

# **Landslide Susceptibility Assessment Using Bivariate Frequency Ratio from Pekan Nabalu to Kundasang Area of Sabah, Malaysia**

## **ABSTRACT**

A statistical bivariate model, Frequency Ratio was used to assess the landslide susceptibility of Pekan Nabalu to Kundasang area using Geographic Information System (GIS) as a tool. A total of 564 landslides (0.27km<sup>2</sup>) were detected from field observation, Google Earth satellite imagery and IFSAR imagery to produce a landslide inventory map (dependent factor). Eight (8) landslide causative factor maps (independent factor) namely slope angle, slope aspect, slope curvature, drainage proximity, lineament proximity, lithology, land use and soil series. The integration of the dependent factor and the independent factors resulted in a regional scale spatial Landslide Susceptibility Analysis map (LSA) with five susceptibility classes. About 11.39% (12.99km<sup>2</sup>), 25.56% (29.14km<sup>2</sup>), 29.67% (33.82km<sup>2</sup>), 23.6% (26.9km<sup>2</sup>) and 9.78% (11.15km<sup>2</sup>) are classified as Very Low, Low, Moderate, High, and Very High susceptibility classes respectively. Using AUC (Area Under Curve) validation method, the prediction rate is 82.63% and the success rate is 82.6%. The LSA map is considered reliable as 405 landslides (0.22km<sup>2</sup>) were detected in Moderate to Very High susceptibility classes. Therefore, this study would benefit various stakeholders, researchers, and other professionals to propose suitable mitigation measure and develop better landslide management plan.