

Dear Reviewer,

we thank the reviewer for appreciation of work and for the comments. We believe the current comments can greatly help improve the quality of the paper. Please find our responses in the attached file.

General comments

The authors used FAO-56 Penman-Monteith equation (FAO56-PM), multiple stepwise regression (MLR) and Kohonen self-organizing map (K-SOM) techniques to estimate daily pan evaporation (Ep) in three treatments. And in an six-season experiment. The 10 modelling approach included six measured meteorological variables were compared and evaluated. The results showed that the MLR method provided close compliance with the observed pan evaporation values, but the K-SOM method gave better estimates than the other methods.

I really appreciate the huge work made by the authors. However, I have some questions about the innovation of the research method and the purpose of this study. First, the ,methods of FAO-56 Penman-Monteith equation (FAO56-PM) (Allen et al., 1998), Kohonen self-organizing map (K-SOM) techniques (Kohonen, 1982) and multiple stepwise regression (MLR) are classic, but also relatively old methods. Predecessors have done a lot of research and published a lot of relevant papers on the comparison of these methods. If only a few traditional, classical methods are compared and discussed, I think that there is not enough innovation in terms of methodology to be published in HESS, and there are already many ready-made papers on comparative studies of evaporation calculation methods. In addition, the authors said that “there is little information in the literature on how submersed macrophytes affect the evaporation of a lake” in Introduction (Lines 64). Is this statement supported by the literature? (Wang, J.H. 1994. Effects of aquatic plants on water surface temperature and evaporation. Arid Land Geography, 17(2), 3. doi: CNKI:SUN:GHDL.0.1994-02-009). **This article is not available in any traditional datanbase (scimago, google scholar, Sci-hub. se). Only the Journal name was found here: <http://english.egi.cas.cn/pub/alg/>. But even in the search window, the article is missing.**

The aim of the study was to investigate the effect of littoral sediment and macrophytes on lake evaporation and not an introduction of a new method in pan evaporation estimation. The previous results in FAO-56 Penman-Monteith equation (Allen et al., 1998), Kohonen self-organizing map techniques (Kohonen, 1982) and multiple stepwise regression are classic methods, highlighted widely by citations in the study. They are the tools in analysing the effect of sediment and macrophytes in pan (lake) evaporation estimation only. The novelty of the paper is the way how the evaporation estimation is carried out.

The second main aim of this paper was to estimate daily Ep using FAO-56 Penman-Monteith (FAO56-PM), Kohonen self-70 organization map (K-SOM) and multiple stepwise linear regression (MLR) methods. Since this purpose is only the comparison and evaluation of several traditional methods, and I personally still feel that the innovation is not sufficient for HESS.

This work’s novelty is not the use of a new statistical method. We complete the new aim of the article as follows: “Up to our best knowledge, there are no studies attempting to project the lakes evaporation using traditional A pan measurements, taking the macrophytes- and sediment-related factors into account. Lake evaporation study is missing under such climate conditions as our experimental site.”

Specific Comments

1. English language needs to be modified. I found several unclear sentences that make it difficult to understand the analysis and results carried out.

Thank you for your comment. Although, this manuscript was corrected by an English native speaker. Correcting the paper, we repeat this process. It would be useful to know which are those unclear sentences.

2. The description at the beginning of the Abstract is too simple and empty, two to three sentences should be used to focus on the shortcomings of the current study and the innovation of this study.

The Abstract will be completed to highlight the main novelty and the mechanical impact of seeded macrophytes on the pan evaporation.

3. Some of the references in the Introduction are too old. It is suggested that the author update some relevant studies recently published.

We added 25 new references to the Introduction.

4. The font resolution in Figure 1 is too low to see the relevant text clearly. I suggest the author to redraw it.

Done.

5. The numeric font in equation 2 is suggested to be Times New Roman, and the rest of the formula is the same.

Done. Thank you for your comment.

6. In Materials and methods, it would be better to give specific steps about the experimental design of this study, the current presentation is relatively sketchy.

We complete the materials and methods with more exact steps of the experimental design as follows:

“The used sediment was psammal/psammopelal ($\varnothing > 6 \mu\text{m} - 2 \text{mm}$, sand/sand with mud) with the following composition: quartz, calcite, aragonite, dolomite, muscovite, chlorite, feldspar, smectite, kaolinite and pyrite (Anda et al., 2016). One Class A pan was treated with a 0.02 m thick sediment–covered bottom.

Macrophyte samples were gathered from lake Balaton (Keszthely Bay) with similar water depth (0.6–0.8 m) each year. The amount of crop density was controlled monthly without variation in the green mass weight of crops between natural habitat and “seeded” US Class A pans. In the experimental area three species of submerged, freshwater aquatic macrophytes: *Potamogeton perfoliatus*, *Myriophyllum spicatum* and *Najas marina* was colonized.”

7. The Results and Discussion session. I found some good results from this study, but unfortunately the authors' description of these results is too brief (Both in Figures and Tables)and suggest a more specific analysis and evaluation of the results. And the discussion was not in-depth enough and was only a brief description of the Results. It is recommended to fully evaluate and discuss the results obtained by several different methods used in this study in terms of the mechanism of influence.

The results will be analysed in more detail accounting the following:

We plan to extend the description of the results with weather conditions of the studied six seasons using Thornthwaite index, TI (T_p). In the next step, the evaporation will also be analysed based on TI. We discuss differences in pan evaporation based on actual weather conditions.

A more specific analysis and evaluation of the missing discussion of pan evaporation related to thermal layering and surface water temperature will also be added. These basic observations in terms of the mechanism of influence will be completed to Abstract as well.

8. The content of the conclusion should not be a simple retelling of the results and discussion, but also a more in-depth explanation of the scientific significance and potential application value of the study, rather than the kind of formulaic statement in the last paragraph of the conclusion.

Potential application value of the study is validating presence of littoral sediments and macrophytes in evaporation estimation, the amount of lost water by lakes that can easily be accounted in the prediction of wetland performance. Results from the study may also be contributed to the protection of aquatic plants and environmental management of lakes in other regions of the world. Management strategies aiming to estimate accurate water budget terms including evaporation can be a realistic aim for preventing further inaccurate water loss projections.

9. I am not quite sure if the current hess format requires line numbers to be marked every five lines, which causes some reading difficulties, if not required by the journal format, it is recommended that authors mark all line numbers.

The authors used the Copernicus_word_template format recommended by HESS.

Sincerely,

Brigitta Simon-Gáspár