Reviewer(s)' Comments to Author: The IAS2024 coastal sea level dataset and first evaluations

Thanks for very supportive and helpful comments. Our response to comments by reviewers is shown below in blue.

Reviewer #1:
I (Reviewer 2) have read the revised manuscript and found it considerably improved compared to the original version. The authors have well responded to all my comments. This revised version now reads very well. It includes the detailed information on the data processing that was lacking in the initial version. It has also improved the comparison with other data sets. I think this revised version is now acceptable for publication in ESSD.

I list below a few minor comments that should be taken into account by the authors when preparing the final version.

Thank for you confirmation and the manuscript has been revised as you suggested.

- Abstract, line 2: change 'has been' by 'is'

It has been revised.

- Lines 40-41: change '…calculate…estimates' by '…estimate the vertical land motions.'

It has been revised.

- Line 136: explain what is the Topex ellipsoid and give a reference

The Topex ellipsoid is a reference ellipsoid which has an equatorial radius of 6378.1363 kilometers and a flattening coefficient of 1/298.257.

- Table 1: give references for EWCMF and CLS22

It has been added.

- Line 144: change 'derived' in 'derive'

It has been corrected.

- Line 161: define SWH

It has been revised.

- Line 172: give a reference for the CLS22 mean sea surface

The reference has been added.

- Line 181: add a sentence, explaining that crossovers can occur between ascending and descending Jason tracks

The sentence has been revised as "the crossover point is the intersection between the ascending

and descending ground tracks".

- Line 186: add the reference to Holgate et al., 2013 for the PSMSL

The reference has been added.

- Line 187: Figure 13a showing the location of the 549 tide gauges should appear here or at least at the beginning of the paragraph that starts line 330 or line 345

The Figure 13 has been changed into Figure 4 in the revised manuscript.

- Line 248: give a reference for ITRF 2014

The reference has been added.

- Figure 9: explain in the figure caption what the violet bars represent

The violet bars are the overlaps between IAS2024 and ESA CCI. It has been mentioned in the revised manuscript, as well as the Figure 13.

- Line 294: change 'They' by 'the two datasets'

It has been revised.

- Lines 337-338: cancellation of global VLMs may be true on a 'true' global scale. But the distribution of the 549 tide gauges used in this study is far from global. Thus I am not sure that cancellation applies here

As illustrated by Wöppelmann and Marcos (2016), a possible average bias would be obtained when the number of sites decreases. This means the cancellation of global VLMs can still be achieved at regional scale, which is the case in the study. To clarify this, we revised the sentence as "The result from the IAS2024 dataset is thus consistent with this assumption even it is not a true global scale, as the mean of trend differences is −0.26±3.57 mm yr^{-1}".

- Line 356: change 'where' by 'which'

It has been revised.

- Lines 505-506: differences in altimetry-based sea level trends and tide gauge trends are visible in several other regions

We agree and here we only denote the remarkable difference between tide gauge and altimeter in the revised manuscript.

A final comment: I do not see in the text any information on how the coast is defined and on the associated dataset. Please correct this.

The world's coastline is defined by the Global Self-consistent, Hierarchical, High-resolution Geography Database (GSHHG) dataset (https://www.soest.hwaii.edu/-pwessel/gshhg/), which is used by the official SGDR product to calculate the offshore distance, which is explained in Section 2.2 in the revised manuscript.