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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.

Anonymous Referee #1

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This paper provides interesting evidence for structural differences between recent T7 XBT probes produced by two different manufacturers. They show that this results in systematic differences in fall rate, and that furthermore the fall rate may be depend in water temperature (viscosity). The same launcher launcher and system were used for all the probes and comparisons at sea were done with CTD casts during stations, in very well controlled situations. Estimates of depth errors are made by comparing temperature gradients.

The dependency on temperature that is discussed in 2.4 on page 8 is sound, but could be normalized as a function of temperature difference, or as a function more directly of viscosity. As a common formula is used for the whole depth range and the temperature profiles do not vary linearly with depth (in particular for H; L on the other

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hand has almost constant T), it is not so clear what is the relevant temperature which should normalize the observed difference near the surface (maybe the average T in the top third of the profiles). It could be also more relevant to provide a standard fall rate formula for an average T (viscosity) profile and then a deviation from fall rate as a function of temperature difference that could be then applied as a function of z .

In the example of profile plotted on figure 5, there is also a suggestion of a positive T bias for the SIP T7 probe. Although this is not commented in the paper, and the magnitude is within the reported probe accuracy, it would be interesting to indicate in the paper if this error is random or has a significant average (for this small sample), whether this error varies with depth, and whether it corresponds in what is reported in recent papers (Reseghetti et al., 2007; Gouretski and Reseghetti, 2010; Reverdin et al., 2009) for example. It is also interesting to know whether the error is dependent on manufacturer (probe type). It has also be mentioned that launcher or system could be involved. Here, is it present with the TSK launcher and systems used?

Alltogether, this is a very interesting, but somewhat worrying paper, which opens important questions that need to be checked for the past (probably, easier for Sippican probes). When were these structural changes made...

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

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