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Interactive comment on “Globalization of agricultural pollution due to international trade”

by C. O'Bannon et al.

Anonymous Referee #3

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This work presents a novel analysis on the network's dynamics of the global gray virtual water trade among countries. It is an original contribution that may help us to have a starting quantitative framework to study the effect of globalization on water pollution due to agricultural production.

I substantially agree with the comment of professor Savenije about the value of this paper. Beyond the corrections regarding the unit of measure of VW flows I have few other comments.

1) pag. 11225. I think that the words "clustering and dispersion" are a bit too vague and it is difficult to grasp the effect of the non linear relation in Eq. (2). The exponent of the power law indicates correlation between topology and weighted properties of

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the network (see Barrat et al, PNAS 2003). Correctly, an exponent greater than one, means that there is indeed non trivial correlation and that "not only would nodes with higher degrees have more export links but each link would also carry on average a higher volume of virtual water", i.e. the backbone of the networks is dominated by relatively few nodes (see Suweis et al., GRL 2011).

2) pag. 11229 line 22. For future projection of virtual water transfers the correct references are Suweis et al, GRL 2011 and/or Dalin et al., GRL 2012. Possible hint: if from the analysis of the VW flows from 1986–2010 you find that the ratio of green+blue and gray virtual water growth is somehow constant, then you can use the mentioned future projections of VW to have a qualitative estimate of gray water transfer.

3) In the conclusions you raise concerns related to the fact that consumers are not completely affected by the environmental impacts of their choices. However, at pag. 11228 line 26 you find that the Gini coefficient is slightly decreasing over the 25 years. Aren't these finding somehow indicating an improving in the responsible consumer behaviors? Moreover, same pag. 11228 line 28: "External grey water footprints were highly unequal, but only accounted for 14.1% of the inequality in the total grey water footprints because external water footprints are small compared internal water footprints and internal grey water footprints had lower inequality". Does it mean that up to now, globalization on water pollution due to agricultural production is not impacting so much national water pollution?

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