

The manuscript by MacPherson et al. presents the importance of considering historical information, primarily related to large events, in the extreme sea level estimation. Including such data, instead of treating them as outliers, it can reduce the uncertainties to better plan for coastal adaptation. I find the article to be of very good quality, well written, with a detailed methodology and with a good discussion. However, I do recommend some improvement in the results section.

The findings presented here are not only of great interest to the coastal research community but also to coastal managers. In this sense, my overall impression is positive, and I recommend the publication. I nonetheless do have some minor comments that may help to improve the manuscript by a bit.

### **Specific comments:**

Figure 1: Define in Figure 1 where “Kattegat”, “Schleswig-Holstein” and “Mecklenburg-Western Pomerania” are located.

Figure 2: Although Figure 2 exemplifies the data series, it does not contain the water level. No scale illustrates the events’ magnitude, so the reader cannot visualize the water level. Including the information related to the 1872 event. How large was it? I recommend the authors plot the data series for each site containing the thresholds presented in lines 191 and 192 and the POT and AMAX selected events.

Line 191: The authors justify why they had to select different thresholds for each site but do not give major details. In this sense, explain the criteria for choosing each threshold in more detail.

Line 199: “...AMAX samples are used in lieu of historical measurements for analysis 2,...” What is analysis 2? Also, the authors say “lack of historical information,” but the AMAX samples are longer than the historical measurements in Eckernförde and Kiel, for example. Clarify these sentences.

Line 205: If you refer to what can be seen in Figure 2, I cannot see it properly. Figure 2 should be reformulated to better visualization of the events.

Line 228: Why a 70-year moving window?

Line 240: You haven’t mentioned HW1000 before. Please include it in the methodology.

Line 245: The changes in the maximum likelihood estimation being negligible for AMAX makes me wonder what the results would be for the other sites that you used POT only. Have you tried to apply AMAX on the other sites with the data you have? Could this be related to the method applied (POT x AMAX)?

Line 251: I believe you are saying 71 years of systematic data, but how many POT events are considered in these 71 years? Is the result difference caused by the amount of sampling or the different techniques? This discussion could be added in the manuscript.

Table 2: Review all numbers referred to in Table 2 in the text. It could be a rounding issue, but some of the numbers presented in the text are slightly different from the ones in the table—for example, the difference shown in line 272 is 47 instead of 48 cm.

Line 273: The authors present differences in HW200 for Wismar and Warnemünde (2 cm and 5 cm, respectively) but then say in line 244 that “the effect of incorporating historical information can only be examined at Travemünde”. Where do these results come from?

The authors say the systematic record at Travemünde started in 1949. But there has been a continuous measure of AMAX since 1826. In this case, the systematic data mentioned in Figure 5 are from 1826, right? And what about the syst.+hist one? If historical data are the white circles in Figure 2, in a moving average of 70 years, from 1900 onwards, it would include only one datum, the one from 1872. Is this one event changing that much in the results from using systematic data only when compared to systematic + historical data? Later you explore this better in the discussion, but I believe that Figure 5a needs to be better described in the results section.

**Minor corrections:**

Line 62: Close parenthesis in Figure 1.

Line 71: (MELUND 2022) → (MELUND, 2022)

Lines 71/79: (MLUV 2009) → (MLUV, 2009)

Figure 2 caption: Define AMAX and POT.

Line 80: These data cover only the coastline of Mecklenburg-Western Pomerania except for at Travemünde, which is a special case due to its location at the border of both states. → These data cover the coastline of Mecklenburg-Western Pomerania and also Travemünde, located at the border with Schleswig-Holstein.

Line 85: and → an

Line 171: Define NHN.

Table 2 caption: The first figure... → The first table... Add units.

Figure 3: Define MLE.

Line 257: 54% → 51%

Line 264: Wismar → Warnemünde

Line 279: "...large increases..." Rewrite this sentence since the changes at Travemünde, including historical information, are negligible.

Figure 5: Correct Figure 5 to include all the CI data. Otherwise, the reader cannot see the 2.63m difference mentioned in line 292.

Line 296: Figure 5b.