

Interactive comment on “A global and high-resolution assessment of the green, blue and grey water footprint of wheat” by M. M. Mekonnen and A. Y. Hoekstra

J. Liu (Editor)

water21water@yahoo.com

Received and published: 1 July 2010

This article presents very interesting results on green, blue and grey water footprint of wheat with a high spatial resolution. Both the reviewers have provided constructive comments. I suggest a moderate revision by fully considering the comments from the reviewers. In particular, the following issues need to be addressed:

(1) grey water assessment: both the reviewers raise concerns about the grey water footprint. One reviewer challenged the method used. A clarification of the method should be included in the revised version. It seems that using the leaching-runoff fac-

C1287

tion is the most straightforward way to estimate grey water footprint, but more accurate methods are expected at a later stage (maybe out of the scope of this article). The N leaching in cropland has been estimated on a global scale with a high spatial resolution in a recently published article [Liu et al., 2010. A high-resolution assessment on global nitrogen flows in cropland. Proceedings of the National Academy of Sciences of the United States of America. Vol 107 No. 17. Page 8035-8040]. This article and the methods should be briefly mentioned in the revised manuscript. The second reviewer argued that green/blue water footprints are not on the same dimension to grey water footprint. The authors need to address this issue in the discussion section.

(2) Discussion section: this section needs to be strengthened based on the comments from the second reviewer. Impacts of water use on local water resources and environment should be analyzed.

(3) Green and blue water footprint has been estimated in high spatial resolutions on a global scale previously [i.e. Liu et al. (2009) and Siebert and Doell (2010), see comments from Reviewer 2]. The contributions of this article include (a) a new approach for the estimation of green and blue water footprints (b) assessment of grey water footprint. (c) Water footprint assessment from both the production and consumption perspectives. The authors need to explicitly mention the work that has been done previously in this field, and compare the results in different articles more comprehensively [see comments from Reviewer 2].

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 2499, 2010.

C1288