

Interactive comment on “Defining and Analyzing the Frequency and Severity of Flood Events to Improve Risk Management from a Reinsurance Standpoint” by Elliott P. Morrill and Joseph F. Becker

Anonymous Referee #2

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General Comments:

This manuscript applied a data driven approach to solve the issues of inconsistent event definitions within the reinsurance industry. The methodology based on a peak over threshold (POT) was used to determine a metric for identifying independent peaks at various regions. Analyses were conducted on both HUC8 and HUC6 a total of 8,021 HUC8 events and 8,478 HUC6 events in the United States, in which each flooding event was characterized by duration, magnitude and severity. Although in my opinion the manuscript is well written and interesting to a broad readership, the following important

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issues need to be addressed before acceptance of publication.

1. Threshold selection is the most important step of POT method, as it shows a large impact on estimation of the flood stage of that site, then affecting the estimates of flooding frequency and severity. The authors chose the median of annual maximums as the minimum threshold, which corresponds to the 2-year quantile. I am not sure if the 2-year quantile is suitable for all the sites of HUC8 and HUC6 basins, because it is only rough estimation for “bankfull discharge” on naturally occurring streams. Therefore, more information about how to select threshold should be given in this step. In addition, the introduction of calculation of 2-year quantile for sites with less or more than 5 years of data also needs more detail.

2. There is some discussion of threshold selection in Section 5 but it is very general and not quantitative. I suggest that the authors conduct a sensitivity statistical analysis on the threshold selected to test the impacts of changes in threshold on the frequency and severity across the basins. In addition, it is better to include and discuss your findings with the ones from the literature.

3. The number of figures must be reduced. Some similar figures may be combined as one figure for better comparison (e.g. for HUC8 and HUC6), such as Figures 2 and 3, Figures 4 and 5, Figures 6 and 7, Figures 8 and 10, Figures 9 and 11, and Figures 12 and 13.

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