

Interactive comment on “Land-surface modelling in hydrological perspective” by J. Overgaard et al.

L. Menzel (Referee)

menzel@usf.uni-kassel.de

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General comment:

This article gives a very good overview on current issues and problems in hydrological modelling. It successfully collates shortcomings and development options with special regard to land-surface modelling - a risky job, since a multitude of current deficiencies in hydrology is related to an appropriate representation of the land surface, its complex interrelationships with the boundary layer and the subsurface processes, and its spatial and temporal heterogeneity. The authors not only succeeded in compiling these questions into a logical and well structured framework. They also discuss possible developments regarding a closer integration of remote sensing in hydrology and the coupling of (hydrological) land-surface models with regional climate models. At the same time, they give very good examples of modern modelling approaches and give the most important references. Therefore, this paper is very well suited as a general review of the state of the art in hydrological / SVAT- modelling and neighbouring mod-

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elling attempts. It can be recommended as a rich source of information and "food for thought" for hydrological modellers in general. To conclude, this is an excellent paper which is recommended for publication with very minor revisions.

Specific comments:

Page 1819, Chapter 1: "The purpose of this paper...." comes quite late, at the end of a long Introduction. It would be good to inform the reader right at the beginning of this chapter about the aims of the article.

Page 1820: "...the plant retards the transpiration rate because of resistance of the stomata to molecular diffusion of moisture". This sounds a bit confusing and should be rewritten: It is the active role of plants to limit the loss of water vapour. They carry it out by reducing stomatal aperture. This process is reflected in models by the formulation of a resistance.

Page 1821: "Their simplicity and yet physically sound basis has made the one-layer models widely used". This is correct, but this pretended simplicity has led to a neglected treatment of the two resistances in this concept (aerodynamic and stomata / canopy resistance): There are many studies applying the Penman- Monteith approach which use extremely simplified (e.g., static or seasonal dependent) resistance formulations.

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