Report #1

Submitted on 17 Jan 2026
Referee #2: Tasneem Ahmed, tasneem.ahmed@research.atu.ie

Anonymous during peer-review: Yes **No**

Anonymous in acknowledgements of published article: Yes **No**

Checklist for reviewers

1) Scientific significance
Does the manuscript represent a substantial contribution to scientific progress within the scope of this journal (substantial new concepts, ideas, methods, or data)?

2) Scientific quality
Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)?

3) Presentation quality
Are the scientific results and conclusions presented in a clear, concise, and well structured way (number and quality of figures/tables, appropriate use of English language)?

For final publication, the manuscript should be

accepted as is

accepted subject to **technical corrections**

accepted subject to minor revisions

reconsidered after **major revisions**

rejected

Were a revised manuscript to be sent for another round of reviews:

I would be willing to review the revised manuscript.

I would not be willing to review the revised manuscript.

Suggestions for revision or reasons for rejection

(visible to the public if the article is accepted and published)

The paper has been greatly improved, however I will suggest a little improvement in the introduction when the author is describing ESLs. Rel while defining ESLs. As the paper focusses on EVA of ESLs, such an improvement could be important.

See lines 37 to 40 in revised document, to accommodate this objection. A reference is also provided.

Note that most other edits within the manuscript were made in response to comments from Reviewer 2.

The following edits were also made

a) changes around lines 250, 251, 261, 289 due to a typo regarding the definition of variance.

b) more concise explanation of equations 12 and 13 in lines 217 to 231.

c) Numerous minor grammatical changes and minor edits to improve readability

To reviewer 1 may I take this opportunity to thank you for taking the time to review my paper.

4 February 2026

REPORT 2. I would like to thank you for taking the time to provide their helpful comments and recomendations. I have attempted to enact these where appropriate and practically possible. Much appreciated.

General comments

I would like to thank the author for the careful attention to all three reviewers' comments. This manuscript is greatly improved, and I think will be fit for publication after minor revisions. In particular, the paper now nicely articulates its purpose as a "proof of concept" and appropriately describes the advances achieved by the TMAX method. The author added detail to the methods so that they are clear and easy to follow, and they now provide a robust error analysis.

The following are three significant revisions I suggest prior to publication are. Note that all are described in further detail in the "line-by-line" comments. ← see "line-by-line" comments below.

- Reassessing the assumption that the selection of one event per tidal cycle is sufficient for declustering
- Providing background on UK water levels (tidal range, storm surge climatology)
- Extending the comparison of TMAX and SSJPM globally using results from Enriquez et al. (2022) (note: I do not think this is necessary for publication, but would strengthen the paper)

Line 19. "accurate" removed. Previous line 22 removed since the study does not specifically examine the behaviour of TMAX in non-stationary series. Lines 81 to 83. Indicate general applicability as regional / global screening and references provided as suggested.

Line by line comments

+ *Introduction:* The final paragraph of the introduction nicely frames the purpose of this study as to deliver a "generally applicable," rather than maximally accurate, method and "to examine the proof of concept for the TMAX method, rather than being an attempt to redefine UK." However, the beginning of the introduction primarily describes the value of EWL distributions in terms of providing accurate design heights. What is the of generally applicable but not maximally accurate design water levels? For example, Reviewer 3 suggests "broad regional screening." I would also suggest finding examples of papers that use tide gauge-based EWL distributions to compare characteristics of flood hazard / drivers of flooding across seasons or large geographic areas.

Major comment

+*L174-176, 196-201:* The text says, "Furthermore, assuming the storm surge duration is less than that of the tide, it also prevents the selection of multiple peaks from within the same storm event. Therefore, in addition to providing a determination of relevant peak value, it is also a form of declustering (see below)." Is this a good assumption? If it is, please provide references or an analysis showing that typical surge durations are less than 1 tidal cycle. Batstone et al. (2013) applies a declustering algorithm (the extremal index), and other ETC-impacted regions I'm more familiar with experience multi-day surge durations.

See new lines 194-201 in 3.2Tide Peak Detection, 3.3Tide Peak Selection.

+*L*192-196: There may be something I'm not considering here, but I don't think it's true that threshold selection in a POT approach "involves tidal range and datum." In practice, the threshold is often selected using a percentile that targets a certain average number of events per year and is then adjusted via sensitivity testing (e.g. Batstone et al., 2013; Baranes et al., 2020; Enriquez et al., 2022). I recommend removing this part of the text.

I am unable to assess which POT implementations use percentiles rather than absolute values. Therefore I have removed this claim as recommended. Previous lines 192-196 removed, new lines 207-208 added.

+*L279*: Can you please provide detail on how were gauge drifts and slips were assessed?

281-285 provides this additional detail requested.

+*General comment:* The paper would benefit from text describing tidal range and storm surge climatology of the UK to give the reader a sense for 1) the magnitude of the errors relative to total surge and 2) an idea of whether the 1 tide cycle independence criteria is reasonable.

Line 90 to 93 now briefly set the UK tidal scene. Lines 195-201 discuss the declustering and surge duration.

+*Figure 3:* For a broad audience, I do not think there is value in showing 100 year ESLs relative to ODN. For example, it's unclear whether spatial variation is driven by variations in tidal range, storm climatology, or geography. I would instead recommend showing TMAX2009-EA2011 in this figure, and I would use filled markers with a color scale in addition to writing the values on the map. You could also turn this into a multi-panel figure where additional panels in the same format show tidal range or the 100-year EWL **relative to MHHW** (rather than ODN).

Fig. 3. I have modified the points to indicate TMAX2009-EA2011.

+*General comment:* Why do you only assess through 2018 for the extended time series analysis? Given that this now excludes the most recent 7 years of data, it is worth a brief explanation.

See added text on line 309.The cut off in the data for the UK downloaded from the site was 2018.

+*General comment:* This is not, in my opinion, necessary for publication, but I believe the manuscript would be stronger if it could demonstrate broad geographic applicability via comparison to results in regions beyond the UK. The SSJPM results from Enriquez et al. (2022) would be a good option (https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021JC018157). They use the qn-SSJPM (Baranes et al., 2020) to provide annual exceedance curves, but they also calculate the full-record exceedance curve. They use the GESLA-3 dataset, but I do not believe they provide the actual EWLs for each location. If you would like to strengthen the paper with this comparison, perhaps the authors could be contacted to request their results.

Yes this is a good idea. See introduction lines 77-79, conclusion 391-393. I feel it should be for a follow up paper, as it would require e.g. a) contacting the athors, b) re-appraisal and comparison c) extensive redraft, and d) new title.

I have attempted to carry out most of your recommendations. However I have not carried out your suggestion regarding colour markers a)primarily because of map clutter in the South West UK where a) my GIS is struggling to find room to clearly display the labels, and b) bearing in mind recommendations to ensure diagrams are acceptable for color-blind readers.

Note that edits lines 37-40 were made in response to comments from Reviewer 1

The following edits were also made by the author

a) changes around lines 250, 251, 261, 289 due to a typo regarding the definition of variance.

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