

***Interactive comment on* “Interannual variability of pteropod shell weights in the high-CO₂ Southern Ocean” by D. Roberts et al.**

Anonymous Referee #3

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The manuscript utilises an extensive data set on sediment traps deployed at 2000 m depth at 47°S, 142°E between 1997 to 2006. Such long-term observations are extremely valuable for studying variabilities and interannual trends especially in regard to the impact of anthropogenic influences.

Roberts and co-workers studied the flux and shell-weight of the aragonitic pteropods (I suggest the nomenclature thecosomatos pteropods since the correct name of the taxon is Thecosomata and not Pteropoda) from the trap material and estimated the interannual variations in *in situ* calcification.

Although Thecosomata can be a dominant zooplankton taxon in both Polar Seas in the water column and in sediment traps – for example they can outnumber copepods

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and euphausiids in coastal waters along the continental shelf in the Antarctic – our knowledge of this prominent taxon is still very limited. This is particularly true for its role as a marine calcifer. Hence, this paper by Roberst er al. is a valuable contribution and brings forward interesting results. Both morphotypes of *Limacina helicina antarctica* found in the sediment traps the more southern forma *antarctica* and the northern forma *rangi* showed a decrease in flux contributions over the past decade, however, a loss in shell weight was only found in *L. helicina antarctica* forma *antarctica*. Roberts et al. give different explanations and hypothesis of their results but they also emphasize the urgent need for intensive field (water column, sediment traps) and experimental studies – and I totally agree.

I have only a few points to mention:

I suggest to include into the discussion the paper:

Manno C, Sandrini S, Tositti L & Accornero A (2007) First stages of degradation of *Limacina helicina* shells observed above the aragonite chemical lysocline in terra Nova Bay (Antarctica). J Mar Sci 68: 91-102.

Please check Smith and Reynolds (1997) on page 4458/59 and Smith and Reynolds (2004) on page 4466

Please use either Subantarctic or Sub-Antarctic.

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