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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Effect of restoration vegetation on the stochasticity of soil erosion in a semi-arid environment" *by* Ji Zhou et al.

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1. The manuscript shows a novel and interesting approach to link rainfall stochasticity to runoff and sediment delivery stochasticity through the role of vegetation.

2. There is a conceptual inconsistency that the authors should clarify: They claim about the impact of stochasticity on the increase of runoff and erosion, but their measure of stochasticity is a measure of the probability of extreme values or of the classes of frequency values. By this way they ignore memory of the system, which lacking characterizes true stochasticity. This could be obtained through autocorrelation or variograms, which should lack of upper asymptote and therefore the attribute variance grows unbound with the lag or time.

3. The approach lacks explicitly of any theory and totally relies on empirical ad hoc

information from small plots. At the same time, the method is designed to be used in restorations, and as such it should deal with different vegetation, topographies and soil attributes. The number of small plots to grant significance would increase exponentially and so the cost of the operation. How to deal with this issue should be commented by the authors.

4. The parameters used in the transfer probability functions comes from the plots, where the application is performed. This seems incurring in circularity. The authors should clarify that in the interpretationof results.

5. The authors don't mention the spatial stochasticity of rainfall and of the land attributes. A fact crucial in most of large applications supposed of to be real targets of the proposed method 6. The references almost lack mentioning the efforts done since the eighties in the same direction by combining temporal and spatial stochasticity.

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