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.

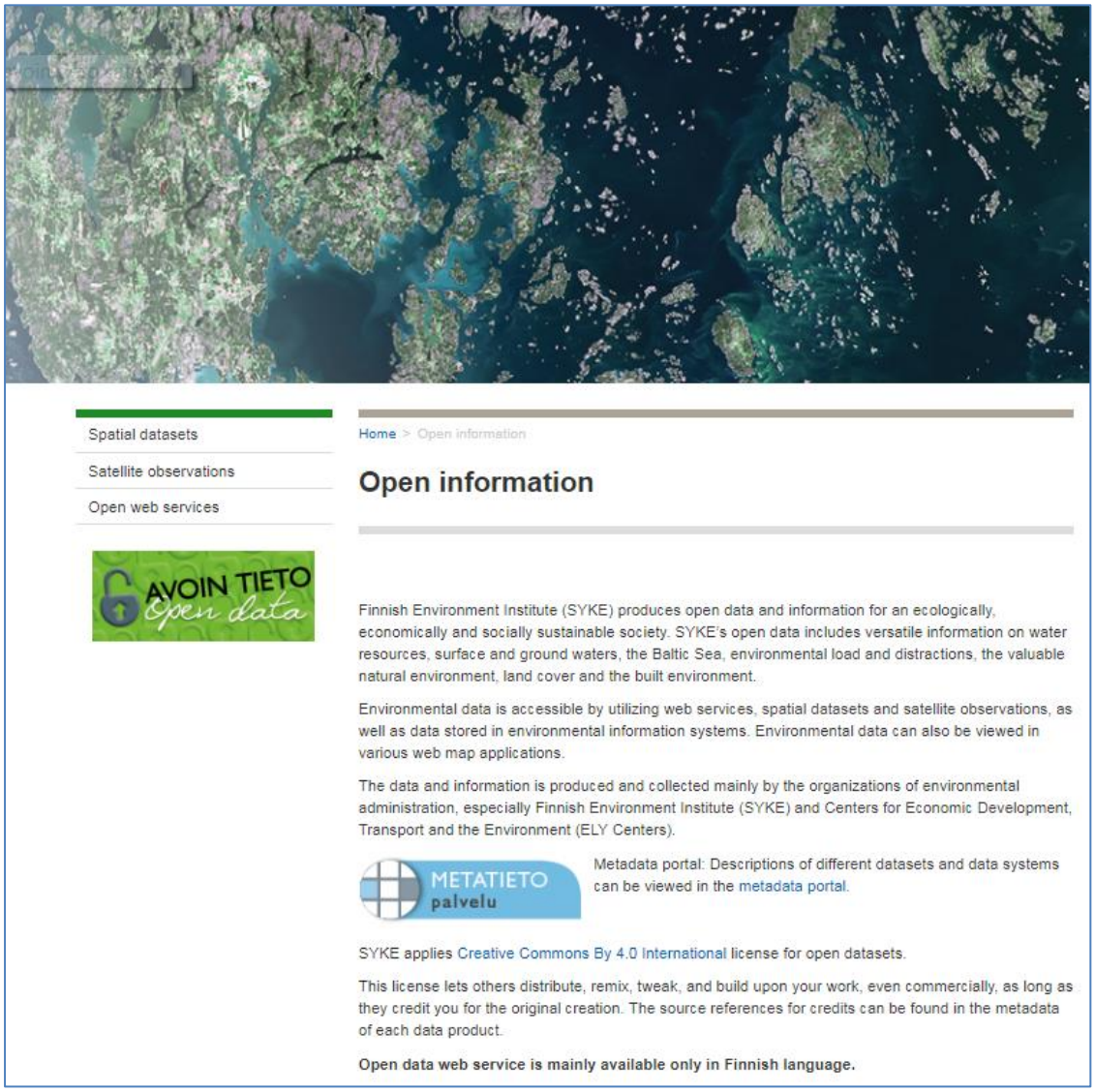

Figure 1. The SYKEs open data portal (www.syke.fi/opendata) is used for data dissemination

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/WMSServer

INSPIRE compatible data download provided by ATOM-feed and GML –file for Corine Land Cover 2018:
http://wwwd3.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=%7B26EEEBBB-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://wwwd3.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 erotuskyvyn 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).

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

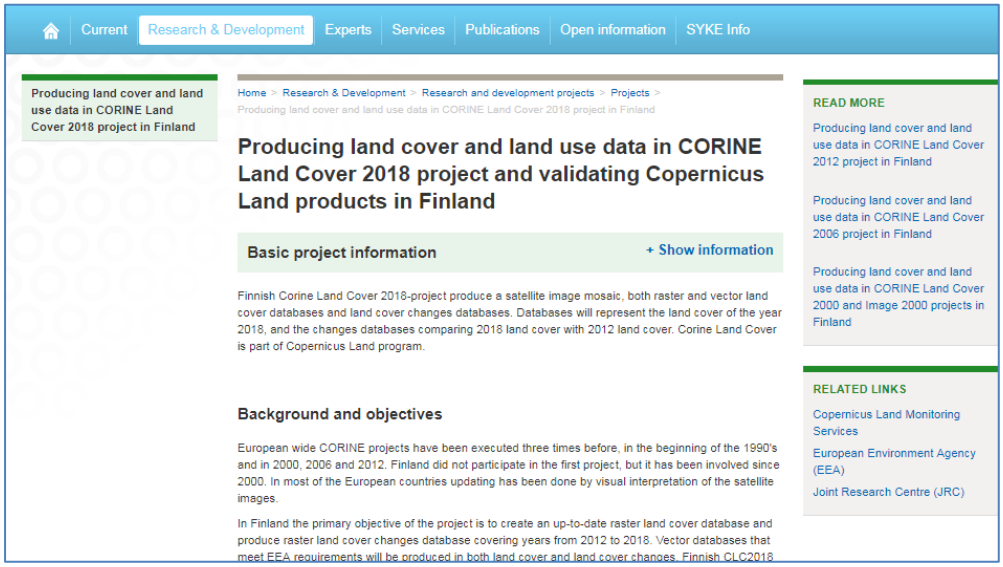

Figure 5. Projects websites (www.syke.fi/projects/corine2018)

3.2. Workshops, meetings and social media

The national land cover monitoring seminar with 25 participants was hold in September 2017. The programme of the seminar concentrated on different Copernicus land monitoring services. The participants were also asked to participate to 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.

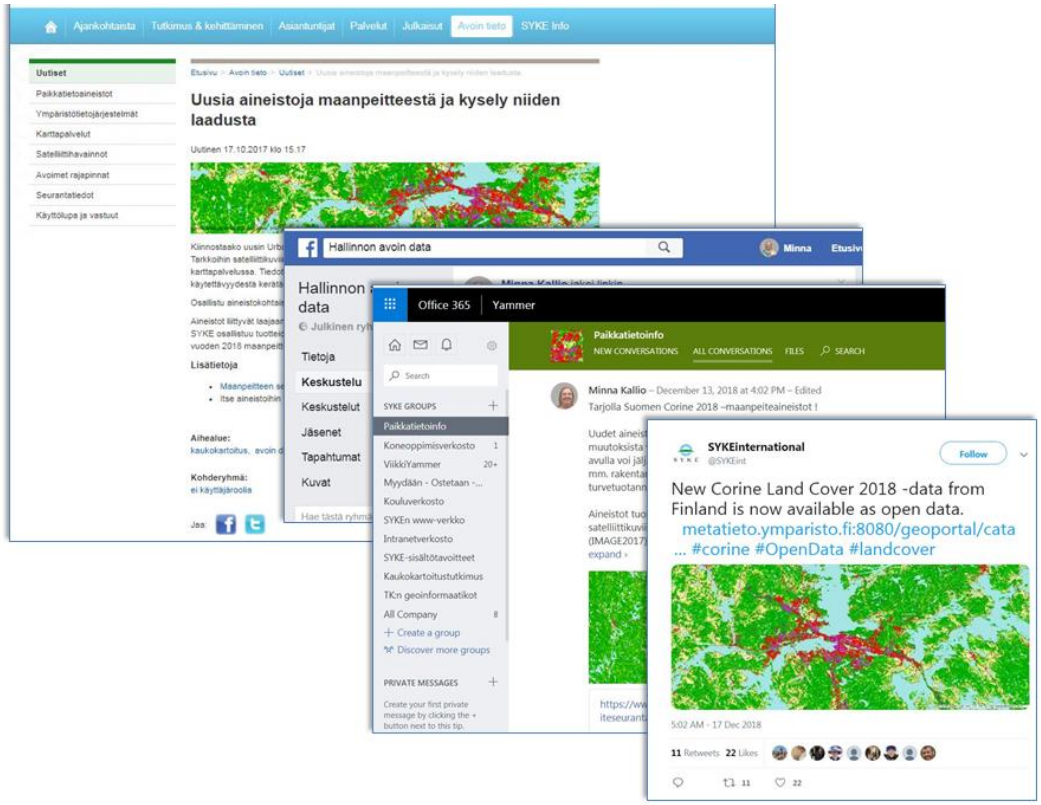

Figure 6. News on different information channels have been published in different phases of the project.

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.

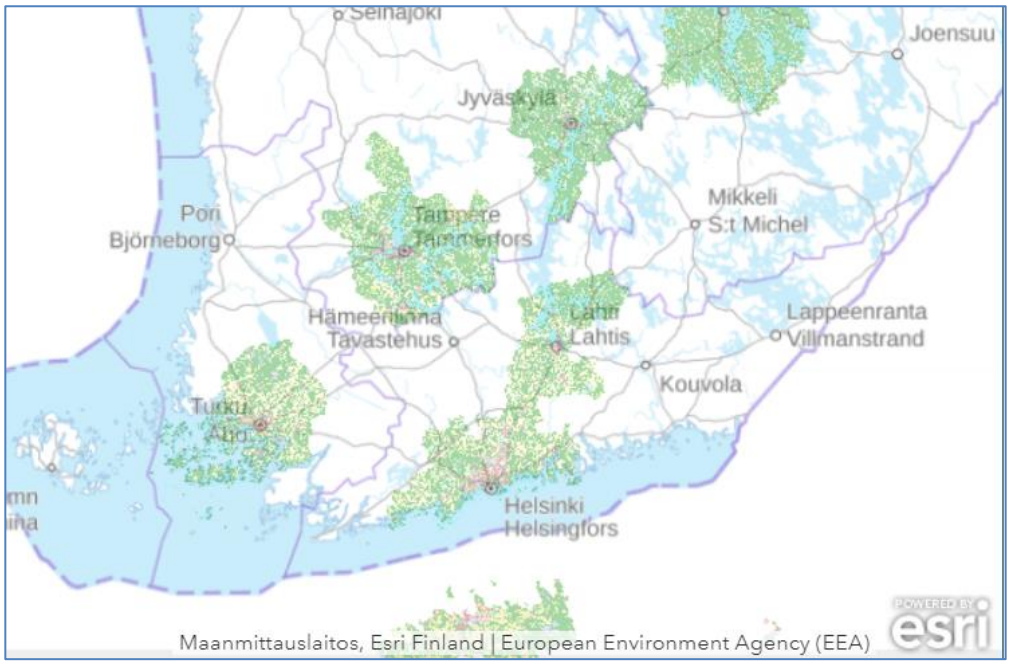

Figure 7. The Local component Urban Atlas 2012 viewed in the Copernicus Land Map Application for Finland.

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).

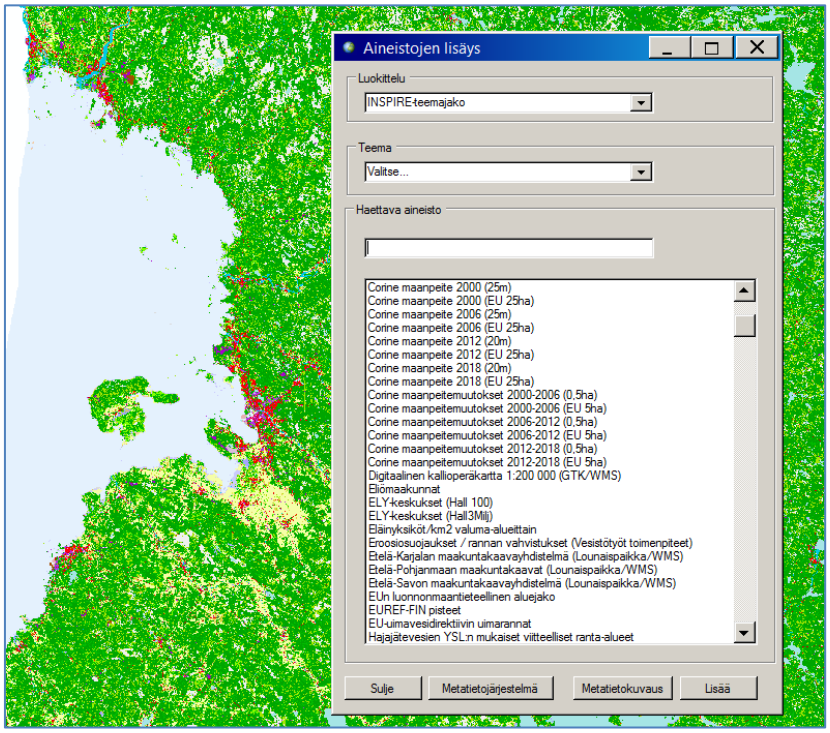

Figure 8. CLC2018 can be added with the user interface in the environmental administration.

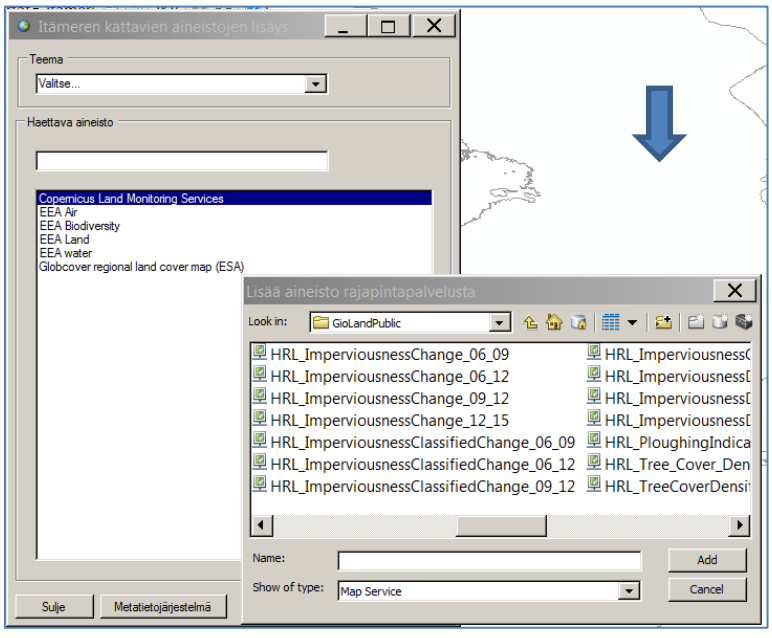

Figure 9. HRL map services in the SYKE ArcGis User Interface.

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.

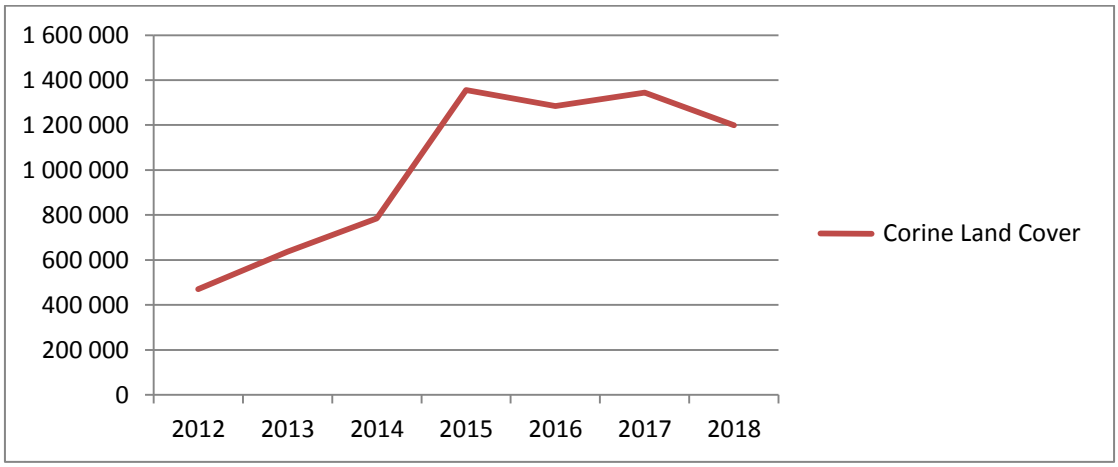

Figure 10. The amount of WMS requests of Corine Land Cover service in the course of time. The chart includes all CLC versions (years 2000-2018).

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.

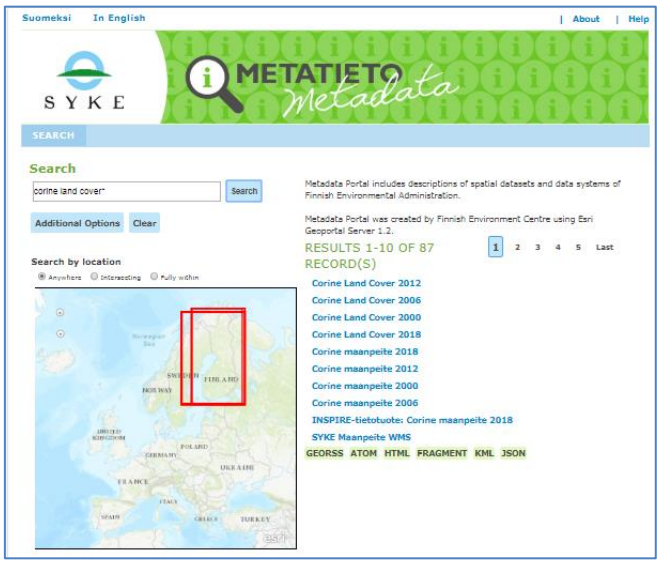

Figure 11. CLC2018 in SYKE metadata service are described both in English and in Finnish.

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

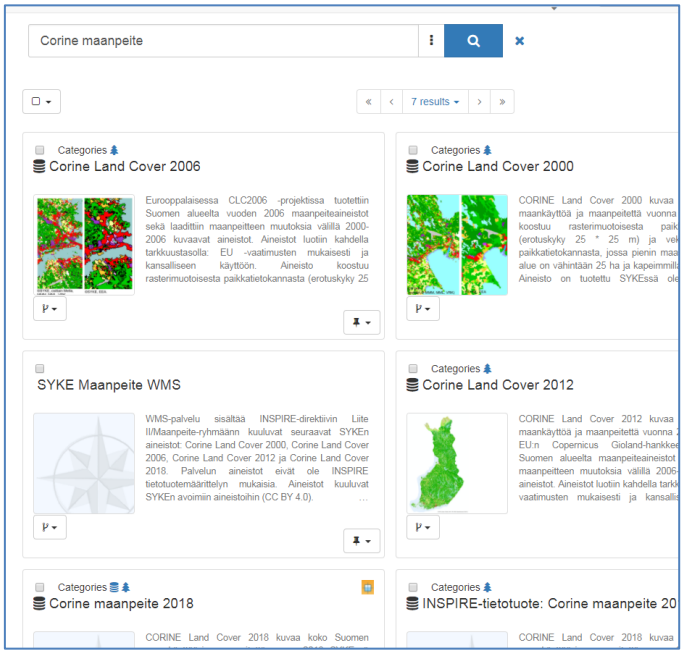

Figure 12. National Discover Services viewing metadata

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 allow 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.

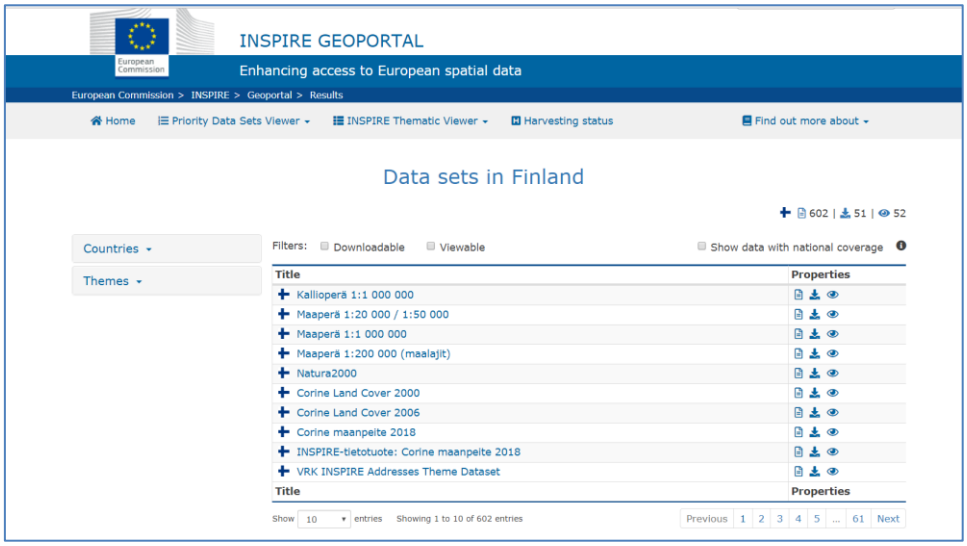

Figure13. Corine Land Cover products listed in Inspire Geoportal.

Finnish Environment Institute SYKE / Data and Information Centre

Date: 21.2.2019

Names: Minna Kallio and Riitta Teiniranta