Global multi-year burned area maps from PROBA-V 333M data

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Objectives

- To offer a multi-year burned area product with an estimate of fire seasonality in near real-time as part of the Copernicus Global Land Service
- Validated and Quality Assured
- Output monitoring indicators
- Flexible algorithm – adapt to new sensors
- Not reliant on hotspot data
15-year+ global burned area record

- SPOT-VGT until from Q3 in 1999 to end 2013 @ 1km
- PROBA-V 333m from start 2014 to the present day
- Copernicus Global Service Product
- Validation activity supported by ESA CCI Fire + Copernicus
Algorithm Properties – 333m

- Evolved from GBA2000 project
- Stringent pre-processing (best cloud detection method), static and dynamic water masking (new), improved DEM
- Removal of those pixels believed to not be vegetated surfaces
- Daily time steps of NIR reflectance evaluated against mean NIR reflectance from time t-1
- Threshold checking of the MIR band
- Repeat fire reset after clustering of fire detections in a 1 or 0.5 degree grid call or on the 1st of April.
- Validation in the year 2008 for the 1km product
- Systematic comparison against MODIS, EFFIS and any Copernicus Emergency Service burned area sources
Observations

Increase of burned area from PROBA 333m when compared to 1km
Montan - SPAIN
Fire - 07/07/2015
Grading Map

Fires detected by PROBA-V 333m
Fires detected by Copernicus Emergency Service (EMS)
Scale 1:11000
Overview of the product portfolio

The Copernicus Global Land Service reliably provides a set of global biophysical variables which describe the state and the evolution of the vegetation and soils, the energy budget at the surface, and the water cycle.

The below table shows the availability of the latest major version, available in near-real time. For more details on the definition, quality, development or version history of the products, as well as the available archive (time series), please visit the individual product pages.

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<thead>
<tr>
<th>Theme</th>
<th>Near-Real Time Product</th>
<th>Spatial Resolution</th>
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<tbody>
<tr>
<td></td>
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<td>Coarse &gt;=1km</td>
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<tr>
<td>Vegetation</td>
<td>Fraction of photosynthetically active radiation absorbed by the vegetation</td>
<td>In production</td>
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<td></td>
<td>Fraction of green vegetation cover</td>
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<td></td>
<td>Leaf Area index</td>
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<td>Normalized Difference Vegetation Index</td>
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<td>Vegetation Condition Index</td>
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<td>Vegetation Productivity Index</td>
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<td></td>
<td>Dry Matter Productivity</td>
<td>In production</td>
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<td></td>
<td>Burnt Area</td>
<td>In production</td>
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Summary & Future Tasks

• 15+ years of burned area data available to download

• 333m product NOW AVAILABLE

• New developments
  – Use of active fire (non-NRT re-analysis product in development at Leicester)
  – Detection of burned areas in cloudy regions with S1

• 2017 will be a Critical Year for Validation

• Better characterisation of fire area at 333m, but still considerable temporal and spatial differences with the MODIS 45 C5 500m product -> New product development
Thank You

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