 has highlighted issues with the use of data in the euphotic zone to assess trends, as well as the use of concentrations instead of partial pressure, that have not been fully addressed in the revisions. Because ESSD is a journal that focusses on the data rather than the interpretation, I would request you to tune down the extensive discussion and interpretation of the patterns, and rather focus on the potential limitations (such as the euphotic zone issue), uncertainty, and comparison with the older datasets. This will also make the concerns of Referee 2 redundant for this manuscript.

This does not require a main overhaul, rather a reduction of paragraphs, mainly L272-287, L299-307, L335-373. Try to avoid extensively discussing mechanisms and drivers, and focus on the patterns your dataset reveals.

Kind regards

Sebastiaan

The authors thank the reviewers and editors for pointing out remaining issues in the manuscript. We have carefully followed the advices and reduce the extensive discussions that are not directly related to the description and validation of the observed pattern in ISASO2. We especially reduce the results and discussion paragraphs at l.298, l. 335, l. 355, l. 367 in the revised version of the manuscript (see the manuscript with tracked changes).

We also add a sentence to acknowledge the uncertainty in the DO inventory trends due to including euphotic zone in our computation (l. 337): "It should be noted that DO inventory over the full water column includes the euphotic zone, that may be highly variable in DO, and part of the variability at depth (below 2000 m depth) is overlooked during the Argo period."

Eventually, we hope that the manuscript is known suitable for publication in ESSD.