

## ***Interactive comment on “Time-clustering of wave storms in the Mediterranean Sea” by G. Besio et al.***

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Received and published: 7 December 2016

The paper presents the results from analysing observed and modelled wave time series in the Mediterranean to identify temporal clustering of extreme events and the spatial distribution of these clusters. The method that has been chosen is based on the Allan Factor, which is commonly used for this purpose, including a wide range of geophysical data sets. The topic that is discussed is an interesting and important one that has gained more and more attention over the last few years. The paper as it stands is well written and easy to follow and results are presented in a concise way. However, there are a number of things that need to be clarified and/or revised before the paper can be published with NHESS. One aspect I believe should be discussed a bit more is the issue of significance, i.e. how large can AF (or alpha) get by chance? This is important to be able to interpret the results. There is for example a paper by Serinaldi and Kilsby

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(2013; <http://dx.doi.org/10.1016/j.physa.2012.11.015>) where this is addressed.

Below is a list of more specific comments: P1, l. 3. 'spanning the period' P1, l. 9. 'longer scales' P1, l. 12. 'the occurrence' P1, l. 17. Another paper has recently been published where storm surge clusters are investigated in much more detail around the UK: <http://www.nature.com/articles/sdata2016107> P2, l. 8. The selection of example references is heavily biased toward one author, if AF is such a prominent method there should be other examples where it has been used. P. 3, l. 3. Close bracket after 'heights' P. 3, l. 10. The way I know AF the denominator should be multiplied by two. If it is just a typo it is an easy fix, but if the analysis has been performed this way everything needs to be repeated. P. 3, l. 12. 'depends on' P. 5, l. 30 to P. 6, l. 7. Somewhere here the authors should refer to Fig. 2 where the locations of the wave buoys are displayed. P. 6, l. 7-10. I don't think this is necessary; it has been said already that only the original stations are used so no need to go into detail what the other station time series look like. P. 6, l. 13ff. What about the "wobbles" that exist at all example sites for the 99.5% threshold in the model data at ~5 and ~25 days, it seems to be something systematic. Can it be explained? P. 6, l. 17. Delete 'and Mazara', it is not included in Fig. 5. P. 6, l. 19. 'sometimes' P. 6, l. 21. How can I see from the figures that alpha is between 0.2-0.3 or 1.1-1.2? There is no reference as can be found in the other figures. P. 6, l. 22. 'on average' P. 11-14. Why exactly are the alpha values of 0.25 and 1.15 shown as reference? This is related to my comment above on significance of the results. The same applies to Fig. 12, is it possible to highlight grid points where the results (in this case the slope) is significantly different from zero (or the Poisson assumption)? P. 15, l. 1. Delete 'the' before Southern Spain P. 16, l. 5-7. I didn't understand the last part of this sentence. P. 16, l. 17. 'to exacerbate'

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-318, 2016.

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