

Interactive comment on “Assessing the impact of climate variability on catchment water balance and vegetation cover” by X. Xu et al.

Anonymous Referee #2

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The paper by Xu et al. aims to explore water balance and vegetation cover patterns in a variety of Australian catchments and quantify the impact of climate variability. I have enjoyed reading and reviewing this paper, which is scientifically sounded and well written. However, I feel the paper can be substantially improved by addressing the suggestions raised by Referee #3. In addition to them, I have got three comments that should be addressed by the authors (see below).

1. The assessment of the impact of climate variability on catchment water balance and vegetation cover is ideally done in natural, pristine catchments. However, many studies have showed that the human footprint has significantly increased over the past decades in most river basins. As a result, natural, pristine catchments have become more and

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more an exception. To my knowledge, although less pronounced than, for instance, European catchments, this is also the case of some Australian catchments. So, I think the authors should seriously consider and comment the level of human footprint on the Australian catchments under study. A clear and convincing demonstration that the human impact on water balance is not significant and therefore the analyzed patterns can actually be attributed to climate variability is currently missing.

2. The paper states that the average temperature elasticity of total runoff is -0.05. How confident are the authors that such an outcome clearly indicates (as stated in the discussion section) that increase in temperature leads to decrease in runoff? In fact, according to this paper, the temperature elasticity of total runoff ranges between -0.8 and 1.1. Perhaps the median value is positive (I have no possibility to make this check). Anyhow, is this -0.05 significantly different from 0?

3. Besides the redundancy of some figures (see comments by Referee #3), I suggest double checking their format as most figures of this paper look of poor quality/resolution.

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