

## **Application of Machine Learning on Google Earth Engine for Forest Fire Severity, Burned Area Mapping and Land Surface Temperature Analysis: Rajasthan, India**

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**Abstract :** Forest fires are a recurring issue in many parts of the world, including India. These fires can have various causes, including human activities (such as agricultural burning, campfires, or discarded cigarettes) and natural factors (such as lightning). This study presents a comprehensive and advanced methodology for assessing wildfire susceptibility by integrating diverse environmental variables and leveraging cutting-edge machine learning techniques across Rajasthan, India. The primary goal of the study is to utilize Google Earth Engine to compare locations in Sariska National Park, Rajasthan (India), before and after forest fires. High-resolution satellite data were used to assess the amount and types of changes caused by forest fires. The present study meticulously analyzes various environmental variables, i.e., slope orientation, elevation, normalized difference vegetation index (NDVI), drainage density, precipitation, and temperature, to understand landscape characteristics and assess wildfire susceptibility. In addition, a sophisticated random forest regression model is used to predict land surface temperature based on a set of environmental parameters.

**Keywords :** wildfire susceptibility mapping, LST, random forest, GEE, MODIS, climatic parameters

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