Probabilistic and Statistical Landslide Hazard Mapping using GIS and Remote Sensing at Cameron Highland, Malaysia

Biswajeet Pradhan (1), Jasmi Ab Talib (2), Saro Lee (3)

(1) Cilix Sdn. Bhd., Lot L4-I-6, Level 4, Enterprise 4, Technology Park Malaysia, Bukit Jalil Highway, Bukit Jalil, 57000, Kuala Lumpur, Malaysia, Tel: +60-3-89968260, Fax: +603- 8941 7964; Email: biswajeet@mailcity.com

(2) Malaysian Center for Remote Sensing (MACRES), No. 13, Jalan Tun Ismail, 50480, Kuala Lumpur, Malaysia, Tel: +60-3-2697 3400, Fax: +603- 2697 3350

Email: jasmi@macres.gov.my

(3) Geoscience Information Center, Korea Institute of Geoscience and Mineral Resources (KIGAM) 30, Kajung-Dong, Yusung-Gu, Taejon, Korea, Tel: 82-42-868-3057 Fax: 82-42-861-9714

Email: leesaro@kigam.re.kr

1 The aim of this study is to evaluate landslides hazard analysis at Cameron Highland area, Malaysia, using Geographic Information System (GIS) and remote sensing. 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 use from TM satellite images; and the vegetation index value from Landsat satellite images. 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 probability model.