

## **GIS-BASED LANDSLIDE HAZARD MAPPING: SINMAP APPLICATION TO STORM-TRIGGERED LANDSLIDES ON MT. DALBONG, KOREA**

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SINMAP is a GIS-based landslide hazard mapping tool built on steady state topographic hydrologic models coupled with the infinite plane slope stability model. Through the application to the landslide events in the Mt. Dalbong area about 78 kilometers south from Seoul, occurred during a heavy storm in 1991, SINMAP successfully spotted most landslide sites. The effects and proper ranges of three calibration parameters of SINMAP, i.e. soil friction angle, cohesion, and T/R, were examined through comparison of predicted landslides with the landslide inventory data. Analytical results on prediction accuracy suggest that the soil friction angle of 38 to 43 degrees seems to be the best choice for the Mt. Dalbong area. It is also suggested that the soil friction angle of 25 to 35 degrees might lead to an overestimation of landslide hazard potential in this area.

It was also found that the landslide prediction accuracy improved by ignoring the combined cohesion of soil and trees. This seems to be due to the sandy soil type (SM) and thin layer of soil typically less than one meter in the study area. And for the parameter T/R incorporating both the spatial and temporal variabilities of hydrology, T/R of 5 to 100 meters seems to produce a realistic soil moisture condition for the slopes in the Mt. Dalbong area. From the findings of this study, it seems that SINMAP has a high potential to be used as a cost-effective screening tool for landslide hazard mapping especially for mountain areas with fairly steep slopes and relatively thin soil layers.

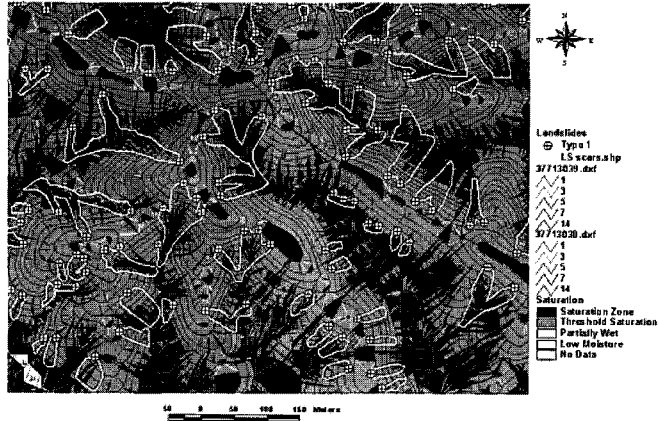


Fig. 9 Wetness Index zones with 1991 landslide data

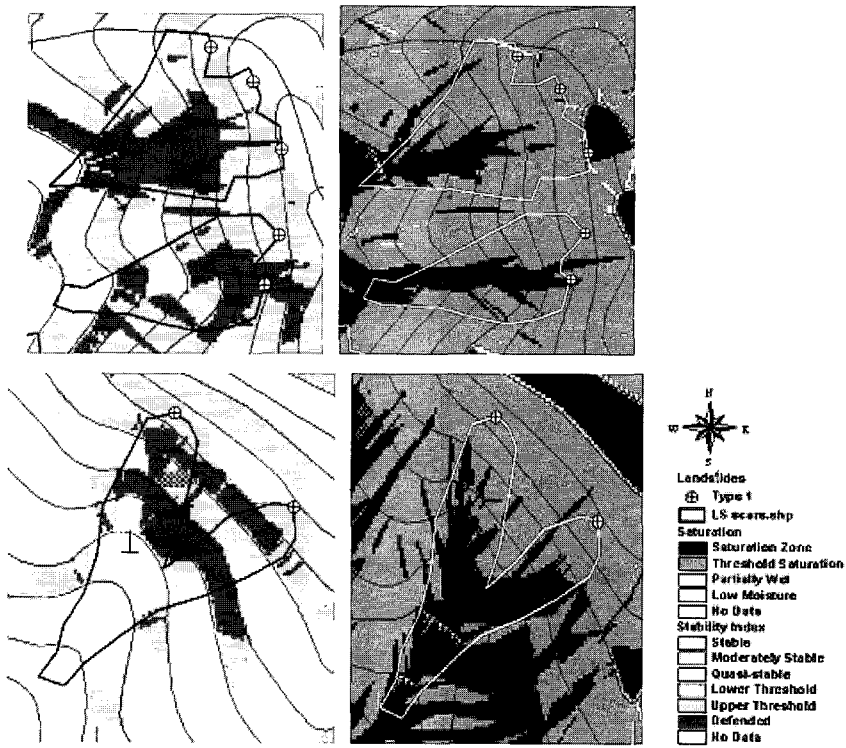


Fig. 11 Comparison of the SI and WI zones within landslide areas (Run no. 22)