**Nanosatellites in Mapping Forest Fires**

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Abstract

Nanosatellites are small satellites lighter than 10 kg that enable daily monitoring of the Earth. They enable wide coverage with a short revisit time. Company Planet Labs Inc. operates the largest constellation of nanosatellites called Doves. Doves weigh only 5 kg and provide 3-metre multispectral (red, green, blue, near-infrared) resolution for a variety of applications. This research examines the use of nanosatellite images called PlanetScope for fire severity monitoring. We examined eight different radiometric indices: normalized difference vegetation index (NDVI), green-blue normalized difference vegetation index (GBNDVI), green-red normalized difference vegetation index (GRNDVI), normalized difference water index (NDWI), soil-adjusted and atmospherically resistant vegetation index (SARVI), chlorophyll index green (CIG), chlorophyll vegetation index (CVI) and green atmospherically resistant vegetation index (GARVI), for mapping burn areas around city of Šibenik in August 2019. The results were compared with the Sentinel-2 Normalized burn index (NBR), which is the standard approach for mapping burn areas, but calculated using a short-wave infrared band. This approach shows great potential for monitoring burn areas, because of the short revisit time of Dove satellites.

Keywords: nanosatellites, Planetscope, fires, radiometric indices