

LANDSLIDE SUSCEPTIBILITY MAPPING AND VERIFICATION USING THE GIS AND BAYESIAN PROBABILITY MODEL IN BOEUN, KOREA

Jaewon Choi¹⁾, Saro Lee²⁾, Youngtae Yu³⁾

1) Department of Earth System Sciences, Yonsei University, 134 Shinchon-dong Seodaemun-gu Seoul 120-749, Korea Tel: 82-2-2123-2673; E-mail address: master2003@yonsei.ac.kr

2) National Geoscience Information Center, Korea Institute of Geoscience and Mineral Resources, Korea, 30 Kajeongdong, Taejeon 305-350, Korea, Tel: 82-42-868-3057; Fax: 82-42-867-0421; E-mail address: leesaro@kigam.re.kr

3) Department of Computer Engineering, Hannam University, 133 Ojung-dong Daeduk-gu, Taejeon 306-010, Korea, Tel: 82-42-868-3057; Fax: 82-42-867-0421; E-mail address: ytyu@kis.kigam.re.kr

ABSTRACT

The purpose of this study is to reveal spatial relationships between landslides and geospatial data set, map the landslide susceptibility using the relationships and verify the landslide susceptibility using the landslide occurrence data in Boeun area in 1998. Landslide locations were detected from aerial photography and field survey and topography, soil, forest, and land use data sets were constructed as a spatial database using GIS. As the landslide occurrence factors, slope, aspect, curvature and type of topography, texture, material, drainage and effective thickness of soil, type, age, diameter and density of wood and land use were used. To extract the relationship between landslides and geospatial database, Bayesian probability methods, likelihood ratio and weight of evidence, were applied and the ratio and contrast value that is W^+ - W^- were calculated. The landslide susceptibility index was calculated by summation of the likelihood ratio and contrast value and the landslide susceptibility maps were generated using the index. As a result, it is expected that spatial relationships between landslides and geospatial database is helpful to explain the characteristics of landslide and the landslide susceptibility map is used to reduce associated hazards, and to plan land use and construction.

Key words: GIS, landslide, susceptibility, Bayesian probability, Boeun