

## ***Interactive comment on “A history of TOPMODEL” by Keith J. Beven et al.***

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Thanks for the careful reading and useful comments, Dave. We will take your points into account when revising the manuscript. The comments on Assumption A1 are particularly valuable and will be used to try and make this clearer earlier in the paper.

I had a long discussion about Assumption A2 Wirth Dave Montgomery in the field at his Coos Bay site many years ago.  $\sin B$  is physically more correct if the slope distance is measured along the slope, and transmissivity in the direction of flow.  $\tan B$  corrects for water balance in using plan distance (for a given input rate) but then requires an effective transmissivity value. Since transmissivity is in any case a rather uncertain parameter and the differences become significant only at larger slope angles, the effective nature of the transmissivity parameter is implicit in the calibration.

We can agree with the comment about run-on. The argument is a consequence of

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field observations in upland UK where areas that produce surface runoff frequently will often have a connection to small rivulets or streams, albeit often subtly revealed in the topography and vegetation, and at scales smaller than the grid size. This is rather different to the Montgomery and Dietrich channel head arguments (albeit that the topographic index has proven rather useful there). I certainly would not argue for the model representing the idea of overland flow as a sheet flow in producing run-on - hence the comments in the paper. We will try to express this more clearly.

Thanks also for the additional corrections and suggestions in the mss.

k

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