

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.

Anonymous Referee #1

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This is a good paper which value may be more in presenting data from a relatively unknown forest type, both climatologically and geographically. I like the approach where they also estimate the subcanopy loss. Too often this ignored and a full treatment of the hydrological effects of this in a forest hydrological model is really important.

There are two main concerns that need to be addressed before the paper can be published. 1) The presentation of the sampling design and data is poor. It is impossible to judge how well through fall is measured (no error bars or uncertainty analysis is given). A discussion on 2% difference between a model and observations is meaningless when the errors in through fall easily approach higher values than 2%. I strongly urge the authors to show the variability between plots and gauges and estimate the errors involved. 2) There is no real rationale given for the use of a complete cover

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Gash model for the top canopy and the reduced cover for the below canopy, other than the somewhat vaguely formulated lines at the beginning of page 1998. In fact given the canopy covers of 82 and 92 % (1999-line 5) I would have expected the reverse. In any case given this high canopy cover, I would have liked to see the application of the original Gash model compared to the reduced cover application. This discussion gains in importance if my first comment is taken into account. If these two issues are addressed, I would recommend publication, as this data is certainly relevant and needs to be published.

Some minor comments.

Page 2000 line 4. Have the authors any idea about the representativity of the open field observations of meteorology? There may be significant errors involved in applying open field meteorology to estimate above canopy evaporation. This may also explain the relatively high values of evaporation obtained. In fact, as explained in the original Gash (or Gash and Morton) derivation one can use observation to derive an empirical value of $E\text{-bar}$. It would be nice to see what the observation suggest for $E\text{-bar}$ (even given the limits to applying this “trick”).

In Table 3 I do not understand how canopy capacity scaled with cover can be higher than the original. Has there been a reversion of the two values.

In table 2 it would be better to have a free through fall coefficient for the original Gash model as, even though in practice these two are used interchangeably, the original Gash model knows no canopy cover.

Although in general the use of language is very good, there are a few places that read somewhat awkward. Maybe a native English speaker could have a good look at the paper when it is resubmitted?

1) Does the paper address relevant scientific questions within the scope of HESS? YES 2) Does the paper present novel concepts, ideas, tools, or data? NEW DATA

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3) Are substantial conclusions reached? YES/NO 4) Are the scientific methods and assumptions valid and clearly outlined? YES 5) Are the results sufficient to support the interpretations and conclusions? YES/NO 6) Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? NO 7) Do the authors give proper credit to related work and clearly indicate their own new/original contribution? YES 8) Does the title clearly reflect the contents of the paper? YES 9) Does the abstract provide a concise and complete summary? YES 10) Is the overall presentation well structured and clear? YES 11) Is the language fluent and precise? YES/NO 12) Are mathematical formulae, symbols, abbreviations, and units correctly YES defined and used? 13) Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? NO 14) Are the number and quality of references appropriate? YES 15) Is the amount and quality of supplementary material appropriate? YES

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 1995, 2005.

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