

Anonymous Referee #2 Received and published: 23 January 2017

This is an interesting manuscript, and the discussion of the water footprint of each kind of crops is beneficial to design the current crop structure to save agricultural water consumption. In my opinion, it can be accepted after moderate revision. The specific comments are below:

Response: Thanks for the reviewer's comments. We resubmitted the manuscript after our careful modification. The responses of the comments are as follows,

1. The newly published papers as reference should be added, the newest papers are 2015 papers in the reference list.

Response: Ok, we have added some newest papers, which were published in 2016.

2. The conclusions should be enriched according to the research aims given at the end of the discussion section. The research result of the first aim is missing, and should be added in the conclusion section.

Response: Good idea, we modified the discussion section further and summarized the findings of this study.

"This study analyzed the WF of crop production in the HSP, and evaluated its temporal variation from 2000 to 2012. In the 13 years, the main crops production consumed about 604.8 km³ water, with 288.5 km³ of groundwater, and the WF of the crop production showed a downtrend yearly. In the local main crops, winter wheat, summer maize and vegetables are three leading crops, their WF, WF_{blue}, WF_{green} and WF_{grey} accounted 76.2%, 73.7%, 74.2% and 81.6% of the total, respectively.

In this region, adjusting crop farming structure was an important means to protect groundwater resources, so we evaluated the reasonable farming structure by scenario analysis of the main crops WF in this plain and suggested that: with about 20% of arable land cultivating winter wheat-summer maize in rotation, 40% cultivating spring maize, 10% cultivating vegetables, 10% cultivating fruiters, without rice and other crops unchanging (i.e. scenario 6) were available to promote the sustainable development of agriculture in this region, which not only can protect approximately 14.5% of groundwater resources (compared to the baseline), but also can ensure the local supply of wheaten food, vegetables and fruits."

3. The authors gave eight scenarios, why? The authors should give the reason to give eight scenarios.

Response: Reasonable question. The scenarios were set according the crop structure change from 2000 to 2012 and considering the high underground water consumption of rice and winter wheat per unit and the lifestyle based on pasta of the local residents. In these 13 years, the planting area of winter maize-summer maize had a downtrend and it decreased about 35% from 2000 to 2012; rice decreased 31.61%, spring maize increased 34.13%, vegetables increased 26.05%, fruiters increased 33.04%, separately, while cotton, peanut and others had a little change.

4. In the discussion section, that 4.3 the main shortcomings of this study is just uncertainties of the results, not shortcoming, so the title should C1 HESSD Interactive comment Printer-friendly version Discussion paper be corrected.

Response: Ok.

5. The authors discussed the water footprint for specific crop types. However, I cannot find the data source of water consumptions of each type of crop in “2.2 data source” section. It should be given.

Response: The water consumption of each crop was calculated by the WF equations, and WF can reflect the water consumption. And the data of the structure of crops was added in this section.