

Interactive comment on “Improving the Xin’anjiang Hydrological Model Based on Mass-Energy Balance” by Yue-Hao Fang et al.

Anonymous Referee #2

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This paper is well written and has presented significant improvement to the Xin’Anjiang Model. The original XAJ model has been widely applied in flood forecasting in South part of China and has provided reasonable results. However, the XAJ model has known issues in parameterizing some of the important variables in mass balance. Moreover the original XAJ model failed to model the energy exchange of water, e.g. the ET was not modeled physically. This paper have made significantly improvements in the energy flux components parameterization and thus physically simulated the ET using the widely available remote sensing data nowadays. From the modeling results, the improvements are promising and are acceptable into operational applications in flood forecasting. The improvements also extend the applicability of the XAJ model which may be applied into arid or semi-arid area although more work is needed before proven. This reader suggest the authors to conduct more testing work beyond this paper in the

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future, which will demonstrate how the XAJ-EB performs in different circumstances. Although the paper is well prepared, this reader suggest the author to carefully edit the paper before accepted for publications.

Specific issues:

- 1) Add spaces before and after some equations. The spacing needs to be consistent throughout the paper.
- 2) Carefully edit the paper. Space needed between some sentences which can be easily found.
- 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.
- 4) page 1 line 15: Change "application fields" into applicability.
- 5) page 2 line7: add ', " before and
- 6) page 3 line 1: change should be into needs.
- 7) page 3 line 22: delete by
- 8) page 8 line 24: Have you considered the time difference of water concentration of different cells in the aggregation procedures?
- 9) page 13, line 3: change plottled into plotted
- 10) page 14 line 15: change ", " before Moreover into "."
- 11) page 15 line 5-8: simplify this sentence. This sentence is too complicate and very confusing for reader to understand.
- 12) page 15 line 21: change solved into simulated
- 13) page 15 line28: change " matched with the observed runoff well" into "well matched

the observed runoff"

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

15) page 16 line 6: delete " may help to"

17) this reader would like to suggest authors to minimize the uses of "we" in this paper.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-516, 2016.

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