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Discussions

# *Interactive comment on* "Impact of LUCC on Streamflow using the SWAT Model over the Wei River Basin on the Loess Plateau of China" *by* Hong Wang and Fubao Sun

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The ideas in this paper are interesting and the results obtained have some implications for land use regulation and water resources management. However, this MS still needs some improvements before publication. The detailed comments are as follows: 1. Could you add the assessment of model performance for use period (1980-2009) except calibration and validation periods? 2. Could you provide the water balance (soil moisture, ET, streamflow, baseflow etc.) for each scenario in a Table? And try to analyze how ET change? 3. Part 2.2, the LUCC data were divided into six types which included forest land and shrub land. As we know, similar to forest land, shrub land is also important for water and soil conservation in (semi)arid area. So, could you make a comparison about stream flow change caused by forest and shrub land change? Could



you show more data and function about check dams, reservoirs, water channels, and water conservancy projects from 1980 to 2009, even for the calibration and validation periods? I understand this is a virtual experimental (or scenario) study, but the results would provide some implications for land use policy, and therefore need carefully check anything related with hydrology cycle. To my knowledge, there are a lot of check dams for agriculture catchments on loess plateau, which might change hydrology (streamflow) as well. If they are not considered in calibration and validation periods, SWAT model may get wrong parameters for different land use types even if the model results (streamflow) is correct. Overall, this is an interesting study, which would provide potential helps for land use policy on loess plateau. The results of this study might suggest that grain for green measures should be different for different eco-regions, i.e., trees may suit some places while grasses suits others.

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