

Interactive comment on “Microstructure measurements and estimates of entrainment in the Denmark Strait overflow plume” by V. Paka et al.

V. Paka et al.

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Reply to Anonymous Referee #2 comments

We are thankful to the Referee for his valuable comments.

We have responded to the reviewer's criticism/suggestions as follows. (For convenience, quotations from the review are hereafter given in double angle brackets, « ... »).

« My major comment is associated with the use of previous theories (see P. 1078, lines 10-15). The differences between the estimates of entrainment rate based on the approaches developed by Arneborg et al. (2007) and Umlauf and Arneborg (2009) are not enough discussed, as this concerns the applicability of these studies to the

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case addressed in the present paper. I would recommend that the authors also explain in more detail the basics of the theories of Shih et al.(2005) and Osborn (1980) and discuss the results of the present study in the context of limitations of the used theories. »

In view of this remark we added a discussion on the Osborn (1980), Peters and Bokhorst (2001), and Shih et al. (2005) approaches to parameterize eddy diffusivity. In light of the discussion, estimates of entrainment based on the Osborn (1980) and Shih et al. (2005) approaches are treated as upper and lower limits of the quantity.

« I would suggest also one technical change: Figure 8: Can you plot in this figure also the theoretical curve given by Eq. 10. »

Done.

Interactive comment on Ocean Sci. Discuss., 10, 1067, 2013.