

Interactive comment on “Mapping turbidity currents using seismic oceanography” by E. A. Vsemirnova and R. W. Hobbs

E. A. Vsemirnova and R. W. Hobbs

r.w.hobbs@durham.ac.uk

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Response to comment by Grant Buffett

Point 1 - we agree that the difference in timing of the seismic data and physical oceanography acquisition is not ideal. However, this area has an extensive database of both seismic data (mainly acquired for hydrocarbon exploration) and physical oceanography. As there has not been a combined seismic/oceanographic cruise in the area, we based our selection on a seismic dataset for which we already have publication rights and then oceanography data from the area close-by that provided measurement of sediment loading. We also acknowledge that the probability of surveying at exactly the same time as a gravity driven flow is unlikely and we debated exactly what to call the observed flow. Though its shape looks very much like a gravity driven flow we sus-

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pect that it is resuspension by a strong bottom current hence our references to Bulat et al 2001 and Masson et al 2010 who show evidence for sediment scouring and redeposition in the channel. Given that the seismic image is just a snapshot we are unable to provide a history for this event. We note the useful comment by Ruddick and Biescas that we should use the term "turbidity layer" for the avoidance of doubt, this we will do in the revision. Though in their comment Ruddick and Biescas provide a quick calculation to show that the interpretation that this feature has a gravity driven component is plausible. However, without direct evidence we cannot conclude the exact nature of the flow.

Point 2 - the density and sound-speed of the sediment laden water is calculated using equation (1) where the contribution of the quartz is scaled by its concentration (ϕ). The reason we choose quartz was based on the analysis of Stoker et al (1993) and Masson et al (2010) who present evidence of sand. If we had chosen a different mineral the analysis would have stayed the same but we might have needed to change the concentration to compensate for a change in density and/or sound-speed if they were different from those of quartz.

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