

Title: GIS-Based Information Quantity Method for Landslide Susceptibility Mapping in The Uzundere Town, Northeastern Turkey

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Landslide susceptibility mapping is an essential tool for Landslide susceptibility studies. The main objective of this study is to produce a landslide susceptibility map at Uzundere Town, Erzurum, Turkey using the Information Quantity Method (IQM), one of the statistical probability approaches. At the first stage, landslide locations were identified in the study area by interpretation of aerial photographs, historical records and from multiple field surveys. Of the 42 landslides identified, 30 locations (≈70% of total landslide locations) were used for the modeling of landslide susceptibility map, while the remaining 12 locations (≈30% of total landslide locations) were used for the model validation. The landslide predisposition factors such as topographic relief, land type, general curvature, stream frequency, proximity to streams, distance to main road network, normalized difference water index (NDWI), rock mass, slope directional, slope in degree, terrain surface texture (TST), and distance from geological fault zone were extracted from the spatial database. Subsequently, the weights of each factor and landslide susceptibility map were produced using IQM. Finally, the ROC (receiver operating characteristic) curve for landslide susceptibility map was drawn and the areas under the curve (AUC) were calculated. The verification results showed AUC=75.89% and AUC=71.02% for success and prediction rates, respectively. According to the IQM, about 28.94% of the study area is located within high to very high susceptibility classes of landslides. Additionally, the resulted susceptibility map indicated that the most important factor of landslide occurrences was the proximity to streams, whereas the distance from geological fault zone played the least role in landslide susceptibility assessments. The landslide susceptibility map produced from this research can be useful for general land use planning and future hazard reduction in the study area.

Biography

Azimollah Aleshzadeh has completed his BA degree (2002) and MA degree (2007) from Sahand University of Technology, Iran. He is the PhD Candidate with “the investigation and the evaluation of landslide susceptibility of the Lake Tortum Landslide Dam Region (Uzundrer, Erzurum, Turkey)” titled doctoral thesis supervised by Assoc. Prof. E. Vural Yavuz at the Graduate School of Science Engineering & Technology at Istanbul Technical University.

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