

Fragile Ecosystem of Lahaul and Spiti

In the two maps submitted, one showcases NDVI, Normalised Difference Vegetation Index, which uses, the healthy vegetation's high reflectance to Near Infra red rays as it's main criteria for analysis. The map has been presented in such a manner that it's symbology showcases, vegetations' health throughout the district. The data from **LISS 3** satellite was used, wherein the rasters were combined (created mosaic with bands of same wavelength combined to form a single raster) and subjected to raster based band calculation (applying NDVI formula after merging bands in a composite raster). Further, the final raster formed was clipped with the existing boundary provided by the IITB link. Similar approach has been adopted while studying the snow/ glacier cover in the region. The Formula for this analysis has been adopted from research papers available online, which implied using green and red spectral bands to identify snow/ice cover.

$$\text{NDGI} = (\text{NIR}-\text{Green})/(\text{NIR}+\text{Green})$$

$$\text{NDVI} = ((\text{NIR}-\text{Red})/(\text{NIR}+\text{Red}))$$

The cold desert of Lahaul and Spiti District in Himachal Pradesh is a fragile ecosystem, vulnerable to slightest change in the climate. Hence it is essential to map it's vegetation and snow cover to understand the constant flux of change the planet is going through. Studying the most fragile ecosystems will give better insights on the implications and the dangerously fast pace of destruction we're bringing about.