

Dear Wolfgang,

thanks a lot for your support! I am happy to see the paper on a good way.

Eric Deal criticized that some of the limitations should be made much more clear, and ideally be discussed in more depth. Reading the manuscript, I was also a bit surprised to reach section 8, the conclusions, without a discussion. Of course, many points to be discussed are already mentioned throughout the text, but I think that nevertheless, an iteration of these points would complete the otherwise well written manuscript. One important point that you might want to address is whether the explicit treatment of glacial width could also be applied to rivers whose width is larger than the cellsize? In addition, it might be important to stress that the model is largely restricted to valley glaciers but may have difficulties if glaciations involve plateau or piedmont glaciers. Moreover, it may be useful to point out potential use cases of the model. The explicit treatment of valley shape may preclude studies that may wish to investigate form-process feedbacks at the scale of valleys. Rather, I feel that the model and its implementation will particularly have its merits when studying regional-scale effects of glaciations and their interactions with tectonics.

177: Minor point, yet I was a bit confused by the term 'cardinal flow line', which I first interpreted as the flow line to the four direct neighbors rather than the diagonal neighbors. Please feel free to make this point clearer if you think this could lead to some confusion.

217: have to be modified

241: remove one 'not'

Fig. 9: It's really difficult to visually detect topographic changes in Fig. 9 compared to Fig. 7. Consider a hillshade overlain by a grid of total erosion.

Fig. 10: Same as for Fig. 9.

Best,



Stefan Hergarten

Hm yes – makes sense to me. I am always afraid of repeating previous parts, so I tried to bring in some aspects that were not explicitly discussed before (lines 520–550). I also thought about the application to wide rivers, but I am not sure whether it would work well since wide rivers often occur in regions of deposition. Forcing the entire swath to follow the erosion of the cardinal flow line works well, but the scheme would not distribute the incoming sediment over the swath automatically. Maybe a student can test this, but it seems to be safer not to mention it here.

I would not have thought about this, but I agree that readers might start from the four nearest neighbors and then misinterpret the cardinal flow line. I think it would become clear in Fig. 2 anyway, but nevertheless it is a goof idea to clarify it (lines 177–178).

Fixed (line 218), thanks!

Fixed (line 242), thanks!

Indeed! For Fig. 9, however, it is mainly a stronger erosion at high elevation that shadows the details even if I plot the differences. So I was not successful in improving the information in Fig. 9. In turn, it indeed makes things much better in Figs. 10 and 12, in particular in combination with plotting a smaller part of the domain. It even works well without hillshading because the valleys and ridges are easily recognized. The modified Fig. 10 also required some extension of the text (lines 395–405).