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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Quantitative contribution of climate change and human activities to runoff changes in the Wei River basin, China" *by* C. S. Zhan et al.

Anonymous Referee #1

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My main concern of the paper relates to the improved climate elasticity method. The authors assumed that over a long period of time, change in catchment storage can be neglected so that the water balance equation can be expressed as P=E+R. They further assumed that the Budyko curve can precisely estimate mean annual evaporation. However, we know that the Budyko curve can be used to estimate mean annual evaporation, but not precisely. The third assumption made here is that any departure from the Budyko curve would be caused by human activities. The fact is that any departure from the Budyko curve could be caused by change in climatic variables, i.e. P and E0 not necessarily by human activities. For example, studies have shown that changes

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in rainfall distribution can affect estimates of evaporation from the Budyko curve. The authors defined RH as the water consumption by human activities and what does it present exactly? Does it include evapotranspiration from crops and reservoirs? What are the effects of these assumptions on the results presented in the paper? I am not convinced that the method described here is an improvement over the climate elasticity method reported in the literature.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 2149, 2014.

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