Significant decline of forest fires in Nilgiri Biosphere Reserve, India

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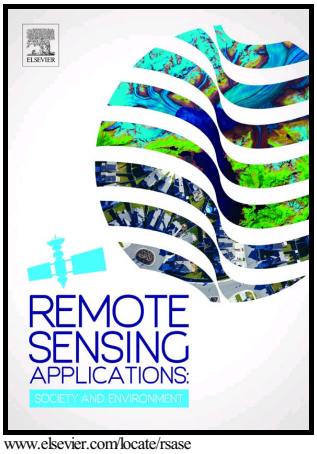

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Significant decline of forest fires in Nilgiri Biosphere Reserve, India

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Abstract

Yet there is considerable uncertainty over management effectiveness of many protected areas around the world. In this regard, long-term monitoring and management of disturbances in the protected areas need to be properly addressed and documented. The present study is aimed correspondingly to analyze spatial extent, frequency and distribution of forest fires in Nilgiri Biosphere Reserve, Western Ghats, India over four decades (1973 to 2014). Multi-temporal Landsat and Indian Remote Sensing satellite data were used to quantify forest burnt area. The results showed that the spatial extent of burnt area greatly varied between 1318 km^2 (in 1989) to 15.17 km^2 (in 2013). The continuous monitoring of fires during the recent decade (2005-2014) was observed to have a gradual decline over the reserve. High frequency of fires has been found in dry deciduous forest followed by moist deciduous forest, scrub, grassland and semi-evergreen forest. Among six protected areas, Bandipur National Park had represented more fire incidents followed by Mudumalai Wildlife Sanctuary, Nagarhole and Mukurthi National Parks. Grid analysis shows that 67% of the grids were affected by forest fires. Large burnt patches have steadily decreased in their size while the other patch classes showed a significant reduction in their size over the study period. This study had revealed the role of climate and accessibility in