Landslide hazard assessment at Cameron Highland, Malaysia using frequency ratio and logistic regression models

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The aim of this study is to evaluate the hazard of landslides at Cameron Highland area, Malaysia, using a Geographic Information System (GIS) and remote sensing. The study area is famous for tea plantation. Landslide locations were identified in the study area from interpretation of aerial photographs and from field surveys. Topographical and geological data and satellite images were collected, processed, and constructed into a spatial database using GIS and image processing. The factors chosen that influence landslide occurrence were topographic slope, topographic aspect, topographic curvature and distance from drainage, all from the topographic database; lithology and distance from lineament, taken from the geologic database; land cover from TM satellite images; the vegetation index value from Landsat satellite images; and precipitation distribution from meteorological data. Landslide hazardous area were analysed and mapped using the landslide-occurrence factors by frequency ratio and logistic regression models. The results of the analysis were verified using the landslide location data and compared with probabilistic model. The verification results showed that the frequency ratio model (accuracy is 89.25%) is better in prediction than logistic regression (accuracy is 85.73%) model.