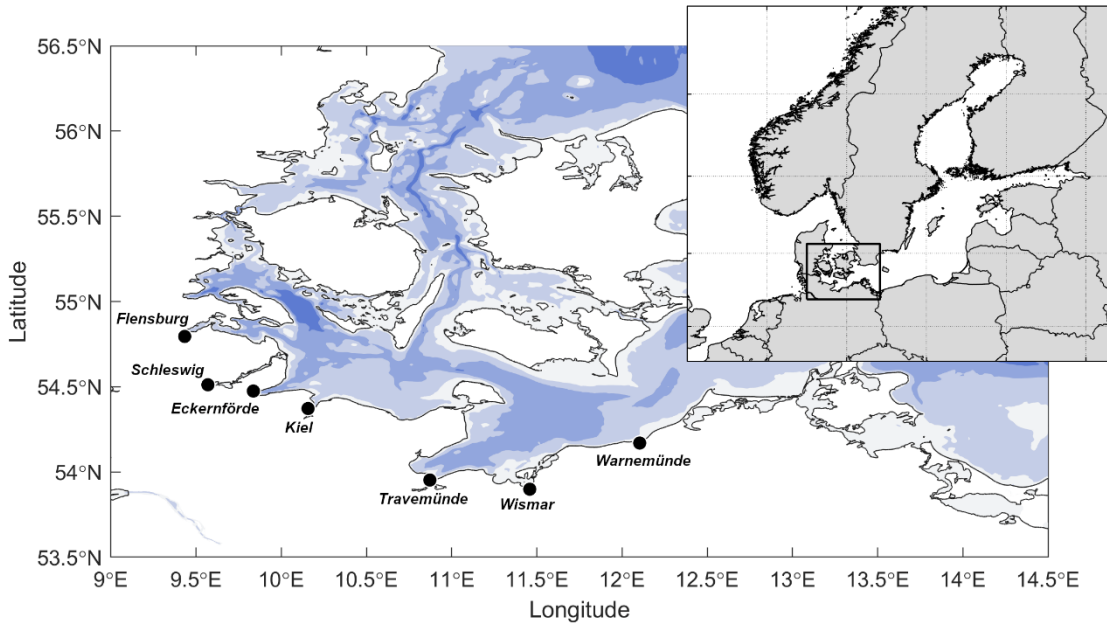


Thankyou very much to the reviewer for taking the time to read through our manuscript. We have implemented the following changes as per your suggestions!

[Specific comments]

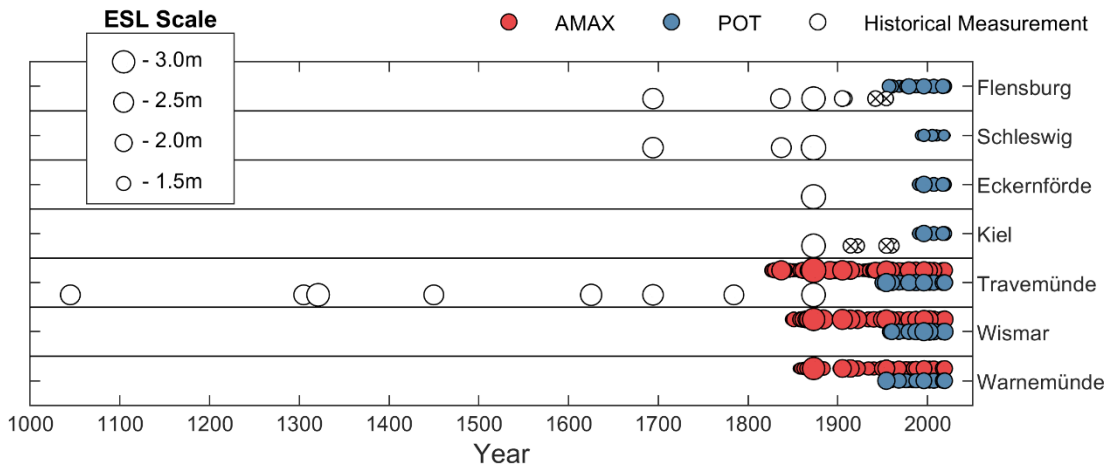
For Fig. 1, it might be easier to understand if the place names are written on the map.

This change has been made:



For the size of the cycle in Fig. 2, it would be easier to understand by adding the legend of magnitude.

Thankyou for this comment. Please find the updated figure below:



The “exp” in Eqs. (3), (4), and (10) need to be modified to be normal, not italic.

Well spotted! These have been corrected.

Some abbreviations, such as NHN at p. 8 in line 171 and MLE at Fig. 3, are used without explanations. Please check for missing explanations of abbreviations.

Thankyou for this comment. Indeed, some of the explanations have been missed and we have checked the manuscript to correct this.

For Line 192, how much impact does the threshold variation or the number of used historical information have on the extreme value analysis?

Selection of the perception threshold can have a large influence on the final results. If it is set too low, the assumption that the historical records are exhaustive may be false and ESL estimates will be biased downwards. Set too high and some historical events may be disregarded unnecessarily. We performed a sensitivity analysis with a range of perception thresholds and found, that in general, higher perception thresholds result in higher maximum likelihood estimates and vice versa. Although, uncertainties increase as less events are included. Choice of a perception threshold is indeed an important part of this analysis and great care should be taken to set a threshold appropriately high enough to fulfill the exhaustivity assumption, and appropriately low enough to ensure the most amount of data is used. We have expanded the description of how we chose perception thresholds in the manuscript:

*“As mentioned in Section 3.1, it is a necessary condition that the available historical information is exhaustive above a perception threshold. That is, the only events which have exceeded the perception threshold for the duration of historical observation exist within the historical record. Therefore, the perception threshold should be set high enough to ensure this assumption is true. At first, a systematic approach to setting a perception threshold was attempted based on the systematic data and the period of historical information. Here, ESLs were estimated using systematic data only for return periods dependent on the number of historical events available and the length of the historical record. For example, the perception threshold might be set to a height equivalent to a 1-in-100 year event, where a 200 year long historical record is available which contains 2 events. However, due to large differences in the magnitude of systematic and historical observations, relying on the systematic data alone was not sufficient, and no one method could be applied at all sites. Instead, perception thresholds were chosen on a site-by-site basis, using all available data for each case.*

*Given the lack of a clear physical threshold at any of the tested locations (e.g. a sea wall where all exceeding events are recorded), a threshold selection process was conducted based simply on the author's intuitive reasoning. Factors that influenced the selection process include the magnitude and occurrence of ESLs in both the systematic and historical records and the length of the historical record in question. Keeping in mind the assumption that the historical record is exhaustive, and due to the subjective nature of this method, final perception thresholds were set*

*conservatively high at 2.3 m at Flensburg, 2 m at Schleswig, 2.25 m at Eckernförde, 2.25m at Kiel, 2.6 m at Travemünde, 2.25 m at Wismar and 2 m at Warnemünde. Historical ESLs that do not exceed the perception threshold cannot be used in the analysis, and are thus disregarded. These events are highlighted in Figure 2.”*