



Land Monitoring

CLMS NCP: Slovakian kick-off meeting

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Objectives of the CLMS NCP



**...through voluntary,
tailor-made
programmes**

Duration: 18 months

Implementation principles: Modules

Mandatory modules

- Use case stories
- Organisation of CLMS meetings
- Support progress monitoring
- Final report

Optional modules

- Focus teams
- Training sessions
- Visiting Ph.D. students
- Communication material

Overview and inspiration: [NCP website](#)



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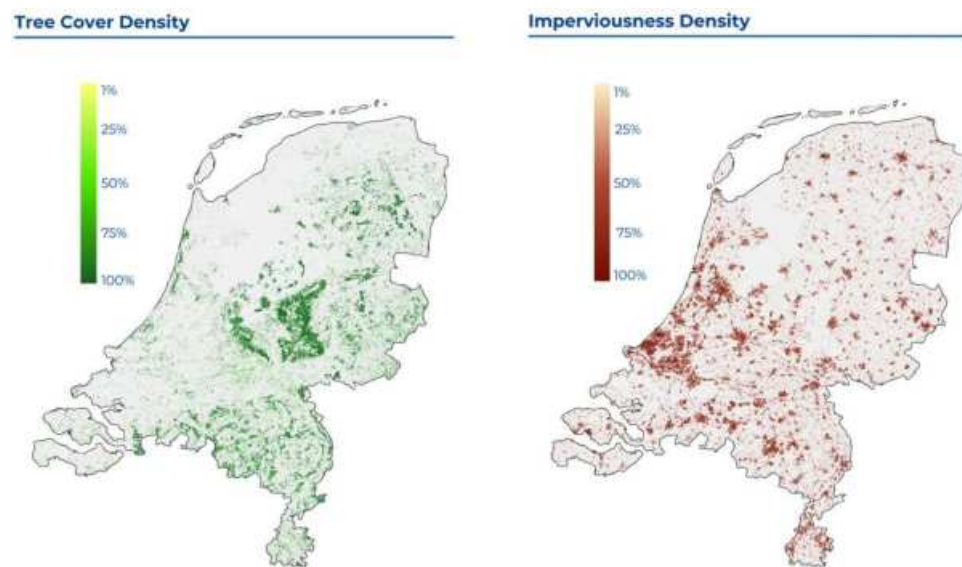
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Examples: Use cases

Netherlands: “CLMS supports new ecosystem accounting efforts”



Spain: “Improving the national land cover and land use information system”



Examples: CLMS meetings

Germany: “Land in Focus workshop”

- Online event with 230 attendees and talks from CLMS experts
- Programme addressed NCP and CLMS + natl. products
- Survey launched to map use of and needs for CLMS



Spain: “Contribution of the CLMS to Emergency Management”

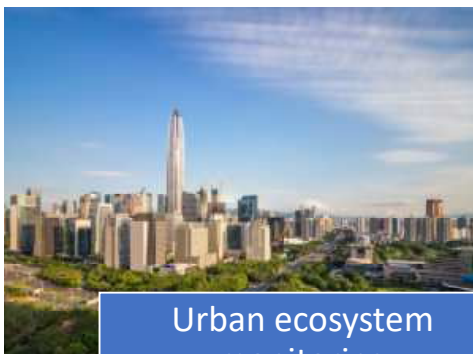
- In-person event with 40 attendees and talks from CLMS and CEMS experts
- Programme addressed NCP and forecasting, rapid response and land recovery following natural disasters



Examples: Focus teams



Coastal applications



Urban ecosystem monitoring

First focus team led by Spain

- Goal to document state-of-the-art costal applications through
 - mapping use cases
 - identifying data needs
 - reviewing the Coastal Hub
- Supported by European Topic Centre (ETC)

Second focus team led by ETC

- Goal to support countries' implementation of Nature Restoration Regulation
- Supported by EEA



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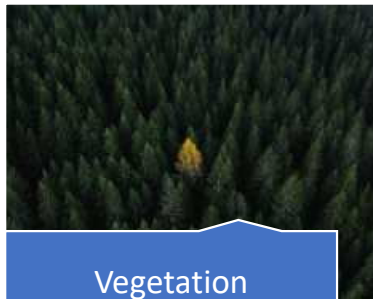


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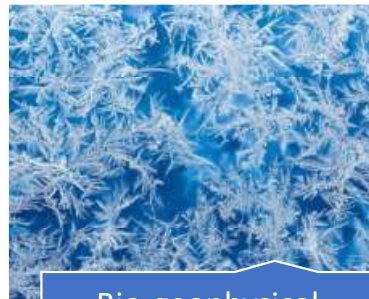
Examples: Trainings



Vegetation



Ground motion



Bio-geophysical parameters



Examples: Visiting Ph.D. student

- Home institution:
Istituto Universitario di Studi Superiori (IT)
- Motivation:
 - Working with CLMS experts
 - Combining technical analyses with dissemination and training efforts



What have you learned so far?

“that [...] professional interactions are truly constructive, and everyone is committed to helping you grow [...]”

Would you recommend the experience?

“The experience [is] genuinely fulfilling, both personally and academically.”

News article



Examples: Communication materials

Estonia: Leaflet in EE to showcase CLMS



Germany: Leaflet in DE to showcase CLMS and data access, a use case, and to provide contacts to relevant consulting services



CLMS NCP: Reaching far!

AUSTRIA
IIASA

BELGIUM
Ghent University

ESTONIA
University of Tartu
Estonian Environmental Agency

LATVIA
Silava

GERMANY
UBA
City of Leipzig BKG DLR City of Leipzig
BFN BGR Julius Kühn Institute BSH
DFA DWD BKG D City of Leipzig
Julius Kühn Institute

SWEDEN
Lund University

ITALY
ISPRA · CNR · ISTAT
CIMA · Italian Space Agency
Italian Space Agency
Politecnico di Milano

ROMANIA
Meteo Romania

NETHERLANDS
Netherlands Space Office

SPAIN
IGN IGME · CSIC
MITECO · SOCIB · INTA
PLOCAN · VAERSA
Complutense University



...and will reach even further in Phase II!





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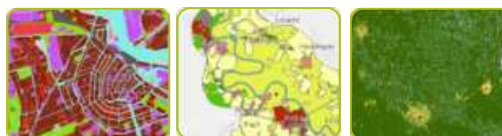
CLMS Portfolio



**Land cover and
land use mapping**



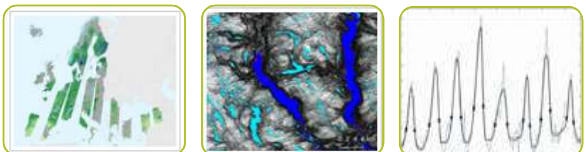
**Priority area
monitoring**



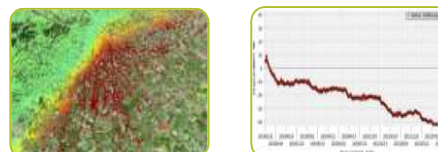
**Satellite
data**



**Bio-
geophysical
parameters**



**Ground
motion
monitoring**



**Reference
and
validation**



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Overview of EEA's products

Urban Atlas

2006-12-18-21



Riparian Zones

2012-18-24



Protected Areas

2006-12-18-21



Coastal Zones

2012-18-24



CLC & CLCC

1990-2000-06-12-18-24



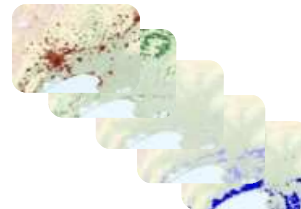
CLC+ BackBone

2018-21-23



High Resolution Layers

2006-09-12-15-18-various



Biophysical Parameters

Near Real Time



European Ground

Motion Service

Yearly 2019 to 2023-2024



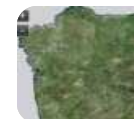
EU-Hydro

Next update 2026



VHR optical images

(2-5m pixel)



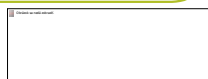
HR optical images

(Sentinel 2 10-20m pixel)



HR radar images

(SRTM, Sentinel 1 14m pixel)

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Land Cover and Land Use

Land Monitoring



Global Dynamic Land Cover

>2020, yearly, 10m
2015-2019, yearly, 100m, Global



HRL VLCC Cropland

>2017, yearly, 10m, Europe



HRL Small Landscape Features

>2015, 3-yearly, 5m, Europe



CORINE Land Cover

>2000, 6-yearly, 100m
1990, 100m, Europe



HRL VLCC Grasslands

>2017, yearly, 10m
2015, 3-yearly, 20m, Europe



HRL Water and Wetness

2018, 3-yearly, 10m
2015, 3-yearly, 20m, Europe



CLCplus Backbone

>2021, 2-yearly, 10m
2018-2021, 3-yearly, 10m, Europe



HRL VLCC Tree Cover and Forest

>2018, yearly, 10m
2012-2015, 20m, 3-yearly, Europe



Non-Vegetated Land Cover Characteristics

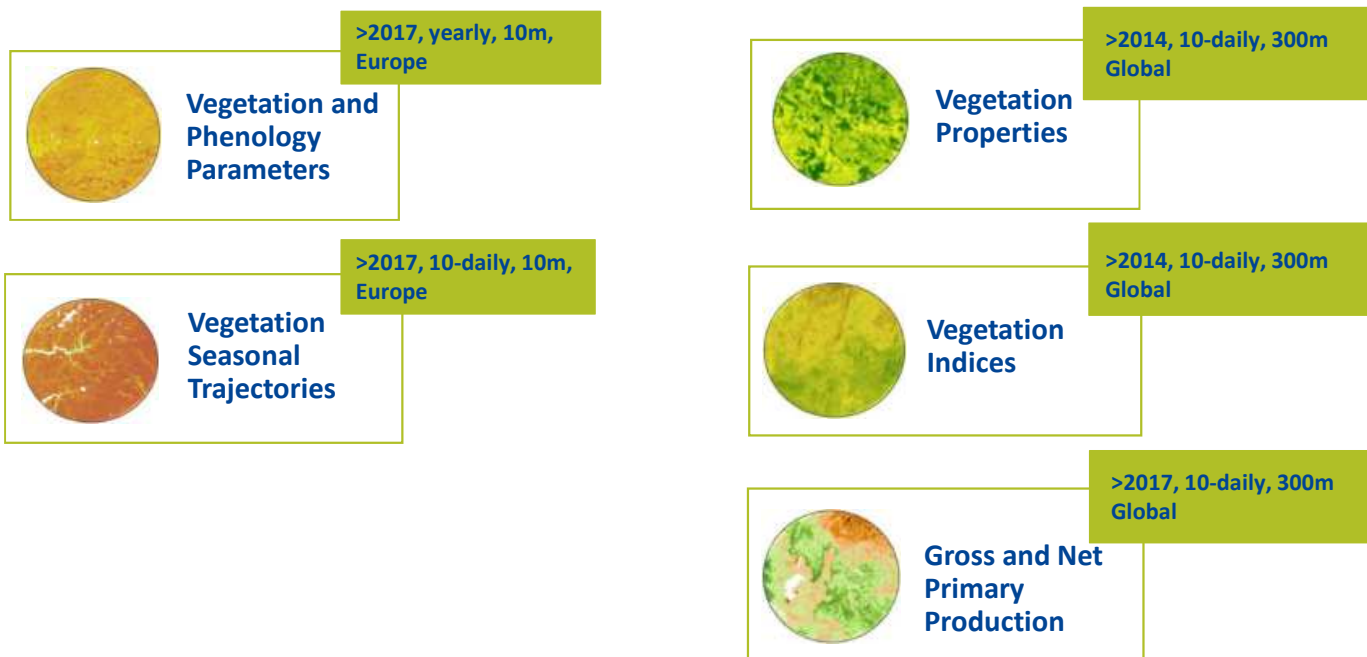
>2018, 3-yearly, 10m
2006-2015, 3-yearly, 20m, Europe





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Vegetation



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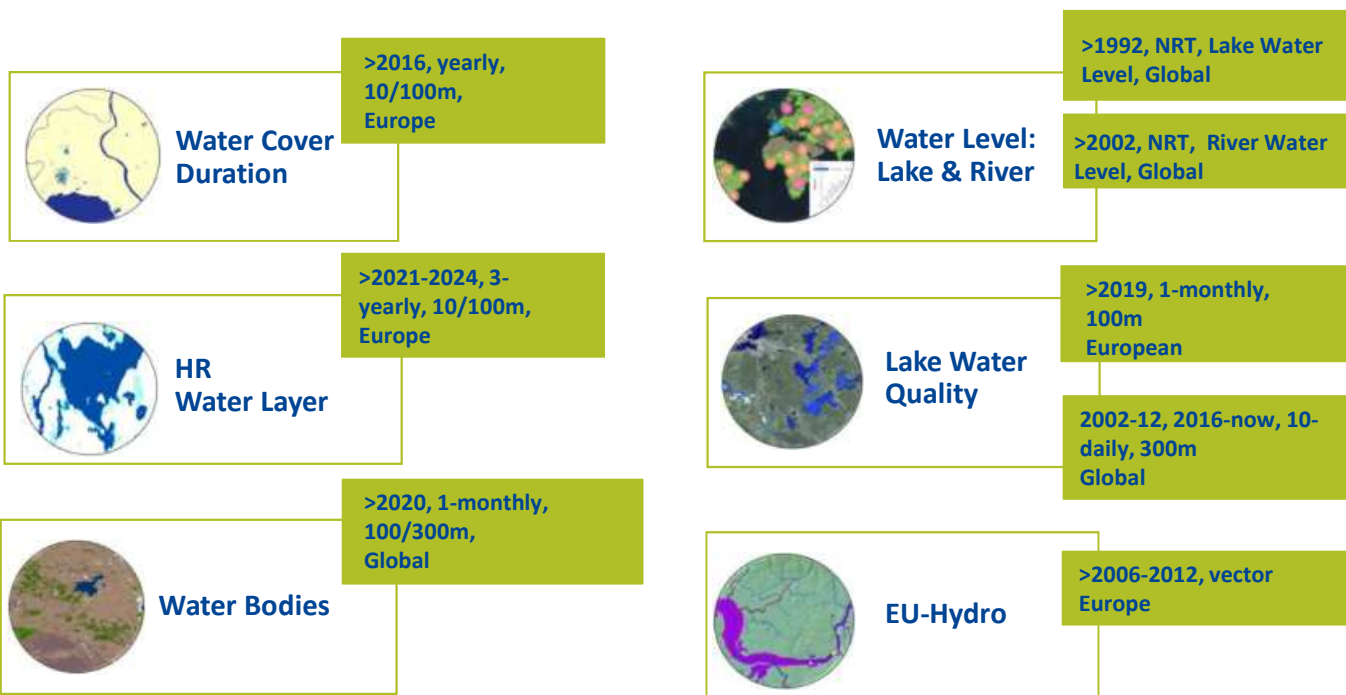
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Water Monitoring



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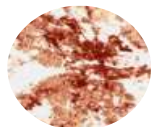


CLMS – Portfolio Updates

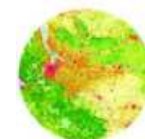
Land Monitoring



**Small Landscape Features
2021**



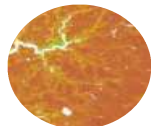
**Non-Vegetated Land Cover
Characteristics 2021**



CORINE Land Cover 2024



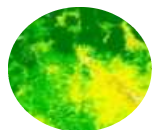
**Update Vegetated Land Cover
Characteristics Status Layer
2024**



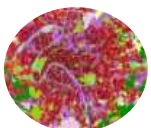
**Vegetation Seasonal
Trajectories**



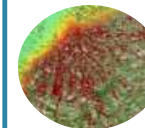
**Coastal Zones
2021**



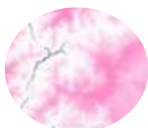
**Pan-European Vegetation Phenology
and Productivity Parameters
2024**



**Urban Atlas
2021**



**EGMS update
2020-2024**



**Snow Phenology 2016-present
(20m/60m/100m)**



**Protected
Areas 2024**



PUBLISHED



Q2 2026



NEW PRODUCT



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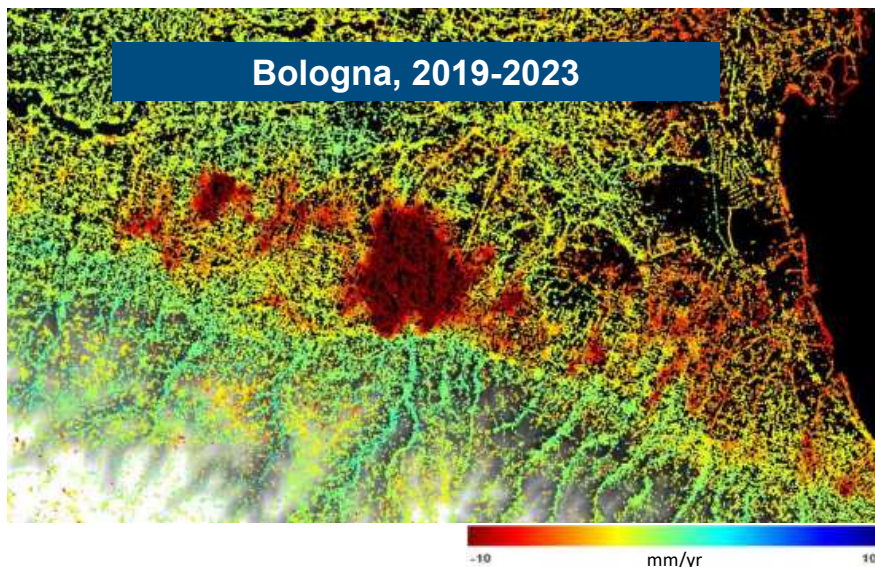




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European Ground Motion Service (EGMS)

Europe, 20 m (point vector), yearly (2016-present)



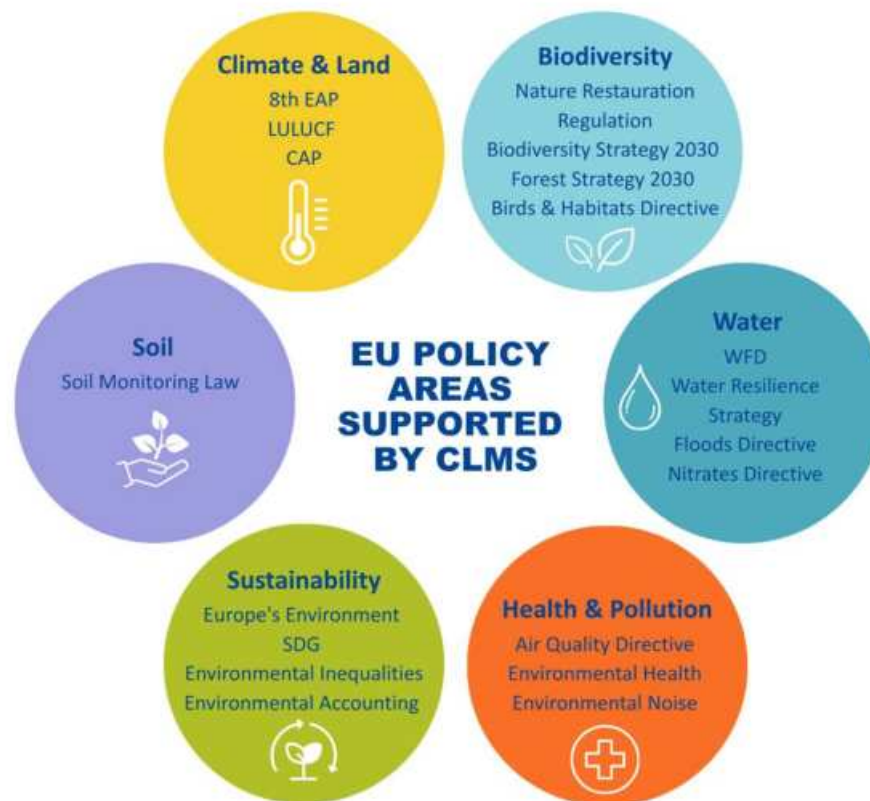
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CLMS EU Policy Relevance



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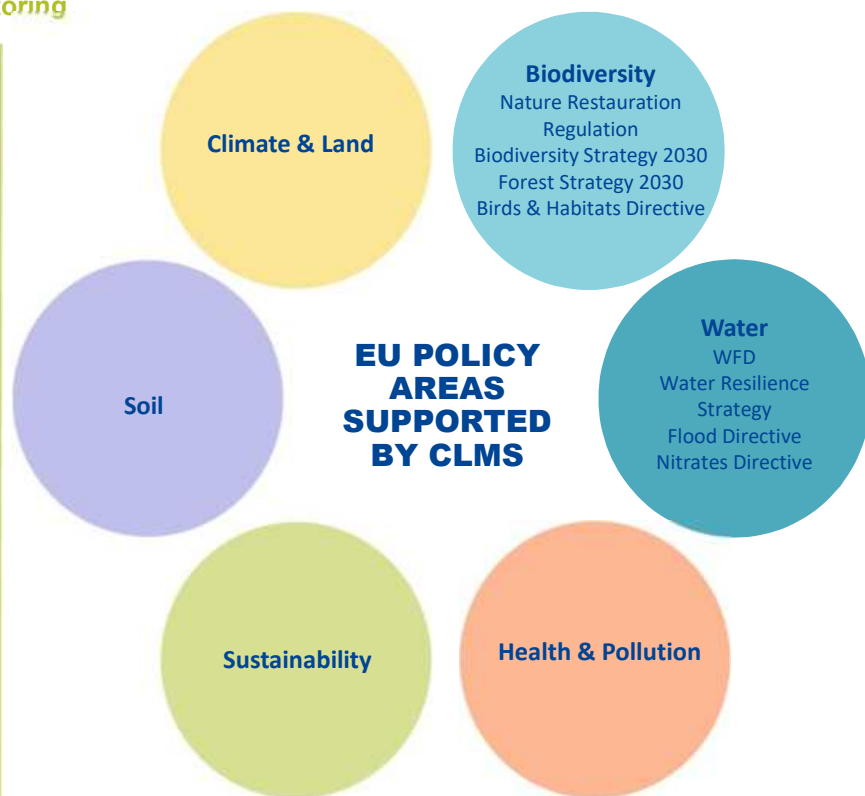


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CLMS EU Policy Relevance



Biodiversity – Application Areas

- Imperviousness in Urban Areas, Urban Green Space maps
- Stratification in agricultural landscapes, Farming in Natura 2000 areas, Farmland productivity
- Forest connectivity and fragmentation

Water – Application Areas

- Water abstraction, Water scarcity conditions in Europe, Water balance in Europe
- Agricultural areas in Nitrate vulnerable Zones
- Flood risk, Hydro morphological features in transitional and coastal waters, Free flowing rivers



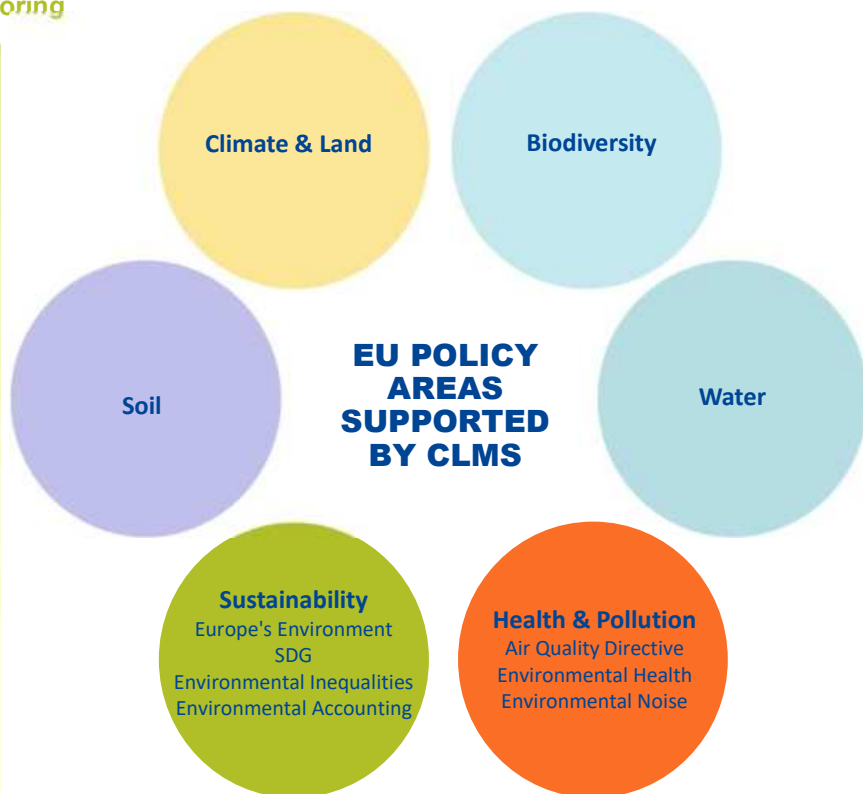
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CLMS EU Policy Relevance



Health / Pollution – Application Areas

- Environmental noise & quiet areas, Urban environment & health
- Zero-pollution monitoring
- Air Quality assessment and real-time information, Air pollution episodes - warning systems

Sustainability – Application Areas

- European Drought Risk Atlas
- Sustainable land management
- Environmental inequalities
- Ecosystem Accounting/ Habitat Assessment



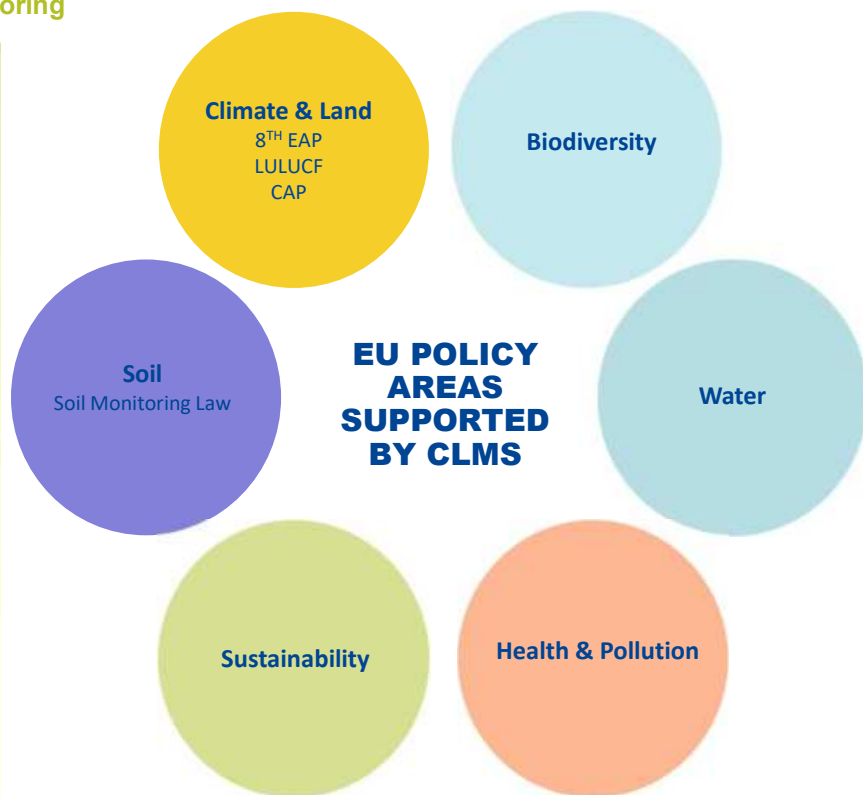
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CLMS EU Policy Relevance



Soil – Application Areas

- Soil Degradation and Soil Sealing
- Monitoring soil sealing under SML
- Imperviousness in Urban Areas

Climate & Land – Application Areas

- Land cover & land use monitoring
- Urban adaptation & green infrastructure
- Climate change adaptation
- LULUCF



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Portfolio development – Example SML

Goal: Address potential CLMS product developments needed for policy support

Soil Monitoring Law

“Art. 6/4 The Commission and the European Environment Agency (EEA) shall leverage existing space-based data and products delivered under the Copernicus component of the Union Space Programme (..) to provide the Member States with the necessary data on soil sealing and soil removal indicators and to support the Member States in monitoring the relevant soil descriptors”

Assessing which products can be used in reporting of land-related indicators of soil sealing and soil removal.
Possible extension of NVLCC and potential new product on soil removal



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CLMS Website

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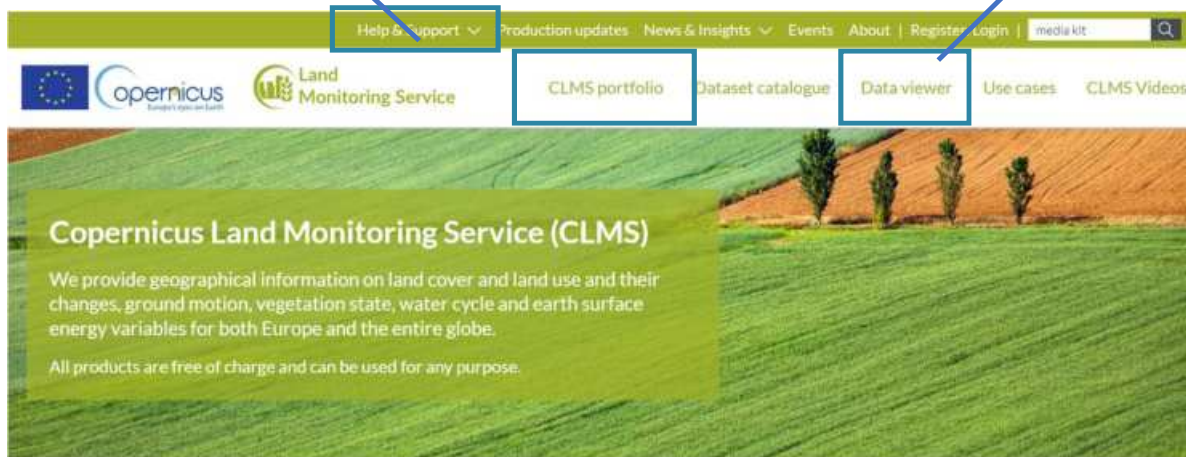
Home > How to guides

How to guides

In this section you will find some short guides that explain how to use the main functionalities provided through our website. If you still can't find an answer to your question please contact us through the [Service desk](#).

These definitions are used in how to guides to represent various data groupings:

Dataset is a collection of data of certain content type characterized by same version, resolution, coverage, temporal extent or belonging to the same time series, update frequency, etc. It can be viewed and downloaded.



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References

- [CLMS website](#)
 - [Event page](#)
 - [Use case repository](#)
 - [Data viewer](#)
 - [Ask Copernicus](#)
 - [Helpdesk](#)
- Jupyter Notebooks: see product pages
- [EEA Github repository](#)
- [Copernicus Data Space Ecosystem](#)
- [LinkedIn](#)



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