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Interactive comment on "Multiple Causes of Nonstationarity in the Weihe Annual Low Flow Series" *by* Bin Xiong et al.

Anonymous Referee #1

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1. There are many researches focusing on reasons, causes and modelling of nonstationarity of hydrological extremes such as: Xihui Gu, Qiang Zhang, Vijay P. Singh, Peijun Shi, 2017. Nonstationarities in the occurrence rate of heavy precipitation across China and its relationship to climate teleconnection patterns. International Journal of Climatology, DOI: 10.1002/joc.5058. Xihui Gu, Qiang Zhang, Vijay P. Singh, Peijun Shi, 2017. Changes in magnitude, frequency and timing of heavy precipitation across China and its potential links to summer temperature. Journal of Hydrology, 547, 718-731. Xihui Gu, Qiang Zhang, Vijay P. Singh, Peijun Shi, 2017. Nonstationarity in timing of extreme precipitation across China and impact of tropical cyclones. Global and Planetary Change, 149, 153-165. Xihui Gu, Qiang Zhang, Vijay P. Singh, Lin Liu, 2016. Nonstationarity in the occurrence rate of floods in the Tarim River basin, China, and

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related impacts of climate indices. Global and Planetary Change, 142, 1-13. Qiang Zhang, Xihui Gu, Vijay P. Singh, Mingzhong Xiao, Xiaohong Chen, 2015. Evaluation of flood frequency under non-stationarity resulting from climate change and human activities in the East River basin, China. Journal of Hydrology, 527, 565-575. Qiang Zhang, Xihui Gu, Vijay P. Singh, Mingzhong Xiao, Chong-Yu Xu, 2014. Stationarity of annual flood peaks during 1951-2010 in the Pearl River basin, China. Journal of Hydrology, 519, 3263-3274. What are the motivations, research objectives and novel points of this current study when compared to standing researches? My strong suggestion is that thorough literature review is pretty necessary. New findings, new ideas, new methods, if any, should be pointed out with enough citations to justify authors' statements.

2. There are no exact and/or results included in the Abstract section. Or only limited words describing results. More details and particularly in a quantitative way should be provided for description of results and conclusions.

3. In Introduction section, it was noticed that there are numerous researches focused on nonstationary low flow frequency analysis. However, no novel points were listed and hence research motivations were not well justified. Besides, as a tributary of the Yellow River, evaporation or evapotranspiration, irrigation, population, GDP and so on should be included as factors influcing low flow changes. Related works have been done using Budyko framework by Prof. Dawen Yang from Tsinghua University and Prof. Qiang Zhang from Beijing Normal University and other colleagues from China. Besides, I still have no idea about how the authors developed the framework to evaluate low flow frequency from a nonstationary perspective.

4. In Method section, a working framework should be formulated besides some descriptions.

5. Why the authors choose Weihu River basin as a case study? Are there any unique features of the study region when compared to other alternative rivers?

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