Hydrology and
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Discussions

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comment

Interactive comment on "A Comparison of the Discrete Cosine and Wavelet Transforms for Hydrologic Model Input Data Reduction" *by* Ashley Wright et al.

Anonymous Referee #3

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OVERVIEW

The study investigates the use of Discrete Cosine and Wavelet transforms for the reduction of input data dimensionality in hydrological modelling.

GENERAL COMMENTS

I am reviewing the paper after reading the comments raised by previous reviewers on the interactive discussion. As specific comments were already given by previous

reviewers, I included here only my general comments for the paper.

The paper topic seems to be relevant for the HESS readerships. However, I found some important issues that need to be addressed before the publication.

1) It is not clear to me how the DCT and DWT methods are applied. If I well understood, for each basin the authors used streamflow and precipitation data, together with a hydrological model, for applying DCT (and DWT) and thus reducing the dimensionality of precipitation data. However, no hydrological model is mentioned in the paper. What are the input and the output data? Is a hydrological model used? Can the procedure be applied in a testing period? What is the targeted application of the proposed approach (something is mentioned in the introduction, but needs clarifications)? All these questions need to be addressed. Otherwise, I have not clear why the study is relevant for the hydrological community.

2) An important issue in the analysis of rainfall timeseries is related to the zeros, i.e., days with no rainfall. By looking at the results, good performances are obtained for POP values larger than 30-40

3) Besides the performance metrics related to precipitation, also the peak discharge error is mentioned. However, it is not clear how it is computed (see also comment 1). If a hydrological model is used, it should be mentioned. I expect that results depend also on the quality and reliability of discharge time series. If yes, it should be investigated and discussed. All these information are totally missing in the current version of the paper and should be added.

4) Some parts of the paper seem to be written quickly without much attention. Therefore, typos and grammatical errors are present. I suggest a detailed review of the whole

text, and of the figures (e.g., y-axis labels in Figure 2 are wrong).

RECCOMMENDATION

On this basis, I found the topic of the paper relevant, but as I mentioned above, the analysis and the text need major revisions before the possible publication on Hydrology and Earth System Sciences.