

Eco-Environmental Vulnerability Evaluation in Mountain Regions Using Remote Sensing and Geographical Information System: A Case Study of Pasol Gad Watershed of Garhwal Himalaya, India

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Abstract : The Mid Himalaya of Garhwal Himalaya in Uttarakhand (India) has a complex Physiographic features with diversified climatic conditions and therefore it is suspect to environmental vulnerability. The natural disasters and also anthropogenic activities accelerate the rate of environmental vulnerability. To analyse the environmental vulnerability, we have used geoinformatics technologies and numerical models and it is adopted by using Spatial Principal Component Analysis (SPCA). The model consist of many factors such as slope, land use/land cover, soil, forest fire risk, landslide susceptibility zone, human population density and vegetation index. From this model, the environmental vulnerability integrated index (EVSI) is calculated for Pasol Gad Watershed of Garhwal Himalaya for the years 1987, 2000, and 2013 and the Vulnerability is classified into five levels i.e. Very low, low, medium, high and very high by means of cluster principle. The results of eco-environmental vulnerability distribution in study area shows that medium, high and very high levels are dominating in the area and it is mainly caused by the anthropogenic activities and natural disasters. Therefore, proper management for conservation of resources is utmost necessity of present century. It is strongly believed that participation at community level along with social worker, institutions and Non-governmental organization (NGOs) have become a must to conserve and protect the environment.

Keywords : eco-environment vulnerability, spatial principal component analysis, remote sensing, geographic information system, institutions, Himalaya

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