Rainfall-induced Landslide Susceptibility assessment at the Longnan county

Haoyuan Hong (1) and Ying Zhang (2)

(1) Jiangxi Provincial Meteorological Society, Jiangxi Meteorological Bureau, No.323 Aixihuer Road, Nanchang, 330096, China(honghaoyuan@qq.com), (2) Jiangxi Provincial Meteorological Observatory, Jiangxi Meteorological Bureau, No.323 Aixihuer Road, Nanchang, 330096, China(361960912@qq.com)

Landslides are a serious disaster in Longnan county, China. Therefore landslide susceptibility assessment is useful tool for government or decision making. The main objective of this study is to investigate and compare the frequency ratio, support vector machines, and logistic regression. The Longnan county (Jiangxi province, China) was selected as the case study. First, the landslide inventory map with 354 landslide locations was constructed. Then landslide locations were then randomly divided into a ratio of 70/30 for the training and validating the models. Second, fourteen landslide conditioning factors were prepared such as slope, aspect, altitude, topographic wetness index (TWI), stream power index (SPI), sediment transport index (STI), plan curvature, lithology, distance to faults, distance to rivers, distance to roads, land use, normalized difference vegetation index (NDVI), and rainfall. Using the frequency ratio, support vector machines, and logistic regression, a total of three landslide susceptibility models were constructed. Finally, the overall performance of the resulting models was assessed and compared using the Receiver operating characteristic (ROC) curve technique. The result showed that the support vector machines model is the best model in the study area. The success rate is 88.39 %; and prediction rate is 84.06 %.