

Interactive comment on “Impact of spatial data resolution on simulated catchment water balances and model performance of the multi-scale TOPLATS model” by H. Bormann

Anonymous Referee #2

Received and published: 12 December 2005

General comments:

This paper investigates the impact of the resolution of spatial data on the performances of the multi-scale TOPLATS model. While the paper is well structured and well written, its objective seems quite commonplace. Many previously published papers have been dealing with this issue and this paper does not really emphasize on new techniques or approaches, as far as the model or the overall methodology are concerned.

When the author comments on the performances of the model, he is probably somewhat too optimistic, qualifying ‘satisfying’ a Nash coefficient of 0.6 for the daily time-step (see table 3). With increasing time-steps, the performance of the model increases. In

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this respect, it certainly is necessary to counterbalance somewhat the statements at the end of section 3.1. on the successful simulation of the water balance. As far as the evaluation of the model's performance is concerned, the paper would certainly gain in consistency and quality, if an uncertainty analysis was included, especially since many parameters are actually involved.

Would it not also be interesting to perform a new calibration of the model at each aggregation step? One result might be for instance that in the end the performance of the model would be as good at a 1000 m resolution, than at a 25 m resolution.

In section 3.2. a statement is made on the possibility of transferring the results issued from data aggregation to other basins. More comments on this important statement are necessary here. Is this not to be put into some general frame, for instance according to the physiographic characteristics of a given region where it has to be transposed to?

The most interesting part of the paper certainly lies in the conclusion, in the sense that 'high quality simulation results require high quality input data but not always highly resolved data' and emphasising on the fact that the focus should be set on improving the quality of the data first, before optimising the data resolution in a second step. As a general statement, it can be said that the conclusion, and moreover this very interesting statement cited above, should be dealt with and commented on more in depth.

The paper certainly has enough potential for being published. However, before publication it would have to be improved by addressing the above mentioned points.

Minor comments:

- Abstract, line 15: change (without 's')
- Introduction, page 2186, lines 7 to 9: sentence is not complete.
- Material and methods, page 2188, line 7: ... local water fluxes yield at catchment scale ...

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- Material and methods, page 2188, line 11: Finally, base flow is generated ...
- Page 2190, line 15: ... periglacial processes have strongly ...
- Section 3.2., page 2194, line 18: ... results on data aggregation are transferable to other basins.
- Correlation between changes and catchment properties, page 2195, line 28: ... it would first have been expected ...

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 2183, 2005.

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