

Dear Reviewer:

We greatly appreciate your thoughtful comments and suggestions that helped us to improve the manuscript. Based on your comments, we have revised the manuscript accordingly and we believe that your comments have been addressed. In the following, we give a point-by-point reply to your comments.

Specific Comments:

(1) Add spaces before and after some equations. The spacing needs to be consistent throughout the paper.

Response: We used LaTeX instead of WORD to prepare this manuscript, and under such circumstance the layouts of these equations are automatically controlled by the official LaTeX template. It seems that, by default, the template places equations on the leftmost edge and places corresponding numbers on the rightmost edge, which results in inconsistent spacing. We can not adjust the layouts since we're not allowed to modify the original class file. However, we found that we aligned several equations (Eq.14; Eq.25 - 29) based on equal sign "=" which generated some spacing before these equations. In the revised manuscript, we have canceled the alignment to remove the spacing.

(2) Carefully edit the paper. Space needed between some sentences which can be easily found.

Response: Like equations, both line spacing and paragraph spacing are controlled automatically by LaTeX template. After checking on the manuscript, we found that the line spacing of Page 4 Line 17-25 is larger. This is because we used the enumerate environment to organize this part, and in the revised manuscript we used the ordinary method instead, which helps to reduce the line spacing.

(3) I would like to suggest the authors to use a title like " Improving the XAJ hydrological model by adding energy simulation". The major improvements were made to simulating the energy flux and have not made significant change to the mass balance.

Response: We are sorry for the misunderstanding we raised. The novelty of this study include:

- 1) Development of the energy balance scheme suitable for the XAJ model
- 2) Fully coupling of the mass and energy balance in the model

We have revised the Section 2.2.1 to explain the methodology more clearly. Moreover, we also revised the introduction part to better justify our motivations.

(4) page 1 line 15: Change "application fields" into applicability.

Response: We have changed "*application fields*" into "*applicability*" in the revised manuscript.

(5) page 2 line7: add ', " before and

Response: We have added comma before "*and*" in the revised manuscript.

(6) page 3 line 1: change should be into needs.

Response: We used "needs" to replace "should be" in the revised manuscript.

(7) page 3 line 22: delete by

Response: We have deleted “by” in the revised manuscript.

(8) page 8 line 24: Have you considered the time difference of water concentration of different cells in the aggregation procedures?

Response: We didn’t take consideration the time difference of water routing when aggregating the runoff yield. The time difference you mentioned is considered, at each element area, in routing simulation by several liner-reservoir components, which represents the “lumped” effects.

(9) page 13, line 3: change plotlted into plotted

Response: Sorry for the typo and we have changed the word “plotlted” into “plotted”.

(10) page 14 line 15: change “,” before Moreover into “.”

Response: We have changed the “,” into “.”.

(11) page 15 line 5-8: simplify this sentence. This sentence is too complicate and very confusing for reader to understand.

Response: We have simplified the sentence.

(12) page 15 line 21: change solved into simulated

Response: We have changed “*solved*” into “*simulated*” in the revised manuscript.

(13) page 15 line28: change “ matched with the observed runoff well” into “well matched the observed runoff”

Response: We have changed “ *matched with the observed runoff well* ” into “*well matched the observed runoff*” in the revised manuscript.

(14) page 16 line 4: change can help into helps

Response: We have changed “ *can help* ” into “*helps*” in the revised manuscript.

(15) page 16 line 6: delete “ may help to”

Response: We have deleted “ *may help to*”.

(16) this reader would like to suggest authors to minimize the uses of “we” in this paper.

Response: We have deleted several “*we*” in the revised manuscript.

Xingnan Zhang

On behalf of all co-authors