EEA geospatial data catalogue

CORINE Land Cover Change 2012-2018 (raster 100 m), Europe, 6-yearly - version 2020_20u1, May 2020

Corine Land Cover Change 2012-2018 (CHA1218) is one of the Corine Land Cover (CLC) datasets produced within the frame the Copernicus Land Monitoring Service referring to changes in land cover / land use status between the years 2012 and 2018.

CLC service has a long-time heritage (formerly known as "CORINE Land Cover Programme"), coordinated by the European Environment Agency (EEA). It provides consistent and thematically detailed information on land cover and land cover changes across Europe.

CLC datasets are based on the classification of satellite images produced by the national teams of the participating countries - the EEA members and cooperating countries (EEA39). National CLC inventories are then further integrated into a seamless land cover map of Europe. The resulting European database relies on standard methodology and nomenclature with following base parameters: 44 classes in the hierarchical 3-level CLC nomenclature; minimum mapping unit (MMU) for status layers is 25 hectares; minimum width of linear elements is 100 metres. Change layers have higher resolution, i.e. minimum mapping unit (MMU) is 5 hectares for Land Cover Changes (CHA), and the minimum width of linear elements is 100 metres.

The CLC service delivers important data sets supporting the implementation of key priority areas of the Environment Action Programmes of the European Union as e.g. protecting ecosystems, halting the loss of biological diversity, tracking the impacts of climate change, monitoring urban land take, assessing developments in agriculture or dealing with water resources directives. part of the European Copernicus Programme coordinated by the European Environment Agency, providing environmental information from a combination of air- and space-based observation systems and in-situ monitoring.

Simple

Identification info

Date (Creation)	2019-06-14
Date (Publication)	2019-06-14
Date (Revision)	2020-05-13
Edition	20.01
Citation identifier	copernicus_r_3035_100_m_cha-2012-2018_p_2011-2018_v20_r01
Citation identifier	DAT-49-en
Citation identifier	DAT-38-en

Identifier

Code	10.2909/5654b422-af84-4115-ac3c-5d7dea540ebb

Point of contact

Organisation	Individual	Electronic mail address	Website	Role
European Commission			https://commission.europa.eu	Owner
Copernicus Land Monitoring Service		JRC-Copernicus-Land@ec.europa.eu	https://land.copernicus.eu	Custodian
European Environment Agency		sdi@eea.europa.eu	http://www.eea.europa.eu	Publisher
Copernicus Land Monitoring Service helpdesk		JRC-Copernicus-Land@ec.europa.eu	https://land.copernicus.eu/en/contact-service-helpdesk	Point of contact

Spatial representation type	Grid

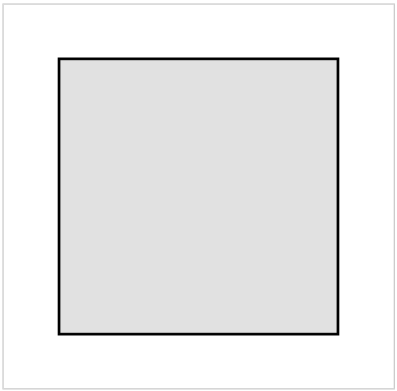
Spatial resolution

Spatial resolution	100 m

Topic category	• Environment • Imagery base maps earth cover

Extent

71.41	N	27.41	S	44.82	E	-31.56	W



16.61	N	15.74	S	-60.91	E	-61.91	W

5.85	N	3.77	S	-51.62	E	-54.27	W

14.97	N	14.30	S	-60.71	E	-61.33	W

-12.55	N	-13.09	S	45.39	E	44.93	W

-20.78	N	-21.48	S	55.94	E	55.12	W

Temporal extent

Time period	2012-01-01 2018-12-31

Maintenance and update frequency	Continual
GEMET - INSPIRE themes, version 1.0	• Land cover
Continents, countries, sea regions of the world.	• EEA39
GEMET	• landscape alteration • land cover • landscape • land use
Spatial scope	• European
EEA Management Plan	• 2016 2.6.1
EEA topics	• Water • Land use

Resource constraints

Access constraints	Other restrictions
Other constraints	no limitations to public access

Resource constraints

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.

Associated resource

Association Type	Revision Of
Metadata Reference	• Corine Land Cover 2012 - 2018 changes (raster 100m) - version 20, Jun. 2019
Language	English
Character encoding	UTF8

Distribution Information

Distribution format	• GeoTIFF
OnLine resource	https://image.discomap.eea.europa.eu/arcgis/rest/services/Corine/CHA2012_2018_WM/MapServer
OnLine resource	Product Information & Technical Documentation
OnLine resource	CHA2012_2018
OnLine resource	https://doi.org/10.2909/5654b422-af84-4115-ac3c-5d7dea540ebb
OnLine resource	CLMS Website Download (requires authentication)

Data quality info

Hierarchy level	Dataset

Report

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

Resource lineage

Statement	Version 2020_20u1 Release date: 24-02-2020 File naming conventions simplified and better described. New file naming convention has been introduced based on user feedback on version 20. Filename is composed of combination of information about update campaign, data theme and reference year and version specification (including release year and release number). The French DOMs are provided in separate databases (files both for vector and raster version of data).

All raster layers are back in 8 bit GeoTIFF. Modification is introduced based on the user feedback on version 20. In order to keep 8 bit resolution for raster change layers, they are divided into two files - representing consumption (from) and formation (to) part of change.

Version 20

Release date: 14-06-2019

Vector CLC database was provided by National Teams within original CLC1990, I&CLC2000 update, FTSP/CLC2006 update, CLC2012 update and CLC2018 update projects. All features in original vector database were classified and digitised based on satellite images with 100 m positional accuracy (according to CLC specifications) and 25 ha minimum mapping unit into the standardized CLC nomenclature (44 CLC classes).

European Corine Land Cover seamless DBs represent the final product of European data integration. The process of data integration started when national deliveries have been accepted and the Database Acceptance Report (DBTA) delivered . Delivered national data were produced in local national systems of all participating countries. Each national Coordinate Reference System (CRS) definition had to be known precisely together with its geometric relationship to a standard system in order to accurately transfer all national data into a standard European coordinate reference - ETRS89/LAEA1052.

Mostly, the process itself was carried out by global equation-based transformation to ETRS89 (e.g. seven-parameters Bursa-Wolf methods). The accuracy of a particular transformation ranges from centimetres to meters depending on the method and the quality and number of control points available to define the transformation parameters, but, in any case, the accuracy is far above the actual CLC data resolution (for more details see the DBTA reports for particular country). National data, when transformed into the common European reference, are introduced into tiled pan-European structure and as final step seamless dataset is produced.

In order to achieve production of the real seamless European database, the integration step includes also harmonization of database along country borders. It consists from edge-matching of land cover polygons from the national databases across national borders done by a verification / re-interpretation of the satellite images in the border regions (2 km wide strip along borders). The satellite images from IMAGE2000. CLC1990, CHA9000 and CLC2000 database were harmonized this way, but the order to priority was as following: CLC2000, both geometric and thematic adaptations of all polygons in a 2 km strip along national boundary lines; CHA9000 database to ensure that

changes in CLC2000 are consistent with the change database; corrected CLC90 (if provided by the MS); corrections were focused to geometric adaptations in semi-automatical way based on CLC00 and CHA00 databases. Border harmonization step has been skipped for CHA0006, CHA0612, CLC2012 and CLC2018 datasets. Simplified border harmonization step for CLC2006 dataset has been created for these countries: CH, NO, KO, TR, IE.

A simplified border matching has been applied:

- <25 ha polygons are NOT systematically removed (see next bullet).

- Sliver-like polygons (area < cca. 5 ha - soft limit) are generalised to largest or thematically most similar neighbour.

- CLC-code differences in polygons along two sides of the border are NOT changed

Only polygons with area <= 0,1ha were eliminated in CHA0006, CHA0612, CLC2012 and for CLC2018 datasets and CLC2006 dataset (besides the above-mentioned cases) and in parts newly added in campaigns 2006 and 2012 too

Note: Some artificial lines (dividing polygons with the same code) can be still present in database due to technical constraints of current ArcGIS technology, but has no impact for dataset contents and can be dissolved for data extracts.

Version 18 (V18)

Release date: 19-09-2016 (see V18_5_1)

Main purpose of the release: Publication of the final, corrected CLC 2012 data.

The 4th CLC inventory for the reference year of 2012 was produced under the Copernicus Initial Operations (GIO). It has the shortest production time in history of CLC. Two high-resolution satellite image coverages (IRS Resourcesat-1/2, SPOT-4/5, RapidEye constellation) taken in 2011-2012 provided multi-temporal information to support the update. Computer Assisted Photointerpretation (CAPI) was the prevailing methodology applied in interpreting of satellite images. FI, DE, IC, IE, NO, ES and SE applied a semi-automatic methodology. UK has turned from semiautomatic processing to CAPI because no national hi-res dataset was available for 2012. Most of the QC was conducted in remote verifications. IT and ES were verified by regions. In producing the European products, a simplified border matching was applied (see Version 15).

Changes from previous main release (Version 17):

• Inclusion of CLC 2012 layers for all the EEA39 countries.

• Production of CLC 2006 for Greece (in V18_3) and all CLCs for Channel Islands (V18_1).

• Revised CLC 2000 and CLC 2006 layers were made available (V18_5).

• Change in rasterization algorithm (V18_2).

Known problems:

• Some redundant lines between neighbouring polygons with the same code are still present, but only as result of persisting ‘adaptive tilling’ procedure (limitation of ESRI ArcGIS technology for large datasets).

• Polygons <25 ha can be present along national borders and along 'adaptive tilling' tiles boundaries.

Version 17 (V17)

Release date: 02-12-2013

Main purpose of the release: Maintenance / Increased European coverage of CLC time series data.

Changes from previous release (V16):

• Full CLC and CLCC data time series (from CLC 1990 to CLC 2006 including all CLCC datasets) has been included for the Autonomous Region of the Azores (PT).

Version 16 (V16)

Release date: 15-04-2012

Main purpose: Maintenance / Increased and improved European coverage of CLC time series data.

Changes from previous release (V15):

• CLC 1990 coverage: TR has been delivered CLC 1990 and CLCC (1990, 2000) data. Still missing CLC 1990 data: AL, BA, CH, CY, FI, IS, MK, NO, SE, UK and the XK.

• CLC 2000_revised layer covering 27 countries was included (CLC 2000 data revised during production of CLC 2006).

• Shift in MT geographic position has been corrected. All CLC layers for MT have been re-projected.

• A few coding inconsistences were corrected.

Version 15 (V5)

Release date: 20-07-2011

Main purpose: Publication of final CLC2 006 data.

The 3rd CLC inventory for the reference year of 2006 was produced under GMES Fast Track Service on Land Monitoring. The CLCC database was considered as the primary product, and a uniform change mapping methodology was agreed. Dual date satellite imagery (SPOT-4/5 and IRS P6) taken in 2005-2007 provided enhanced change mapping capabilities. Some of the countries newly entering CLC have produced CLC 2000 datasets also during the project time frame. Scanned topographic maps and digital aerial ortho-imagery have become commonly available. CAPI was the prevailing method applied in interpreting of satellite images. Nevertheless, FI, IS, NO, SE and the UK applied a semiautomatic methodology. Most of the European QC was conducted by visiting national teams (see Version 2). In some cases, remote verification was applied (without mission to countries). ES and IT were verified by regions.

Changes from previous release (V14 (V4)):

• CLC 2006 data covering Great Britain (part of UK) and TR were delivered. Thus, CLC 2006 European coverage includes 38 countries of the EEA39. Still missing CLC 2006 data for Greece.

• A simplified border matching was applied for countries new in CLC: XK, NO, CH and Türkiye: 1) <25 ha polygons along the borders are not removed systematically; 2) sliver-like polygons (area < cca. 5 ha) are generalised to largest or thematically most similar neighbour.

• For the rest of CLC 2006 countries a simple border-matching was applied. Code differences along two sides of borders are not changed. Only polygons with area 0,1 ha (sliver polygons) are eliminated.

• Data dissemination: CLC data become freely accessible from the EEA to any person or legal entity.

Version 14 (V4)

Release date: 25-10-2010

Main purpose: Maintenance / Increased European coverage of CLC 2006 and CLC 2000 data.

Changes from previous release (V13 (V3)):

• CLC 2006 European coverage includes 37 full countries of EEA39. New data for Northern Ireland (part of the UK), Madeira Islands (part of PT), CH, IS and TR were added to CLC 2006 data. Still missing CLC 2006: GR and the UK (except Northern Ireland).

• New data for Madeira Islands (PT), CH and IS were added into the European CLC 2000 coverage, which includes already the EE39. However, CLCC (1990, 2000) is available for 28 countries only.

• New data for Madeira Islands (PT) were added into CLC 1990 and CLCC (1990, 2000). Still missing CLC 1990 data: AL, BA, CH, CY, FI, IS, MK, NO, SE, TR, UK and XK.

The seamless European database has been further improved addressing feedback from the EEA on V13 (V3):

• No-data buffer (code 999) outside of valid data area was deleted.

• Small gaps identified in V13 were corrected by tolerance adaptation in ArcGIS v10 geodatabase.

• Remaining neighbour polygons with the same code were resolved by additional dissolve operation.

Version 13 (V3)

Release date: 02/2010

Main purpose: Publication of initial European coverage of CLC 2006 data.

Changes from previous release (V2):

• Version numbering was changed to harmonise vector data (V3) and derived raster data (V13) releases.

• First seamless release in ESRI Geodatabase format.

• Initial coverage of CLC 2006 including 35 countries and Northern Ireland (part of the UK). Missing countries in CLC 2006: GR, CH, TR and the UK (except Northern Ireland).

• Two updates added to CLC 2000: a new version for NO and the first CLC dataset for TR.

• Sea buffer around land has been introduced (15 km as proxy to 12 nautical miles' sea zone).

	Version 2 (V2) Release date: 09/2009 Main purpose: Publication of final CLC 2000 coverages. The 2nd CLC inventory for the reference year of 2000 (CLC 2000) was carried out in the frames of I&CLC 2000 project. A single date Landsat-7 ETM satellite imagery taken in 1999-2001 was provided by JRC. The technology of drawing the interpretation on transparencies was discarded and replaced by CAPI (computer-assisted photo-interpretation). Prior to mapping changes CLC 1990 data had to be corrected: 1) bulk geometric mistakes removed and residual geometric errors >100 m and coding mistakes were corrected; 2) polygons smaller than the 25 ha MMU were generalised. European QC was conducted by visiting national teams (usually at the start and towards the end of the project). Computer-assisted verification has provided written, geo-located explanations regarding the mistakes and supported harmonized production of the database all over Europe. Changes from previous release (V1): • It was to deliver a single seamless layer, but was not feasible in ESRI environment. Therefore, seamless ESRI ArcInfo Librarian map tiles were produced again (but free of tiling artefacts reported in V1). • New country deliveries integrated into European CLC 2000 ME, RS (incl. XK), IS and NO. Simple harmonization along national borders of these countries was done (small artefacts cleaned only). • CLC 2000 data for MT have been updated to reflect changed geometry in CLC 2006 delivery. • The dissemination and use of products was defined in an agreement between the EEA, the EC and the participating countries. Version 1 (V1) Release date: 08/2005 Main purpose: Publication of initial European coverage of CLC 2000 and CLCC (1990, 2000) data. Changes from previous release (V0): • The first consolidated version of European CLC data have been produced as integrated and harmonised seamless layer in ESRI ArcInfo Workstation Librarian map tiles. • The production of the first CLCC database has started, but no consolidated methodology was available. • Initial CLC 2000 coverage included 32 countries: AL, AT, BE, BA, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IT, LV, LI, LT, LU, MK, MT, NL, PL, PT, RO, SI, SK, SE and the UK. Missing countries in CLC 2000: CH, IS, ME, NO, RS (including XK) and TR. • CLC 1990 for most of the countries has been replaced by revised CLC 1990. Some additional countries have produced CLC 1990. Still missing in CLC 1990 European coverage: CY, LI, MT, SE and UK. • Full harmonization (visual re-interpretation by keeping the 25 ha MMU) inside a 5-km wide strip along national borders was done including 32 countries for CLC 2000 and 24 countries for CLCC (1990, 2000). • Semi-automatic harmonisation of 2-km wide strip along national borders was done for CLC 1990. • Vector to raster conversion: “cell centre” method was applied. • The 25 ha MMU is considered as hard limit. Polygons <25 ha were generalised. • Dual ownership of CLC and CLCC data (EEA and the country) was introduced. Version 0 (V0) Release dates: up to 12/2000 Main purpose: Distribution of country-level CLC 1990 data and creation of European raster products. The period of the first CLC inventory was rather long (1985-1996) and 1990 is considered as reference year. CLC 1990 data delivered by countries became part of GISCO database. Releases were provided bi-annually. Following political changes in Central and Eastern Europe 10 additional countries joined. The methodology was visual photointerpretation by drawing the CLC map on transparency, placed on top of satellite image hardcopy at scale 1:100.000. • CLC 1990 vector and raster data were initially available for 12 countries: AT, BE, DE, DK, ES, FR, GR, IE, IT, LU, NL and PT. Raster only data were available for FI and UK. • The EC Phare programme supported the implementation of CLC 1990 in 11 countries of Central and Eastern Europe between 1992 and 1998: BG, CZ and SK, EE, LV, LT, HU, PL, RO and SI. • Integrated European vector dataset was available as ESRI ArcInfo Librarian and derived raster products as ESRI grids in 100m and 250m resolution. • Data dissemination policy was unclear.
Hierarchy level	Dataset
Source	• CORINE Land Cover Change 2012-2018 (vector), Europe, 6-yearly - version 2020_20u1, May 2020

Reference System Information

Reference System Information

Code	EPSG:3035

Maintenance and update frequency	

Metadata

Metadata identifier	5654b422-af84-4115-ac3c-5d7dea540ebb
Language	English
Character encoding	UTF8
Contact	**Organisation** / **Individual** / **Electronic mail address** / **Website** / **Role** European Environment Agency / / sdi@eea.europa.eu / / Point of contact

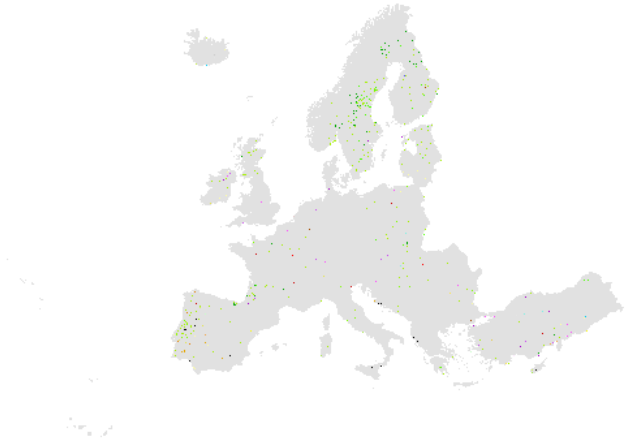
Type of resource

Resource type	Dataset
Metadata linkage	https://doi.org/10.2909/5654b422-af84-4115-ac3c-5d7dea540ebb
Date info (Creation)	2020-05-20T10:09:19Z
Date info (Revision)	2026-09-25T08:59:57.290384Z

Metadata standard

Title	ISO 19115/19139
Edition	1.0

Overviews



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