



An improved burned area algorithm designed for PROBA-V by the Copernicus Global Land Service

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The Global component of the Copernicus Land Monitoring Service (CGLS) provides a series of bio-geophysical products on the status and evolution of land surface at global scale. A number of products of the CGLS portfolio are derived from PROBA-V sensor data, among them the burned area (BA) product.

Through various validation and inter-comparison experiments performed on the Collection 300m Version 1 product, it was noted that it could be improved if using the spatial and temporal location of active fires (also known as thermal anomalies or hot spots). A new algorithm (Version 2) has been developed that maps BA by using information from active fires and spectral PROBA-V or SPOT-VEGETATION reflectance observations.

The algorithm is based on a breakpoint analysis that identifies sudden spectral changes related to burns on temporal series of reflectance observations. Active fires location and timing are used as seeds in a spatio-temporal regional growing algorithm. The region (burn patch) grows through the detections of sudden burn-like spectral changes, across the spatial and temporal domains. Validation results based on Landsat imagery on 2014 provided evidence of large improvement in accuracy respect previous versions (those from Collection 1km and 300m). The accuracy of the category burned (Dice coefficient, DC) increased from around 21% to 31%. The results show on the other hand, that still there is room for improvement to achieve the DC 50% of the most accurate product currently available, MODIS-MCD64 Collection 6.