Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2019-430-SC1, 2019

Hydrology and Earth System Sciences
Discussions

Interactive comment on "A Universal Multifractal Approach to Assessment of Spatiotemporal Extreme Precipitation over the Loess Plateau of China" *by* Jianjun Zhang et al.

Zhihua Shi

shizhihua70@gmail.com

Received and published: 19 October 2019

General comment

In this work the authors proposed an approach integrating the universal multifractals and a segmentation algorithm to precisely identify EP events. Then they assessed spatiotemporal variation of extreme precipitation over the Loess Plateau, China.

It is known that extreme precipitation in the Loess Plateau is one of the major agents causing serious environment hazards in the Loess Plateau. However, to my knowledge, traditional method including parameter methods and non-parameter method

could not gave such a rational result of extreme precipitation in both spatial and temporal distribution.

The method proposed in this paper is innovative, and the results are of great significant in catchment management. The paper is in good presentation and fluent expression, and the content of the paper suits to HESS.

My detailed comments follow:

1. The authors should describe the procedure to calculate the EP indices in detail.

2. Can the methodology proposed in this paper be applied to extreme precipitation assessment in many other regions? Please discuss this point at the end of the abstract.

3. Line 42: The most serious soil erosion in the Loess Plateau should be 3×104 – 4×104 tÎĞkm-2ÎĞyr-1. Please check it.

4. Line 153: The abbreviation of "EP severity (EPS)" doesn't agree with "EPSI" in Table 1. Please check it throughout the paper.

5. Line 215: Add the unit to the annual EPF.

6. Line 231: it should be "4.2 Spatiotemporal variation of EP".

7. Line 238: It should be "mainly in"

8. Please check the units used throughout the paper and make sure each unit is strictly unique in the paper. For example, Line 42 "yr-1", Line 214 "days" and Line 237 "days/yr" don't in consistent with "d" and "d/yr" used in Figures 3 and 4.

9. The scarce precipitation but intense EP is a major external agent inducing most serious sediment erosion in Loess Plateau. The spatial EPI and EPS derived in this paper is important as it well illustrate this question. This is an important question should be further discussed in section 5.1.

10. There are some studies to explore the EP in the Loess Plateau. The authors should

compare their results with previous studies.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2019-430, 2019.