Geophysical Research Abstracts,
Vol. 11, EGU2009-9467, 2009
EGU General Assembly 2009

Inclusion of land use in rainfall-induced landslide prediction

T. Lahousse (1), S.H. Chiang (1), and K.T. Chang (2)

(1) Department of Geography, National Taiwan University, Taipei 106, Taiwan (thomla@rocketmail.com), (2) Kainan University, Taoyuan County 33857, Taiwan

This study suggests a methodological approach which takes into account the impact of land use when predicting rainfall-induced shallow landsliding. In this research, we adopted the integrated model, which combines a deterministic slope stability model and a logit statistical model. By including land use specific parameters within the process based part of the integrated model, we developed a land use inclusive model. This land use inclusive model pulls together rainfall variables, topographic and soil properties, as well as land use related parameters, to estimate the probability of landslide occurrence. To develop and validate the model, we used two different rainfall events and the landslides they triggered. We then compared the modified success rate of landslide prediction for the land use inclusive model and the original integrated model. Reaching an overall modified success rate of 89% in the validation stage, the land use inclusive model achieved a higher prediction rate than the integrated model. The land use inclusive model also fared better than the integrated model when comparing landslide prediction ability within each land use category. Finally, with the land use inclusive model, sharply distinct landslide probability estimates were obtained for each land use category, thus pointing out the specific sensitivity of each land use to rainfall-induced landsliding.