

Interactive comment on “Determination of the Optimal Lake-Marsh Pattern in the Lake-Marsh Wetland System based on Ecological Land Use and Ecological Water Use” by Wuxia Bi et al.

Anonymous Referee #2

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This study presents a methodology to determine the optimal lake-marsh proportion (not pattern) in a lake-marsh system based on maximising ecosystem services. In my opinion, the paper presents an interesting idea but the implementation is not up to standards for a scientific publication like HESS. There are two main issues of concern: the ecosystem valuation and the optimisation procedure. Both aspects have almost inexistent explanation and there is not enough information to assess the quality or the suitability of the methods used.

The authors used ecosystem valuation estimates taken from Li et al., (2014) and Zheng and Wu, (2015) included in their table 1. The second reference is in Chinese, but the

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first one has a collection of data from several lakes in China (not including the study site) not exactly covering the range of services assessed by the authors but still having some similarity. My concern is that Table 1 has about 20 parameters that are site specific, which are later provided in Table 4. The values of the parameters in table 4 are not justified or even compared to the literature (Li et al., 2014 for example shows different values).

The other important aspect that I believe requires more work is the optimization methodology. The exact method is never described or discussed (apparently they used the GAMS software) and Figure 2 is hard to understand without a clear explanation.

Another aspect that have not been included and should be taken into account is that the model assumes that all inundated marsh area has the same ecosystem value, neglecting the fact that not all marsh inundated area will be actually colonised by marsh. Increases in depth of water may generate more inundated marsh areas but it takes time for the colonization to occur.

Last, the paper contains almost no hydrological data. How can the monthly patterns of figure 6 can be analysed without hydrological data? The authors refer to Yan et al (2009) for more hydrological information, which I could not find, but a basic hydrological analysis should have been included in the manuscript

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