Comment on essd-2021-352

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Community comment on "Towards improved analysis of short mesoscale sea level signals from satellite altimetry" by Yves Quilfen et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-352-CC1, 2021

This is an extended study to the one (Quilfen and Chapron 2021) to present a thorough assess a set of denoised SLA measurements from three altimeters of J3, S3 and AltiKa, to capture short-scale surface signal. Well recognized due to low SNR by altimeter data, retrieving fine-scale ocean dynamics thus requires preliminary noise filtering. Smoothing low-pass filters (e.g., running mean, loess or other filters) are often adopted. These filters can smoothen altimeter signals, but maybe result in somewhat loss of small-scale geophysical signals.

Apparently, this EMD approach can be used to design an effective and objective filter to generate denoised surface signals (SSHA, SWH, etc.). I have a few comments and suggestions on this manuscript.

- There are duplicated contents in the method section very similar to the one (Quilfen and Chapron 2021). Maybe need a rewriting in the revision.
- The paper at page 510 states “the adjustment of the EMD denoising process for Jason-3 and Sentinel-3 was performed by using the AltiKa results as reference”. Is this objective way to do such an adjustment.
- It looks EMD, a data-driven method, leads to a more complicated design process for any specific applications, such as a specific coast/shelf region. The two-step analysis should be completed using regional altimeter data to determine an optimal value of A. In addition, One single value of A in a region may not well represent the seasonality. Look forward to seeing any comments on this by the authors.
- It will be nice if the datasets used in this paper, and processing codes can be available for the readers and potential users who are interested in using the EMD.