

## ***Interactive comment on “Assessment of impacts of agricultural and climate change scenarios on watershed water quantity and quality, and crop production” by A. D. Teshager et al.***

**Anonymous Referee #1**

Received and published: 4 April 2016

General comments: The study used a distributed hydrological model (SWAT) to predict the impacts of future climate and land use changes on stream flow, total suspended sediment, total phosphorous, total nitrogen, and crop yields in a small basin in US. The authors used five agricultural scenarios and 72 climate scenarios (eight climate models\*three emission scenarios\*three temporal scenarios) to drive a well-calibrated model. The analysis was then based on these virtual experiments. In general, this is a typical model-based study about predicting the future changes in water quantity and quality. The data and methods used in the study were reasonable, and I think the predicted results were also reasonable and may be a reference for decision-making. Moreover, the manuscript was well organized and written. Thus, I have no major com-

C1

ments about this manuscript.

Specific comments: 1. Why were simulated total suspended solids different for different agricultural scenarios? I think the mechanisms about the TSS simulations in the model should be introduced briefly in section 3.1. 2. I think the major contribution of this study is that the authors analyzed of the combined effects of agricultural land use change and climate change. However, I found that the scientific questions are lacking. Can the agricultural scenarios be completely independent with the climate scenarios? Is it necessary to consider the adaption of agriculture to climate change? Moreover, the basin is too small. Are the conclusion representative for the whole U.S. Corn Belt region?

Technical corrections: P, L7: “Addition research” should be “addition research”

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-86, 2016.

C2