

Interactive comment on “Sensitivity of hydrological model to the temporal and spatial resolutions of rainfall input” by Yingchun Huang et al.

Anonymous Referee #1

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This paper evaluates the sensitivity of a hydrological model to different temporal and spatial resolutions of rainfall input. The study uses four mesoscale catchments as a case study and evaluates the model's ability to capture NSE and MSE. The paper has a clear experimental design and identifies several interesting results.

The major limitation of the paper for me is the introduction and discussion. There are very little references to the wider literature and both sections do not address where this research sits in the wider field. Furthermore, the choice of catchments and performance criteria need to be better justified. My detailed comments are listed below.

Major Comments

C1

Introduction – The introduction is quite short and I don't think gives the reader a thorough overview of previous literature on this topic and where this research sits within the field. There have been lots of other studies that have focused on the impacts of spatial and temporal resolution of rainfall on hydrological model output and you need to clearly explain how your research builds on these previous studies. I found it difficult to identify from the introduction what the research gap was and how this study addressed that research gap.

Study area and hydrometeorological datasets – The rationale for your choice of catchments needs to be outlined. Why were these four catchments chosen? Do they have different climatological characteristics that make them interestingly different? A lot of the following analysis focuses on differences between these mesoscale catchments so it is important that the reader understands what these key differences are. Table 1 contained some interesting catchment characteristics but then these were not further explained.

Performance criteria – The choice of performance criteria needs to be better justified as this has a large impact on the sensitivity of your results.

Minor Comments

Abstract P1 L6 ‘Two different flavors of HBV’ – this doesn't make sense to me. It would be better to just say two different formulations or types.

P3 L20 ‘illustrates the frame of these four datasets’ – again, this sentence doesn't make sense to me and needs rewriting.

Figure 6 As you are focusing on higher flows, I would also find it useful to have another plot (or combined with Figure 6) that focuses on the flow duration curve for flows higher than the 10th percentile of flow.

Figures 7 -10 need some improvement. The colour scheme needs to be changed in these plots so it is easier for the reader to distinguish between the different catchments.

C2

Currently it is difficult to pick out differences between catchments.

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C3