

Analysis of the landslides in Hiroshima caused by the typhoon-12 based on bivariate statistical landslide susceptibility

DOU, Jie^{1*} ; PAUDEL, Uttam¹ ; OGUCHI, Takashi² ; HAYAKAWA, Yuichi S.²

¹Department of Natural Environmental Studies, The University of Tokyo, ²Center for Spatial Information Science, The University of Tokyo

Following the heavy rainfall caused by the typhoon-12 on 20th August 2014, Hiroshima city in Japan was struck by a series of landslides including numerous mudslides and debris flows. The landslides affected several suburban residential areas mostly in the Asaminami and Asakita wards causing a great loss of property and the death of 74 residents. This study concerns a bivariate statistical approach to analyse if a landslide susceptibility study would have been able to identify the vulnerable areas beforehand. Firstly, we prepared a landslide susceptibility map (LSM) using a 10 m DEM, geological information and past occurrences of landslides. The landslides after the typhoon event were later used to assess the accuracy of the LSM. The inventory of landslides before and after the typhoon event was interpreted from the high-resolution satellite images. The results show that a similar landslide susceptibility study could have identified vulnerable areas and helped in mitigating the disaster.

Keywords: Hiroshima, landslide susceptibility mapping, typhoon, rainfall