

Interactive comment on “Virtual water trade and water footprint of agricultural goods: the 1961–2016 CWASI database” by Stefania Tamea et al.

Anonymous Referee #2

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I admire the hard work by authors to deal with numerous data for the analysis of the long-term temporal change of water consumption for crop production. This sort of work is never done by anyone before. However, I have critical concerns on the values of this work that qualify this manuscript to be published in scientific journals as the original article.

- Estimation of temporal changes of water consumption for crop production Authors adopt a very simple approach to estimate water consumption for crop production in a year from 1960-2016; water consumption for the production of a crop by Mekonnen and Hoekstra 2010 is simply extrapolated by multiplying the ratio of crop yield in a year

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to that in the year referred by Mekonnen and Hoekstra. This is too much simplified for the analysis of temporal changes of water consumption for crop production. Water consumption is highly dependent on the climate condition of the production area (e.g. precipitation amount and pattern, temperature, soil conditions, etc.), which can temporally vary in a production area. The approach adopted by authors ignores such crucial aspects of water demand for crop production, which would not make any sense and not give any value of the results. Because it is too far from the real condition. The results are just estimation based on the very much simplified assumption, which can not give any legitimacy as the analysis of the past trend of crop water consumption.

- The value of temporal analysis of water consumption of a crop The analysis of the temporal trend of water consumption for crop production is interesting at some point, but there is no clear implication for the users of this data. If we know the past trend of crop water consumption, who can use these data, and what purpose can they have for better water management? Authors simply state that such temporal analysis of crop water consumption has not yet done anywhere, however why we need to know such a temporal trend and how can we use such information to improve our water management? Authors mention the temporal trend of crop water consumption in the results section, but no deep interpretation and implication is given. The only one clear message is crop water consumption per unit production is mostly improved globally, but this is obvious because agricultural technology improves from the past, which can be imagined without this sort of analysis. This concern is strongly related to the first point I raise.

- Crop water consumption is not water footprint Authors use the term, water footprint (WF), but in fact, they only account water consumption for crop production (excluded trade related processes, for instance). The water footprint is defined by the ISO standard 14046:2015, which is obviously different from what is done here. Authors should be careful to use the terms "water footprint".

There are many other minor points, but at the points above, I can not recommend this

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article to be published. The work needs more substantial efforts to plan and implement again.

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