

## ***Interactive comment on “Contrasting roles of interception and transpiration in the hydrological cycle – Part 1: Simple Terrestrial Evaporation to Atmosphere Model” by L. Wang-Erlandsson et al.***

### **Anonymous Referee #5**

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This paper describes a new evaporation scheme STEAM (Simple Terrestrial Evaporation to Atmosphere Model). STEAM distinguishes between the different evaporation fluxes. First, a validation of evaporation from STEAM is provided. Then, some topics related to evaporation are addressed in this study, such as time scale of transpiration and impact of land-use change on evaporation.

#### General comments:

This paper is very well written and presented.

The results presented are interesting. However, they are presented as if it was an evaluation of the model (e.g Section 5.1., 5.3.2., 5.4.). It is difficult to understand what

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the new scientific findings are. I suggest to put the results into a broader context, to highlight the importance of the results and the new scientific insights. This might need more literature research and will probably result in a longer version of the paper. I think that for readers of Earth System Dynamics, this longer discussion of the results and a significant reduction of the model description (Section 2.-4.) would be more interesting. Some of Sections 2-4 can go into the Supplementary information.

I think the paper would also benefit if one experiment was selected and elaborated on extensively (e.g. on residence time scales), while another experiment is chosen for an independent, shorter paper (e.g. on the effect of land-use changes on evaporation and evaporation partitioning). This is just a suggestion, and I leave it to the authors to decide how to improve the scientific value of this paper beyond model evaluation.

The comparison between STEAM and other models for evaporation should be elaborated on in the introduction. Further, several very interesting applications of STEAM are mentioned in the text, but I think it would be desirable to explain these benefits a little more detailed (e.g. how can it be used for atmospheric moisture tracking?).

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