

Response to Referee #3 (Tarmo Soomere)

The referee is thanked for his thoughtful comments and suggestions, see our response below.

1. Ref#3: *This is an interesting study of temporal variations in the large-scale circulation and associated water level near the U.S. East Coast. Even though the spatial resolution of the reconstructions is comparably low and single coastal features and even quite large water bodies such as the Chesapeake Bay are not represented at all, the results seem to capture many interesting items described in other studies. The analysis leads to several interesting points, including the observation that the changes to (the intensity of) Gulf Stream have clear temporal pattern of decrease: one event that happened half century ago and another during this millennium.*

Response: Thank you for recognizing the important contribution of our study.

2. Ref#3: *The conclusions draw a more dramatic picture than one can observe from the images. For example, lines 383–384 tell that “the recent weakening in the GS is unprecedented in its length during the 116 years of the reconstruction.” This is of course true but Figure 3 makes clear that the initial level of the relevant proxy was much higher at the end of the 1990s than in 1960s and the recent weakening more resembles a relaxation of an intense stream back to (or just a little bit below) its usual (almost pre-industrial) level. I would even suggest to adjust the title accordingly. I suggest to critically look at this and similar claims and to make sure to the reader that the results should not heat up the discussion of accelerating climate change. Discussion of the acceleration of sea level rise seems to use slightly too much jargon. Acceleration, by definition, is the rate of change of speed. The presence of different rates of the increase in sea level during different time periods does not necessarily mean acceleration over any longer time interval.*

Response: Following comments from Referee#2 discussion of acceleration is toned down and replaced by description of periods of increased or decrease SLR rates (section 3.1). The referee is correct that the recent decline (now Fig. 9) may be part of a decadal cycle and relaxation from a period of strong GS, and this is now clarified in section 3.3. We do not think a change in title is needed.

3. Ref#3: *I agree with the comment of Referee #2 that, in general, the paper is not really well structured. The text should be divided into much shorter paragraphs. Doing so would also make easier to distinguish the results from conjectures.*

Response: Following the suggestions by Referees#1&2, we indeed changed the entire organization of the paper and the order of sections and figures to make it more logic and readable.

3. Ref#3: *Minor and technical comments.*

Response: All those typos and text corrections have been made. Thanks again for carefully reading our paper.