

Landslides and active faults using remote sensing and GIS techniques in Central Alborz mountains, Iran

ABSTRACT

The attempt has been done on study of habitat factors for the distribution of 370 landslides. This study is based on landform features and landslides associated with active faults distribution using remote sensing, GIS and GPS techniques in the Central Alborz, North Iran. Field observations show that the mass movements on low angle occur most frequently near to active faults. In steep slopes avalanche and planar slides are dominant. In this study digital image processing has been done on the ASTER L1A, L1B and Landsat7 ETM+ images. GIS layers have been extracted from 370 historical landslides and active faults over the study area. Digital Elevation Model (DEM) (15m) has been generated from ASTER stereo pair data using PCI Geomatica 9.1 software. The use of a (15m) DEM is a potential substitute in tectonic activity analysis, as it highly correlates with slope instability, geomorphologic processes and factors affecting landslides. Appropriate landform parameters have been derived which are indicating landslides and faults distribution, exposure towards rain and snow. Tectonic classification schemes decomposing the landscape into basic landform-elements proved useful for characterizing a zonal, altitudinal landslide classes. The results show that more than 72 percent of landslide points are situated on the active faults buffer zone. It can be used as fundamental data for hazard prediction, land use planning and construction in study area.

Keyword: Active fault; DEM; GIS; GPS; Landslides; Remote sensing