

Interactive comment on “Improved sea level record over the satellite altimetry era (1993–2010) from the Climate Change Initiative Project” by M. Ablain et al.

Anonymous Referee #2

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This paper is a report from the European Space Agency’s Climate Change Initiative sea level (CCI_sl) project on the impact of new fields on sea level products from altimetry. The project has sponsored new orbit solutions and has evaluated new troposphere corrections, a new tide model, and a mean sea surface. Several assessment criteria are presented in this evaluation of the first phase of the CCI_sl.

General comments

The manuscript is well organized and written, and the work of the CCI is important and comprehensive. My main concern with this manuscript is that it relies heavily on several reports from the CCI_sl project. I understand that the process used to

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evaluate and select corrections was reviewed by an external panel, this external review process should probably be summarized in a sentence or two in section 2 or 3. For my evaluation of this paper, I am assuming that those reports are beyond the scope of this review.

1) On page 2032, I found these two sentences misleading: "During the 1st phase of the project, that lasted 3 years from 2011 to 2013, satellite altimetry data from 7 altimeter satellites have been reprocessed by the SL_cci consortium. Improved satellite orbits have been computed using up-to-date force models and an improved reference frame realization." TOPEX and GFO are 2 of the 7 satellites, yet the orbits for these missions were not reprocessed in this phase and remain in different reference frames.

2) Page 2036, line 22: The GMSL error seems to be higher (on average) for Jason-2. Is there an explanation? Also, for Jason-1 and Jason-2 eras, the scatter in the error "reduction" appears to increase. Is there an explanation for this? Wouldn't expressing this figure as a reduction in variance be better?

3) Page 2046, section 5.4: The authors acknowledge that this section and none of the results in figure 11 include uncertainty estimates. Several estimates of uncertainties on the Argo, GRACE, and altimetry comparisons have been published since 2008-2009. This section should more clearly state that the uncertainties in these comparisons probably exceed the differences among the evaluated sea level products. Also, line 9 refers to "RL05" GRACE data. Does this mean only CSR RL05 fields? My guess is that using GFZ and JPL GRACE fields would show greater differences globally and regionally than the changes in the altimetry products.

Minor comments 1) Page 2033, line 25: The minus signs are missing from PDF version of the paper. 2) Page 2034, line 8: "fulfil" should be "fulfill" 3) Table 1, Typo in the year for Andersen et al.

Interactive comment on Ocean Sci. Discuss., 11, 2029, 2014.

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