Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2020-361-RC1, 2020

Hydrology and Earth System Sciences
Discussions

Interactive comment on "A stepwise GIS approach for the delineation of river valley bottom within drainage basins using a cost distance accumulation analysis" *by* Gasper L. Sechu et al.

Anonymous Referee #1

Received and published: 10 August 2020

Gasper at al. outline a method to delineate flood plain riparian areas based on a least cost algorithm which uses "Terrain slope" as cost factor to minimize. I like the idea, it is nice to see how it was applied to Denmark (though the reference data seemed a bit coarse) and how some of the key limitations where highlighted (including e.g., use in coastal areas, which is something I really did not have on the radar also it makes very much sense). However, and believe me that my heart truly feels heavy saying this, the concept already exists and was presented and tested by Murphy et al. (2009), further applied by White et. al. in 2012 in Canada, followed by a Swedish case study in 2014 (Ågren et al 2014) and tested on large scale and in combination with machine learning (again in Sweden) by Lidberg et. al. (2020). (Disclaimer: I have actually *not* been

involved in any of these studies).

I have tried to come up with ideas on how to save this manuscript but since its core is the already published method I have to recommend the editor to reject it and the authors to (perhaps?) try to use the method in a different context/ frame (perhaps with a stronger focus on it's practical application in a Danish context?).

Good luck!

Murphy, P. N. C., Ogilvie, J., & Arp, P. (2009). Topographic modelling of soil moisture conditions: a comparison and verification of two models. European Journal of Soil Science, 60(1), 94–109. https://doi.org/10.1111/j.1365-2389.2008.01094.x White, B., Ogilvie, J., Campbell, D. M. H. M. H., Hiltz, D., Gauthier, B., Chisholm, H. K. H., et al. (2012). Using the Cartographic Depth-to-Water Index to Locate Small Streams and Associated Wet Areas across Landscapes. Canadian Water Resources Journal / Revue Canadienne Des Ressources Hydriques, 37(4), 333–347. https://doi.org/10.4296/cwrj2011-909 Ågren, A. M., Lidberg, W., Strömgren, M., Ogilvie, J., & Arp, P. A. (2014). Evaluating digital terrain indices for soil wetness mapping – a Swedish case study. Hydrol. Earth Syst. Sci., 18(9), 3623–3634. https://doi.org/10.5194/hess-18-3623-2014 Lidberg, W., Nilsson, M., & Ågren, A. (2020). Using machine learning to generate high-resolution wet area maps for planning forest management: A study in a boreal forest landscape. Ambio, 49(2), 475–486. https://doi.org/10.1007/s13280-019-01196-9

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-361, 2020.