



Zonation of High Disaster Potential Communities for Remote Mountainous Areas in Southern Taiwan

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About three-quarters of Taiwan are covered by hillside areas. Most of the hillside regions in Taiwan are sedimentary and metamorphic rocks which are fragile and highly weathered. In recent years, human development coupled with the global impact of extreme weather, typhoons and heavy rains have caused the landslide disasters and led to human casualties and properties loss. The landslides also endanger the major public works and almost make the overall industrial economic development and transport path overshadowed by disasters. Therefore, this research assesses the exploration of landslide potential analysis and zonation of high disaster potential communities for remote mountainous areas in southern Taiwan.

In this study, the time series of disaster records and land change of remote mountainous areas in southern Taiwan are collected using techniques of interpretation from satellite images corresponding to multi-year and multi-rainfall events. To quantify the slope hazards, we adopt statistical analysis model to analyze massive data of slope disasters and explore the variance, difference and trend of influence factors of hillside disaster; establish the disaster potential analysis model under the climate change and construct the threshold of disaster. Through analysis results of disaster potential assessment, the settlement distribution with high-risk hazard potential of study area is drawn with geographic information system.

Results of image classification show that the values of coefficient of agreement for different time periods are at high level. Compared with the historical disaster records of research areas, the accuracy of predicted landslide potential is in reasonable confidence level. The spatial distribution of landslide depends on the interaction of rainfall patterns, slope and elevation of the research area. The results also show that the number and scale of secondary landslide sites are much larger than those of new landslide sites after rainfall. The greater the slope land disturbance, the more likely the scale of secondary landslide uprisings. The results of the map for the zonation of high-disaster potential communities can be a useful reference for the government to plan strategies on adaptation to climate change for remote mountainous communities in southern Taiwan.