Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2020-560-RC1, 2021

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Classifying compound coastal storm and heavy rainfall events in the north-western Spanish Mediterranean" *by* Marc Sanuy et al.

Anonymous Referee #1

Received and published: 8 January 2021

The paper describes an interesting study on the probability of occurrence of extreme combined events (floods and sea storms). The study clearly shows which are the types of synoptic patterns that generate the different types of event and identifies the areas where it is most likely in the occurrence of compound events (multivariate). I think the paper can be published with a few minor revisions. In particular I find some basic assumptions for the study not sufficiently justified, although I guess the valid justification is there. Specifically, 1) I would suggest explaining why it was assumed, to define an event as "compound" the time window of three days 2) Another assumption that should be more fully justified is why MSLP and geopotential at 1000 hpa were chosen to characterize the weather patterns. I also think that the final discussion can be extended,

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Discussion paper

introducing hints on how the two types of events identified (spatially compound and multivariate) influence the overall damage and also any risk management problems. For example, there is some evidence that floods and sea storms interact with each other during a multivariate event, aggravating the hazard scenario of one of the two (e.g. contemporary sea storm in the same area does increase the intensity of the flood hazard scenario ?)

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