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Hydrology and Earth System Sciences Discussions

Interactive comment on "An efficient semi-distributed hillslope erosion model for the sub humid Ethiopian Highlands" *by* S. A. Tilahun et al.

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We are very appreciative of the thoughtful comments of the unnamed reviewer (Reviewer 1), Dr. Rose (Reviewer 2) and Dr. Zehe (Editor). All reviews were excellent and to the point. Reviewer 1 made many suggestions to improve the paper (which we followed). The main lack of enthusiasm of Reviewer 1 to the proposed modeling approach was that the specific organization and functioning of the Ethiopian highlands landscape were not implemented in our modeling approach since our model did not have a unique set of parameters. As expected, we do not quite agree with this assess-

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ment, and we document that once some of the “measurable” parameters are chosen, they are in agreement with the physical reality of the landscape. Other parameters such as the subsurface flow parameters are calibrated in the same way as almost all other simulation models that are currently on the market. Dr. Rose (Reviewer 2) was much more positive and thought that our approach advances erosion modeling across scales provided that we could show that the model parameters agree with reality. Dr. Zehe points out that we should address the latter in the revised manuscript. He also mentioned that based on the comments of Reviewer 1, we need to show how to model soil and water conservation practices. We explain in the specific comment that there is a need to simulate the effect of soil and water practices on erosion, but this paper is only a first step and only introduces the model development, illustrates its capacity to simulate Ethiopian highland hydrology and erosion, and offers future research potential, such as simulating scenarios, such as the implementation of conservation practices.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 2121, 2012.