



Landslide susceptibility mapping of a landslide-prone area from Turkey by decision tree analysis

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The landslides are accepted as one of the important natural hazards throughout the world. Besides, the regional landslide susceptibility assessments is one of the first stages of the landslide hazard mitigation efforts. For this purpose, various methods have been applied to produce landslide susceptibility maps for many years. However, application of decision tree to landslide susceptibility mapping, one of data mining methods, is not common. Considering this lack in the landslide literature, an application of decision tree method to landslide susceptibility mapping is the main purpose of the present study. As the study area, the Inegol region (Northwestern Turkey) is selected. In the first stage of the study, a landslide inventory is produced by aerial-photo interpretations and field studies. Employing 16 topographic and lithologic variables, the landslide susceptibility analyses are performed by decision tree method. The AUC (Area Under Curve) values for ROC (Receiver-Operating Characteristics) curves are calculated as 0.942 for the landslide susceptibility model obtained from the decision tree analysis. According to the AUC values, the decision tree analysis presents a considerable performance. As a result of the present study, it may be concluded that the decision tree method presents promising results for the regional landslide susceptibility assessment. However, the technique should be studied for different landslide-prone areas and compared with other prediction techniques such as logistic regression, artificial neural networks, fuzzy approaches, etc.