

Dissemination Report

**Copernicus Land Monitoring 2014 – 2020
in the framework of Regulation (EU) No 377/2014 of the European
Parliament and of the Council of 3 April 2014**

Specific Contract No 3436/R0-COPERNICUS/EEA.56936

**Implementing Framework service contract No
EEA/IDM/R0/16/009/Finland
Finland**

This report covers dissemination and promotional activities of following Copernicus Land monitoring products:

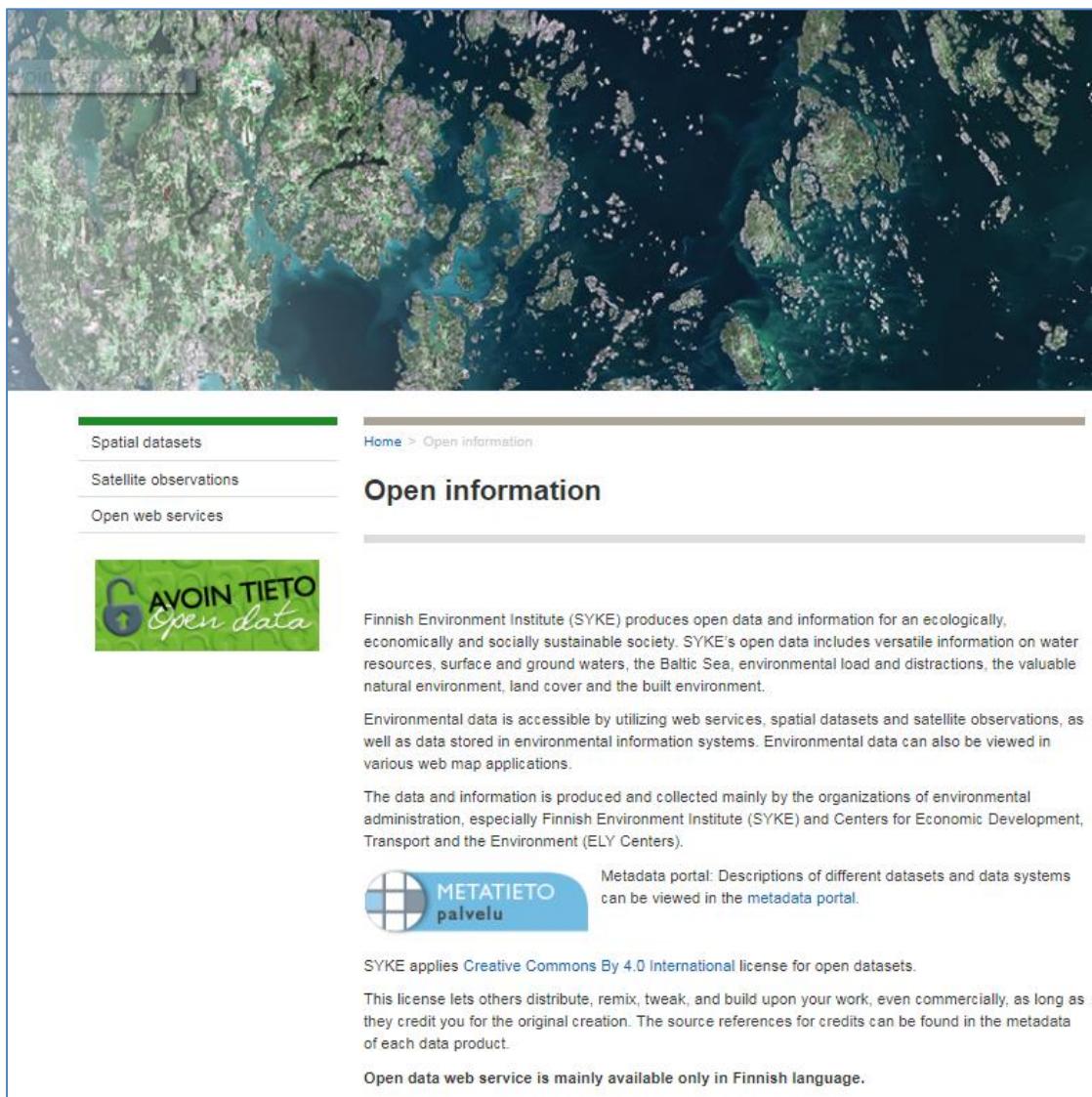
Products:

1. Local component
 - a. Urban Atlas
 - b. Riparian zones
 - c. Natura2000 (N2K) LCLU map
2. CORINE Land Cover 2018 and CLC-changes 2012-2018
3. High Resolution Layers:
 - a. Imperviousness
 - b. Forest
 - c. Grassland
 - d. Wetness and water

1. Spatial Data Infrastructure of SYKE facilitates efficient data dissemination

SYKE maintains the Environmental SDI (ESDI) with the aim of efficient data dissemination. The ESDI consists of components for data, metadata, technology, human resources and coordination structures. The ESDI is connected with national and European INSPIRE infrastructures. The ESDI have tools and processes for data delivery and compatibility with the INSPIRE requirements can be reached when applicable.

SYKE has adapted the open data policy and data is set available in the SYKE's open data portal (www.syke.fi/opendata). Environmental data is accessible by utilizing web services, spatial datasets and satellite observations, as well as data stored in environmental information systems.



The screenshot shows the SYKE open data portal interface. At the top, there is a large satellite map of the Baltic Sea area. Below the map, a navigation bar includes links for "Spatial datasets", "Satellite observations", and "Open web services". The main content area is titled "Open information". It features a green banner with a padlock icon and the text "AVOIN TIETO Open data". To the right of the banner, a text block states: "Finnish Environment Institute (SYKE) produces open data and information for an ecologically, economically and socially sustainable society. SYKE's open data includes versatile information on water resources, surface and ground waters, the Baltic Sea, environmental load and distractions, the valuable natural environment, land cover and the built environment." Below this, another text block says: "Environmental data is accessible by utilizing web services, spatial datasets and satellite observations, as well as data stored in environmental information systems. Environmental data can also be viewed in various web map applications." Further down, it mentions: "The data and information is produced and collected mainly by the organizations of environmental administration, especially Finnish Environment Institute (SYKE) and Centers for Economic Development, Transport and the Environment (ELY Centers)." A blue button labeled "METATIETO palvelu" with a grid icon is shown, along with the text: "Metadata portal: Descriptions of different datasets and data systems can be viewed in the metadata portal." At the bottom, it notes: "SYKE applies Creative Commons By 4.0 International license for open datasets. This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. The source references for credits can be found in the metadata of each data product. Open data web service is mainly available only in Finnish language."

Figure 1. The SYKEs open data portal (www.syke.fi/opendata) is used for data dissemination

2. INSPIRE compatible map services

CORINE Land Cover 2018 products are published according to INSPIRE directive regulation. Also the INPSIRE compatible metadata for data and services are set available. All dataset and services are openly available in SYKEs open data portal (www.syke.fi/opendata). More detailed information of published services are recorded in the figure 2.

INSPIRE View Services allow users and computer programs to view spatial datasets. The recommended approach to implement INSPIRE view services is the Web Map Service (WMS) 1.3.0. SYKE's WMS on Land Cover data is published using ArcGIS for Server.

There are two types of INSPIRE Download Services that may be implemented: pre-defined dataset download service (Atom implementation) and direct access download service (Web Feature Service WFS). SYKE has transformed CORINE Land Cover 2018 vector –dataset into the INSPIRE Land Cover vector application schema. FME Workbench was used for creating the ETL process. The GML file according to INSPIRE application scheme is downloadable in Atom feed. INSPIRE Download services are also implemented with Web Feature Service WFS using technology provided by HALE and GeoServer.

INPSIRE compatible WMS-service for the Corine Land Cover 2018 :

http://paikkatieto.ymparisto.fi/ArcGIS/services/INSPIRE/SYKE_Maanpeite/MapServer/WMServer

INSPIRE compatible data download provided by ATOM-feed and GML –file for Corine Land Cover 2018:

http://www.d3.ymparisto.fi/d3/INSPIREAtom/LC_Corine2018_25ha.xml

INPSIRE compatible download service WFS for Corine Land Cover 2018:

<http://geoserver.ymparisto.fi/geoserver/wfs?service=wfs&version=2.0.0&request=GetCapabilities>

INSPIRE compatible metadata (in English) in XML format of Corine Land Cover 2018 dataset :

<http://metatieto.ymparisto.fi:8080/geoportal/rest/document?id=%7B26EEBBB-FB5C-4045-B6DF-439F9B7D5C46%7D>

The metadata of INSPIRE compatible ATOM feed (in Finnish) :

<http://www.paikkatietohakemisto.fi/geonetwork/srv/eng/catalog.search;jsessionid=1o0kvmsoxqip61fh6cx8ui2g3e#/metadata/%7B615B1B36-3140-4A6A-BFAF-1BF94F8F8D6B%7D>

All versions of CORINE Land Cover products from years 2000, 2006, 2012 and 2018 are also available for down load "as is" -version using ATOM feed and EsriShape/geotiff:

<http://www.d3.ymparisto.fi/d3/atom/inspireatom.xml>

Figure 2. INSPIRE compatible data, metadata and services

The availability of INSPIRE services are constantly monitored using Spatineo Monitor system. According to the monitoring results (example in Figure 3) the availability of the services has fulfilled the requirements set by INSPIRE regulations.



Figure 3. The status and availability of the services are monitored constantly. This picture is taken 20.2.2019.

3. Copernicus Land Cover services - Promotional activities

3.1 Land cover monitoring information on SYKE's website

SYKE's website is used efficiently for promoting Copernicus Land Cover services in national language. Two separate sites are published to inform users about the Land Monitoring activities.

SYKE's land cover monitoring activities are described on SYKE's website (www.syke.fi/maanpeiteseuranta). This permanent site (Figure 4) combines information of land cover monitoring, products and services both in Finland and in Europe. This site is also used to promote Local components (*Paikalliset erityisalueet* in Finnish) and High resolution layers (*Korkean erotuskyyvyn aineistot* in Finnish).

The basic information of Copernicus Land Cover 2018 project is available in project's website (www.syke.fi/projects/corine2018). The website includes links to previous CORINE projects websites (2000, 2006 and 2012) (Figure 5).

Uutiset Etusivu > Avoim tieto > Seurantatiedot > Maanpeitteen seuranta

Maanpeitteen seuranta

Suomen maanpeitteitä ja sen muutoksia on seurattu SYKEssä jo pitkään osana yhteistä eurooppalaista maanpeiteseurantaa. Euroopan Ympäristövirasto (EEA) koordinoi tietotuotantoa koko EU:ssa ja jokainen jäsenvaltio tuottaa tiedot omalta alueeltaan. Aluksi seuranta tehtiin projektitahoilta, mutta vuodesta 2012 alkaen Corine-maanpeitekartotit otettiin osaksi EU:n Copernicus Land -ohjelmaa. Seuranta on operatiivista jaksolla 2014–2021 – rahaan pääveluihin käytetään 10 M€ EU:n budjetista vuosittain.

Seurantatiedot

- > [Maanpeitteen seuranta](#)
- > [Paikalliset erityisalueet](#)
- > [Korkean erotuskynnyksen aineistot](#)

Kayttööpä ja vastuu

Eurostat puolestaan on tilastoinut maanpeitetta ja maankäytöä LUCAS-koealavarkoston avulla. Suomi on selvittänyt hankkeissa, miten vastaavat tiedot voisi tuottaa kansallisista aineistoista, koska LUCAS on ollut osin pääleikkäinen kansallisten maastointentien ja tiedontuotannon kanssa.

Maanpeite ja sen muutokset Suomessa

Suomessa eurooppalaisen tulkinnan lisäksi on tuottettu kotimaiseen tarpeeseen tarkempi kansallinen rasterialeaste. Valtaoissa jäsenmaita tieto tuotetaan satelliittikuviin visualisella tulkinnalla, Suomessa tuotanto on pääosin automatisoitu kaukokartoitusaineistosta ja paikallitietoaineistojasta hyödyntämällä. Suomessa on avoimesti saatavilla paljon tarkkoja paikallitietoaineistoja, joista on hyötystä tulkinnan

Figure4. WWW pages for land cover-land use monitoring in Finland (www.syke.fi/maanpeiteseuranta)

Home | Current | Research & Development | Experts | Services | Publications | Open information | SYKE Info

Producing land cover and land use data in CORINE Land Cover 2018 project in Finland

Home > Research & Development > Research and development projects > Projects > Producing land cover and land use data in CORINE Land Cover 2018 project in Finland

Producing land cover and land use data in CORINE Land Cover 2018 project and validating Copernicus Land products in Finland

[Basic project information](#) + Show information

Finnish Corine Land Cover 2018-project produce a satellite image mosaic, both raster and vector land cover databases and land cover changes databases. Databases will represent the land cover of the year 2018, and the changes databases comparing 2018 land cover with 2012 land cover. Corine Land Cover is part of Copernicus Land program.

Background and objectives

European wide CORINE projects have been executed three times before, in the beginning of the 1990's and in 2000, 2006 and 2012. Finland did not participate in the first project, but it has been involved since 2000. In most of the European countries updating has been done by visual interpretation of the satellite images.

In Finland the primary objective of the project is to create an up-to-date raster land cover database and produce raster land cover changes database covering years from 2012 to 2018. Vector databases that meet EEA requirements will be produced in both land cover and land cover changes. Finnish CLC2018

READ MORE

- [Producing land cover and land use data in CORINE Land Cover 2012 project in Finland](#)
- [Producing land cover and land use data in CORINE Land Cover 2006 project in Finland](#)
- [Producing land cover and land use data in CORINE Land Cover 2000 and Image 2000 projects in Finland](#)

RELATED LINKS

- [Copernicus Land Monitoring Services](#)
- [European Environment Agency \(EEA\)](#)
- [Joint Research Centre \(JRC\)](#)

Figure 5. Projects websites (www.syke.fi/projects/corine2018)

3.2. Workshops, meetings and social media

The national land cover monitoring seminar with 25 participants was held in September 2017. The programme of the seminar concentrated on different Copernicus land monitoring services. The participants were also asked to participate in the testing of the Copernicus Land local components. The presentations are published and available on www-site (in Finnish)

<https://syke.etapahtuma.fi/Hallinta/Menneet-koulutukset-sis%C3%A4inen/Lis%C3%A4tiedot-sis%C3%A4iset/id/2493>.

Information of Land Cover products were delivered also in various workshops and meetings. The products and services were presented in details in SYKE’s GIS-users meetings and seminars 2017-2018. Presentations were also given for other stakeholders like university students (2017) and land cover specialist in seminar organised by National Land Survey in 2017.

News about the project achievements were published following SYKE’s dissemination processes. All the regular channels (Figure 6) for promoting were utilized: Open Data news in Intranet, WWW and social media. Especially the delivery of Corine2018 product was noted widely.

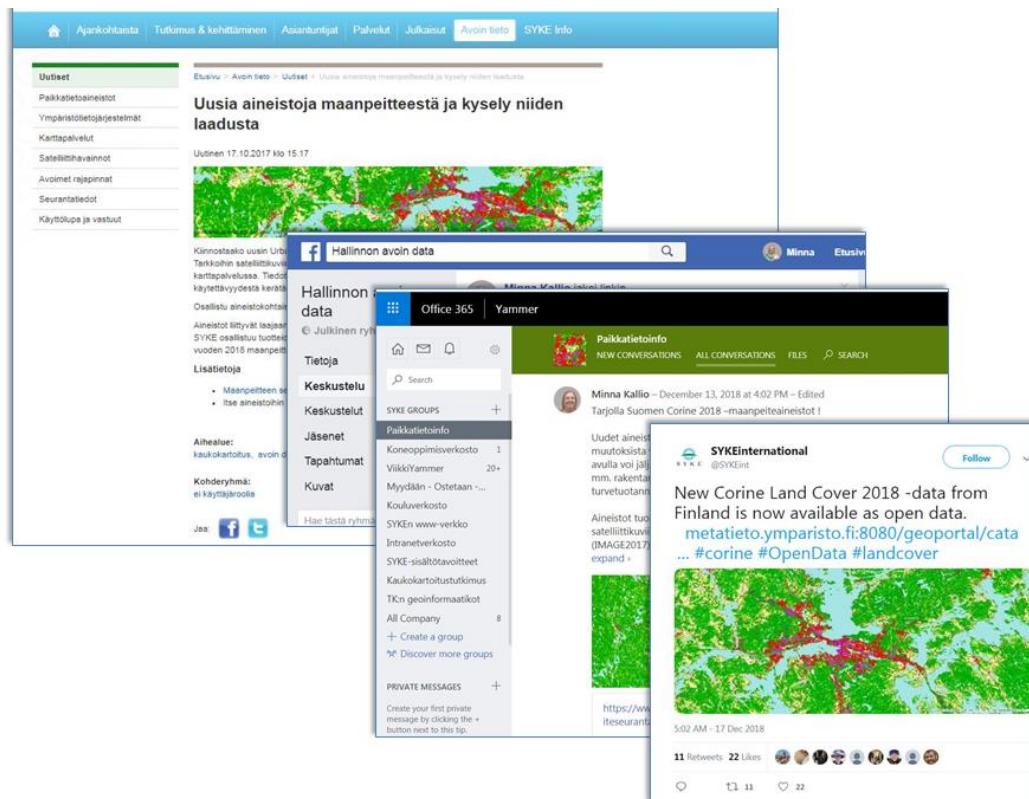


Figure 6. News on different information channels have been published in different phases of the project.

3.3. Applications

3.3.1. Copernicus Land Cover Map application

A web application for viewing the Copernicus Land Cover data with relevant background data was developed in-house. The application utilized directly the local component web map services of EEA.

(<http://syke.maps.arcgis.com/apps/webappviewer/index.html?id=dd3511e11d37468b9f0b02b7d0e4aef7>)

This map application presents the Local component and HRL land cover and land use products coordinated by the European Environment Agency (EEA). It was first used to evaluate the local component datasets. It is also used to promote the national CORINE Land Cover 2018 and let the users view the HRL products with it.



Figure 7. The Local component Urban Atlas 2012 viewed in the Copernicus Land Map Application for Finland.

To enhance and to increase the use of the Local Component Products and the High Resolution Layers the datasets are also downloaded and published in the SYKEs internal infrastructure. The metadata describing the content of the data is also translated into Finnish.

3.3.2. ArcGIS for internal GIS-users

The SYKE's internal users will get the full benefit of the data sets by using them in ArcGIS software and other applications. The data sets can be viewed and analysed with any other data available in the administration and also with the user's own data.

In-house built ArcGis User interface ease the use of spatial data (Figure 8). There are approximately 130 daily ArcGis users in the environmental administration. Corine Land cover dataset, Local component and high resolution products are set available for users. Map services provided by EEA can easily be viewed in the ArcGIS with other data sets (Figure 9).

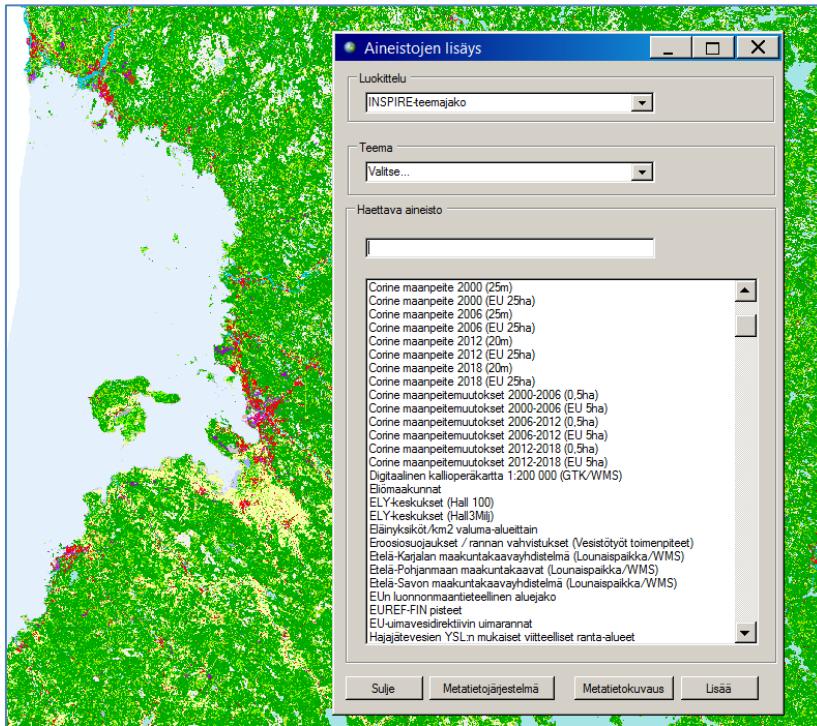


Figure 8. CLC2018 can be added with the user interface in the environmental administration.

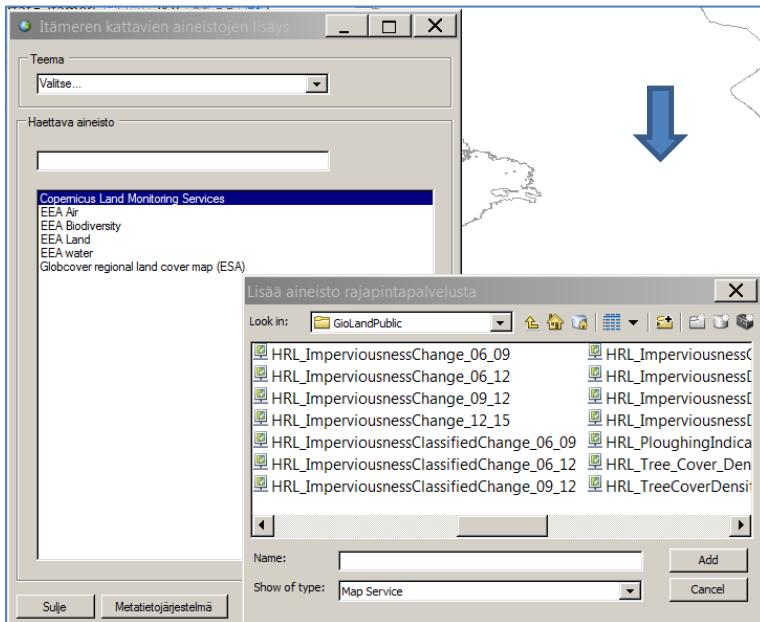


Figure 9. HRL map services in the SYKE ArcGis User Interface.

4. Use of CLC2018 and Copernicus products

The monitoring of the use of SYKEs open data is done by calculating the number of downloaded data packages and by monitoring WMS requests. (Figure 8). The Corine Land Cover products are one of the most popular spatial data sets at SYKE (Table 1). Special interest has been shown for the national versions of Corine Land cover.

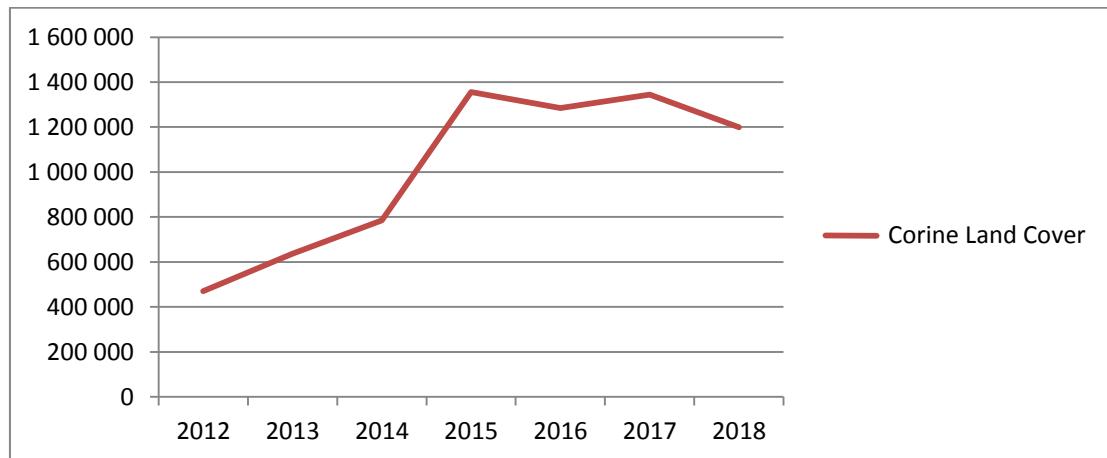


Figure 10. The amount of WMS requests of Corine Land Cover service in the course of time. The chart includes all CLC versions (years 2000-2018).

Table 1: Total number of downloaded Corine Land Cover data packages, numbers includes both national and EU version of Corine Land cover products. CLC2018 was published 11th of Dec 2018.

	2012	2013	2014	2015	2016	2017	2018
CLC2000	373	952	1068	1593	1653	1695	1453
CLC2006	578	1156	1239	3492	2279	1531	1306
CLC2012			214	3508	2640	2077	1870
CLC2018							84

5. Discovery services providing metadata and access Finnish Corine Land Data

INSPIRE directive requires that metadata are created for the spatial data sets and services and metadata need to follow the detailed rules set by INSIPRE metadata regulations.

INSPIRE Discovery services make it possible to search for spatial data sets and services on the basis of the content of the corresponding metadata and to display the content of the metadata.

CORINE Land Cover 2018 and network services metadata are INSPIRE compliant and thus it is available for Discovery services.

5.1 SYKE metadataportal (<http://metatieto.ymparisto.fi/geoportal>)

SYKE's metadata portal offers metadata descriptions of GIS and remote sensing data and information systems in the environmental management. The metadata portal has been implemented using Esri GeoPortal Server product (v. 1.2). Discovery service supports OGC CSW interface standard according to version 2.0.2.

Metadata of all Corine Land Cover products and services are set available in the portal.

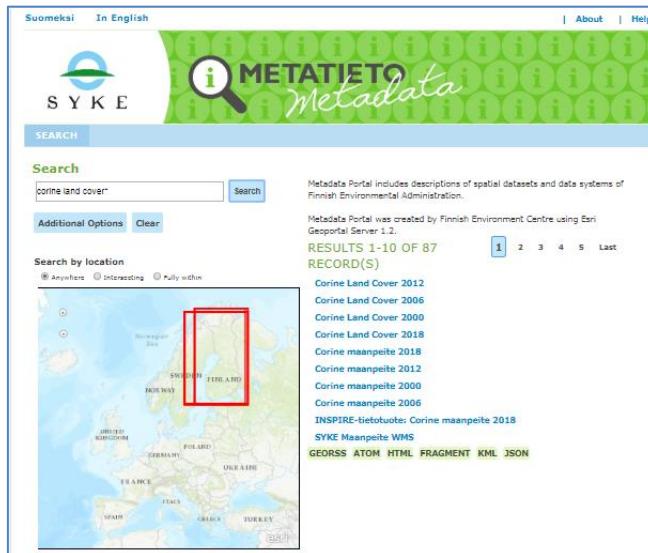


Figure 11. CLC2018 in SYKE metadata service are described both in English and in Finnish.

5.2 Finnish National INSPIRE Discover service (<http://www.paikkatietohakemisto.fi>)

National Discovery Service is maintained by National Land Survey. The INSPIRE compatible metadata can be added using metadata editor provided by the service. The geoportal harvests metadata documents from a CSW service provided by SYKE. The Corine Land Cover products can be discovered also in this service



Corine maanpeite

7 results

Categories

Corine Land Cover 2006

Categories

Corine Land Cover 2000

Categories

SYKE Maanpeite WMS

Categories

Corine Land Cover 2012

Categories

Corine maanpeite 2018

Categories

INSPIRE-tietotuote: Corine maanpeite 2018

Figure 12. National Discover Services viewing metadata

5.3 Inspire Geoportal (<http://inspire-geoportal.ec.europa.eu/>)

The INSPIRE Geoportal is the central European access point to the data provided by EU Member States and several EFTA countries under the INSPIRE Directive. The geoportal allows discovering suitable data sets based on their metadata and accessing the selected data sets through their view or download services. The metadata used in the Geoportal are regularly harvested from the discovery services of EU Member States. Thus the SYKE's Corine Land Cover products can be discovered also in the portal.



INSPIRE GEOPORTAL

Enhancing access to European spatial data

European Commission > INSPIRE > Geoportal > Results

[Home](#) | [Priority Data Sets Viewer](#) | [INSPIRE Thematic Viewer](#) | [Harvesting status](#) | [Find out more about](#)

Data sets in Finland

[+ 602](#) | [51](#) | [52](#)

Countries	Filters:	<input type="checkbox"/> Downloadable	<input type="checkbox"/> Viewable	<input type="checkbox"/> Show data with national coverage	?							
Themes	Title	Properties										
	Kallioperä 1:1 000 000				?							
	Maaperä 1:20 000 / 1:50 000				?							
	Maaperä 1:1 000 000				?							
	Maaperä 1:200 000 (mealajit)				?							
	Natura2000				?							
	Corine Land Cover 2000				?							
	Corine Land Cover 2006				?							
	Corine maanpiste 2018				?							
	INSPIRE-tietotukie: Corine maanpiste 2018				?							
	VRK INSPIRE Addresses Theme Dataset				?							
	Title	Properties										
Show	10	▼	entries	Showing 1 to 10 of 602 entries								
				Previous	1	2	3	4	5	...	61	Next

Figure13. Corine Land Cover products listed in Inspire Geoportal.



Finnish Environment Institute SYKE / Data and Information Centre

Date: 21.2.2019

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