

Interactive comment on “Responses of natural runoff to recent climatic changes in the Yellow River basin, China” by Y. Tang et al.

Anonymous Referee #1

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After reviewing the article “Responses of natural runoff to recent climatic changes in the Yellow River basin, China” my decision is to accept this document with major changes. Below, you will find some of the elements that contributed to make my decision.

The pertinence and relevance of the study are high. The techniques are appropriate to the scope of the study and sufficient to accomplish the objective. The document is succinct and its organization is appropriate.

In the following paragraphs I will describe some points I suggest the authors to address: In general the document identifies three periods of time characterized by flow regimes called base flow, low-flow, and recent flow. Though the document these flow regimes are taken as independent stages this leads to assume that there is a recovery of the

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flows in “recent” years. Although this is partially correct, the time span of the present study would better identify these conditions as shifts in regulatory processes that in both cases reduce flows with respect to the called base flow (rather than assume a recovery period in recent years). This may change the scope of the paper, since the main issue is what originates this variable regulatory process.

In a similar context, the authors consistently mention the three flow regimes but poorly addressed the implications or the processes that produced those changes within the context of each particular section. In the Results section this is particularly evident due to the lack of discussion. The authors relay on the literature review to support their findings rather than contrast and discuss how similar they were. This discussion will leverage to a better understanding of how water-land-climate processes regulate surface flows in the area.

Regarding the Methodology

As mentioned above, the elasticity technique used is able to provide some insights about why these reductions in flow occurred at different intensities according to the objective of the study. However, a number of questions arise due to the lack of a representation of spatial distributions of precipitation and runoff, as well as the other climate-related variables taken into account in this document.

Since SWAT performs relatively well, should be shown additional elasticity results upstream of the Huanyuankou station. As reader, I would like to see whether those changes in runoff might be attributed to spatial changes in precipitation rather than climate variables. In addition to deeper spatiotemporal assessment of the hydroclimatological variables it is key to illustrate or describe a more elaborated time frame of the recovery projects and changes in land-use. These elements may provide more support to the elasticity assessment and the addressed contribution of the climate variables.

Some particular points along the text

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Between lines 15 and 25 in page 4498 the authors write a series of unclear statements about potential ET, Rn, T, RH and U2. The statements made, should reflect the results obtained; otherwise argue why those results may contradict theory.

It was unclear to me if statistical parameters were calculated with monthly or daily values

The conclusions poorly address some of the climatic factors affecting the “smaller” reduction in the flows with respect to the baseline case.

There are minor grammar issues that will become irrelevant if the authors address the comments and suggestions above.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 4489, 2013.

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