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A view of recent forest fire in Australia by satellite derived indices

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Bushfire is one of the dangerous natural manmade hazards. It can cause great damges to the air quality, human health, environment and bio-diversity. In addition, forest fires may be a potential and signigicant source of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans. In early 2020, Australia experienced serious bushfires with over an area of estimated 18.6 million hectares burned, over 5,900 buidlings (including 2, 779 homes) destroyed, and at least 34 people (including three fire fighters) and billion animals and some endangered species killed. Subsequently, air quality was degraded to hazardous levels. It was estimated that about 360 million tonnes of CO_2 was emitted as of 2 Jan. 2020 by NASA. Remote sensing data has been instrumental for the environmental monitoring in particular the bushfire. Many methods and algorithms have been proposed to detect the burned areas in the forest. However, it is challenging or even infeasible to routinely apply them by non-experts due to a chain of sophisticated schemes during their implementation. Here, we present a simple and effective method for mapping a burned area. The performances of different optical sensors and indices are conducted. Sentinel-2 MSI and Landsat 8 data are ultilized for the comparison of burned forest by analyzing different indices (including NDVI, NDBR and newly development index Nomarlized Difference Laten Heat Index (NDLI)). The forest damages are estimated over the Katoombar, Austrialia and the burning severity map is generated and classified into eight levels (none, high regrowth, lowregrowth, unburned, low severity, moderate low severity, moderate high severity, and high severity). The comparision in results from Sentinel-2 MSI data and Landsat image is performed and presented.