

## ***Interactive comment on “An internally consistent data product for the world ocean: the Global Ocean Data Analysis Project, version 2 (GLODAPv2)” by A. Olsen et al.***

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*Dear Editor*

*We thank the reviewer for setting aside time for this work and providing a set of very useful comments that has helped to improve the paper. As the concerns of both reviewers were mainly on length and style, we focussed on shortening the manuscript and improving its style during the revisions. In particular the first three sections have been significantly shortened. Some of the figures have also been revised following the reviewer's comments.*

*Below, we adress the comments, one by one.*

C1

*Cordially*

*Are Olsen*

The writing is too colloquial with too many sentences including "we". Scientific writing should be in passive voice.

*During the revision we have worked on improving the style of according to this suggestion, and revised from active to passive voice. We hope the reviewer concur.*

1. The text is very long and the authors should consider putting some info in appendices. In particular: section 2. History and most of Section 3 "Glodap 3 production" could go into an appendix. That is, the information that most are after starts in section 4.

*Section 2 has been strongly revised and focus on what data are included. The detailed information on past products has been removed. Section 3 has also been significantly revised; in the original submission we focussed on the strategy and workflow, now we focus on the analyses that were actually used for production of GLODAPv2. The section on how to interpret information in the Adjustment Table has been now been added as an Appendix.*

2 The examples and anecdotes are too numerous and too detailed

*Most anecdotes have been removed. The same is the case for examples, in particular, the examples on use of Adjustment Table are now in an appendix*

3. In several cases the description of tables and figures in text are too detailed and duplicative of the information provided in figures and tables.

*We have worked towards ameliorating this throughout.*

4. I am not providing specific comments on text as many readers will focus on tables and figures so the emphasis should be on improving these.

C2

Abstract: include a statement such as. "This compiled and adjusted dataset is believed to be consistent to 0.005 in Salinity, 1 percent in oxygen, 4 umol/kg in DIC, 6 umol/kg TALK etc etc for each parameter. It would become a long sentence but this is absolutely the key information that the reader wants to know up front. (It's the information in Table 6, but I believe you cannot refer to tables and figures in an abstract)

*This is a very good suggestion and the sentence has been added to the abstract*

Section 5.1: This is where text becomes more scientific writing

Table 1. Instead of placing "X" list the minimum differences that are adjusted Table 2. This is also largely discussed in the text. Perhaps decrease the discussion in the text and just refer to Table 2

*Table 2 has been removed in the revised version. The table with minimum adjustment limits has been retained*

Table 3. Just list the flags used 0,1,2,6,9 (?) not the ones that are not in the files. Note 0 is not an original WOCE flag and is often used for "not QCd" or preliminary in cruise data files.

*This table has been revised. WOCE flags are used both in the individual cruise files and in the product files, with a simplified set in the latter and somewhat different interpretation. The table still lists all flags, and specifies how they are used for the individual cruise files and in the product files. Following the revisions this table is no. 1 in the revised manuscript.*

Table 4. Delete

*This table has been deleted.*

Table 6. This is the key information, it can be placed in Table 1

*Original Table 1 has been removed in the revised manuscript, so Table 6 has been retained (currently as Table 2)*

C3

Table 7. While QCing a entire cruise has been well justified it is unclear why they should be entered in the product files as a single entry rather than the legs. This will cause massive confusion later on. Case in point oxygen adjustments on 316N19950930

*As we see it, the alternative solution is not optimal either, splitting up cruises that are normally considered as an entity, in the data file. This is just a matter of choosing between two sub-optimal solutions, of which we chose one.*

Table 13. It is unclear why some calculated values e.g. AOU have a flag while others (e.g. density) do not.

*For all calculated values, if they are from one flagged value (as is the case for density - the only term that goes into it and has a flag is salinity), the calculated value is not flagged. If they are determined from two or more flagged values (for AOU that would be salinity and oxygen, temperature does not have a flag) they usually have a flag. Exceptions to this are CFC partial pressures. This is because in the former case it is easy to check the flag of the input variable, while it is more cumbersome in the latter. This has been made clear in the text. For those parameters where another's flag also applies, we have entered the relevant one in parenthesis (e.g for potential densities: (salinityf))*

Also, explain in footnote what a secondary QC flag is

*This has been done.*

Most figures need to be improved for legibility. Cruise numbers in figures need to be corrected to the GLODAPV2 numbers, axes need to be explained, and units need to be included. The figures look like they are crude products from a matlab script.

*Figures 3 and 4 are examples of figures downloaded from the Adjustment Table, as such they need to correspond exactly to the figures there, and have not been revised. Following the revisions they are part of the Appendix.*

*For Fig 2: Simplified to a single-panel, each cruise identified with its expocode, y-label*

C4

added, header changed to TCO2.

Fig 5 (Fig 3 in revision): Each panel has been made larger, legends have been revised, x and y labels added.

Figs 6 and 7 (nos. 4 5 in revision): Panels moved close together, improved legibility.

Figure 2. Header says DIC, I assume it should be TCO2. Correct all cruise number to what is in file. Not sure what 3 X axis legends are in figure 2.

Fig 2 has been revised. Header updated, cruises are identified by expocodes, just a single X-axis legend is given.

Figure 3. Specify in legend what adjustment were made

*This figure is now in Appendix. The final adjustment to this cruise has been stated in its caption*

Figure 5. Change mzan, nzam etc. in caption

*This has been revised: peak to no adj; nzan to adj; nzam to adj.mean; nzasd to adj.std, all of these should be more intuitive to interpret.*

Figure 6. If panel "a" lists US mean bias of +2 and Japan mean bias of -0.3, why would you do a correction of +1 and -1, as opposed to -2 and +0.3? Also, it is not quite clear why examples of adjustments are done by country rather than group/institution. As mentioned in text there can be differences between groups in countries. (e.g. how to analyze samples with high silicate)

*The crossover and inversion analyses gives no information on which data are correct. It has a zero-sum constraint however, i.e. the sum of all corrections suggested by the inversion has to zero. Hence, the crossover and inversion tends to conclude that the most frequently measured value is the least biased one. In this case it is the deep silicate measured at Japanese cruises, since there are many more Japanese than US cruises, and these come out with smaller mean bias than the US cruises. In reality, we*

C5

*do not know which is correct, and decided to split the difference, preadjusting the data +1 and -1. This has been made more clear in the text in the revised version. We agree that there can be differences between groups rather than countries, however, division by country certainly improved the overall consistency of the data and was the ad-hoc solution in this case.*

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C6