Plinius Conference Abstracts,
Vol. 11, Plinius11-21, 2009
11th Plinius Conference on Mediterranean Storms

Manifestation of likelihood ratio and advanced fuzzy logic model for tropical rainfall induced landslide analysis

B. Pradhan and M. F. Buchroithner

Dresden University of Technology, Institute for Cartography, Faculty of Forestry, Geo and Hydro-Science, Dresden, Germany
(biswajeet@mailcity.com, biswajeet.pradhan@mailbox.tu-dresden.de, biswajeet24@gmail.com, +49-351 463 37028)

There are different statistical models available for landslide susceptibility analysis. In this paper, we have applied an advanced fuzzy logic model operators combined with likelihood ratio model to identify landslide susceptible areas in part of Cameron area in Malaysia. Remote sensing data coupled with GIS tools have been very useful for the construction of landslide inventory map. Topographical and geological data and satellite images were collected, processed, and constructed into a spatial database using GIS and image processing. A data derived model (likelihood ratio) and a knowledge-derived model (fuzzy operator) were combined for landslide susceptibility analysis. Using the factors and the identified landslide, the fuzzy membership values were calculated. Then fuzzy algebraic operators were applied to the fuzzy membership values for landslide susceptibility mapping. Finally results of the analysis were verified using receiver operating characteristic curve analysis (ROC). The results indicate that Fuzzy gamma operator showed the best accuracy.