



Process type identification in torrential catchments

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The classification of torrential processes takes place according to factors like sediment concentration and flow behavior and ranges from fluvial process types, including water floods and fluvial sediment transport processes, to fluvial mass movements such as debris flows. This study hypothesises a context between basic geomorphological disposition parameters and potential dominant flow process types in steep headwater catchments. Thus, examined catchments were selected based on a historical event documentation of torrential events in the Austrian Alps. In total, 84 catchments could be analysed, and 11 different morphometric parameters were considered. To predict the dominant torrential process type within a catchment, a naive Bayes classifier, a decision tree model, and a multinomial regression model was trained against the compiled geomorphological disposition parameters. All models as well as their combination were compared, based on bootstrapping and complexity. The presented classification model with the lowest prediction error for our data might help to identify the most likely torrential process within a considered catchment.