



Influence of Climate Variables on Phenology of Indian Forests

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Amplification of the hydrological cycle as a consequence of global warming increases the frequency, intensity, and spatial extent of extreme events. The magnitude and direction of the impacts of these extreme climate events on ecosystem function, however, remain largely uncertain, particularly on vegetation phenology. In this study, the role of climate variables like precipitation and radiation on the phenology cycle of Indian forests is studied considering the MODIS Enhanced Vegetation Index (EVI) as a measure of the greenness of the forests. The forests of Central India, Western Ghats, Eastern and Western Himalayas and the North East Hills are considered separately to take into account of the spatial variability. Forests of wetter regions are observed to be less affected by the decrease in precipitation, compared to drier regions, indicating their higher resilience to extremes. The relative dependence of vegetation on radiation is higher in high precipitation regions and is clearly visible in the seasonal variation of EVI. The shifts in the start of growing season (SOS), end of growing season (EOS) and length of growing season (LOS) with precipitation and radiation is a clear indicator of the dependence of phenology cycle on climate variables. The effect of radiation on EVI is dependent on the amount of precipitation received, in most of the forest regions considered and hence, a coupled effect of both radiation and precipitation controls the vegetation phenology.