

## ***Interactive comment on “The role of forest maturity on catchment hydrologic stability” by Oscar Belmar et al.***

### **Anonymous Referee #1**

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General comments: I reviewed the paper "The role of forest maturity on catchment hydrologic stability" by Oscar Belmar and co-workers. In this paper, the authors attempted to improve the understanding of the impact of land cover on flow extremes (flood and drought) at the catchment scale through an experimental design. The objectives and relevant scientific questions addressed in this paper are within the scope of HESS. However, I have to say that the experimental design of using associated with correlations and regression, and speculating that forest maturity can serve as a better hydrological indicator is a little weak. In addition, the authors stated that the first objective of this paper is to isolate the relative contribution of precipitation and land cover to hydrological extreme events. There is model development. If there was an analytical model developed, this would be an adequate contribution. However, this has not been performed in this manuscript. 1. Comment: In the revised version of the

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paper, the authors should clearly state which is the novelty of the paper for which the paper deserves publication. 2. Comment: It seems that the authors try to describe some original interpretations for the phenomenon. I would recommend the authors to show the possible mechanisms a little more specifically. That would help particularly the abstract to be more understandable and attractive. 3. Comment: P1, L26, what do you mean by average conditions? 4. Comment: P1, L29, I suggest the authors add the specific forest area. 5. Comment: P2, L20 and L31, what is the difference between watershed and catchment? If this two terms have the same meaning, please used one of them consistently. 6. Comment: In the Introduction section, I could not find detailed research progress of the effect of forest or other land cover on hydrological processes. 7. Comment: The Result section is too short. This again illustrates that the evidence in support of your conclusion is weak and I suggest authors provide more evidence. 8. Comment: The comparison and discussion with the similar studies on the impact of land cover on flow extremes is lack in the manuscript. 9. Comment: P4, L31, how water interception and retention were estimated to determine the proportions of slow and quick flows? Meanwhile, the authors should define what are slow flows and quick flows, respectively. 10. Comment: P5, L9, here the authors only take precipitation into consideration as a climatic factor, how about the effect of evapotranspiration? 11. Comment: P5, L22, what does western extreme mean? 12. Comment: P7, L20-21, I have no idea what you mean here; please improve. 13. Comment: P7, L26, what does the low representation mean? 14. Comment: In Table 1, the authors should provide the mean annual cumulative precipitation and mean annual air temperature, and add what period for hydrological variables (i.e., mean runoff and mean flow), climate variables (i.e., precipitation and temperature) and land cover, though this information have been present in the text body. Furthermore, I suggest that the codes and names of river in eastern and western part of the study area should be distinguished. I wonder that what forest surface is. It refers to vegetation coverage, or something else. What is the relationship between forest surface and forest maturity? 15. Comment: In table 2, partial correlation analysis have been performed between hydrological index (i.e.,

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M3DMF, FRE9, and BFI) and forest probability. Yet, in Fig. 3 and Fig. 4, the similar analysis were conducted between hydrological index and forest maturity. Can you please explain this?

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