Mapping Biomes Of India Using Holdridge Life Zone Model - Identifying Footprints Of Climate

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Abstract

The primary aim of the study is assessing shifts in the different biomes types of India using the conceptual framework of the Holdridge life zone model, a tool for ecosystem mapping. According to the HLZ model, natural vegetation of an area could be objectively determined by the local climate. The study identifies nineteen (19) potential Holdridge life zones; seven (7) biomes and nineteen (19) sub-biomes in the Indian sub-continent. In order to verify the biome mapping precision, actual vegetation cover type map derived from IRS Wide Field Sensor (WiFS) data had been used to calculate the accuracy. The overall accuracy and kappa coefficient come out to be 82.7% and 0.75, respectively. Climate change and its cascading impacts are being increasingly recognized as a major challenge across the globe. Since the HLZ model uses climate parameters only; it can help predict potential biome redistribution. In the present study, modeling was carried out on entire region of India using various combinations. The impact of changes in temperature and precipitation reveals tropical desert (plains), tropical desert scrub (lower montane), tropical very dry forest (plains), tropical dry forest (plains), tropical dry forest (lower montane), tropical moist forest (lower montane), and tropical wet forest (lower montane) being most susceptible to changes in the percentage of area cover under climate change for different years for emission scenarios. Such estimates are very important for the detection and assessment of regional impacts of climate change so that better management and conservation strategies can be adopted. Keywords: Holdridge, Life zones, Biomes, Climate change, India