

REVIEWER 1

The manuscript is much improved and the authors have addressed my comments in sufficient detail. Prior to final submission, I would encourage the authors to revisit the introduction again to streamline some of the text (see comments below). In addition, in the latter half of the paper, I notice that the authors replaced “AEP” with annual chance of occurring in any given year throughout. While I recognize that this was in response to the other reviewer’s comments, and defer to the editor to make a final decision about the terminology, this change feels wordy and somewhat unnecessary once the meaning of AEP has been clarified. The change is especially tortuous in the first paragraph of the Results section.

We thank the reviewer for the insightful comments, which have helped improve the manuscript. We agree that using AEP terminology is more concise; however, we also aimed to incorporate another reviewer’s suggestion to avoid probabilities in certain sections to facilitate understanding for readers less familiar with the topic. We acknowledge that these changes may have reduced clarity in some places, so we have revised the manuscript (particularly the first paragraph of the Results section) to consistently use AEP terminology again.

Minor technical comments

Line 47 should read “In the U.S., the event-based approach has been widely used and is currently recommended” FEMA’s Future of Flood Risk Data (FFRD) Initiative would move away from the event-based approach and towards a response-based approach and is already under way, see, e.g., <https://www.hec.usace.army.mil/confluence/hecnews/spring-2023/fema-s-future-of-flood-risk-data-initiative>

We thank the reviewer for pointing this out. We have revised the sentence to: “In the U.S., the event-based approach has been widely used by the Federal Emergency Management Agency (FEMA) to produce the 1% AEP flood elevations for both coastal and inland flood mapping, which serve as the basis for regulatory floodplain management and planning (FEMA, 2022).”

In addition, we have added the following sentence to line 95:

“For inland regions, FEMA is working to develop a methodology to transition to response-based (probabilistic) estimates.”

Line 50-55 This is one approach that is used for inland flooding, but I believe that river floodplains are also (deterministically) mapped using the return periods of water levels at gages.

We have added the following line to clarify this point “In some cases, inland flooding is instead mapped using the 1% AEP river discharge estimated from stream gauges.”

Line 59 JMP should be JPM

Corrected

Lines 75-78 This sentence repeats some of the information provided in the previous paragraph

This sentence refers specifically to rainfall and river discharge, whereas the previous paragraph focused on coastal water levels. We agree that similar approaches have been used for both inland and coastal drivers, and that this may sound somewhat repetitive, but we chose to retain this sentence to emphasize that the method has been applied across all flood drivers.

Lines 100 “However, FEMA has not planned...” I don’t think this statement is true and I would remove it in light of on-going work that is part of FFRD and related activities.

Following the response to a previous comment, we have added: ‘For inland regions, FEMA is working to develop a methodology to transition to response-based (probabilistic) estimates.’ However, we have not found any FEMA activities specifically addressing ‘compound flooding’ or a response-based approach for coastal compound flooding. We do acknowledge, though, that FEMA is actively working to transition to a response-based approach for inland regions.

Line 125 the k in km² should be lowercase

Corrected

Line 530-531 It would be worth citing some hydrodynamic studies where the drivers were generated, perhaps from Gori and Lin 2022, Grimley et al., 2025 (preprint), or Bartlett et al., 2025 (preprint), to support this statement

<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2022EF003097>

<https://essopenarchive.org/doi/full/10.22541/essoar.176030870.06323732>

<https://arxiv.org/pdf/2511.03871>

We thank the reviewer for the suggested references, which have been added to the relevant sentence.

Line 535 It would make sense to cite USACE or FEMA's work on FFRD here as well

Added

REVIEWER 2

This is a strong paper and I am happy to recommend for publication, pending some minor improvements that in my view do not require review. Most of my original comments were suggestions for communication rather than deep critiques of the paper, and the authors have responded thoughtfully (often differently from how I would have done, but it is their paper not mine!)

We thank the reviewer for the constructive comments and suggestions that have helped improve the manuscript, as well as for the kind words regarding our work.

MAJOR COMMENTS

1. I was concerned that the paper "buried the lede". The authors have addressed this.

Thanks

2. I was concerned about level of polish of figures. Generally the figures are improved, but a few (eg, 8) are still blurry. I wonder if figure 2 could have subplots rearranged to fit better on the page? I would make (b)-(d) smaller and (a) larger.

We have revised Figure 2 as suggested by the reviewer, changing the layout from vertical to horizontal. Our initial choice of a vertical layout was based on the journal's two-column format; however, given that the other reviewer also recommended changes to this figure in the first review, we have now enlarged panel (a) and repositioned panels (b-d) to the right side in a smaller format.

Regarding the map figures, we agree with the reviewer that the basemap quality was not optimal. Unfortunately, higher-resolution basemaps are not freely available. Public basemaps from ESRI (and other providers such as OpenStreetMap) do not offer high zoom levels without a paid license. We have therefore switched to a different publicly available ESRI basemap that is less colorful and maintains better clarity at the given zoom level. The basemaps for Figures 4, 7, and 8 have been updated accordingly.

3. I disliked the use of probabilities / return periods to communicate compound events. The authors have addressed the comment appropriately -- I stand by my recommendation but where they disagree, they do so thoughtfully

We thank the reviewer for this comment. However, based on the other reviewer's feedback regarding the use of 'AEP,' we have revised several sections again. We decided to revert to AEP terminology in some sentences while retaining the phrasing '1% chance of occurring in any given year' in parentheses to aid readers who may be less familiar with probabilistic terminology.

4. I suggested that they better discuss similarities and differences between their hazard-generation framework and others; they have done an excellent job

We thank the reviewer for this comment. We are pleased to have addressed this constructive suggestion, which we believe has strengthened the manuscript.

Minor points are all addressed. I encourage the authors to tighten the figures a little bit and then I am excited for the community to read this paper.