Hydrology and Earth System Sciences Discussions

Interactive comment on "Modeling and measurement of two-layer-canopy interception losses in a subtropical mixed forest of central-south China" *by* G. Zhang et al.

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The Authors present the application of a two-layer canopy interception model to a Chinese subtropical forest stand.

When looking at the structure of the paper there are three major issues: 1. From the introduction it is not clear what the novelty is of the authors' contribution. Application of a model to a new location by itself is not enough to warrant publication in HESS. Possibly the combination of the Gash-model and the spare Gash-model is novel. The authors should then say so and support this first application of the dual model by references. 2. The Discussion part is overly long and often reads like a review. The authors should keep to their own results and only refer to the literature when relevant. 3. The

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English should definitely be improved, i.e. by letting a native speaker look at the paper. Furthermore, to improve the readability the authors are encouraged to not repeat all figures that are already in table, but only mention the main results.

When considering the content of the paper I share the three major concerns of the reviewers: 1. What is the reason for application of the sparse model to the under story and the original one for the top canopy, while the gap fraction of the top canopy is larger? 2. The authors should not only report the average observations, but also the variability between individual gauges and plots. 3. The authors calibrate and verify an event-based model on time-averaged observations, while previous literature (mentioned by reviewer #2) has analysed the problems with that. The authors should thus analyse the uncertainties involved, possibly recalibrate their model on time series (perhaps they have these) and analyse the degree of uniqueness of their estimated parameters.

Some specific remarks (see online paper): 1. Page 1999: the 12 throughfall collectors are 1 m above ground. Does this mean that they are at located without sub-canopy? 2. Rutter et al, 1975 and van Dijk and Bruijnzeel, 2001 are not in the references. 3. Page 2002, line 19: should it be C=S instead of C >S, as C<=A at all times? 4. Table 5: difficult to read; it would be better to replace it by a Figure. 5. Page 2008, lines 2 to 8: this is a puzzling paragraph, because I would think that if canopy evaporation E is under-estimated, canopy interception will be under-estimated as well, not over-estimated as stated here? 6. Page 2008, line 23-end page: this is the first time that it is mentioned that in theory the Gash model will overestimate interception. If this is the case, than this should be mentioned already in the introduction. 7. 2010, last line: The authors claim that canopy structures strongly influence Shaoshan forest hydrology cycle. They cannot make this claim, as they have not related discharge, groundwater recharge and transpiration in relation to canopy properties.

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