Natural Hazards
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Discussions

Interactive comment on "Homogenous regions based on extremogram for regional frequency analysis of extreme skew storm surges" *by* Marc Andreewsky et al.

Marc Andreewsky et al.

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The authors thank the reviewer for their helpful comments and suggestions. In the text below we have listed the reviewer's comments just after the symbol "->". This is followed by our response. In the supplement, we add the new version of our paper.

-> In my opinion the word "extremogram" should be defined more clearly. The authors should state that it is a sort of "graph" illustrating the similarity between the extremes of location A and other locations, by means of a measure called extremogram coefficient. I would suggest to give a very synthetic explanation also in the abstract.

Yes, that's true that there were ambiguities. This is corrected. A synthetic explanation

is also added in the abstract (line 20, page 1) and in the text (line 2, page 3).

-> line 26, pg 1: I would write "... is often too low to obtain accurate estimations of the return levels (associated ..."

It's corrected.

-> Eq. 1: the meaning of the superscript -1 is unclear.

It's corrected.

-> Eq. 2: this formula is rather unclear to me. What does the "I" in the sums represent? Is this rho the number of peak over threshold occurring in both locations divided by the size of the POT at location A? I would suggest to clarify.

It's corrected: the definition of "I" is added in the text (line 9, page 4).

-> line 31, pg 6: lambda == 1: isn't this number of events per year too low? Considering a few events per year would increase the sample, and would be in most cases fitted correctly by a GPD.

The question is relevant. We have added in the text (line 31, page 6): "Note that, due to the contribution of the others sites in a region, the value of λ is not too low to get a lot of events in the regional sample and, in the case of $\lambda=1$, equation A2 shows that the number of the selected skew storm surges is equal to the effective duration. This number, which depends on the region, is high enough (more than 151) in every tested case to carry out the fitting."

-> line 32, pg 6: "is carried out".

It's corrected.

-> same line: isn't the KS test too strict? The statistics of the extremes will likely be slightly different in different locations, due to local conditions, say, of a few percent, much less than the uncertainty in the return levels. But as the sample would increase,

the KS test would unavoidably fail beyond whatever risk level, just because the two distributions are slightly different.

We used the same test as Weiss (2014c) because, one of our goal is to compare our study to Weiss (2014c), and it works: we find that no p-values are smaller than the risk level of 5%. -> Figure 1: in the map the names of the locations often overlap. Consider increasing the size of the map, or numbering the locations in the table.

It's corrected. The new map, clearer, replaces the old map.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-378/nhess-2016-378-AC1-supplement.pdf