

Interactive comment on “WOCE-Argo Global Hydrographic Climatology” by Viktor Gouretski

Anonymous Referee #2

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This manuscript describes the new gridded WOCE-Argo Global Hydrographic Climatology (WAGHC). Details of the method are provided along with a comparison between WAGHC and the NOAA World Ocean Atlas 2013 (WOA13). While both products are mapped on isobars with a 1/4 degree resolution, WAGHC is also mapped on isopycnals for comparison. This comparison is particularly valuable to understand the effect of averaging oceanic properties on isopycnal surfaces versus isobars (which may result in the production of water masses with temperature-salinity characteristics different from those of the observed data due to the non-linearity of the equation of state for seawater).

This work is a great contribution and the writing is outstanding. I recommend to accept the manuscript with minor revisions. I suggest to include these clarifications/modifications in the revised version of the manuscript:

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- Line 135: It would be good to include (in the appendix) a plot of the depth dependent threshold value. Could the weighted-parabola method for vertical interpolation create unrealistic water masses for profiles with low vertical resolution ?
- Line 148: What threshold value is used ? How does it vary in space ?
- Line 254-255: How much of the difference (in Fig. 8) may be due to the estimate on isopycnals being biased towards the ocean interior where isopycnals outcrop ?
- Section 9.2 (Fig. 11, 13a-b): In place of Fig. 11, 13a-b, I suggest to show figures of the difference in volume (in each T/S bin) between WAGHC and WOA13, divided by the total volume in the same bin in WAGHC. This would provide more information on the differences in water masses between the two products.

Typos:

- Line 434: missing parenthesis
- Line 451: “defines” instead of “defined”
- Fig. 5d: “Nunber” instead of “Number” in xlabel
- Fig. 12: I suggest to include what different numbers mean in the caption.

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