

Interactive comment on “Dynamics of green and blue water flows and their controlling factors in Heihe River basin of northwestern China” by Kaisheng Luo and Fulu Tao

Anonymous Referee #2

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The focus of the proposed study is on green and blue water flow dynamics and their controlling factors in the Heihe basin in China. The scope of the study is without doubt of broad interest for the audience of HESS. However, I regret to say that neither the proposed methodology nor its presentation meet the standards required for a publication in HESS. The author present mainly an application of SWAT in combination with different standard statistical methods to assess trends in simulated green and blue water components. The presentation of the model results is very brief (0.75 pages), the author mainly declare that their model is suited for the objective of their study and start straight away discussing the trends in simulated flows.

Contrary to the author's statement, I found their results are not so convincing. For in-

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stance the authors evaluate their model on a monthly basis, regardless of the fact that river discharge reveals a strong seasonal pattern. In such a case, and as discussed by Schaefli and Gupta (2007), the null model is not the overall mean of the discharge, but the mean annual cycle of daily discharges. A proper evaluation implied either to benchmark the model against predicted deviations from the annual cycle, or to work at the daily scale. Secondly, the authors compare simulated and annual ET totals to underpin that their model is well suited to discriminate green and blue water flows. Firstly, I wonder how the authors estimated ET annual totals, unfortunately the manuscript does not provide any information on the data sources which are used to drive and test the model. If their ET estimation is based on the long term water balance (P-Q), this cannot be regarded as independent assessment. Secondly, one cannot conclude to have a model which reproduces green water flow dynamics well, without comparing the model against dynamic data.

In conclusion, I cannot recommend further treatment of this submission in HESS. The authors might consider either to largely enhance the scientific depth of their study or to submit their work to a more applied journal.

References: Schaefli, B., and Gupta, H. V.: Do nash values have value?, Hydrological Processes, 21, 2075-2080, 10.1002/hyp.6825, 2007.

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