

Letter to the Editor: 3rd Resubmission of Manuscript

Dear Bernadette,

Thank you for your careful consideration of our revised manuscript and for your comments. We have produced a 3rd revision of the manuscript incorporating your suggestions (detailed below), and an updated reference list in accordance with citation style of Ocean Science. Regarding your query on the re-ordering of co-authors between revisions, the co-authors have agreed that the new order better represents the relative contributions of each author, in particular reflecting contributions throughout the revision process.

Best regards,

Jennifer Cocks

Minor comments:

Reviewer comment	Author's response	Changes to manuscript
Line 58. Suggest change Antarctic waters to Southern Ocean waters, or Antarctic slope waters Line 131. Suggest you define SHA here. Change to "We compute the steric height anomaly (SHA), by" Line 247 change (d) the to (d) The Line 265 Change "at the latitudes north of.." to between 50oS and.." Line 475 What is meant here "...as a function,..." should this be "...as a spherical harmonic function,..." or some other function of? Line 489 Change South to south and East to east Line 489 Provide location, latitude and longitude of Syowa Tide Gauge for reader reference. Line 490 remove "from this" Line 511 remove (Results)	Thanks for these suggestions.	All have been modified as suggested.

<p>Line 518 provide year of Rye et al study. Line 525 Remove “discussed in the previous sub-section”. If you want to keep the reference to the sub-section, use the section number.</p>		
<p>Line 234. “maxima in 2013”. In the figure 3f, it looks like the this maximum is in Isn't this 2012, by 2013 SHA is decreasing? Line 234. “minima in late 2010”. Not sure this is obvious in 3f. The figure suggests minimum in mid-2008 to mid-2009? The minimum in SHA continues through to mid-2010, but not in GPHA which increases from late-2010.</p>	<p>Thank you for these observations: we agree the text could be clearer.</p>	<p>We've changed lines 186-189 to describe more accurately what we see in Figure 3f.</p>
<p>Line 237. Figure 3f. Is there any comment on the apparent lead/lag timescale of the 12-month average SHA and GPHA signals? This appear to be evident for maxima anomalies in particular? Is this referred to in Discussion section?</p>	<p>There does appear to be a lag between the SHA and GPHA 2012/2013 maxima however this doesn't seem to be a pattern at any other times so we assume this difference results from errors in the data or the validation procedure. However we agree this should be addressed in the text.</p>	<p>We have added a line (L190-194) to explain the differences between the SHA and GPHA time series, describing how this might arise from either source or due to difference in data scales.</p>