Hydrol. Earth Syst. Sci. Discuss., 8, C6431–C6435, 2012
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Hydrology and Earth System Sciences Discussions

Interactive comment on "Combined assessment and regulation on ecological land use and water demand of the river system: a case study in Luanhe River, North China" *by* D. H. Yan et al.

Anonymous Referee #2

Received and published: 22 March 2012

General comments:

The paper proposed a framework to assess the ecological land use and water demand of the river system, with the Luanhe river in China examined as an example. The paper is interesting and innovative in some aspects; however, I had many difficulties in understanding some of the terminologies and methodologies, and I believe that some results (Section 4.2 and Section 4.3 in particular) are based on highly speculative or arbitrary arguments. In addition, when I went through the manuscript, it constantly occurred to me that some of the evidence/numbers/data presented by the authors just

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came out of nowhere. I assume the authors must have obtained them from other papers or sources but forgot to put on the correct references, or the authors were trying to explain some of the figures but forgot to mention which figure they are referring to. Last but not the least, I fully understand how difficult it is for a non-native speaker to write a scientific paper in English, but it is my responsibility to point out that there are numerous grammar errors and language issues in the manuscript.

Specific comments: (1) I suggest the authors to change the title to “Assessing ecological land use and water demand of river systems: a case study in Luanhe River, North China”. It is certainly nice if the scientific work can have an impact on regulations and policies, but as far as I understand, regulation is not a central focus of the paper, which was only mentioned at a few places. I also suggest change “the river system” into “river systems” to make it sound broader since the authors have already added “a case study in Luanhe River, North China” to restrict their scope.

(2) I think the authors should try to avoid using past tense in general. Please revise the manuscript accordingly.

(3) Page 9230, line 1, add “demand” after “ecological water”

(4) Page 9230, line 2, always delete “the” before “river systems”, please revise the manuscript accordingly.

(5) Page 9230 , line 3, delete “preliminarily” and please add a definition for “eco-environmental functions”

(6) Page 9230, line 7, change “i.e.” to “namely”

(7) Page 9230, line 8 and 9, change “combined with the main functions of all functional areas” to “Considering the overall eco-environmental functions”.

(8) Page 9230, line 11, please change “was” to “is”

(9) Page 9230, line 18, please change “downwards” to “starting”

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(10) Page 9231, line 1, change combined to complex

(11) Page 9232, line 9, please do not use “researches”, change them to “research”

(12) Page 9232, line 30, why do you want to add the sentence starting with “moreover”?

(13) Page 9234, line 3, add “of” after comprise

(14) Page 9234, line 8, change increased to increasing

(15) Page 9234, line 17 to 20. How can you come up with these numbers such as 40.6%? Are you referring to Fig. 10? How do you justify “obviously decreased”?

(16) Page 9235, line 9. First, you jump to Fig. 2 without mentioning Fig. 1, did I miss the Fig. 1? Please clarify. Second, what do you mean by sections in Fig. 2 since there is no “section” in the legend? Are you referring to sites?

(17) Page 9235, from line 25. I don’t get the simple algebra here. You mentioned 49 kinds in total, and then 36kinds were aquatic insects, 5 were oligochaeta, 5 were mollusk, and 4 were left. Then 36+5+5+4=50 not 49! The same confusing thing happens to the percentages. Please clarify.

(18) Section 3.1.2, the authors listed a number of figures such as 12.61million at line 4 on page 9237. Please indicate the sources for these figures and please revise the other parts of the manuscript accordingly.

(19) Page 9238, line 12, delete “a sort of”

(20) Page 9238 and 9239, it seems that you used Wi to indicate both water quality and the section width. Please use two different symbols for the two variables.

(21) Page 9239, Eq. 1, does Eq. 1 also come from Duan(2011)? Please derive the equation or list the reference for it as well as Eq. 2. You should probably also list the functional forms for all the f functions in Eq. 1? Otherwise, the reader will not understand how you generate figure. 5.

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(22) Page 9240, line 10, I can accept the seepage rate to be 0.15 as a rough estimate, but please explain why you choose this value. Why not 0.18? I think you can either refer to the literature or discuss the soil properties and how they impact the seepage rate.

(23) Page 9240, line 20 to 25. Again, please explain how you get these numbers such as 500mm? And please clearly indicate units, 500mm/year or 500mm/2years?

(24) Section 3.2.4, I feel a little bit surprised that you don't have a single reference in this section? I admit it is possible that the classification is completely new and you don't need a reference. But please indicate clearly for example by saying that it is the first time that this framework is proposed. You might also want to mention Figure 4 in the text (I did not see Figure 4 mentioned in the text but I could have missed it somewhere).

(25) Pagge 9248, line 10-15. Where do these numbers come from?? Fig. 5?? How do you generate Fig. 5??

(26) Section 4.2, I don't understand at all how do you come up with the numbers in this section! Please explain them(2100km, 728km, 533km and so on) clearly.

(27) Similarly, Section 4.3, I don't understand at all how do you come up with the numbers in this section! Please explain them(876.98km2, 1745.52km2and so on) clearly.

(28) What I found confusing is that when the authors mentioned "as shown in Table 2", I found neither of the two numbers (284.25 and 17.35km2) were listed in the Table!

(29) In addition, in section 4.3 there are two 1745.52km2, (according to the authors) one is the area of restrictive ecological land use, and the other is the ecological land use suitable for development. Please clarify why these two values are exactly the same.

(30) Page 9254, line 14, the authors mentioned they would like 391 million and 820 million m3 as the controllable indexes for minimum and suitable water demand(page 9250 line 6), why do you change the suitable ecological water demand to 893million

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while maintain the minimum water demand as 391million here (also in Fig. 10 and 11) ?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 9229, 2011.