

## ***Interactive comment on “A computational method for determining XBT depths” by J. Stark et al.***

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I think the authors should be more modest about their achievements.

They dropped the probe's spin which are thought to be essential in the fall motion of the instrument, and perhaps some parts of the device (the angled part of the tail fins, for example). I agree with the authors in the point that the impact of pressure drag is hard to quantify and hence not known well, but it does not mean that the authors can dismiss the effect when they try to claim their modeling is accurate enough. The authors should consider what their conclusions mean. I am afraid that the present agreement between the model and the drop (it was a single drop without being collocated by CTD, wasn't it?) is just accidental. Reasonable agreement is necessary.

I am frustrated because the revised manuscript (or statements) are not shown. The description about the modeling process is totally unsatisfactory. The presented equa-

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tions are just poorly explained, and lots of variables are even not defined. What is F1? F2? "a"? P? E? sigma? beta? Such description should be self-contained basically, and the authors should not refer too much to the references. I cannot follow what the authors actually did in their calculation.

Kizu et al.(2005b) conducted two dozen of side-by-side comparisons among LMS T5, TSK T5, and CTD. The paper showed that TSK T5, which was found to be HEAVIER (by about 11 grams in water) than the LMS T5, falls more SLOWLY by about 5% than the LMS T5. We inferred that their structural differences, especially in the center of gravity, caused some difference (like wobbling) in the probe's fall and overcame the effect from the weight difference.

I sent the data used in Kizu et al.(2005b) to NOAA's XBT Bias References page ([http://www.nodc.noaa.gov/OC5/XBT\\_BIAS/xbt\\_bibliography.html](http://www.nodc.noaa.gov/OC5/XBT_BIAS/xbt_bibliography.html)), and they will soon be shared. I hope they help authors further evaluate their results. If the authors need them more quickly, I can send them to the correspondent author independently.

The importance of tail parts for the fall-rates are also well identified for XCTDs in Kizu et al.(2008; Kizu, S., H. Onishi, T. Suga, K. Hanawa, T. Watanabe and H. Iwamiya (2008): Evaluation of the fall rates of the present and developmental XCTDs. Deep-Sea Res., 55(4), 571-586, doi:10.1016/j.dsr.2007.12.011). Also, one of your co-authors (Franco Reseghetti) has a very demonstrative video clip that clearly shows how LMS T7 wobbles during fall.

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Interactive comment on Ocean Sci. Discuss., 8, 1777, 2011.

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