

Interactive comment on “Sea level trends in South East Asian Seas (SEAS)” by M. W. Strassburg et al.

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We thank the reviewer for the helpful comments. While we will provide a detailed response to the comments once the open discussion is closed, we want to begin to address the ability of the reconstructions to reproduce the variability in the region. As a starting point, several of the tide gauges are compared to the reconstructed data at the same location. The tide gauges that were selected for comparison met three primary criteria: 1) these tide gauges were included in the reconstruction process, 2) they have at least a 50% complete record over the 60-year time period of interest, and 3) they are located in the region of interest. By using only tide gauges that we included in the reconstruction, that means they have passed the editing criteria discussed in Hamlington et al. [2012] and are of reasonably high quality.

The attached figure shows the comparison between the raw tide gauge data (blue;

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seasonal signal removed, no vertical land motion correction provided) and the reconstruction (red). At each of the 6 tide gauges, the reconstructed data (on a qualitative level) matches the tide gauge data well, with the agreement better in some locations than others. More quantitative analysis will be included in the detailed response and revision, but as a starting point, it is clear that the reconstruction is performing well in the SEAS region. Coupled with the good agreement with trends over the altimeter record, we feel the CSEOF reconstruction is suitable for this type of study. Additional, subsequent quantitative analysis will reinforce this point.

As a final note, it is not absolutely necessary to have tide gauges located in an area of interest to accurately capture the variability in that region. Many papers have looked at the effect on sea level of ENSO and the PDO in the western tropical Pacific, and as we show in the paper, the SEAS region is similarly effected. ENSO and the PDO are very large-scale patterns, and by relying on the variability captured in the satellite altimetry-derived basis functions, it is possible to reconstruct sea level data in areas that are sparsely covered by tide gauges. This is particularly true in the Pacific Ocean, that has such dominant patterns of large scale variability.

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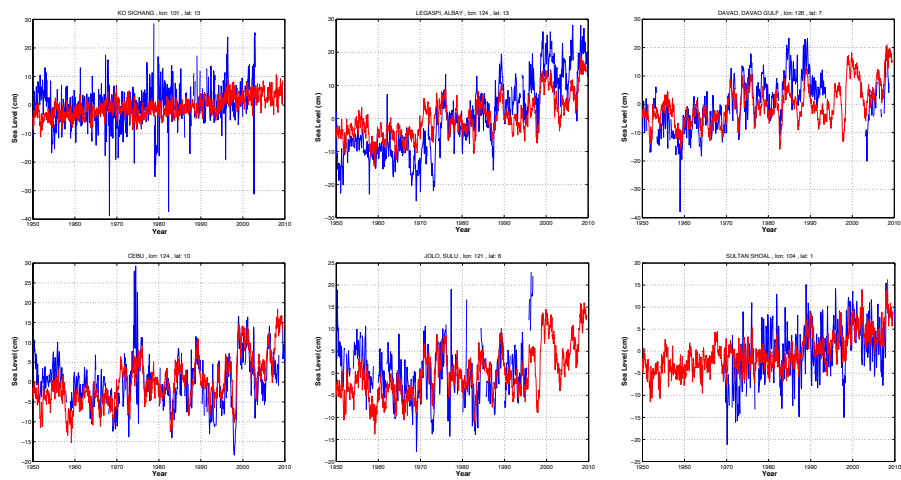


Fig. 1. Comparison between tide gauge data (blue) and reconstruction (red) for tide gauges in the SEAS region.