

Big Remotely Sensed Data Application on Forest Fires In Morocco

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RESUMO – Forest fires are undeniably the most devastating scourge of forests in the Mediterranean region. The current evolution of this phenomenon and its foreseeable consequences threaten the sustainability of forest ecosystems and compromise the validity of the usual post-fire regeneration practices. To answer this, the application of wisely rehabilitation measures due to low post-fire resilience becomes important. This study aims to assess fire severity and the post-fire regeneration dynamic using remotely sensed data. The methodology proposed is based on the analysis of a multitemporal dataset of Landsat satellite imagery in Morocco between 1997 and 2016. The processing is carried out using Google Earth Engine (GEE) as web-based remote sensing platform, which facilitates the use, visualization, geosynchronization, and processing of different types of satellite images to produce maps and statistics of the burned area. Fire severity and vegetation regeneration monitoring study is based on the analysis of the temporal trajectories of different spectral bands and the use of different spectral indices (normalized burn ratio (NBR), delta normalized burn ratio (dNBR), the relativized delta normalized burn ratio (RdNBR), and the relativized burn ratio (RBR), normalized regeneration index (NRI)). The outcome of this analysis shows contrasting trends and different trajectories for the severity and regeneration that depend on the type of forest formation and species composition. Also, the developed methodology based on Google Earth Engine (GEE) to produce Landsat-based measures of fire severity and postfire regeneration dynamic is an important contribution to wildland fire research and monitoring.

Keywords: Remote sensing; Spatial BigDATA, GoogleEarth Engine; forest fire; regeneration dynamics; fire severity; ecosystem restoration

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