

Interactive comment on “Shelf sea tidal currents and mixing fronts determined from ocean glider observations” by Peter M. F. Sheehan et al.

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The authors thank the reviewer for taking the time to review our paper and for their helpful suggestions. Whilst a full response to each comment will follow when we can collate these with responses to all the reviewers, we here provide some initial feedback in the spirit of a discussion journal.

Regarding the comment that the paper is methodological, we agree that the method for accurately determining tidal velocities from dive-average current observations is a new and exciting result. This technique will be of great use to the community especially in regions of poor tidal models, hence its prominence in the paper. The second part of the paper, which discusses frontal location in the northern North Sea, demonstrates a po-

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Discussion paper



tential application of the method. We look forward to clarifying this point in revision. On the subject of the heating-stirring model, we note that the model (perhaps surprisingly) correctly positions the front for the first part of the deployment. We will include example sections from the glider and the model in the revised paper to more clearly explain the strengths and weaknesses of this simple model. We agree with the reviewer that the stratifying influence of freshwater is important in this region; we discuss the influence of salinity gradients in section 3.2. We will emphasise this more strongly in the revised paper.

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