

## ***Interactive comment on “Nonstationarities in the occurrence rates of flood events in Portuguese watersheds” by A. T. Silva et al.***

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We thank the anonymous referee for his/her valuable comments and suggestions.

### **General comments**

1. The referee's concern on data quality was also been raised by referees #1 and #3. Please see our reply to referee #1 for an explanation. Such explanation will be included in the revised manuscript.
2. We agree with the referee's comment and we will include an introductory paragraph on the issue of floods in Portugal.

C5002

3. The referee's concern with the structure of the manuscript has also been raised by referees #1 and #3. The revised version will be restructured based on the proposition by referee #1, with which we are in agreement.

### **Specific comments**

4. In the revised manuscript, we will point out the limitations resulting from the number of stream gauging stations we have used.
5. We followed the referee's suggestion and will write a descriptive paragraph on the characteristics of the studied watersheds. Such paragraph will be included in the revised manuscript. Also, we will include contour maps of mean annual rainfall and flow depths for mainland Portugal in order to enable an understanding of the watersheds' characteristics from the hydrometeorological and hydrological viewpoints.
6. In the revised manuscript, we will provide a better description of the methods employed in evaluating the threshold selection.
7. Regarding the notation  $k/(k+1)$ , we will avoid it as we agree that it might lead to misunderstandings.
8. Following the referee's suggestions, we have fitted linear relations to the running means. We have also tested the significance of the slope parameter,  $\beta$ , of those linear relations. We have found that, out of the 10 series of running averages, only 3 of them have a slope that significantly differs from zero: S6, S8 and S9. We will include this finding in the revised manuscript, however we note that we have a difficulty framing it into a formal significance test because these variables are already smoothed 15-year running averages made dimensionless by the overall mean. Furthermore we are not looking for strictly monotonically increasing or decreasing trend. Also we remind that the analysis concerning Fig. 3 is an accessory analysis and does not affect the final conclusions of the paper, since the main focus in the paper is on the times of occurrence of the events and not the events themselves.

C5003

9. In the revised manuscript, we will rephrase that statement to avoid confusion.
10. We will include the referee's suggestion in the revised manuscript.
11. We will follow the referee's suggestion for improving the readability of Sec. 3.2.
12. This issue will be improved in the revised and restructured version of the manuscript.
13. We will follow the referee's suggestion in the revised manuscript.
14. We agree with the referee's observation, add will add it to the revised manuscript.
15. We accept the referee's suggestions. In the revised manuscript we will stress the limitations of our conclusions due to the small number of streamflow and rainfall samples.
16. We thank the referee for bringing this sentence to our attention. It will be corrected in the revised manuscript.

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