

Interactive comment on “Analysis and Modelling of a 9.3 kyr Palaeoflood Record: Correlations, Clustering and Cycles” by Annette Witt et al.

Anonymous Referee #1

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This was a thorough and interesting paper to read.

It is regrading relatively novel, but important topics in palaeoscience. The degree to which we can make informed interpretations of proxy data is constrained by our understanding of the memory/persistence of a given proxy in a given archive. Finding statistical approaches to help with this understanding is therefore important (e.g. Fischer, 2016).

This not only helps with interpretations of time-series of past change but also in understanding how best to statistically model future scenarios, including the frequency of hazards such as flooding.

It draws heavily on Witt and Malamud (2013) and applies their approaches to a varved lake record. Links to this prior paper, and the useful R code it contains, are clear in this

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paper and with the flood record to also be made available, allow readers to undertake the analyses and check output before applying to their own data. This is likely to be a very useful product for the community, particularly for working with annual time series such as those available from varved lake sequences.

Please note, I haven't had time to work through this for the review.

There are a couple of small typos in the text, but this is a paper that is publishable as it is.

Fischer, M.J., 2016. Predictable components in global speleothem $\delta^{18}\text{O}$. *Quat. Sci. Rev.* 131, Part B, 380-392. Witt, A., Malamud, B.D., 2013. Quantification of Long-Range Persistence in Geophysical Time Series: Conventional and Benchmark-Based Improvement Techniques. *Surveys in Geophysics* 34, 541-651.

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