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Interactive comment on "A discrete wavelet spectrum approach to identifying non-monotonic trend pattern of hydroclimate data" *by* Yan-Fang Sang et al.

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Received and published: 12 February 2017

Thanks very much for giving this helpful comment. As is well known, hydrological and climate process usually present non-monotonic trend at long-term time scales. Thereby, how to accurately describe the trend and assess its statistical significance are two important issues for the detection of trends in hydroclimate data. Of course we can visually check the non-monotonic trend in a time series; by determining the break-points, we can use certain functions to describe the trend between two breakpoints. However, the approach cannot meet the practical needs enough, by which the detected trend is just composed by some segments. More importantly, we need to continuously describe the change of non-monotonic trend with time, because it is an important basis

for the simulation and prediction of decadal variability of hydroclimate process. Furthermore, the significance of a trend depends on both its own magnitude and its ratio in the original time series, and thus assessing the significance of a trend should consider the variability of the trend and the influence of other components in original series. In this article, we proposed the DWS method to identify the non-monotonic trend in hydroclimate data. We used the discrete wavelet method mainly to separate and describe the trend component, which shows continuous and smooth variation; then, we used the established discrete wavelet spectrum to assess its significance, which directly reflect its variability degree and its ratio in original time series. Therefore, we think that the proposed DWS is reliable and can be used in climate change detection and attribution studies. The Anderson-Darling test, as mentioned in the comment, is used widely for assessing whether a data set fits certain probability distribution or not. However, we don't think it can meet our need for the detection of trend, as mentioned above.