Ocean Sci. Discuss., 3, S822–S825, 2007
www.ocean-sci-discuss.net/3/S822/2007/

Ocean Science Discussions

Interactive comment on "Variability of Antarctic intermediate water properties in the South Pacific Ocean" *by* M. Tomczak

M. Tomczak

Received and published: 22 February 2007

The comments from the two reviewers, minor as they are, are appreciated and helped to clarify a few points. My detailed response to their comments is as follows.

Reviewer #1:

p. 2022, l.9-10: The paper includes a detailed discussion of interannual variations in section 4.3. The float data presented in that section are from regions where the data density of the World Ocean Atlas (WOA) is quite good, so the observed differences between the floats and WOA are very unlikely due to bias in the WOA data. I added a pointer to Figure 6 in section 4.3 to encourage readers to verify this themselves.

p.2025, l.14-16: The procedure followed in these cases has been clarified by adding "Such profiles were accepted if their total number was small compared to the length of

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

EGU

the time series and if the salinity at the deepest level was very close to the minimum salinity found in the remainder of the profiles; the salinity at the deepest level was used as the salinity minimum in these cases."

p.2025, l.21-22: The WOA reference is already in the reference list. It has been included as citation in the text.

p.2026, l.8-9: As the purpose of the paper is to identify short term variability and long term trends it was essential to exclude possible elimination of features of interest through calibration against existing standards. A sentence to this effect has been added.

p.2026, l.20-21: The float data used in this study were downloaded from the ARGO database in mid-2005. This is now more than 18 months ago, but doing research in a university environment is a constant struggle to find time in a busy teaching schedule. An additional problem of universities is that research assistants come and go in quick succession because they prefer more stable employment conditions elsewhere. As a consequence, the work required for this study took longer than its rather straightforward and - in the reviewer's words - "quite simple" analysis warranted. Quite likely the floats mentioned by the reviewer that are not included in the data set of the paper were added to the ARGO data base later than mid-2005. I doubt whether their inclusion would change the findings of the paper.

p.2027, l.28-29: The sentence about the salinity accuracy guaranteed by ARGO was added in response to a comment from an ARGO team member. Not all readers will be familiar with the ARGO accuracy guidelines, and it was considered important to avoid the impression that ARGO floats are generally accurate to the higher standard used in the paper.

p. 2027, l.29-30: This information is helpful in the current context and has been added to the paragraph. The additional reference has also been included, and an acknowledgement to the referees as well.

OSD

3, S822–S825, 2007

p.2031, section 4.2: Elevated variability is the logical opposite of smooth laminar flow and has its place here. The sections that follow divide elevated variability into further detail.

p.2032, l.18-22: The suggestion that the observed freshening is representative of a decadal trend is valuable. New text has been added to the paragraph.

p2034: It has been demonstrated with “meddies” (sub-surface eddies of Mediterranean Water in the North Atlantic) that subsurface eddies can have a surface expression and are therefore seen in altimeter data on occasions. However, a detailed investigation of individual float data is beyond the objective of the paper. A future study may follow this up, concentrate on a few clear eddy-type time series and link the data with satellite observations.

p2038, l.9: The exact date on the x-axis has been added.

Figure 15: There had been a coding error in the code that produced the figure. The error did not affct the salinity and temperature but identified the depth from the wrong files. The calculation was redone and the figure amended to show the correct depths.

Reviewer #2:

The time reference (origin of the x-axis) is always the beginning of a year. This makes it relatively easy to determine actual data. Different floats were deployed in different years, and it would be wasteful if all figures would start at the earliest common date.

The calculation of the WOA time series along the track is based on the annual mean. Using seasonal WOA salinity data is not justified because there is no reason why the AAIW seen by the Argo floats at a certain time should have originated in that location and during that season. On the contrary, it should be expected that the AAIW seen by the float moved more or less with the float and therefore should not be affected by sesonal effects in the AAIW formation process. The text has been modified in the methods section to clarify this.

OSD

3, S822–S825, 2007

Information on the number an distribution of profiles has been added.

The use of “buoy” and “float” has been made uniform in favour of the latter. “Group” has been replaced by “section” and references are given to the correct sub-numbered sections.

Figures 1, 2 etc: The meaning of the contour has been clarified in the caption to Figure 1.

Figures 10, 11 etc: The meaning of the red contour has been clarified in the caption to Figure 10.

Pg 2028, l.27; pg 2032, l.25: Typing mistakes were rectified.

Interactive comment on Ocean Sci. Discuss., 3, 2021, 2006.