



Identifying Topographic Factors of Observed Landslides Based on GIS Approach.

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Employing statistical model to estimate spatial probabilities of landslides has been conducted by (Martin et al, 2015), using the software tool r.randomwalk to calculate the impact probability distribution of the observed landslides.

This study aims to identify topographic factors from the impact probability result along the riverbank in the landsliding area by employing the statistical model and GIS approach: (1) we derive the distance of each pixel from and the height of each pixel above the river. (2) The distance and the height are used to obtain the average slope of each pixel. (3) The average is used as a strong indicator for the tendency of erosion occurrence by the river – shown as a predictor map - making a slope more susceptible to landsliding. (4) A wetness index is derived to indicate where water content occurs both in area located near and in a certain distance from the river, as some landslide occurs far away from the riverside.

We demonstrate the model by implementing with a 242 km² study area of Kaoping river basin in Southern Taiwan using an inventory in 2011, and 30 meter DEM. Due to the pixel size, we only use the observed landslides larger than 10,000 m² in the study area.

Analyzing the result we arrive at to some conclusions: (1) the average slope in the study area varies from 0 to 47 degrees. (2) Observed landslides involving wide area occurs in the meander area with average slope from 30 to 47 degrees. (3) the most observed landslides in the riverbank are located in steep average slope, indicating where the erosion by the river occurs.