



## Reference Land Cover in Great Virunga 2016-2018 (vector) - version 1, Feb. 2019

This metadata refers to the Land Cover vector data generated over Virunga (Africa) for 2016 in the framework of the Copernicus Global Land Hot Spot Mapping (C-GL-HSM) contract under the coordination of JRC. This area of interest is either mapped with the generic 8 classes dichotomous legend (CAF\_02\_lc\_a) or the detailed modular legend (CAF\_02\_lc\_b).

The mapped area of interest (AOI) represents a Key Landscape for Conservation area (KLC). The KLC has a total size of about 4 million ha (40,000 km<sup>2</sup>) and is situated at the border between the Democratic Republic of Congo (DRC), Uganda and Rwanda. The main National Park is represented by the Virunga National Park, with a total area of 7768.93 km<sup>2</sup>. Several parks in Rwanda and Uganda are adjacent and connected to Virunga

Reference time: 2016 - 2018

### Simple

Date (Creation)	2019-02-25				
Date (Publication)	2019-02-25				
Date (Revision)	2019-02-25				
Edition	01.00				
Citation identifier	jrc_v_4326_30_m_c-gl-hsm-virunga_p_2016-2018_v01_r00				
Point of contact	Organisation name	Individual name	Electronic mail address	Website	Role
	European Commission			<a href="https://commission.europa.eu">https://commission.europa.eu</a>	Owner
	Copernicus Land Monitoring Service		copernicus@eea.europa.eu	<a href="https://land.copernicus.eu">https://land.copernicus.eu</a>	Custodian
	European Commission's Joint Research Centre			<a href="https://joint-research-centre.ec.europa.eu/">https://joint-research-centre.ec.europa.eu/</a>	Publisher
	Copernicus Land Monitoring Service helpdesk		copernicus@eea.europa.eu	<a href="https://land.copernicus.eu/en/contact-service-helpdesk">https://land.copernicus.eu/en/contact-service-helpdesk</a>	Point of contact
Maintenance and update frequency	Not planned				
GEMET - INSPIRE themes, version 1.0	<ul style="list-style-type: none"><li>Human health and safety</li><li>Land cover</li></ul>				
Keywords					
Continents, countries, sea regions of the world.	<ul style="list-style-type: none"><li>Rwanda</li><li>Democratic Republic of the Congo</li><li>Uganda</li><li>Africa</li></ul>				
Keywords					
GEMET	<ul style="list-style-type: none"><li>land cover</li><li>landscape alteration</li></ul>				

	<ul style="list-style-type: none"> <li>• landscape</li> <li>• land use</li> <li>• land</li> </ul>
<b>Spatial scope</b>	<ul style="list-style-type: none"> <li>• <a href="#">Regional</a></li> </ul>
<b>EEA topics</b>	<ul style="list-style-type: none"> <li>• Environmental health impacts</li> <li>• Land use</li> </ul>
<b>Temporal resolution</b>	<ul style="list-style-type: none"> <li>• Not planned</li> </ul>
<b>Access constraints</b>	Other restrictions
<b>Other constraints</b>	<a href="#">no limitations to public access</a>
<b>Use constraints</b>	Other restrictions
<b>Other constraints</b>	<p>The Copernicus component is governed by Regulation (EU) No 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU. Within the Copernicus component, a portfolio of land monitoring activities has been delegated by the European Union to the European Environment Agency (EEA) and the DG Joint Research Centre of the European Commission.</p> <p>The Copernicus land monitoring products and services are made available on a principle of full, open and free access, as established by the Commission Delegated Regulation (EU) No 1159/2013 of 12 July 2013.</p> <p>Free, full and open access to the products and services of the Copernicus Land Monitoring Service is made on the conditions that:</p> <ol style="list-style-type: none"> <li>1. When distributing or communicating Copernicus Land Monitoring Service products and services (data, software scripts, web services, user and methodological documentation and similar) to the public, users shall inform the public of the source of these products and services.</li> <li>2. Where the Copernicus Land Monitoring Service products and services have been adapted or modified by the user, the user shall clearly state this.</li> <li>3. Users shall make sure not to convey the impression to the public that the user's activities are officially endorsed by the European Union.</li> </ol>
<b>Spatial representation type</b>	Vector
<b>Distance</b>	30 m
<b>Denominator</b>	30000
<b>Language of dataset</b>	English
<b>Character set</b>	UTF8
<b>Topic category</b>	<ul style="list-style-type: none"> <li>• Geoscientific information</li> <li>• Environment</li> <li>• Imagery base maps earth cover</li> </ul>

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<b>Begin date</b>	2016-01-01		
<b>End date</b>	2018-12-31		
<b>Additional Information</b>	<p>The Virunga National Park is not only the oldest park in africa (established in 1925), but also the richest in terms of biological diversity. The abundant wildlife includes the last of the worlds endangered mountain gorillas.</p> <p>Virunga is located in the centre of the Albertine Rift, between Rwanda and Uganda. The park extends from the Virunga Massif in the south (including Mount Nyiragongo, the largest active volcano lake on earth) to the 5,109 m high Rwenzori Mountains in the north. The centre is dominated by the large Lake Edward. The park is characterised by a huge landscape diversity, including savannas, peat bogs, marshes, lava plains, eastern steppe vegetation, and various types of forests, including tropical rainforest and bamboo. This diversity is reflected also in the climate, which varies from as little as 500 mm annual rainfall around Lake Edward to more than 3,000 mm annual rainfall in the Mount Rwenzori region and permanent snow on top of the mountain.</p> <p>Exceptional for the park is also the commitment to support local communities. The Virunga Alliance, a public-private-partnership, focuses on three main sectors for development, including tourism, sustainable energy and access to credit, and sustainable agriculture and fisheries.</p> <p>The World Database on Protected Areas (WDPA 2019) has been used in the Copernicus Global Land Hot Spot mapping (C-GL-HSM) contract under the coordination of JRC to obtain statistics on land cover changes inside and outside the protected areas.</p> <p>To see how much of the Key Landscapes for Conservation area is a Protected Area, consult the WMS service found at the Service section of this metadata.</p>		
<b>Coordinate reference system identifier</b>	<a href="#">EPSG:4326</a>		
<b>Distribution format</b>	<ul style="list-style-type: none"> <li>• SHP ( 1.0)</li> </ul>		
<b>OnLine resource</b>	<b>Protocol</b>  WWW:URL   OGC:WMS  WWW:LINK-1.0-http--link   OGC:WMS  WWW:DOWNLOAD-1.0-http--download	<b>Linkage</b>  <a href="https://land.copernicus.eu/en/products/clcc-hot-spots/present_land_cover#download">https://land.copernicus.eu/en/products/clcc-hot-spots/present_land_cover#download</a>  <a href="https://geospatial.jrc.ec.europa.eu/geoserver/hotspots/wms">https://geospatial.jrc.ec.europa.eu/geoserver/hotspots/wms</a> <a href="https://hsm.land.copernicus.eu/">https://hsm.land.copernicus.eu/</a>  <a href="https://geospatial.jrc.ec.europa.eu/geoserver/hotspots/wms">https://geospatial.jrc.ec.europa.eu/geoserver/hotspots/wms</a> <a href="https://land.copernicus.eu/en/technical-library/great-virunga-report-files/@@download/file">https://land.copernicus.eu/en/technical-library/great-virunga-report-files/@@download/file</a>	<b>Name</b>  Great Virunga – Dichotomous and Modular Reference Land Cover  all_present_lc_b_pol  HotSpot Land Cover Change Explorer  all_present_lc_a_pol

		Report file for download
WWW:DOWNLOAD-1.0-http--download	<a href="https://land.copernicus.eu/en/technical-library/great-virunga-validation-file/@_@download/file">https://land.copernicus.eu/en/technical-library/great-virunga-validation-file/@_@download/file</a>	Validation file for download
WWW:URL	<a href="https://land.copernicus.eu/en/products/clcc-hot-spots/satellite_images">https://land.copernicus.eu/en/products/clcc-hot-spots/satellite_images</a>	Satellite images
OGC:WMS	<a href="https://geospatial.jrc.ec.europa.eu/geoserver/hotspots/wms">https://geospatial.jrc.ec.europa.eu/geoserver/hotspots/wms</a>	protected_areas

### OnLine resource

No information provided.

Hierarchy level	Dataset
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### Conformance result

Title	Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services
Date (Publication)	2010-12-08
Explanation	See the referenced specification
Pass	Yes

Statement	<p>e-GEOS Production Site produced this product by satellite analyses in the context of the Copernicus Global land Hot Spot Mapping (C-GL-HSM) framework.</p> <p>Data and products are based on medium to high and very high resolution satellite images (from approximately 1 to 30m spatial resolution) with a change assessment frequency between 1 to 20 years. The Image data sources used for mapping are Landsat 7 and 8. The validation process made use of Spot-6 and Sentinel-2 images as reference data.</p> <p>Images temporal range: 2014-2018</p> <p>It is the time frame that has been accepted to collect the satellite images useful to produces the vector data.</p> <p>The Reference year is included in this time frame and correspond to mean year considering all the image's year used. It is the year on which the majority of the used images are.</p> <p>The classification scheme follows the Land Cover Classification System (LCCS) developed by the United Nations Food and Agriculture Organization (FAO).</p> <p>Since LCCS is a hierarchical system, the modular legend can be aggregated to the dichotomus legend.</p> <p>The FAO LCCS handbook which describes each class in detail, can be downloaded here: <a href="http://www.fao.org/3/a-i5232e.pdf">http://www.fao.org/3/a-i5232e.pdf</a></p> <p>This LCCS Land Cover map includes the following land cover classes (associated raster code in [ ]):</p> <p>A11 - Cultivated and Managed Terrestrial Area(s) [3]</p> <p>A12 - Natural And Semi-Natural Primarily Terrestrial Vegetation [4]</p> <p>A23 - Cultivated Aquatic or Regularly Flooded Area(s) [6]</p> <p>A24 - Natural And Semi-Natural Aquatic or Regularly Flooded Vegetation [7]</p> <p>B15 - Artificial Surfaces and Associated Area(s) [0]</p> <p>B16 - Bare Area(s) [11]</p> <p>B27 - Artificial Waterbodies, Snow and Ice [13]</p> <p>B28 - Natural Waterbodies, Snow and Ice [14]</p> <p>The produced and independently validated Land Cover and Land Cover Change maps and statistics are available to global users.</p> <p>The report and the validation file can be downloaded from the link section.</p>
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Basic image processing: Cloud/Shadow masking, Data Seltion (based on occlusion and sesonality considerations), Atmospheric correction (TOA) of satellite data, Coregistration.

Automatic classification: Feature extraction from Dense Multitemporal Time Series (D MTS), statistics generation, automatic classificaiton (ROI based or decision tree) and labeling according to the required output LCCS legend schema.

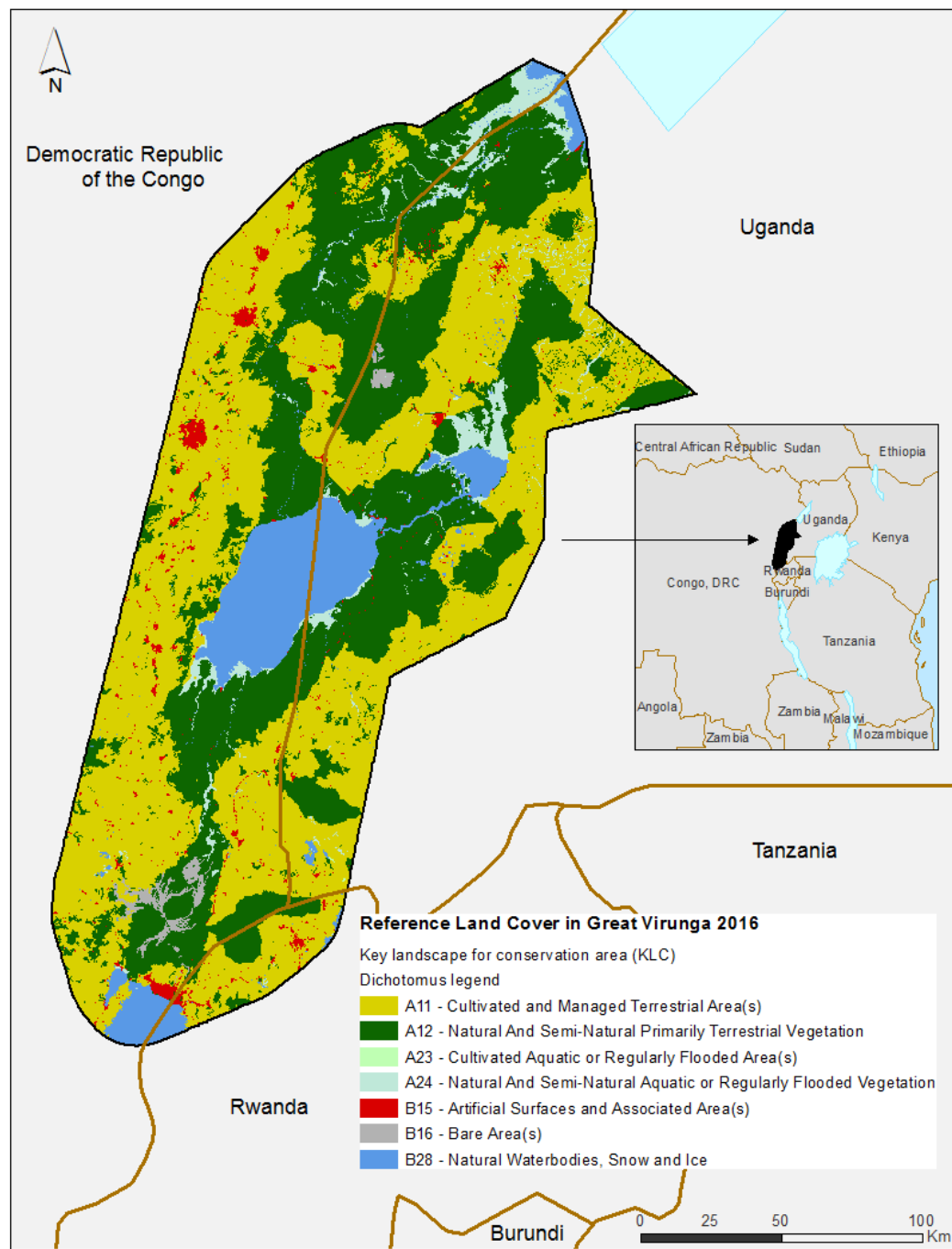
Visual inspection and refiment: check and refinement of the LCCS product generated through the automatic procedure in order to corrected classification errors and to refine borders where necessary.

Internal validation: independent validation of the LCCS product based on external reference data (where available) and on other datasets for intercomparison. The scope of the internal validation is to make a qualitative and quantitavie check of the declared Thematic and Positional accuracies.

Metadata

File identifier	e5397b58-6e4a-4961-8a6c-5cae51486fc3 <a href="#">XML</a>				
Metadata language	English				
Character set	UTF8				
Hierarchy level	Dataset				
Date stamp	2024-07-22T09:22:50.536922Z				
Metadata standard name	ISO 19115/19139				
Metadata standard version	1.0				
Metadata author	Organisation name	Individual name	Electronic mail address	Website	Role
	Copernicus Land Monitoring Service		copernicus@eea.europa.eu	<a href="https://land.copernicus.eu">https://land.copernicus.eu</a>	Point of contact

Overviews



Provided by

