The study used a well-known framework to analyze the water scarcity in some large basins in China. Although the method is not new, the topic is interesting. However, some details about the method should be added (please see the following point-to-point remarks), and the presentation of the results should be improved. In the results part, I found that the analysis was not complete for each basin, the results were not well organized, and the figures are hard to follow. These limitations made me a little bit hard to understand the results and conclusions (some are due to a lack of quantitative analysis, and some are due to a lack of complete summary and necessary discussions; particularly, the result about water scarcity was not well interpreted). Finally, the authors had three objectives, but the imbalance between upstream and downstream regions was not well quantified, and the third one was only discussed in a very simple way.

The details are given as follows:

P4L1: how did you do the model calibration to show that theta is most sensitive to topography? The details about the model calibration were missing. The theta value was constant for all the basins?

P4L2: the uncertainty of the model should be evaluated more completely. 6.9% was only the average. However, how about the spatial distribution of the uncertainty? Which basins had the largest uncertainty?

P4L3: please give references to show this framework can be suitable for annual studies. In my experience, this frame is only suitable for mean annual studies.

P4L17, here, why was ET0 calculated by the Hargreaves equation rather than the Penman equation? The gridded meteorological data can be also obtained by interpolating the station-based data to grids.

P5L2, please give the reference for the classification method of AI.

P5L5, according to Figs. 4 to 9, I think you focused more on the changes, so maybe the trend was less important. Please consider to delete the trend analysis contents to make the results more coherent.

P5L9, the definition of water scarcity is expressed by two indicators, but this is not very easy to follow, especially in Fig 9. I suggest define a new indicator, e.g., WS=WTA/Shortage? Maybe it is easier to compare this indicator among different decades, basins, and reaches.

P6L15, the correlation coefficient of natural and observed runoff means what? As defined by the authors, natural runoff and observed runoff could be totally unrelated, so I don't know what R means. 1961–1970 was the period for model calibration, so why did you show the degree of suitability of the model during 1961-2010? If the authors assumed that period from 1961–1970 was nearly natural, you should divide the period into two sub-periods: one for calibration and the rest one for validation. I noticed that the model's performance in some basins listed in the right-most column of Figure 1 was very poor during 1961–1970. Is the framework suitable for these basins?

P6L24, it is very difficult to see which gauges are in the upstream and which gauges are in the downstream. The authors should think about how to present the locations of the gauges clearly.

P6L25, can you explain why a gauge with a positive trend in rainfall can have a negative change (Fig. 3)?

P6L29, in northwest of China, such as Heihe, Tarim, river runoff is mostly contributed by snow melt. Is the framework suitable for these basins?

P6L25, P71, the authors gave subjectively the reasons for the trend (a significant increase in rainfall, recent global warming). I don't see any supporting analysis.

P7L11-15, from Figure 4, I can't see these interesting analyzes. And, please add the AI in this figure.

P7L14-15, this is also too subjective.

P7L20, in Figure 5a, I suggest add an average of 1970s~2000s for each basin. Here, how did you define "continuously"? Obviously, WTA in the Yangtze, Pearl, Min River and Songhua did not increase monotonously.

P7L17-25, these results should be discussed to give the possible reasons.

P8L5, Figure 7 is about water shortage, so I don't know why the authors were talking about surface water availability.

P8L11, water availability is determined by natural runoff, so I can't understand why population can affect water availability.

P8L19, from Figure 9a, I can't see the aggravation of water scarcity in China. This figure is not visual to show this aggravation trend.

P8L25, water scarcity is defined with water stress and water shortage, here, why is it related to surface water availability?

P8L28, fig. 9a and 9c cannot show this competition (at least I don't know how to interpret). And this paragraph was about water scarcity, but the authors were talking about water withdrawal. So it is very hard to understand these sentences.

In Figure 8: in the Liao, Huai, and Qiantang, why were there no upstream, middle, and downstream?

P9L4-5, no analysis supporting the statement here.

P9L16, the possible impacts of the policies on water scarcity in all the basins were not fully discussed.