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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Assessing the impact of resolution and soil datasets on flash-flood modelling" *by* Alexane Lovat et al.

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The authors present a study of the performance of the flash-flood modelling tool, the ISBA-TOPP coupled system under varying grid resolutions and terrain descriptors in order to assess their influence. Two resolution grids were used, 300 m and 1000 m, and it was found that the higher resolution gave better results in reproducing the flood peak. It is not surprising and could be stated without any experiments. However, it would be interesting to know how fine the grid should be to still give acceptable results and feasible computation costs. In fact, there might be an interesting relationship between the grid size and model performance, obviously depending on the scale of the catchment. I am aware that this could be a separate paper, but I expect the authors to state clearly that the influence of the grid size is not studied here, apart from the

comparison of two different grid options.

When it comes to the terrain descriptors, the authors do not present their comparison in a very clear way. Two different soil texture maps and two different land use maps are applied. Apart from the fact that we know that those maps have different sources and give slightly different percentages of clay and sand, or land surface cover, no other analysis of the differences in map descriptors is given. As a result, a discussion of the possible reasons for the experimental results is impossible. It would be interesting to know where the differences between the results come from. At the moment, we learn only that for the peaks the texture seems to have a larger impact than the land use and that there is no noticeable difference for peak times between the two. It shows that the comparison between different maps is very crude. There are studies showing that land use and in particular, preferential pathways, can have a large impact on the catchment residence times and the time flood wave travels [Bloschl, 2001, 2007]. The authors are advised to add a discussion on those issues. At the moment, I am not sure what is the paper's outcome.

Bloschl, G., 2001. Scaling in hydrology. Invited commentary. Hydrol. Process. 15, 709–711.

Bloschl, G., 2007, At what scales do climate variability and land cover change impact on flooding and low flows?, Hydrological Processes, 21, 1241-1247.

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