



## **Approaches in Spatial Landslide Hazard Modelling in Germany - An Example from the Triassic New Red Sandstone Areas of Northern Hesse and Southern Lower Saxony**

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Hazards through landslides are widely spread as well in low mountain ranges. During the past decades in northern Hesse and southern Lower Saxony (Germany) the frequency of landslides increased, often resulted in damages of properties.

Investigation funded by the German Research Foundation (DFG) aims at a modelling of hazards to delineate areas most prone for future occurrence of processes. The area of interest is located in the Triassic New Red Sandstone areas between the Kassel and Göttingen towns. The first design state is devoted to develop modelling approaches for a characterizing of spatial landslide distribution. Technical base are a 12.5-meter-grid digital elevation model (DEM), thematic maps (geology, soil science, vegetation), and 160 landslide dates taken from the database „Gravitative Massenbewegungen in Mittelgebirgen“.

The extract of the used model parameters was arranged by methods of descriptive statistics (mainly statistic distributions) as well as a Failure-Rate approach. In order to process a preliminary slope stability map cluster analysis (Hill Climbing) and the Certainty Factor analysis were used. Stability factors as slope inclination, slope length and slope concavity as well as complex-morphometrical parameters computed from the DEM correlate well with kinematical characteristics of the studied processes. However, in consequence of an insufficient grid pattern additional to a levelling of the slope surfaces calculated from the DEM data processing the simulated landslide-endangered

area is generally overestimated. Ongoing work aims to upgrade the data records and to incorporate tectonically, hydrological and soil mechanical factors of slope stability into the analysis.

Further work has to focus on a determination of process path and run-out distances, using a random walk model and physically based friction models.

#### References

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