

## ***Interactive comment on “A GIS-based multivariate approach to identify flood damage affecting factors” by Barbara Blumenthal et al.***

**Barbara Blumenthal et al.**

barbara.blumenthal@kau.se

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Thank you for the time you have invested and for valuable comments which will help us improve the manuscript. Slope was calculated on the whole Digital Elevation Model (DEM) before clipping to parish level in order to ensure that correct boundary values were derived. The Slope function in the Spatial Analyst toolbox in ESRI ArcMap 10.5.1 was used to generate the slope map. The slope function identifies the slope (steepness) from each cell of a raster using a 3x3 moving window to process the data. A more detailed description of slope calculation is found here: <http://desktop.arcgis.com/en/arcmap/latest/tools/spatial-analyst-toolbox/slope.htm>. Medium slope values per parish were calculated as indicator of terrain complexity. The SAGA Wetness Index was calculated with SAGA 5.0.0. In the

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PCA we standardized the variables, used varimax and determined the dimension by Kaiser's eigenvalue > 1 rule in combination with Scree plotting (Backhaus et al., 2013). In a similar context, the procedure is even described in Kalantari et al. (2014) and Kaźmierczak and Cavan (2011), mentioned in our introduction.

Backhaus, K., Erichson, B., Plinke, W., Schuchard-Ficher, C., and Weiber, R.: Multivariate analysemethoden: eine anwendungsorientierte einführung, Springer-Verlag, 2013. Kalantari, Z., Nickman, A., Lyon, S. W., Olofsson, B., and Folkeson, L.: A method for mapping flood hazard along roads, Journal of Environmental Management, 133, 69-77, 10.1016/j.jenvman.2013.11.032, 2014. Kaźmierczak, A., and Cavan, G.: Surface water flooding risk to urban communities: Analysis of vulnerability, hazard and exposure, Landscape and Urban Planning, 103, 185-197, <https://doi.org/10.1016/j.landurbplan.2011.07.008>, 2011.

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