

Interactive comment on “DUACS DT2014 : the new multi-mission altimeter dataset reprocessed over 20 years” by M.-I. Pujol et al.

Anonymous Referee #1

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This paper describes the latest revision (DUACS DT2014) of the processing system behind the very popular satellite altimeter-based gridded sea level product - known to many researchers as the 'AVISO sea level data'. Indeed, this gridded altimetry product is frequently used in preference to the along-track source data, so many users have lost sight of the many issues associated with the processing of the along track data to the SLA stage, or the multimission gridding process.

In this context, the release of a new version of this data set is a very significant announcement, and is an opportunity to inform and educate the users. The paper describing the production and assessment of the data set, and how and why it differs from its predecessor, is bound to be heavily cited. In my opinion, however, the present draft of this paper is not yet satisfactory for this heavy responsibility.

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I think this paper needs to be extensively re-written. It is very light on specifics, but still manages to be 24pp of text, which takes far too long to read for the amount of detail that is presented. The 2nd sentence of the abstract "Numerous and impacting evolutions have been implemented at each step of this new data processing" is indicative of the poor English and imprecise style of the whole paper. Reviewing criterion 11 "is the language fluent and precise?" is certainly not met.

There are many details of the processing that should be explained, but are not. Indeed, the abstract mentions only "The main one is the use of...". The other 'evolutions' are not listed in the abstract. Review criterion 9 is therefore not met.

Section 2 on "Data processing" says the "altimeter standards" were chosen by a rigorous selection process (described by Ablain et al 2015). Altimetry specialists will know what is meant by this but a little more explanation would help the target audience of this paper, so that they can understand the cause of the differences between the resulting product and its predecessor (which will have impacts on analyses and interpretations of the older dataset). For example, on p23 line 26 there is mention of the east-west dipole error that has now disappeared because of the new 'standards'. This needs to be much better explained.

Page 8 discusses the changes made to the 'multimission mapping' or gridding process. A critical change is a 'better defined correlation scale' which needs a more quantitative explanation. Conversely, the change to a finer spatial (0.25 deg) and temporal (1 day instead of 7 day) sampling could be much more compactly described.

Page 13 says that dynamic height anomalies from T/S profiles are compared with the 'equivalent' field from altimetry. There should be mention here that the third term in this equation is the eustatic change of sea level.

The results of the comparisons of the new data set with its predecessor, and with independent data (tide gauges, drifters) are an interesting part of the paper, but the description of these results needs to be much clearer and informative. For a start,

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there is too much use of the word 'products' instead of geophysical quantities. See the caption to Fig. 5, for example. Wording in many places needs to be much clearer, for example page 17 line 25 refers to the 'DT2014 currents intensity' and then the 'variability'. My guess is that the 'intensity' is a measure of the time-mean, but I am not sure.

Some qualitative conclusions could also be better justified. The page 19 line 25 statement "thus reinforce our confidence in these good results" came as a surprise to me after reading of changes that are near zero, or a mix of positive and negative values.

The English of the paper (grammar, vocabulary, spelling, phrasing) certainly needs to be improved throughout (as well as the imprecise style). In some places the poor English is understandable "...error was quite two time more stronger.." but in many places it is not (e.g. "where belong +400cm²/s² are observed"). I had to consult a dictionary to find out what 'restitute', 'conduce' and 'traduce' all meant. The word 'underline' is idiomatically correct but heavily over-used, as is 'impacts'. "From" is spelled "form" in several places.

The Figure captions all need to be improved. Example 1: it is ambiguous to describe Fig. 12b as showing the 'variance reduction'. The values are mostly negative. Is a negative reduction a reduction or an increase? It is clearer to say 'change'. Example 2: Fig. 15a shows the "MSL trend difference between DT2014 and DT2010" while 15b shows the "MSL differences..". The M in MSL usually stands for 'mean', sometimes a time-mean, but sometimes a spatial mean. In 15a it can be neither, while in 15b it must be the spatial mean.

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