

Interactive comment on “Sea level budget over 2005–2013: missing contributions and data errors” by H. B. Dieng et al.

H. B. Dieng et al.

anny.cazenave@legos.obs-mip.fr

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We thank Reviewer 2 for his comments that will be accounted for to improve the manuscript. We respond below point by point to each comment.

Comment 1 'the variations in the altimetry time series from different processing centers have been documented earlier by Masters et al. 2012 and Henry et al. 2014'. Reply: We agree and have indeed acknowledged Masters et al. and Henry et al. works when discussing the differences in GMSL time series (see pages 10 and 11 of our manuscript). However, what we stress here is that the residual trends of the sea level budget equation essentially result from the GMSL data, and not from the GRACE and Argo data. This has important implication when interpreting the sea level budget residuals in terms of missing components, in particular the deep ocean contribution.

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Hence what we would like to stress is the need for additional international cooperation among the community involved in altimetry data processing, in order to 'come to a consensus and propose standardized selection criteria of processing details', as previously written in Masters et al.'s conclusion. May be our text was not sufficiently clear and we did not insist enough on that matter. We will improve the text in this direction and once again insist on the need for reducing the differences in GMSL data to estimate missing contributions (e.g., deep ocean and its role in the hiatus).

Comment 2; 'Remove errors from Table 1'. Reply : we do not fully agree with Reviewer 2 on that topic. Of course quoted errors do not account for unknown measurement errors, but at least reflect uncertainties associated with the different data processings. What we propose is to explain in revised manuscript that the quoted errors represent lower bounds, and that real errors are very likely larger.

Comment 3; Page 704 'in the early part of the study time span, the 700m-2000m depth range is not well covered by Argo data'. Reply: This is why our study period starts in 2005. The study by Chen and Tung (Science, 2014) provides a depth coverage map of in situ T/S measurements, and we note that as of 2005, there are data up to at least 1500m (e.g., almost full coverage down to 1200m and 50% coverage between 1200m-1500m). Nevertheless, we will add a few sentences on that issue.

Minor comments : Reply : we will of course account for all suggested minor changes.

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