

Interactive comment on “Changing global cropping patterns to minimize blue water scarcity in the world’s hotspots” by Hatem Chouchane et al.

Anonymous Referee #2

Received and published: 6 December 2019

The study on "Changing global cropping patterns to minimize blue water scarcity in the world’s hotspots" provides a new view of possibility to reduce crop-related blue water footprint and diminish the severe blue water scarcity worldwide. Plenty work has been done in this study, however, I feel that some parts in the text require careful revisions and improvements before it can be further considered for publication in HESS.

1. Line 31, you mentioned in the abstract 'changing spatial cropping patterns and international crop trade...', but just showing the 'spatial cropping patterns' changes. It could be much better to look at further on hotspot countries in terms of the responses in trade patterns (just changes in crop trade balances).

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2. Line 111, in the introduction of study content, information on how many types of crops considered is lacking.

3. Line 112-113, the first and second constrains seems conflict each other.

4. How do you define the 'cropping pattern' η_{ij} ?

5. In the analysis, how the green water limits were considered? I am wondering if there are some places with increasing green WFs but have insufficient green water availability?

6. Line 213, for China you show an 4% increase in BWC. It looks tiny for the whole country, but could matter when such increases in BWC happend in a very severe blue water scarce places within the country. At least some discussion regarding this should be in somewhere of the text. In addition, I am also worry about the assumptions of increasing harvested area per crop so that it could resulted in increases in harvested area in each country, or I could be wrong in understanding the first assumption. Given that for example in China, the national policy is controlling not reducing the total crop harvested area to a level with no possibility to increase anymore... The issue is also important for developing countries facing rapid urbanization in land. Maybe better to discuss this in some points.

7. I get confusions when reading the Discussion. It looks too much limitations to get published, too 'optimized' beyond the real. It may be nice to look into the mass of results and pick some countries with results that really meaningful for local national water management. Please carefully consider about how to interprate in the discussion part. Another limitation should be in caution is the issue related to green water availability, scarcity and limits.

minor comments: 1. Line 61, better to give the full name of WEF, either in the reference list. 2. Table 1, the initial sources of harvested areas or productions should be listed as well.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-461>, 2019.

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