

Interactive comment on “Atlantic meridional overturning circulation at 14.5° N and 24.5° N during 1989/1992 and 2013/2015: volume, heat and freshwater fluxes” by Yao Fu et al.

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Thank you very much for your comments, which were most helpful in reconsidering our way of presenting our results and sharpening the objectives of this study. We understand your concern, and correspondingly modified the manuscript in a way that expresses our aim better. There are big differences between time series of AMOC strength from end-point geostrophic arrays such as RAPID, OSNAP, SAMOC and repeated ship sections such as OVIDE, 24.5° N, 14.5° N and more general “GO-SHIP sections”. The sections are to seek to combine hydrographic/tracer changes and velocity structure changes while the end-point arrays are designed for time series of fluctuations in mass

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transport. Here we concerned repeated hydrographic sections and examined water mass property changes at the two latitudes (14.5° N and 24.5° N) and for the past two decades. We have shown that the AAIW at 14.5° N became warmer and more saline. 14.5° N is probably the northernmost latitude, where AAIW property changes were observed. The NADW became fresher, while AABW became lighter at both latitudes. These results are in agreement with other observations at other locations. For both 14.5° N and 24.5° N sections, we used the newest available realizations (in 2013 and 2015, respectively), which may update our knowledge on water mass property changes in the tropical North Atlantic.

We would like to point out that this work does not intend to study the variability of the AMOC. We fully agree with reviewer #2 that only 4 snapshots are far from enough to examine the variability of the AMOC. We used the AMOC time series from GECCO2, RAPID and MOVE, but only to show that the inverse solution, even with the uncertainties that come with the solution, does fit the time series.

We hope that this “strategy” is no much clearer and invite this reviewer to look at the revised version of our manuscript. Thank you very much!

Please note that a change-tracking version of the manuscript is uploaded as a supplement.

Please also note the supplement to this comment:

<https://www.ocean-sci-discuss.net/os-2017-87/os-2017-87-AC1-supplement.pdf>

Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2017-87>, 2017.

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