

## ***Interactive comment on “Recurrence analysis of extreme event like data” by Abhirup Banerjee et al.***

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The paper is generally well written and understandable. The text is fluent and precise. The paper introduces a modification of the Edit Distance used in the comparison of time series with extreme events. The technical content is sound and relevant. I would suggest the following comments:

1- In the shifting part of the cost function, replacing the linear function with a non linear function is very interesting. I would like to ask about the choice of the sigmoid? Have you tested other non linear functions and compared them (Tanh, RELU)?

2- The value of  $k$  is crucial for the behavior of the sigmoid and therefore for the cost function. Could you elaborate more on how you set the value of  $k$ . It would be

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interesting to see the curve of DET as a function of  $k$  (like with  $\tau$  in figure 8.C)

3- Line 222, I could not understand the definition of  $p$ . What is the difference between  $p$  and  $L$ ?

4-Figure 12 and 13 have similar titles. Maybe, the overlap in figure 13 is 9 months.

5-It would be interesting to plot the curve of DET as a function of  $\tau$  for flood events in figures 12 and 13 (like in figures 8,9 and 10 for synthetic data using Poisson process)

6- The size of figures 11 and 13 could be reduced.

7- In figure 15, the mean of the surrogates is around 0.15. This value may depend on the shuffling process used in the generation of the surrogates from the original data. Could you describe more how you randomized the original set (uniform/Gaussian process)?

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Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2020-41>, 2020.