Use of geo-informatics for desertification status mapping: A case study of Panamic watershed in the cold desert of Ladakh

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Abstract: Desertification refers to the process of land degradation that leads to transformation of productive land into a desert. The causative agent has been man. Misuse of land led to the degradation of productivity of vegetation, fertility of soil and unfavorable alterations in soil - water balance. Over-grazing, over-cultivation, tree cutting, shifting cultivation, mining, road construction, irrigation, urbanization have been causative effects on the reduction or destruction of vegetation cover that is subsequently accelerated by water and wind erosion process. The work herein is an attempt to evolve, standardize a methodology and build a comprehensive classification system for the desertification status mapping of Panamic watershed (1F3B1), a cold desert region of Ladakh district of Jammu & Kashmir State, at 1:50,000 scale. The multi-temporal satellite data of IRS-1A and IRS-1D reveal that the processes of water erosion, mass movement, wind erosion, frost shattering and frost heaving are the causes of degradation/desertification in Panamic watershed. In Panamic watershed, the diurnal range of temperature is very large, and hence water erosion is the dominant process followed by mass movement.

Keywords: Desertification, Comprehensive Classification System, Cold desert, Degree of Severity, Panamic watershed, Ladakh district