[EE] Evening Poster | H (Human Geosciences) | H-DS Disaster geosciences

[H-DS07]Landslides and related phenomena

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Mass movements, such as landslides, rockfalls, and debris flows, have been occurring extensively in a large number of countries, causing heavy damage. In order to understand them and mitigate induced disasters, we would like to discuss on various issues. We invite contributions that report and discuss on mass movements and related phenomena, focussing on improved understanding of their characteristics; new insights into landslide mechanisms; the development of new approaches to monitoring; novel approaches to behaviour forecasting and prediction; studies of successful landslide management; and the development of methods for hazard and risk evaluation.

[HDS07-P08]Implementation of Selection Criteria to Improve Landslide Susceptibility Model of Kashiwazaki-Kariwa, Japan: a Frequency Ratio Approach

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Keywords:Landslides, Logistic Regression, Frequency Ratio Approach

This study aims to find the most reliable landslide susceptibility model generated from open-source data implementing frequency ratio (FR) method. The number of predisposing factors involved in the analysis might result in many different combinations of landslide susceptibility index (LSI) as a quantitative representation of landslide susceptibility map (LSM). Notwithstanding, the higher the LSI indicates the higher the landslide susceptibility, the predictability and accuracy of LSM are believed will lead to an effective mitigation strategy as well as the urban development plan. Interestingly, the highest LSI value indicated by a model does not always show the best predictability, and the best predictability does not always result in the best accuracy. Therefore, it is imperative to implement a set of selection criteria to provide the most reliable landslide susceptibility model.

The landslide susceptibility model of Kashiwazaki-Kariwa in this study was produced involving the morphometric, geological, land use–land cover, and landslide distribution data. The data were acquired from open-source domains, ASTER Global DEM of NASA’s Jet Propulsion Laboratory, Geological Survey of Japan (GSJ), Japan Aerospace Exploration Agency (JAXA) Centre for Earth Observation Research (EORC), and National Research Institute for Earth Science and Disaster Prevention (NIED) of Japan respectively, which were prepared on the Geographic Information System (GIS) platform.

More than 120 models generated from seven predisposing factors, and compared using the values of LSI, the area under the receiver operating characteristic-ROC (AUC), and accuracy. The model consists of elevation-slope-profile curve-geological feature-Land use showed the most reliable performance with the value of 1.0482 (LSI), 0.8074 (AUC) and 75.13% (Accuracy).