

Interactive comment on “Series distance – an intuitive metric for hydrograph comparison” by U. Ehret and E. Zehe

Anonymous Referee #2

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The manuscript is well written and describes an empirical procedure for the comparison of time series of events in terms of both amplitude and timing. The procedure is termed “intuitive” (title) as it is an attempt to reproduce expert judgment on the comparison of hydrographs. I think this focus is simultaneously the main strength and weakness of the paper. Strength, because this kind of application-driven comparison is very appealing, not only for most hydrology applications but many geoscience problems in general. The quest for procedures that mimic the “straightforward” answer given by the eye and the human brain when comparing two time series is understandable and reasonable, and although of wide importance it is seldom explicitly considered. However, I think this is also one of the major weaknesses of the paper, because the method is presented in a very specific context of hydrological flow events and it is not evident how to apply

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it in other contexts and in a more general setting of time series comparison. More seriously, despite the attempt of the manuscript to objectify the approach, the method for comparing time series of events is not formalized as such, being presented instead as a set of empirical steps. Therefore, I think the manuscript is not acceptable in its present form, but because the topic is relevant and appropriate for the journal, I would recommend publication after a major review addressing the following issues:

- more formal description of the method
- overview of existing approaches for comparison of nonstationary time series, including the abundant literature on dynamic time warping, pattern matching and time series clustering
- the identification of events is based on a fixed threshold. Is this stationary assumption justifiable in practice / real data?
- how sensitive is the approach to the degree of smoothing applied to the data? the proposed approach involves attunement of matching events in order to have the same number of peaks and troughs in the observed and simulated event. This means that when comparing a given event with more than one modeled/simulated event one is not comparing exactly the same observed event – since it will be “attuned” to each different simulation... are the results comparable, then?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 8387, 2010.

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