

Interactive  
Comment

## ***Interactive comment on “Comparison of the fall rate and structure of recent T-7 XBT manufactured by Sippican and TSK” by S. Kizu et al.***

**F. Reseghetti**

franco.reseghetti@santateresa.enea.it

Received and published: 24 November 2010

The article written by Kizu, Sukigara and Hanawa is an important paper clarifying some of the problems affecting the quality of seawater temperature profiles recorded by expendable probes.

The main consequence of results here presented is that XBT temperature profiles will need to be used with a caution greater than earlier estimated because of a lot of factors making the uncertainty in recorded values larger than required by climatological studies.

Therefore, a more sophisticated technique will be required to correctly use XBT measurements. Unfortunately, XBT probes are easy to use, cheap, popular but not scientific instruments, and the uncertainty in their output seems to be too large for

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



climatological analyses.

Specific comments:

- 1) Add m/s and m/s<sup>2</sup> to the numerical values of A and B coefficients, or indicate the units in the introduction.
- 2) Page 1813, line 3: usually software stops the data recording at a stated depth (i.e. 460 m for T4/T6 and 760m for T7/DB). Despite this, it is also possible an acquisition up to the wire breaking, but manufacturers do not guarantee the quality of measurements in this part with the same accuracy as for the shallower ones. Nevertheless, some published comparisons confirm the validity of those deep data.
- 3) Page 1813, line 21: In recent years, a small amount of XBT probes has been produced by Indian and Chinese manufacturers.
- 4) Page 1814, line 26: None of the papers quoted in this page showed an analysis of physical dimensions of XBT probes, and few of them did introduce comments concerning the influence of recording systems on measured values.
- 5) Page 1815, after line 24: some comments on results of the “II-nd XBT Bias and Fall Rate meeting (Hamburg, 2010)” should be included.
- 6) Page 1816, line 10: Usually, articles analyzing XBT properties did not include information about serial number or time of XBT manufacturing, and it is assumed that probes of the same type produced by different manufacturers and in different years do have the same physical characteristics exclusively based on the manufacturer’s statement. In addition, the industrial tolerance stated by manufacturers on the products is different. Therefore, it seems to be a little bit improbable that physically different XBT probes do have the same behaviour (i.e. motion) in seawater, or the uncertainty in their results still remains within the original range. As extreme consequence, without additional metadata, even really well managed inter-comparisons among XBT and CTD should be hardly compared among them. Only the range of variability of the analysed parameters could be realistically calculated.
- 7) Page 1817 end-1818 first lines or in Section 3- Probe structure: similar results in measurements of XBT probe dimension have been presented by Reseghetti at

Interactive  
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



the XBT Meeting in Hamburg (2010), and reinforce a leading idea of this paper: the probes manufactured by LMS and TSK are different.

8) Page 1819, after line 13: it is not clear if a test probe has been used to check the TSK MK130 electronic bias, if any.

9) Page 1821, line 6: This is the same conclusion as quoted by Snowden, Baringer and Goni in their unpublished presentations at SOT-IV (Geneve 2007) and Miami XBT Meeting (2008), and based on a statistically significant inter-comparison. Probably, this conclusion could be likely for Sippican probes manufactured in that period.

10) Page 1822, lines 16-20: Probably, it could be better a table resuming the obtained values for fall rate coefficients from TSK and Sippican probes.

11) Page 1824 end -1825 first lines: probably it should be better a bulleted list, making easy the identification of different obtained results.

12) Page 1823-1825 (Section 3 – Probe structure): Some results quoted in the paper by Hottel (1972) describing properties of old wire used by LMSippican could be useful in improving the analysis of obtained results.

13) Page 1826 and following (Section 4 - DISCUSSION):

-) It could be useful a rough estimate of temperature dependence of fall rate coefficients, respectively for TSK and Sippican probes, starting from results plotted in figure 8.

-) It could useful rough estimate of a correlation between the wire density, physical dimensions and fall rate coefficients, if any (and if possible, of course).

-) Some results concerning tests on wire presented at Hamburg meeting (2010) could be usefully introduced.

-) Results of tests by AOML and presented by Goni at Hamburg Meeting (2010) with old Sippican probes and by Sippican (acoustic check) could be introduced in the discussion.

-) The paper written by S.Good (2010, JAOT) should be added in the list of commented papers.

-) It should be highly interesting a “quick and rough” application of results quoted in

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



this paper to the main proposed XBT bias corrections scheme.

---

Interactive comment on Ocean Sci. Discuss., 7, 1811, 2010.

**OSD**

7, C537–C540, 2010

---

Interactive  
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

