

Interactive comment on “Comparison of N. Atlantic heat storage estimates during the Argo period (1999–2010)” by N. C. Wells et al.

Anonymous Referee #2

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The submitted manuscript is of low scientific interest, is badly structured, contains a number of unclear points, the language needs considerable stylistic and grammatical improvements. Only after substantial major revisions can the manuscript be considered for possible publication. In its current form the manuscript resembles rather a technical report, not a scientific paper.

Major comments:

1) The manuscript contains a lot of redundancy and is heavily overburdened with figures and tables. A considerable part of them could be easily merged without any loss of information. Specifically, tables 1-5 must be deleted as the information given by these tables is better represented by the respective figures. Further, I do not see any sense in presenting the detrended time series (figs.9 and 10) in addition to the original

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time series (figs.1-2).

2) According to the abstract one of the most important issues discussed in the manuscript is an impact of “a strong air-sea interaction event in 2009-2010”, which “reduces the upward trend 1999-2008”. However, no explanation is given in the manuscript about the nature of this event (only a literature link is provided). Moreover, inspecting carefully the HCA time series in figs 1-2 and figs.9-10 I was not able to identify any remarkable event which took place in 2009-2010. What can be seen is just a general slowing of the heat content growth starting at 2004-2005. In detrended time-series this looks like a decrease in OHCA (figs.9-10). But, again, NO visible dramatic changes during the years 2009-10, so the explanation given in the manuscript seems to be wrong.

3) Another important issue (also noted in the abstract) is a significant difference between the two time series (TAMARA and EN3) in the layer 1000-2000m. It is not sufficient to make just a note on this difference, saying that further investigation is needed. That would suffice for a technical report. In the submitted paper a discussion must be provided on this important issue.

4) The EN3 and Tamara time series also demonstrate a quite different pattern for the uppermost 0-100m, with the Tamara time series showing a clear annual signal in contrary to the EN3 dataset, where no seasonality can be seen. This issue definitely requires an explanation.

5) The manuscript is badly structured. For instance, a detailed description of the deficiencies of the ARGO dataset is given in the introduction (lines 20ff page 2364, till line 10 page 2365). This piece of text should be placed into the method and data section. Sections 3.2-3.5 give another example of the bad manuscript structure, with sections being too short and the description jumping from one issue to the other.

6) The usage of different climatologies is obviously an important issue and should be analyzed in more details. I would prefer usage of one and the same climatology for the

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both experiments.

7) The description of the OHC calculation method is unsatisfactory (lines 18ff, page 2367)

Other comments: Page 2364, line 5 : "other platforms". XBTs and CTDs are not "platforms" - they are instruments, which can be implemented from different kind of platforms (e.g. ship, helicopter)

Page 2365, l26ff: why it is difficult to validate the argo data set? I can not see any connection here to the uniqueness of the argo dataset

Page 2366, line 1: "...dataset employs a wide range of data" - bad wording. The dataset contains data from different instruments.

Page 2370: "to further investigate..., the question arises.." The sentence must be completely reformulated.

Section 3.2: as noted above, the section must be completely re-written as no signs of that "cooling event" can be seen on time series.

Page 2373: Line 1: "To further investigate ..., the question arises " - bad wording!

Page 2373, Line 17: "it is been found" change to it has been found"

The discussion and conclusion section is too short, no sufficient explanation of causes leading to differences between the two time series was given.

Interactive comment on Ocean Sci. Discuss., 10, 2363, 2013.