EEA geospatial data catalogue

Sentinel-3 Top-Of-Canopy Reflectance 2018-present (raster 300m), global, daily - version 2

The surface reflectance is the Top-Of-Canopy (TOC) reflectance derived from the Top Of

Atmosphere (TOA) reflectance after correction for the temporally, spatially and spectrally varying

scattering and absorbing effects of atmospheric components.

The Sentinel-3 Top-Of-Canopy (TOC) reflectances are the common input to derive the Sentinel-3 based global bio-geophysical products.

Compared to the previous version, the version 2 benefits from an improved OLCI-SLSTR co-registration and a better cloud, snow and cloud shadow discrimination. Furthermore, the calibration correction factors are applied on the SLSTR data and on the OLCI-A data, as recommended by ESA. Finally, uncertainties are associated to the spectral TOC reflectances, propagating the uncertainty of original OLCI input data and taking into account the uncertainty due to the aerosol model.

Simple

Date (Creation)	2025-05-21
Date (Publication)	2025-05-21
Edition	2.3
Edition date	2019-05-14
Citation identifier	clms_r_4326_300_m_lcms-sen3-l2-toc_global_p_2018_v2 VITO NV 2020-01-01
Code	10.2909/b4149b9b-f020-42ea-9159-9c437ce4c15b
Other citation details	https://land.copernicus.eu/en/products/global-dynamic-land-cover
Purpose	This product is first designed to fit the requirements of the Global component of the Copernicus Land Service. It can be also useful for all applications related to the environment monitoring.
Credit	The Sen-3 TOC product is being generated by VITO NV as part of the operation of the bio-geophysical variables systematic monitoring of the Global Land Component of the Copernicus Land Service 'CGLOPS', a JRC program. The input data comes from the OLCI and SLSTR sensors on board Sentinel-3 platform. In addition, ancillary data is used in the atmospheric correction. The GTOPO30 (Global 30 Arc-Second Elevation) dataset is used for assigning a surface elevation to each pixel. The total column of ozone and the Aerosol Optical Thickness (AOT) comes from CAMS NRT data. The Copernicus Atmosphere Monitoring Service (CAMS) is part of the Copernicus Programme, which is an EU Programme managed by the European Commission (EC) and implemented in partnership with the Member States, the European Space Agency (ESA), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the European Centre for Medium-Range Weather Forecasts (ECMWF), EU Agencies and Mercator Ocean. The surface temperature comes from a climatology based upon a MERRA_2 monthly mean produced by NASA
Point of contact	**Organisation name** / **Individual name** / **Electronic mail address** / **Website** / **Role** Copernicus Land Monitoring Service / copernicus@eea.europa.eu / https://land.copernicus.eu / Custodian Copernicus Land Monitoring Service helpdesk / copernicus@eea.europa.eu / https://land.copernicus.eu/en/contact-service-helpdesk / Point of contact

Point of contact

No information provided.

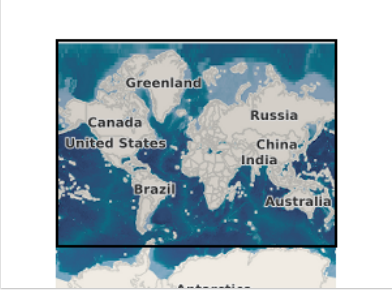
Point of contact

No information provided.

Maintenance and update frequency	As needed
Update scope	Series
Name	netCDF
Specification	NetCDF
Spatial scope	• Global
Continents, countries, sea regions of the world.	• World
Keywords	
GEMET - INSPIRE themes, version 1.0	• Orthoimagery
GEMET	• reflection • geophysical environment
Keywords	• Sentinel-3
Copernicus Themes	• Monitoring Earth from Space
Copernicus Variables	• Surface Reflectance
Temporal resolution	• Daily
Keywords	
Access constraints	Other restrictions
Other constraints	no limitations to public access
Use constraints	Other restrictions
Other constraints	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. 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. Free, full and open access to the products and services of the Copernicus Land Monitoring Service is made on the conditions that: 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. 2. Where the Copernicus Land Monitoring Service products and services have been adapted or modified by the user, the user shall clearly state this. 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.
Spatial representation type	Grid
Distance	300 m

Language of dataset	English
Character set	UTF8
Topic category	• Imagery base maps earth cover • Environment

85.00	N	-65.00	S	180.00	E	-180.00	W



Begin date	2018-06-01
Coordinate reference system identifier	EPSG:4326
Number of dimensions	2
Dimension name	Row
Dimension size	141120
Resolution	0.000992063492063 deg
Dimension name	Column
Dimension size	362880
Resolution	0.000992063492063 deg
Cell geometry	Area
Transformation parameter availability	No
Checkpoint Availability	Yes
Checkpoint Description	Upperleft corner tiepoint
Point in Pixel	• Center
Distribution format	• netCDF (1.0) **Specification**: Extension of Tagged Image File Format (TIFF) Revision 6.0 for georeferenced or geocoded raster imagery
Units of distribution	Per product

OnLine resource

Protocol	Linkage	Name
WWW:LINK-1.0-http--link	https://browser.dataspace.copernicus.eu/	CDSE - Copernicus Browser
WWW:DOWNLOAD:netCDF	https://catalogue.dataspace.copernicus.eu/odata/v1/Products?$filter=Collection/Name eq 'CLMS' and Attributes/OData.CSC.StringAttribute/any(att:att/Name eq 'datasetIdentifier' and att/OData.CSC.StringAttribute/Value eq 'toc_global_300m_daily_v2') and Attributes/OData.CSC.StringAttribute/any(att:att/Name eq 'fileFormat' and att/OData.CSC.StringAttribute/Value eq 'nc')&$count=true&$expand=Attributes	CDSE OData Catalogue
WWW:LINK-1.0-http--link	https://land.copernicus.eu/en/products/temperature-and-reflectance/surface-reflectance-2018-present-raster-300m-global-daily-version-2.3	CLMS - web portal

	null	https://documentation.dataspace.copernicus.eu/Data/ComplementaryData/CLMS.html	CDSE - CLMS data folder
	WWW:LINK-1.0-http--link	https://documentation.dataspace.copernicus.eu/APIs/S3.html	CDSE - Access to EO data via S3

OnLine resource	**Protocol**	**Linkage**	**Name**
	DOI	https://doi.org/10.2909/b4149b9b-f020-42ea-9159-9c437ce4c15b	

Hierarchy level	Dataset

Conformance result

Title	Validation results
Date (Publication)	2021-04-27
Explanation	Overall accuracy just over 80% (80.6% in 2015, 80.3% in 2019) using a set of 21K independent validation points. More details can be found in the validation report at https://land.copernicus.eu/en/products/global-dynamic-land-cover
Pass	Yes

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	This data set is conformant with the INSPIRE Implementing Rules for the interoperability of spatial data sets and services
Pass	Yes

Conformance result

Title	INSPIRE Data Specification on orthoimagery - Guidelines
Date (Publication)	2010-04-26
Explanation	See the referenced specification
Pass	Yes

Statement	The Copernicus Global Land Operations (CGLOPS-1) processing lines generating biophysical products from Sentinel-3 OLCI and SLSTR data rely all on a common pre-processing chain which ingests L1B frames and delivers surface reflectances. This pre-processing chain is made of various modules which perform the pixel classification (Idepix), the co-registration between OLCI and SLSTR acquisitions, the reprojection and resampling in the CGLOPS-1 regular grid and the atmospheric corrections. Idepix is developed in the framework of the Sentinel-3 Optical Mission Performance Cluster (OPT-MPC) under ESA contracts and imbedded in the Sentinel Application Platform (SNAP). The co-registration, reprojection and resampling module and the Atmospheric Correction (AC) module are developed by CGLOPS-1. The historic (June 2018 – March 2025) surface reflectance V2.3 products are derived from the following L1B input data versions: - For OLCI, the version OL__L1_.004.00.00 is used. These OLCI data are accessible through the Copernicus dataspace catalogue. - For SLSTR, the baseline collection 4 (SL__L1_.004) available at the Copernicus dataspace catalogue, is used. The actual minor version depends on the year. The NRT (from 1st April 2025 onwards) surface reflectance V2.3 products are derived from the latest version of OLCI and SLSTR L1B data available at the Copernicus dataspace catalogue.

For historic and NRT products, the used OLCI and SLSTR L1B source files can be found in the metadata of each surface reflectance file.

Ancillary data for atmospheric corrections include the ozone and water vapor content, the aerosol content, the sea-level surface pressure, the surface temperature and the surface elevation.

Metadata

File identifier	b4149b9b-f020-42ea-9159-9c437ce4c15b XML
Metadata language	English
Character set	UTF8
Hierarchy level	Dataset
Date stamp	2025-05-27T13:13:44.137441Z
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	https://land.copernicus.eu	Point of contact

Overviews