Easy to use remote sensing and GIS analysis for landslide risk assessment

ABSTRACT

Many countries throughout the world suffered from the natural risks, they cause a large damage in property and loss in human lives, we cannot prevent the occurring of these hazards but, it is possible to reduce their affect in saving human lives and reducing the damage in properties. Several methodologies have been conducted to predict the suitable model for landslide assessment. The susceptibility maps of landslide hazard generated by combining the remote sensed data with the capability of GIS (geographic information system). We discussed different type of algorithms and factors for modeling the prediction of landslide risk assessment such as SVM (support vector machine), DT (decision tree), ANFIS (adaptive neural-fuzzy inference system), AHP (analytic hierarchy process), ANN (artificial neural network), probability frequency of landslides occurrence factors model and empirical model. The study evaluated various parameters that are responsible for landslide occurrence and the weighting for each parameter and its importance to probable of landslide activity. AHP method, Weights of evidence model, and back propagation method have been applied for weighting the factors. We found that using ANN algorithm with more than ten factors will give high accuracy result especially if the validation performs by field surveys data.

Keyword: Remote sensing; GIS; Geographic information system; Landslide risk assessment