Hydrology and
Earth System
Sciences

Discussions

Interactive comment on "Spatiotemporal response of the water cycle to land use conversions in a typical hilly-gully basin on the Loess Plateau, China" *by* Linjing Qiu et al.

Anonymous Referee #1

Received and published: 4 August 2017

Qiu et al.- Spatiotemporal response of the water cycle to land use conversions in a typical hilly-gully basin on the Loess Plateau, China- studies the hydrological response of land cover and land use change in a hilly-gully basin of the Loess Plateau in China. This region is very lack of water resources and land use and management play very important role in increasing its resilience and sustainability. This study based on modeling approach adds new and important information for effective water resource conservation and management. Meanwhile it would serve as a useful reference with broad impact for similar arid region worldwide. However, the present form is lack of some details on model construction and validation, especially for the dry period simulation. I would also suggest the author check and improve the input data accuracy. English

word selection and expression accuracy need improvement too. There are too many usage of "exhibit" in the text. The following specific comments provide more suggestion for author to consider in their manuscript revision.

Line 22-23, pp1: "These results suggest that the expansive revegetation of sloping land could reduce runoff generation, particularly in woodland areas, but these effects could reduce the soil water volume in the region." What are the percentages of runoff and soil water volume reductions?

Line 6, pp2: change to "considered as?"

Line 23, pp2: "between runoff and increased LULC" what kind of land cover and land use is that?

Line 27-29, pp3: need valid data sources for the climate information.

Line 4, p4: figure 2 shows that the streamflow is about 80% of precipitation. This is against common sense. Pls check your data again.

Line 10-20, pp5: lulc of 2010 was used as baseline. How about the lulc of 1990 and 2000? Did you use these two maps as model calibration and validation? It seems only 2010 map was used for the slope related scenario creation. It is a little bit confusing here. You may need to clarify more on the model and scenario configurations.

Line 29-30, pp5: do you mean the precipitation input miss the streamflow simulations? If so, you may need to prove/show that in a new figure.

Table3: change "Ratio" to "Percentage" for consistence.

Line 23, pp6: it should be "in the same period" and "resulting the small net change"

Line 28, pp8: change "classes" to "types"

Line 11, pp9: what the difference between surface runoff and streamflow?

Line 23, pp9: why cropland has the highest soil water storage?

Line 4, pp10: sloped cropland or sloping cropland? Pls make this term consistent throughout the manuscript.

Line 13, pp10: "transition analysis"? Pretty new and never heard. Pls consider changing it. Otherwise more definition should be given.

Line 24, pp10: change planting wood to afforestation?

The study (Qiao et al., 2017, Woody plant encroachment reduce annual runoff and shifts runoff mechanisms in the tallgrass prairie, USA. Water Resource Research) provides some evidence of water budget difference between woodland and grassland and would be a useful reference for this study.