

Interactive comment on “Trade-offs between crop-related (physical and virtual) water flows and the associated economic benefits and values: a case study of the Yellow River Basin” by Pute Wu et al.

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We thank Referee #2 very much for comprehensive comments on the value estimation for crop production and relative water use, which is the one of the three main parts of the current study. The comments give valuable thoughts to improve current methodology and manuscript. We highly agree with Referee #2 on the marginal effects of irrigation water on crop production. However, we hardly believe that the green water should not be seen equally as blue water. The marginal effect of the irrigation water is the production improvement from the level under rain-fed cropping. The current pro-

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duction level cannot be gained only by irrigation water as well. Apparently, every drop of water consumed in crop growth, wherever it comes from, contributes to the final economic production and values. But we admit and like to follow the comments that the proportion of the final production by blue water needs to be accounted as the production under irrigation minus the production under rain-fed cropping in a same place. So that the current equations 4 and 5 will be corrected in the revised manuscript (if we can get the valuable chance). Meanwhile, referring the comment “If the authors like to compare the efficiency of green and blue water, the production amount by green water should be reduced by considering the proportion of blue water contribution to the total production at least.”, we did that in the current study.

The current study purpose is to investigate the trade-offs between the physical/virtual water flows and associated economic benefits and incomes related to crop production and consumption for a geographic area addition to evaluation of the related physical and virtual water flows. For sure, the irrigation price is definitely not defined by the water endowments but the water supply cost and local water price policy. It cannot be denied that irrigation water price is one of the key economic cost by water users. By comparing the water and economic efficiency, it is possible to evaluate whether the water use in a region is sustainable in terms of both economy and water resources.

Secondly, referring the comments on discussion on cropping pattern with high economic efficiency or not in p. 13, L14-17, we are afraid that the not good writing misleads the understanding. The discussion aims to highlight the importance to look simultaneously the economic and water efficiency in crop production and cropping pattern. Increasing the economic efficiency in crop production is not only by growing economic crops with higher prices, but also to reduce blue water footprint (i.e. reducing the water fee) or increasing the use efficiency of green water (which is for free in terms of water price) in the same field.

Therefore, we think that the above issues commented by Referee #2 can be resolved, corrected and improved if we can get the chance for further revision.

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We thank again Referee#2 very much for the efforts and time cost as well as the very valuable comments to improve the current study.

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