

***Interactive comment on* “The Influence of a Prolonged Meteorological Drought on the Catchment Water Storage Capacity: A Hydrological Model Perspective” by Zhengke Pan et al.**

Anonymous Referee #2

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I read with interest the paper on The Influence of a Prolonged Meteorological Drought on the Catchment 1 Water Storage Capacity: A Hydrological Model Perspective. It's a good piece of work whose findings are useful for water resources management in the light of climate and landuse changes.

My major concern however is in the study design and methodology. Most of the steps in the methods section are not adequately described. Readers can fully link the methods with the results because certain information is not provided in the methods section. Typical examples but not limited to: Which datasets have been used in all the objectives

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Describe the spatial and temporal variation of these datasets What are the different sources of datasets For examples what is the source of the primary land-use types described in the results section.

Authors mention about the catchment physical properties and climate characteristics which influences CWSC. Readers will only get to understand or know these physical properties and climate characteristics when they read the results section. This again has to do with a poor study design.

In section 3.4, what do authors mean by ‘. . . .because of the limitation of available data of catchment attributes, only unique catchment properties are employed. . .’. What are these unique catchment properties? And how were they selected?

The authors use the term ‘climate characteristics’ in the abstract and methods section- Upon reading the manuscript (rather the results) one discovers that its only rainfall being referred to. Is rainfall enough to define meteorological characteristics? - what about the influence of other climate characteristics such as Temperature, Evapotranspiration?

In section 4.3 authors point out that ‘However, the geographical distribution of catchments with significant and non-significant changes in $\delta^{18}O$ showed no obvious geolocation clustering phenomenon.’ Which statistical techniques did the authors employ to come up with conclusions on significance in $\delta^{18}O$ Given multiple climate variables and catchment properties-which one significantly affects CWSC?

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