

Analyzing hazard vulnerability in Mt. Baekdusan area using terrain factors

Sung-Wook Kim¹, Eun-Kyeong Choi¹, In-Soo Kim², Khil-Ha Lee³, Sung-Hyo Yun²

¹GI Co. Ltd., Korea, ²Pusan National University, Korea, ³Daegu University, Korea

E-mail: suwokim@chol.com

Most steep slope failures take place in geographically unstable areas. The Mt. Baekdusan is known as a potentially active volcano in a typical mountainous terrain. This study prepared a digital elevation model of the Mt. Baekdusan area and created a hazard map based on topographical factors and structural lineament analysis. Factors used in vulnerability analysis include shaded relief image map, geographical data involving altitude, orientation, and gradient distribution, as well as contributory area of upslope, tangential gradient curvature, slope gradient curvature, and the distribution of wetness index among elements that comprise topography. In addition, the stability analysis was conducted based on the lineament intensity map. For structural lineament analysis of the terrain, 380 lineaments were decoded from investigation sections of the area, and the lineament rating was made according to the scale in consideration of their direction, frequency, and length. The study classified the following four main directions applying weighting on their frequency and extension: L-1 (N30o -40oE), L-2 (N20o-30oE), L-3 (N80oE), and L-4 (N80oW). As for frequency and the density of lineaments NNE-SSW direction is predominant. Concerning the disaster vulnerability of the Mt. Baekdusan region, the South east area of Mt. Baekdusan has a highest risk of disaster, while the level decreases in the eastern region.

Keywords: Mt. Baekdusan , Hazard map, Vulnerability, Geographical data, Lineament

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