

Partitioning the uncertainty contributions of dependent offshore forcing conditions in the probabilistic assessment of future coastal flooding at a macrotidal site.

General comment

The authors present an interesting methodological framework to assess the uncertainty contributions of forcing conditions to the probability of future flooding. Then, the framework is applied to a macrotidal study site at the French Atlantic coast, and its sensitivity to different framework assumptions is also tested.

The paper is quite interesting both in terms of proposed methods and yielded results, and will be of interest for NHESS readers.

The methodological framework is complex, and because of the way the paper is structured, some parts of the method are under the Section 4 (Application) instead of Section 3 (Methods). As a general comment, I would recommend a slight review of the current structure of the manuscript, trying to wrap all methodological information in section 3, leaving sections 4 and 5 to purely present results. A methodological chart might also help in such a complex study.

In line with the previous comment, current section 6 presents a summary of results and future works. I would also recommend splitting this in Discussion and Conclusions. The results summary is repetitive and the manuscript could be improved with a broader discussion comparing the used methods (e.g. the Heffernan and Tawn 2004 approach, or the GPs) with other methods available in literature such as hierarchical copulas or RBFs (e.g. in Goulby et al., 2014). Some discussion on limitations is done in current chapter 6 although it seems short for such a complex study such as the one performed here, with many methodological steps.

Specific comments

Line 33: "...flood severity is significantly increased..

Line 112: Maybe the sentence is lacking the verb: "...were built on...".

Line 266-270: This is general methodology. Consider defining the base case scenario and the alternative scenarios to test sensitivity on different assumptions under the methodological sections.

Line 304: What does *aggregating* mean in this context? From what I understand, results of Q^2 in Table 1 should be given as a *mean +- std* as they are the result of a 10-fold cross validation procedure. How is the single value given in table 1 computed from the 10 folds?

Figure 5: is it showing 1 fold or the 10 folds? A word on the effect that the poorer performance of the GP approach around $Y_c = 50 \text{ m}^3$ might have on the results might be interesting in the discussion.

Line 332-333: the ZCA-cor procedure and number of neighbors are both parameters of the R function, namely *n.knn* and *rescale*. This part and associated reference can be moved to the methods section, as it is confusing here.

Line 335. It is not standard to present Figure 9 before Figures 7 and 8. Consider moving this part later in the manuscript.

Line 360-366: As in Line 266-270, this is general methodology. Consider defining the base case scenario and the alternative scenarios to test sensitivity on different assumptions under the methodological sections.

Line 428. Do you mean Figure 8a,b?