



EGUsphere, author comment AC2  
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## Reply on RC1

Adrien Guérou et al.

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Author comment on "Current observed global mean sea level rise and acceleration estimated from satellite altimetry and the associated measurement uncertainty" by Adrien Guérou et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-330-AC2>, 2022

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Dear Thomas,

Please find below our complete answer to your comments:

### General

We have included to the revised version of the paper the comparison of our GMSL record to the GMSL curves you mentioned. See paragraph I.238 and associated figure 5.

### Line-by-Line

**L.3** / The syntax of Poseidon has been modified accordingly

**L.22-23** / We modified the sentence to make the distinction between sampling and accuracy. We also add references to the accuracy numbers. See Lines 23-25.

**L.72 and 79** / Modifications as follow has been added: "... all grid cells within +/-66 degrees N/S (the Topex and Jasons coverage) are spatially averaged..." See L.82 now.

**L.134** / We modified the sentence according to your comment, see I.145-148

**L. 178** / We estimated the trend and acceleration over the 29 years period of the GMSL record, with and without filtering, and the results are identical. This was expected since the 2 months cut off period of the filter is low as compared to the total length of the record (i.e, 29 years). The border effects are thus not significant. This is also true for estimations over 5 years periods.

We apply such a filtering on the AVISO GMSL record as we consider that we remove some high frequency noise and that we still do not degrade the trend and acceleration estimations. We nevertheless note that raw GMSL time series could be publicly provided. This will be done in a future release.

**Figure 5 and 6** / Thank you for having noticed this point. We were using the wrong GMSL timeseries for Figure 5 and 6 (i.e., not corrected for the Topex-A drift). We now obtain, naturally, consistent values between Figure 3, 5 and 6.

**L.294** / The ITRF uncertainty is certainly non-linear, this is a good point. We modified I.324

accordingly. We used the uncertainties published for the ITRF2014, indeed. The updated reference frame ITRF2020 should help reducing the associated uncertainties as: time series are longer, seasonal signals are now considered in the local movements of the ITRF2020, the models are enriched as well as more data is used to constraints the model (I.e., Galileo). Information has been added to the manuscript L.358.

**L.409** / We are currently discussing publishing the scripts used to calculate the trend, acceleration and uncertainties. Unfortunately, it will take some time. In the meantime, Prandi et al. (2021) made public similar scripts to perform OLS estimation with uncertainties in the context of regional MSL. This code is based on the same theoretical approach as ours and can be used to reproduce our analysis. We added this information l.207.