



Assessment of landslide susceptibility on land degradation processes in Chamoli and surrounding area using RS and GIS technique

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Abstract

Amongst the various land degradation process prevalent in the region, landslides are one of the most significant. Investigation of landslides requires considerable judgement because natural slopes are seldom homogeneous and the shear strength of the soil is difficult to determine. While the mathematical calculations for stability can be done with the help of numerous softwares it is often difficult to establish the shear strength of the soil or rock mass and the boundary conditions. Garhwal Himalayan region being very fragile part of the country enthalls great scientific interest while posing a channel to cope up with the environment. The main objective of the study was to generate Landslide susceptibility map based on statistical analysis.

IRS-LISS-IV and PAN satellite data, topographic maps, field data, and other informative maps were used as inputs to the study. Important terrain factors, contributing to landslide occurrences in the region, were identified and corresponding thematic data layers were generated. These data layers represent the geological, topographical, landuse, drainage density, soil, lineament and conditions of the terrain. A numerical rating scheme for the factors was used for spatial data analysis in a GIS domain.

The resulting landslide susceptibility map delineates the area into different zones of three relative susceptibility classes: high, moderate and low. The susceptibility map was correlating the landslide frequencies of different classes. This has shown a close agreement with the existing field instability condition. In the present study, remote sensing and Geographical Information System (GIS) were widely used in data analysis.

Key words: slope stability, landslides, remote sensing, land degradation, GIS.