Assessment of neural network, frequency ratio and regression models for landslide susceptibility analysis

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This paper presents the assessment results of spatially based probabilistic three models using Geoinformation Techniques (GIT) for landslide susceptibility analysis at Penang Island in Malaysia. Landslide locations within the study areas were identified by interpreting aerial photographs, satellite images and supported with field surveys. Maps of the topography, soil type, lineaments and land cover were constructed from the spatial data sets. There are nine landslide related factors were extracted from the spatial database and the neural network, frequency ratio and logistic regression coefficients of each factor was computed. Landslide susceptibility maps were drawn for study area using neural network, frequency ratios and logistic regression models. For verification, the results of the analyses were compared with actual landslide locations in study area. The verification results show that frequency ratio model provides higher prediction accuracy than the ANN and regression models.