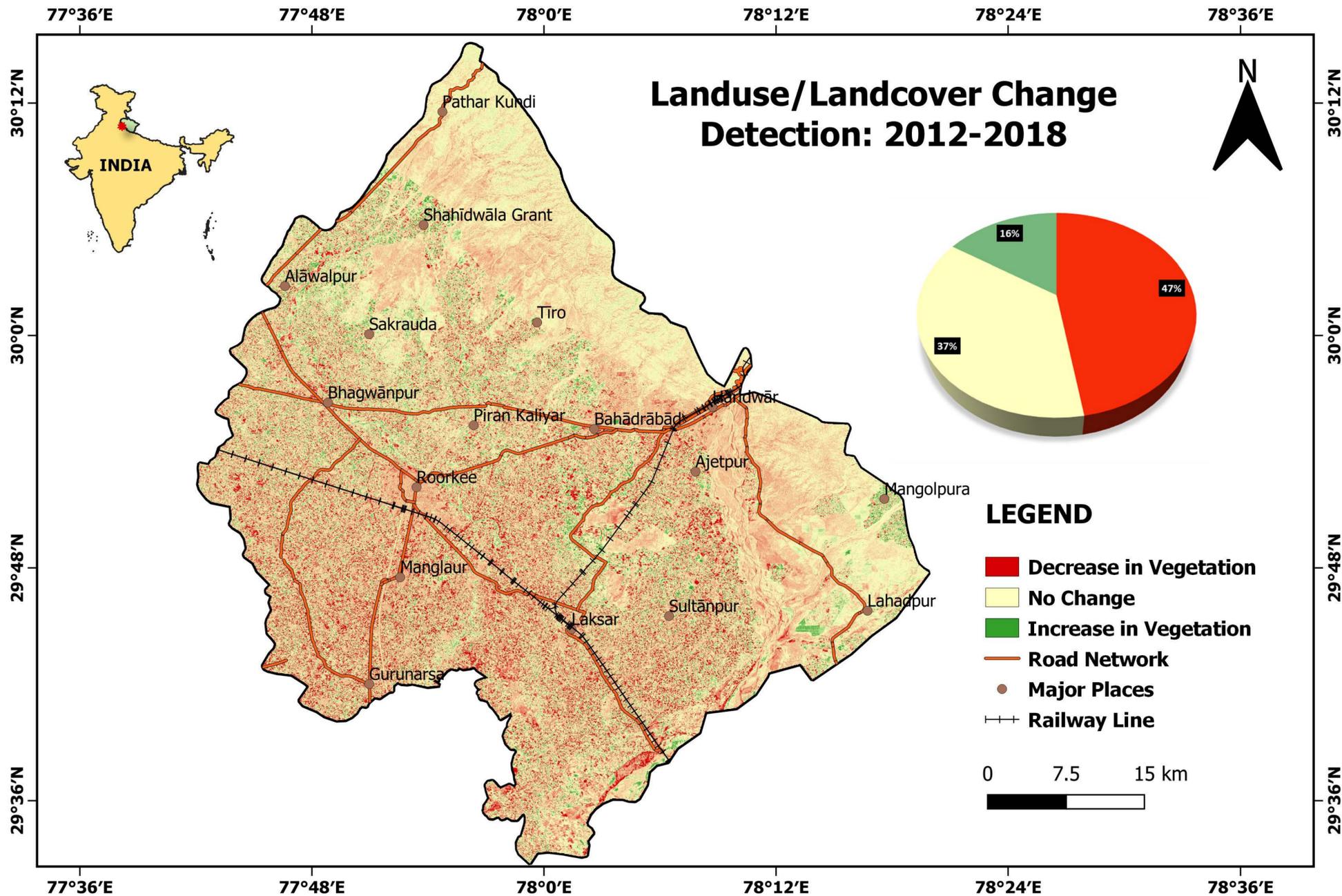


# Title: Change Detection Analysis in Haridwar District, Uttarakhand, India

# Map description and analysis



## Introduction:

Change Detection Analysis is a technique to identify the transformation of phenomena over a period of time. Multi-temporal dataset is used to perform quantitative analysis. In this study, LISS III Datasets are used to carry out change detection. The study reveals how vegetation have changed over a time period of 2012 to 2018.

## Study Area:

Haridwar (29.9457° N, 78.1642° E) is located in Uttarakhand state, North India.

## Methodology:

- To cover the entire district, a total of 11 tiles were downloaded (22 tiles for both years) from Bhuvan geoportal.
- Image Mosaicing Utility, an open-source software from NRSC, ISRO used to perform the mosaic operation.
- In QGIS application, Stacking and stretching process is performed for all the bands. For better visual interpretation, all the images were stacked in False Color Composite. Study area clipped using the boundary file taken from the Mapathon Portal.
- Normalized Difference Vegetation Index is calculated for the two separate datasets and the image differencing technique applied to get the final output.
- Formula For NDVI:  

$$NDVI = (NIR-RED)/(NIR+RED)$$
- Difference Formula:  

$$(NDVI_{DATE1} - NDVI_{DATE2})$$

## Conclusion:

Red area in map displays decrease in vegetation and green area defines increase in vegetation whereas yellow represent no change

Source of Data: <https://bhuvan.nrsc.gov.in> ; <https://www.openstreetmap.org>  
 Disclaimer: This map has been prepared for Mapathon 2020 contest and conveys information for contest purpose only.

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