

## ***Interactive comment on “Investigation of hydrological time series using copulas for detecting catchment characteristics and anthropogenic impacts” by T. Sugimoto et al.***

**T. Sugimoto et al.**

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- 1) In the abstract API acronym should be defined. <author’s reply > yes, I will do it.
- 2) In the Introduction line 20-22. If the aim is to investigate on the catchment status and the anthropogenic impact, I do not think it is obvious that the solution is to analyze the discharge time series, the reader could expect to see the analysis of the crosscorrelation between rainfall and runoff time series.

<author’s reply > yes, I agree that cross correlation between rainfall and runoff can be the first choice. There are several studies about them, but in my opinion, it seems

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difficult to prove the causality between them.

Relation between rainfall and runoff is analysed in this study as well, but yes, then I should not cause any confusion especially in introductory part. I will reconsider the expressions.

3) please see ... <Author's Response : additional description about asymmetry and hydrograph>

4) Section 3.1 line 15. "and instead of "und" 5) Section 3.1 line 25. related "to" temporal Distribution <author's reply > thank you very much for pointing out the mistakes

6) please see ... <Author's Response : additional description about asymmetry and hydrograph>

8) Section 4.1. In general this section is very interesting. I would suggest to better explain if the distance  $D$  is based on empirical copula and why this is important; and the uncertainty of the estimated distance. Maybe these notions are already included in the text but it should be better clarified.

<author's reply > I agree to the comments of anonymous referee2# and try to clarify them in the text.

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