

Interactive comment on “A novel data-driven analytical framework on hierarchical water allocation integrated with blue and virtual water transfers” by Liming Yao et al.

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Received and published: 31 October 2019

A novel data-driven analytical framework on hierarchical water allocation integrated with blue and virtual water transfers

The authors proposed a bi-level methodology that combines two game theoretical models: Stakelberg competition and Nash-Harsanyi bargaining to optimize the water usage. The model is applied to a case study in the Chinese region of Hetao, a sensitivity analysis is carried and policy making insights are obtained. In my opinion the idea of combining Stakelberg competition and Nash-Harsanyi bargaining models to deal with the problem of water management is interesting and original, as far as this referee knows,

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for this reason the paper could be accepted for publication. Therefore minor revision of the current version of the paper is needed. Comments and suggestions are given below.

1. I do not understand why the authors need the disagreement point of the leader in the Stakelberg model because the leader does not take part in the bargaining procedure of the lower level. Please, add some more explanations. 2. Conclusion section is a little lengthy and therefore needs to be shrunk. Too much information would distract people's attention. 3. The heading titles should be revised, such as Section 5.1 Which sector largely contributes to water stress.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-389>, 2019.

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