Abstract

The global climate is showing altered temperatures and precipitation levels. Forests can regulate in reducing the rate of climate change. They regulate the nutrient cycle, the also protect species and diversity, and support livelihoods that drive holistically. Presently, the forest ecosystem's capacity to withstand change is being undermined by the rate of change, along with anthropogenic pressures and the specificities of mountainous regions. Total forest cover estimated by the Forest Survey of India for Pauri Garhwal District in their State of Forest Report 2019 is 63.71 sq km ^{2}. The main objective of the study was to detect the vulnerability of forests in the Pauri Garhwal district of Uttarakhand. It was done mainly using five factors which includes Satellite –derived Indices, Topological Data which includes Slope, Aspect and Elevation, then Climate data which includes Precipitation and temperature of the district. Then for calculating the Distance from Drainage we have calculated Drainage Proximity. Lastly, we also have included Distance to Roads and Settlement. GIS based analytical hierarchy process (AHP) was also utilized to identify the important drivers of forest vulnerability in the study area. The FVI index was further classified into four different categories- which are low, medium, high, and very high. The results revealed maximum (37%) forest areas under medium vulnerable profile followed by 31% (high) and 21% (low) vulnerable areas. After running the AHP analysis it revealed that the main drivers of the inherent forest vulnerability were slope (14.92 %), proximity to drainage (13.208 %), distance to settlement (12.554 %), rainfall (11.142 %) and temperature (10.043 %). This study helped in understanding the inherent forest vulnerability and adapting sustainable forest management strategies to control further forest degradation in the Pauri Garhwal District.

Keywords- Vulnerability, Forest cover, Dominant factors, Extension, Preference table, AHP, Climate change, Degradation.