



Comment on **essd-2021-32**

Anonymous Referee #1

Referee comment on "Comprehensive bathymetry and intertidal topography of the Amazon estuary" by Alice César Fassoni-Andrade et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-32-RC1>, 2021

General comments

The paper titled "Comprehensive bathymetry and intertidal topography of the Amazon estuary" by Alice César Fassoni-Andrade et al., presents a wide overview of a much-needed topographic-bathymetric data set of the Amazon Estuary area. It is composed of a combination of existing maps (topography and ocean bathymetry) with a newly developed dataset, based on a novel approach to map the topography using flood frequency. This new dataset can be used in hydrodynamical modelling and in other applications that need such a high-resolution data. The authors clearly presents the dataset errors and caveats, which is highly appreciated, and provide the data for future use. I therefore think the paper (and the data) is suited for publication after addressing a few issues detailed below. It will be clear from the points I raised that I am not an expert in this kind of environment or datasets, yet still, there are a few points that needs to be addressed by the authors.

Specific comments

Regarding the online dataset – I had some problems opening and using the netcdf version of the maps. Can you add a short explanation on how to use them? The geoTIF files were working fine. Additionally, I think it could be very helpful if you add a meta-data map to the dataset. I.e. a map containing the spatial distribution of the different data sources, and the areas that were smoothed etc.

L122: Please explain why you only 4 years of data for the flood frequency. If I remember correctly, Pekel's dataset comprises >30 years of data. This could be a major drawback of your dataset, since 4 years is not so representative if accounting for hydroclimatological events.

L215: Did you convert the ellipsoid heights to EGM08 heights?

L220: Was this assumption validated somehow? Even visually?

L250: How did you correct from EGM96 to EGM08?

L255-258: Can this explain the trend in error you show in Fig 4e & 4f? It seems like there is a systematic trend in this error, which to my opinion is strange. Shouldn't this bias be corrected?

L295 and sect. 2.3.3: Why did you choose these specific cross sections? Were these the only one existing? If you add other cross sections to the validation – will the resultant error change significantly?

Technical corrections

L15: "this characterization" – what characterization? Do you mean this "mapping"/"product"?

L26-27: "the largest"... of what? Do you mean the largest of all rivers? If so, please state this.

Figure 1: Please state the source of the DEM in this map. Also, please indicate in the figure caption what are the black rectangles, and why some parts of the river appear blue while others are gray.

Is it possible to add the Xingu River to the map?

L40: Please consider replacing the word "with" with the word "extending".

L58: "anthropic" – should this be "anthropogenic"?

Figure 3: Is the yellow area in panel a always wet? If so, please indicate it in the figure's caption or somewhere along the river.

L144: The reference to Fassoni-Andrade et al, 2020 is in place, however, a similar methodology to map water bodies was also published in an earlier study (Armon et al., 2020).

L253: "top-to-raster" – should this be "topo-to-raster"?

References

Armon, M., Dente, E., Shmilovitz, Y., Mushkin, A., Cohen, T. J., Morin, E. and Enzel, Y.: Determining bathymetry of shallow and ephemeral desert lakes using satellite imagery and altimetry, *Geophys. Res. Lett.*, n/a(n/a), e2020GL087367, doi:10.1029/2020GL087367, 2020.