



Vulnerability analysis of Landslide hazard area: Case study of South Korea

Chaeyeon Oh (1), Kyewon Jun (2), and Younghwan Kim (3)

(1) Disaster Prevention & Safety Engineering, Kangwon National University, Samcheok, Republic of Korea(cyoh@kangwon.ac.kr), (2) Graduate School of Disaster Prevention, Kangwon National University, Samcheok, Republic of Korea(kwjun@kangwon.ac.kr), (3) Graduate School of Disaster Prevention, Kangwon National University, Samcheok, Republic of Korea(god@kangwon.ac.kr)

Recently such as Landslide and debris flow are occurring over the due to climate changes, frequent sedimentation disaster in mountains area. A scientific analysis of landslide risk areas along with the collection and analysis of a variety of spatial information would be critical for minimizing damage in the event of mountainous disasters such as landslide and debris flow. We carried out a case study of the selected areas at Inje, Gangwon province which suffered from serious landslides due to flash floods by Typhoon Ewiniar in 2006. Landslide and debris flow locations were identified in the study area from interpretation of airborne image and field surveys. We used GIS to construct a spatial information database integrating the data required for a comprehensive analysis of landslide risk areas including geography, hydrology, pedology, and forestry. Furthermore, this study evaluates slope stability of the affected areas using SINMAP(Stability Index Mapping), analyzes spatial data that have high correlation with selected landslide areas using Likelihood ratio. And by applying the Weight of evidence techniques weight values (W+ and W-) which were calculated for each element. We then analyzed the spatial data which were significantly correlated with the landslide occurrence and predicted the mountainous areas with elevated risks of landslide which are vulnerable to disasters, and the hazard map was generated using GIS.

Acknowledgments

This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT & Future Planning(No.NRF-2014R1A1A3050495).