Response to reviewer 2 comment,: RC2, on "Attributing decadal climate variability in coastal sea-level trends" by Royston, Bingham and Bamber

Dear anonymous reviewer,

The authors thank the reviewer for their review. We provide the following comments (in blue, italic) to the reviewer's major concerns (in black) below.

The authors showed the effect of climate modes on the decadal sea level rise in the coast using the sea level modeling results of the high-resolution ocean model and the CMIP6 models. In general, the ideas are clear and scientifically supported. However, some corrections are suggested to aid the reader's understanding.

- Why don't the authors show the mean value of decadal trends in Figure 1 or 2?

Our work aims to quantify the variability about the time-mean, regional trend that is driven by climate variability on decadal time scales. The time-mean regional trends are derivable from observations and are discussed in detail in CMIP modelling work, for example (e.g. Meyssignac et al 2017). For transparency and completeness, the time-mean regional trends derived in the NEMO model run are added to the Supplementary Information, Fig S2.

- In Figure 1, there is not enough explanation for each panel. Adding more information about each picture to the picture caption is suggested.

The Figure shows the standard deviation of the rolling decadal trends from the NEMO model and the ensemble mean and spread of these standard deviations. The text has been modified in the revised manuscript.

- In Figure 2, since opaque rectangles are overlapped, information distortion is possible. Instead, it is recommended to minimize the overlap by averaging several boxes.

The authors appreciate the feedback on this presentation issue. By averaging the overlapping grid node values we would smooth the result, which isn't ideal. With only 1 month to respond to comments we haven't made a change to this Figure; if deemed necessary by the Editor then please allow more time to modify the Figures.

- It is proposed to add the total sea level rise rate to Figure 2. If the sea level rise rate is very low, this classification may not have much meaning.

The aim of the paper is to investigate the variability in decadal sea-level trends about the time-mean and spatially about the global-mean. This Figure shows the variance in the decadal trends explained by different sea-level components, as proportions of the variability in the rolling decadal trends (the sum of the time-mean trend and variability shown in Fig 1a). The Figure caption has been amended to hopefully make this clearer.

- In Figure 3, it is proposed to verify and show the results of reconstruction and NEMO for Tide Gauge. The authors did not show their level of accuracy.

The correlation and variance explained from the reconstructions for the tide gauge locations given in Fig. 4 are presented within triangles with white borders overlaid on the coastal grid points in Fig. 3. We have not shown the accuracy of the NEMO model to replicate the tide gauge observations, but the NEMO citations and our Supplementary Information does show NEMO replicates the open ocean

observations well on the decadal timescale. Our discussion for tide gauges only aims to demonstrate the potential for reducing observations by climate-driven variability.