



Land Monitoring

CLMS NCP: Nordic kick-off meeting

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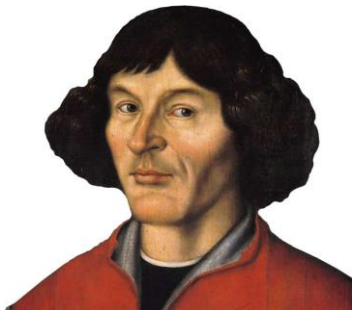
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Commission



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Copernicus

- Earth observation component of the EU's Space Programme
- Managed by the European Commission
- Three components: Space, Services, In-Situ
- **Harmonised** and **consistent** data in time and space
- **Free** and **open** data policy



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Copernicus



Space Component

Services

In-Situ Component



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Copernicus Land Monitoring Service

- Geographical information on:
 - land cover and its changes
 - land use
 - vegetation state
 - water cycle
 - Earth's surface energy variables

on European and global levels
for environmental applications

Implemented by JRC and EEA



<https://land.copernicus.eu/>



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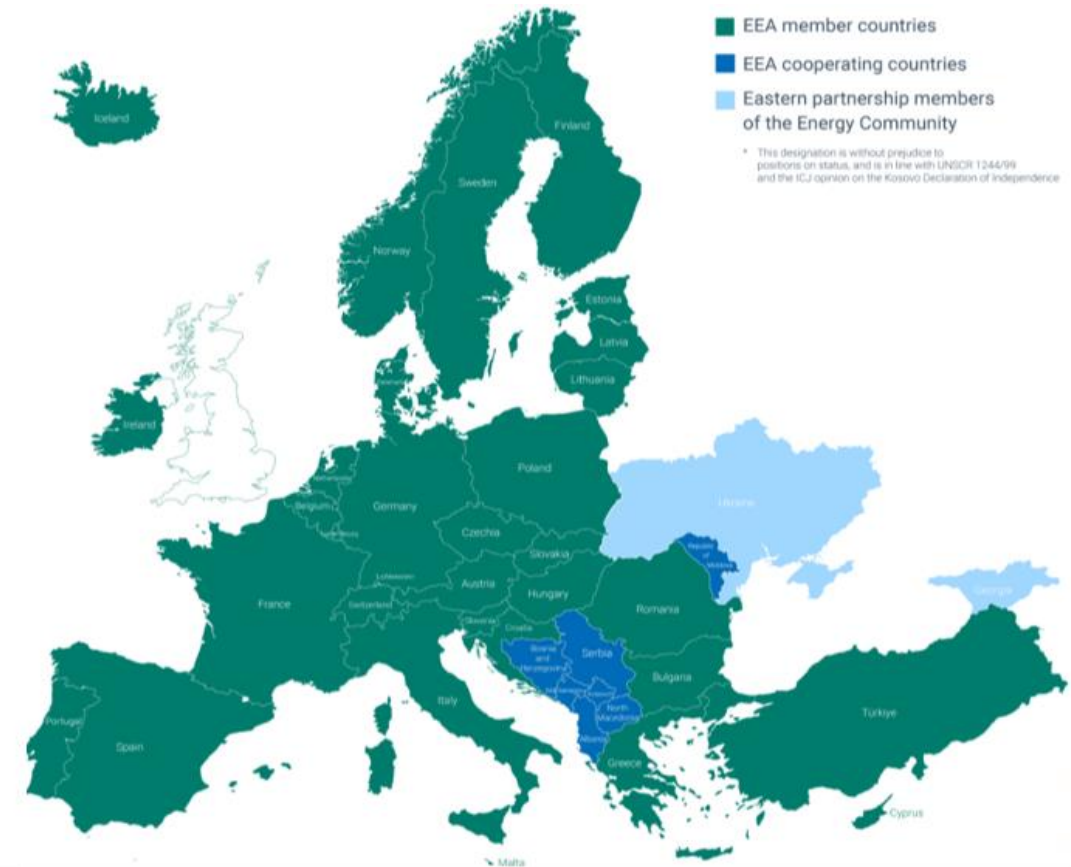
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Copernicus and the EEA

EEA has been **Entrusted Entity** for Copernicus implementation since 2014:


- **Copernicus 1.0** (2014 – 2021)
- **Copernicus 2.0** (2021 – 2028)
- Currently preparing framework for **Copernicus 3.0** (2028 – 2035)

Sure, but why the EEA?



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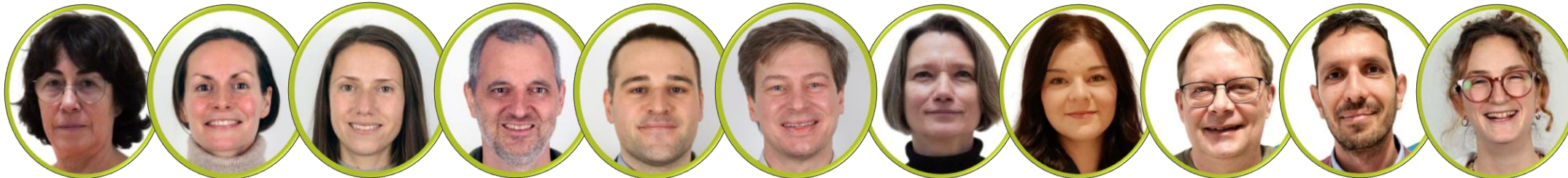


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Who are we? Copernicus at EEA



CLMS Production and user uptake



In-Situ



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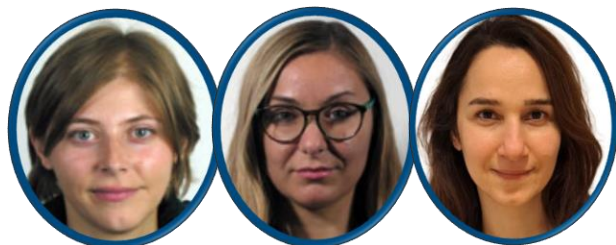


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Who are we? Copernicus at EEA



Communication



Administration



Management



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Objectives of the CLMS NCP



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

Duration: 18 months



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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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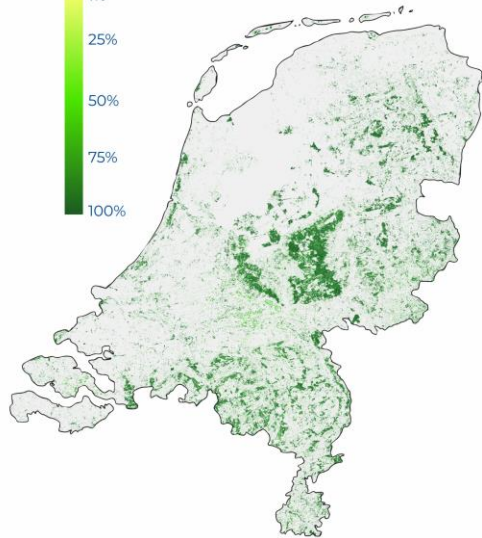
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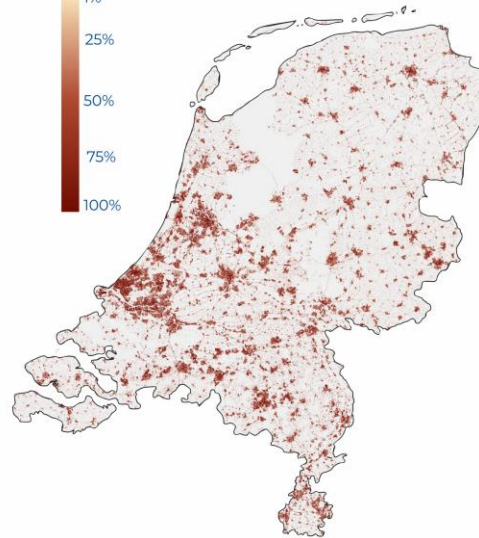
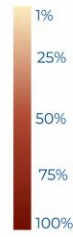
Examples: Use cases

Netherlands: “CLMS supports Netherlands new ecosystem accounting efforts”

Tree Cover Density



Imperviousness Density



Spain: “Improving the national Spanish 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

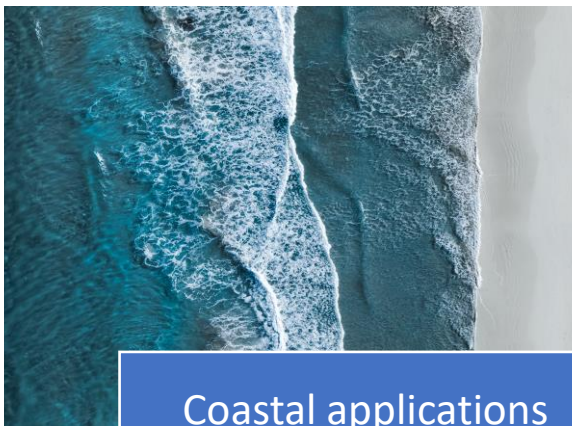


Spain: “Contribution of the CLMS to Emergency Management”

- 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

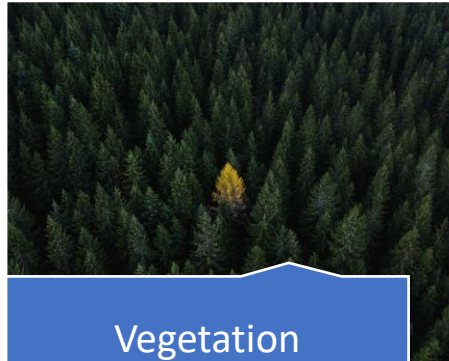
First focus team lead by Spain

- 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 lead by ETC

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

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



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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!



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



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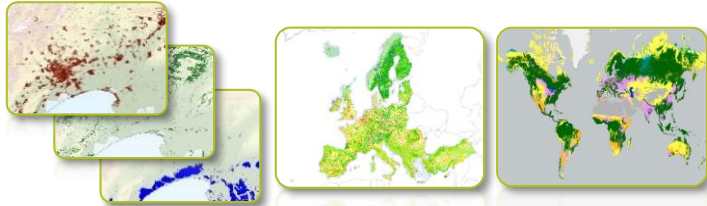


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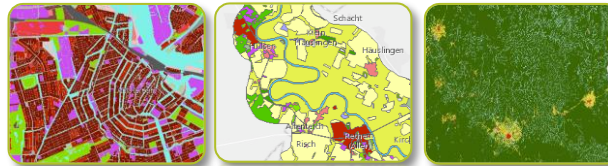
CLMS Portfolio



**Land cover and
land use mapping**



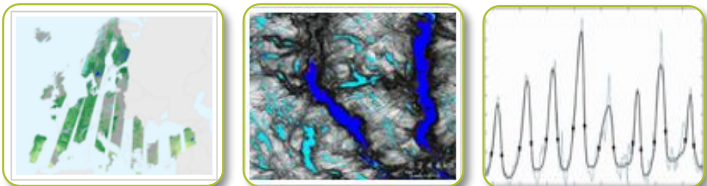
**Priority area
monitoring**



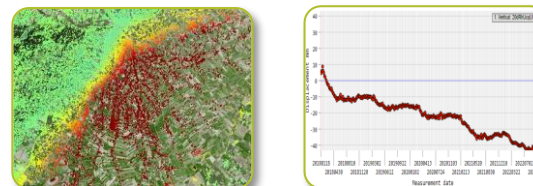
**Satellite
data**



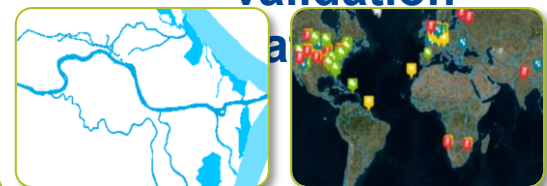
**Bio-
geophysical
parameters**



**Ground
motion
monitoring**



**Reference
and
validation**



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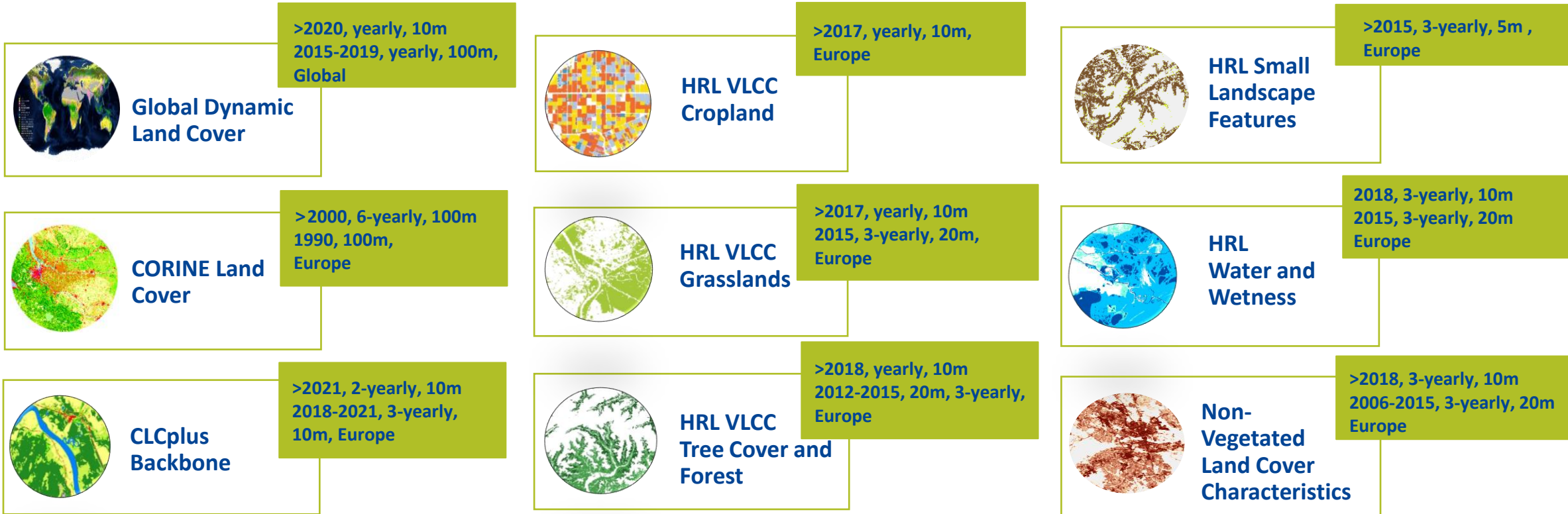
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Land Cover and Land Use



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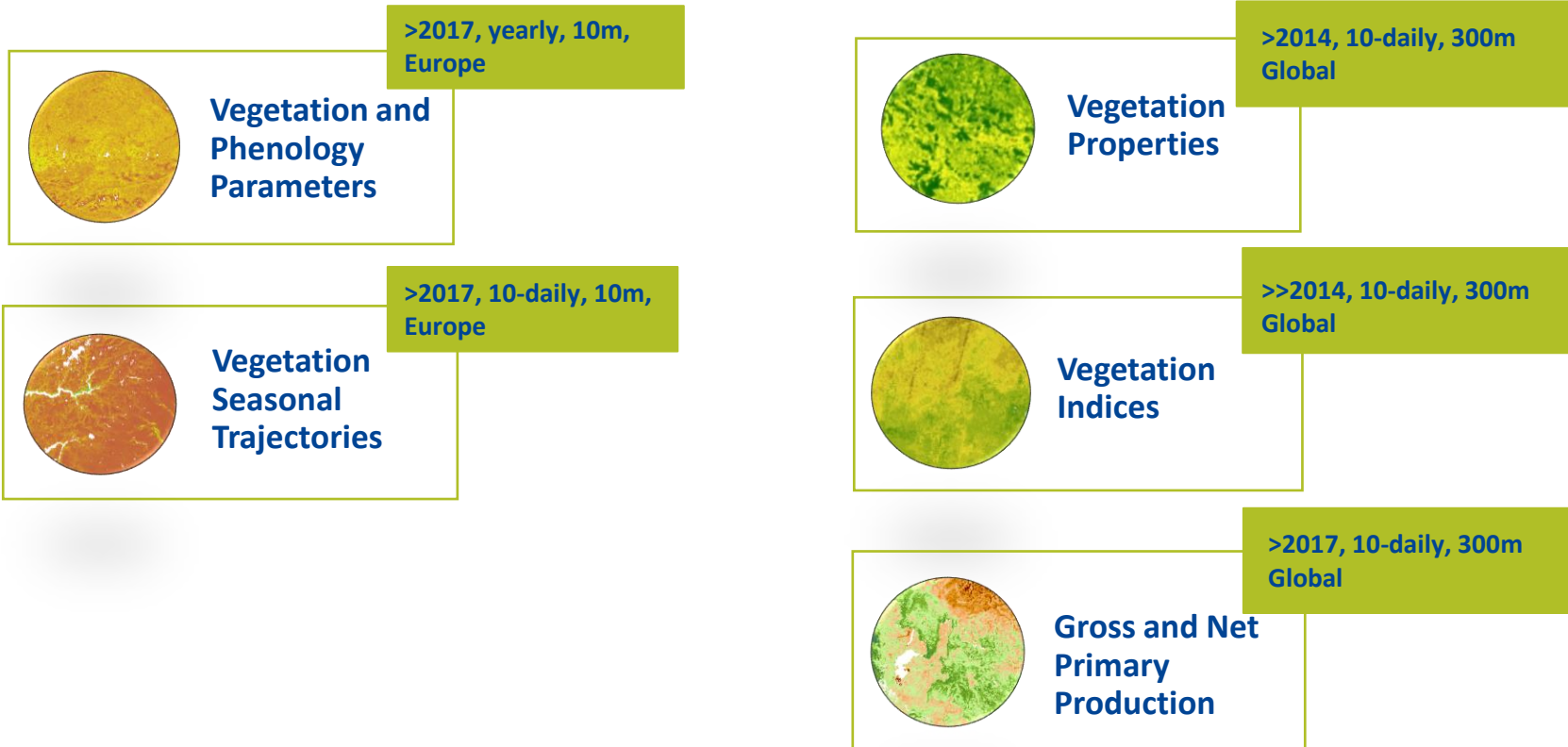
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Vegetation



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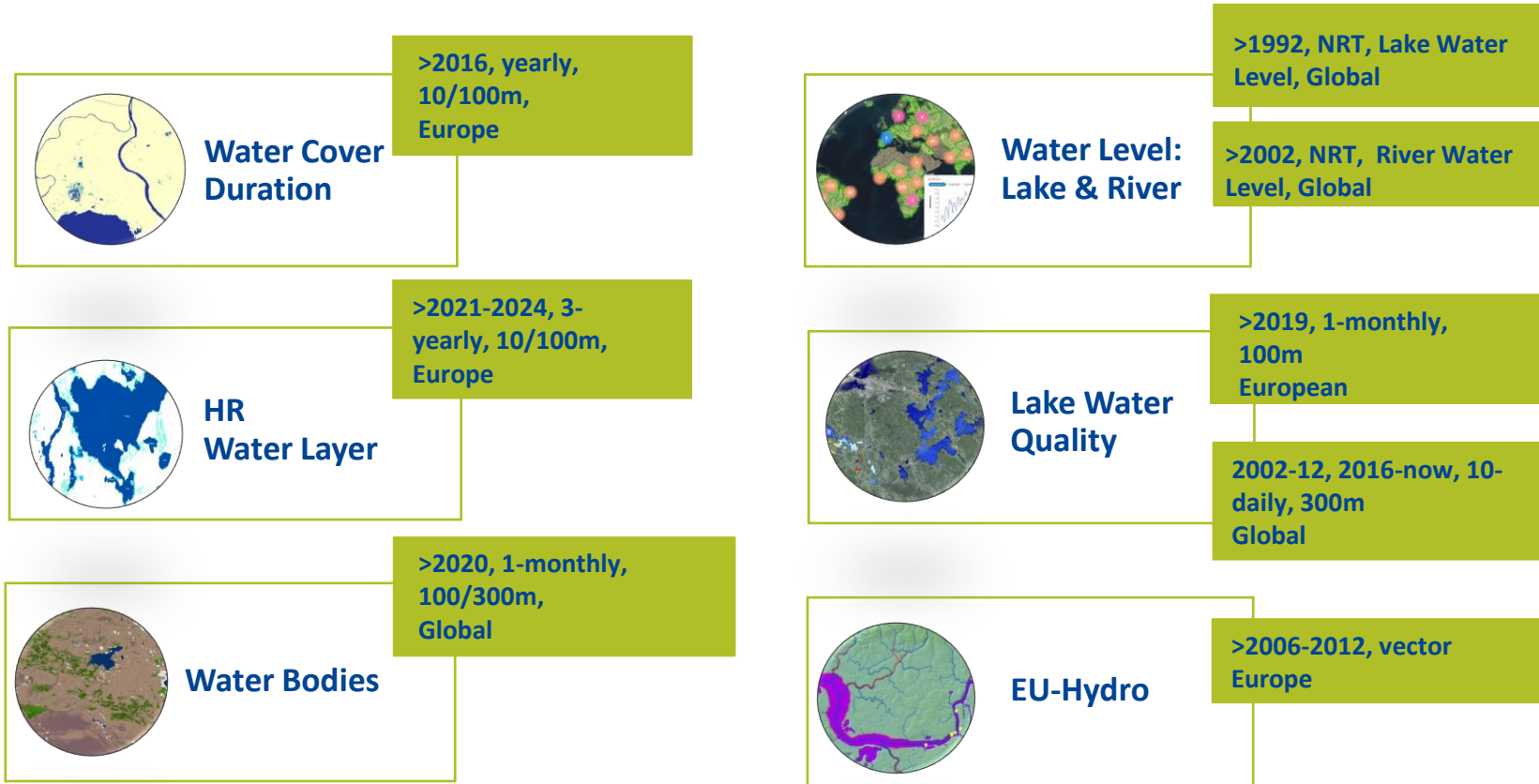
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Water Monitoring



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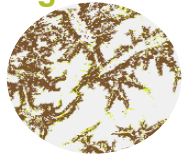
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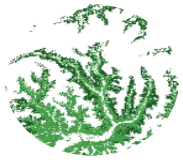


CLMS – Portfolio Updates

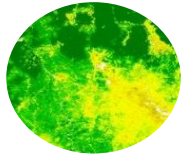
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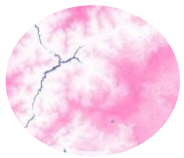
**Small Landscape Features
2021**



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

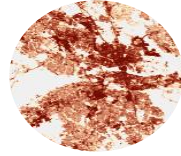


**Pan-European Vegetation Phenology
and Productivity Parameters
2024**

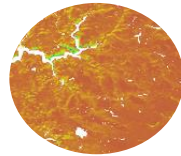


**Snow Phenology 2016-present
(20m/60n/100m)**

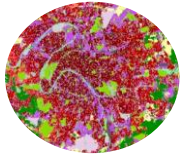
NEW PRODUCT



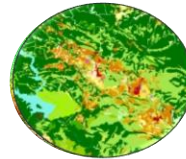
**Non-Vegetated Land Cover
Characteristics 2021**



**Vegetation Seasonal
Trajectories**

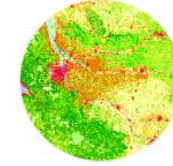


**Urban Atlas
2021**

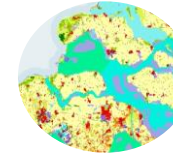


**Protected
Areas 2024**

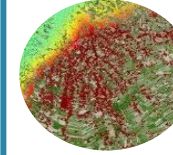
Q2 2026



CORINE Land Cover 2024



**Coastal Zones
2021**



**EGMS update
2020-2024**

COMING SOON



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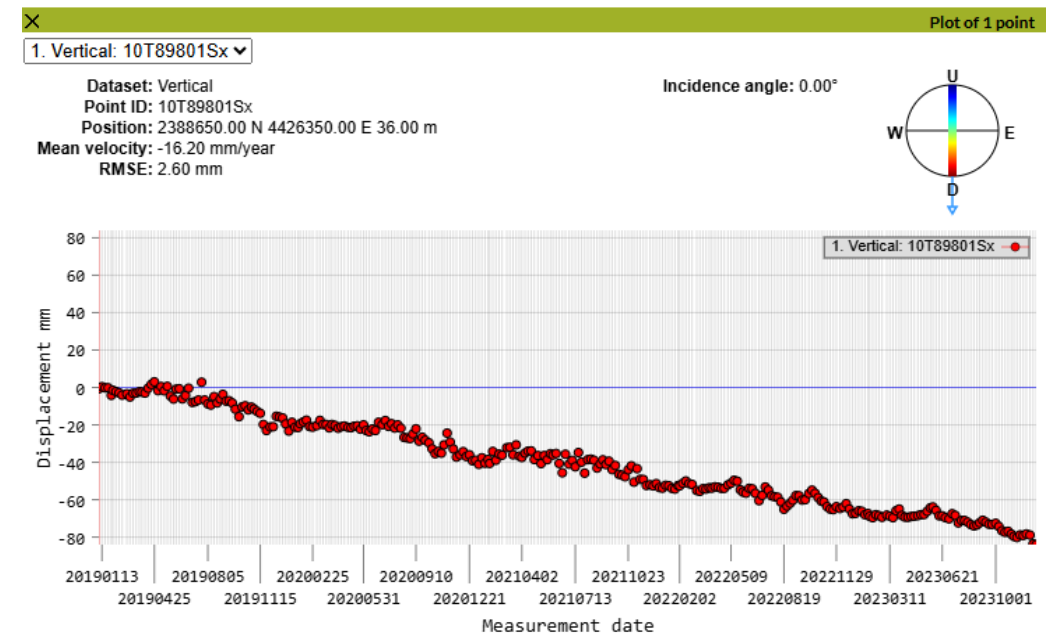
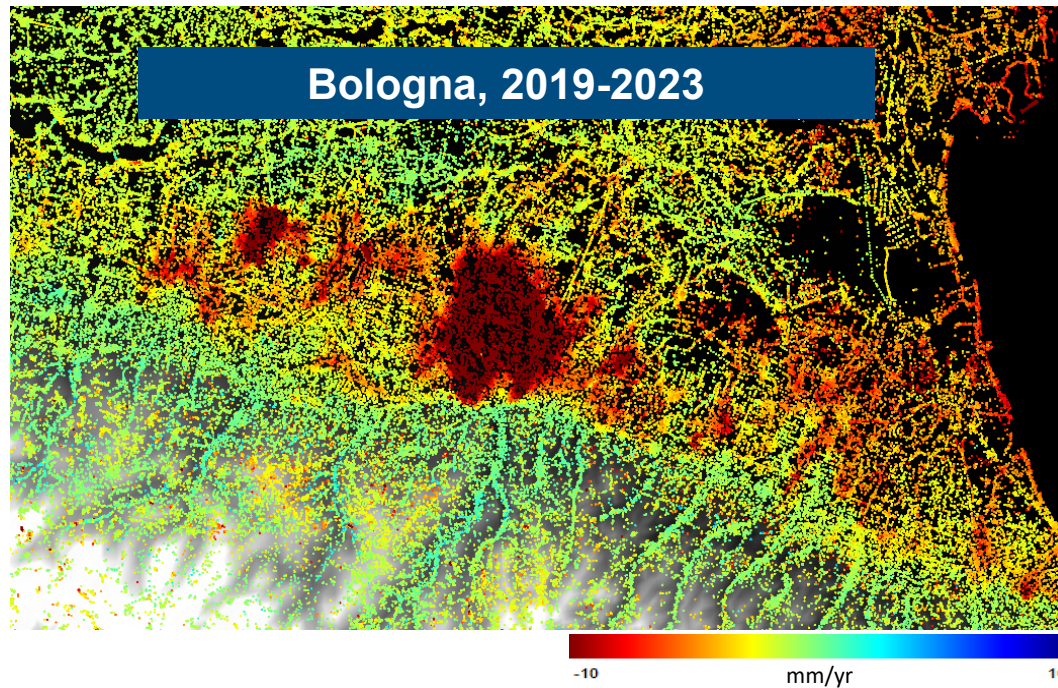




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European Ground Motion Service (EGMS)

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



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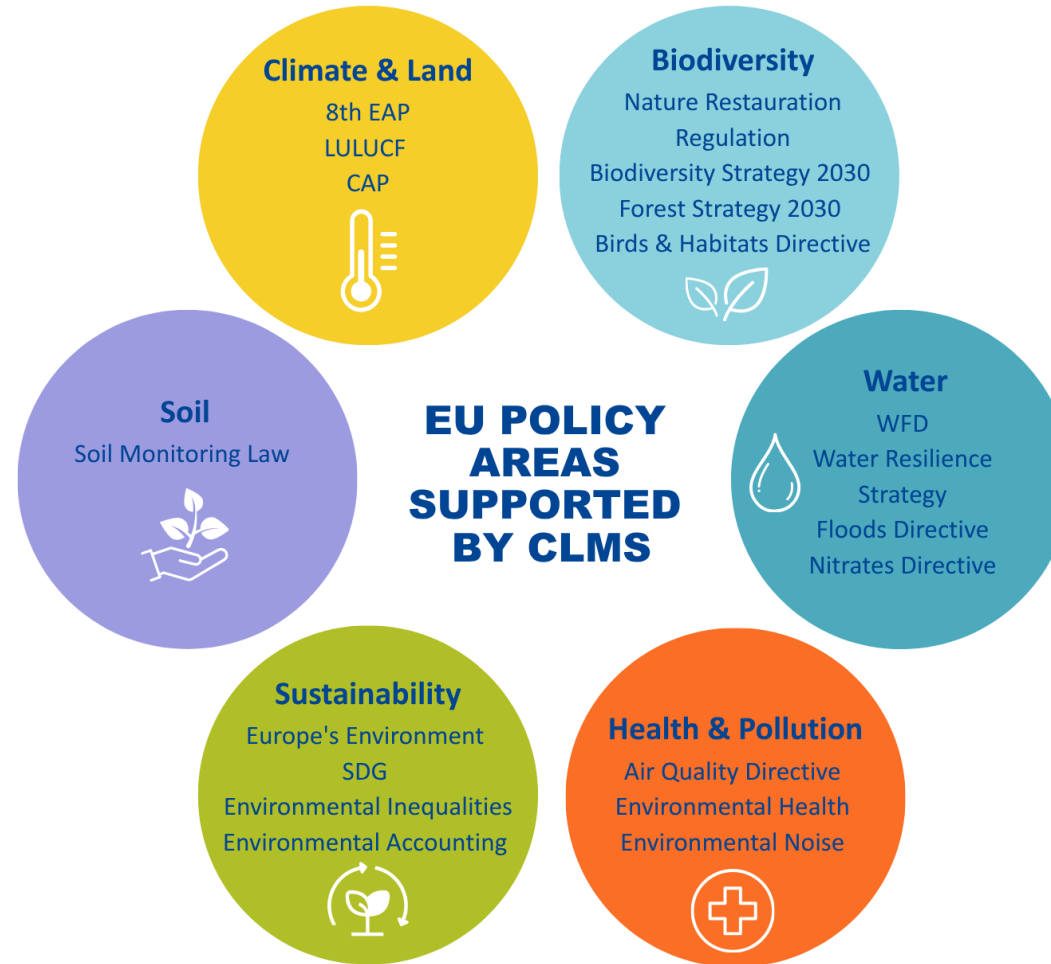


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CLMS EU Policy Relevance



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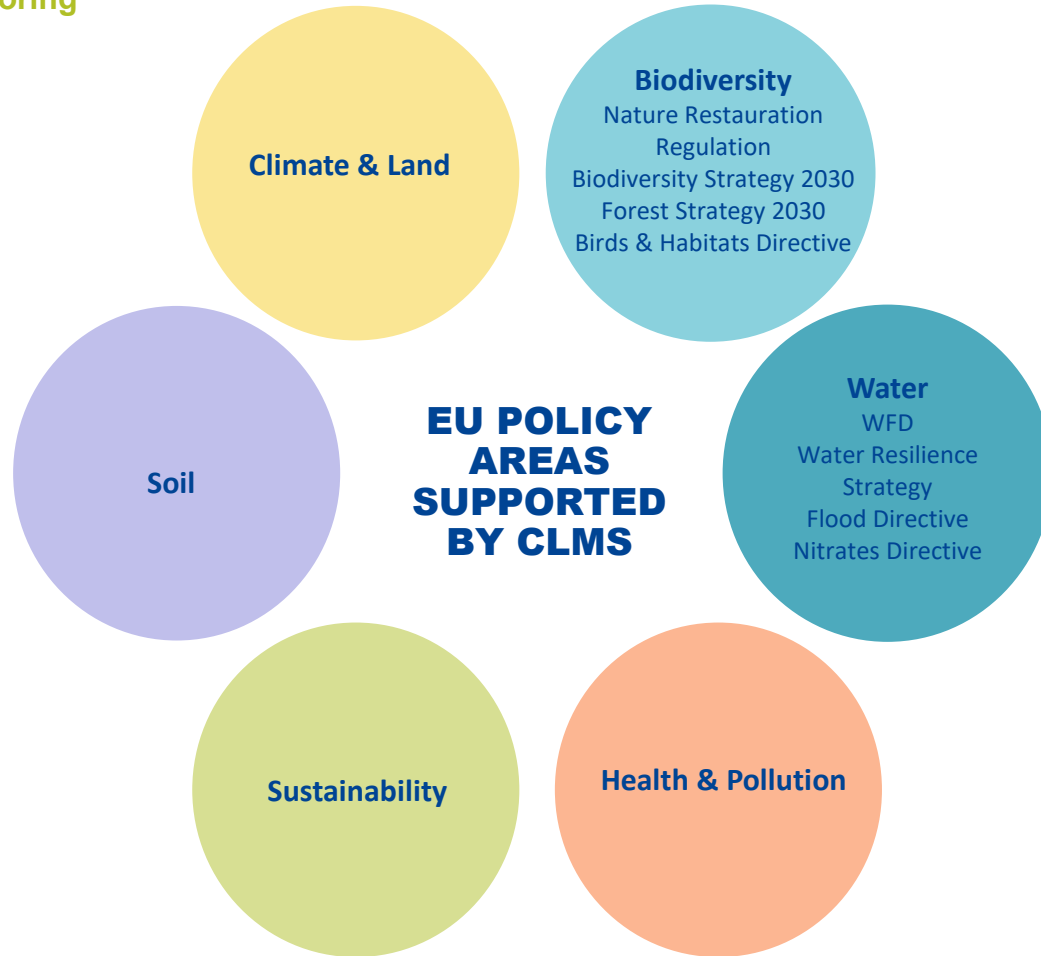
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CLMS EU Policy Relevance



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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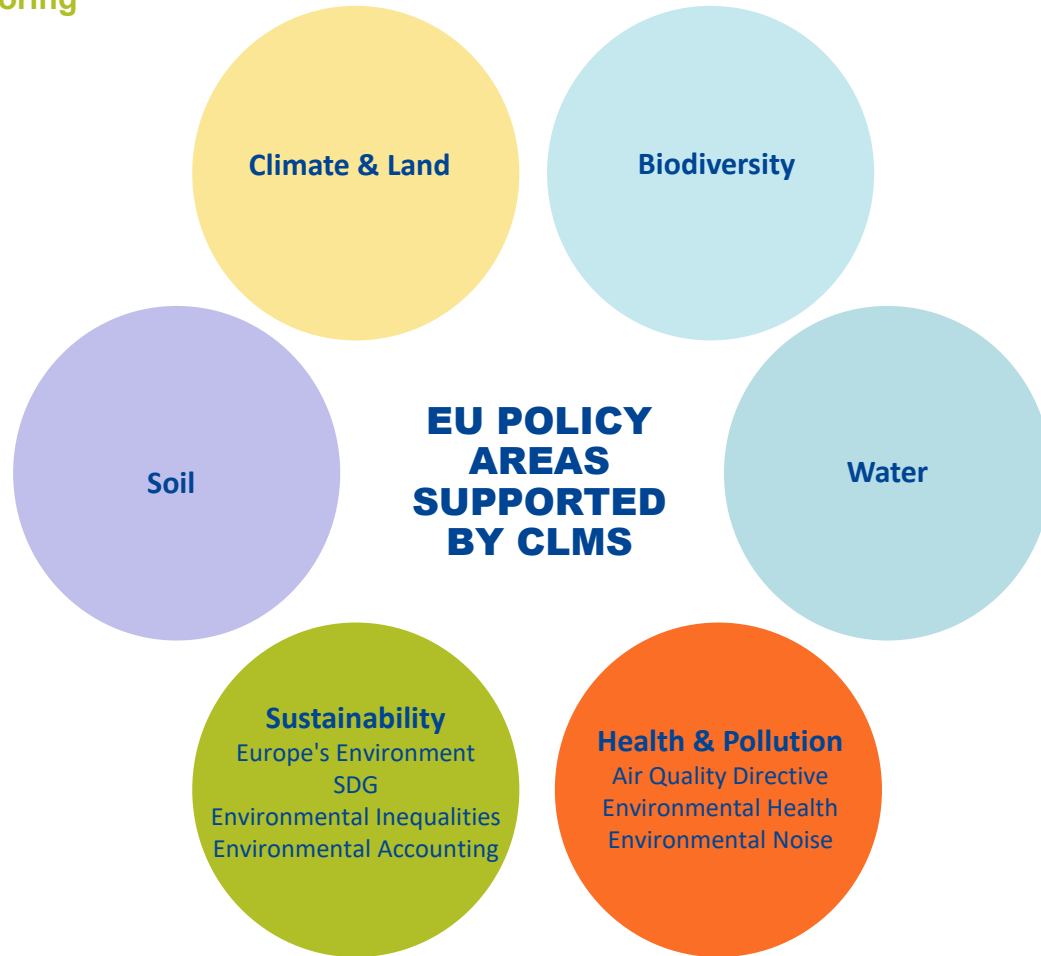
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CLMS EU Policy Relevance



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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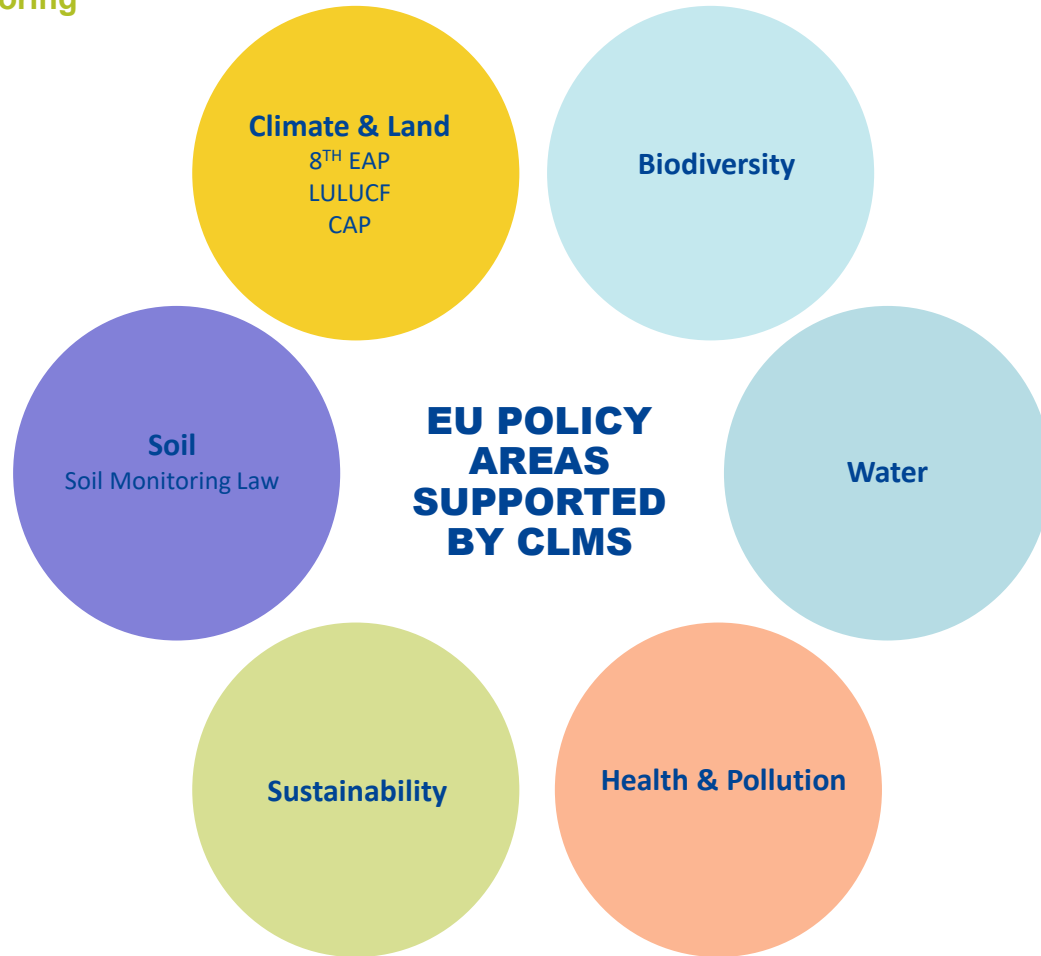
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CLMS EU Policy Relevance



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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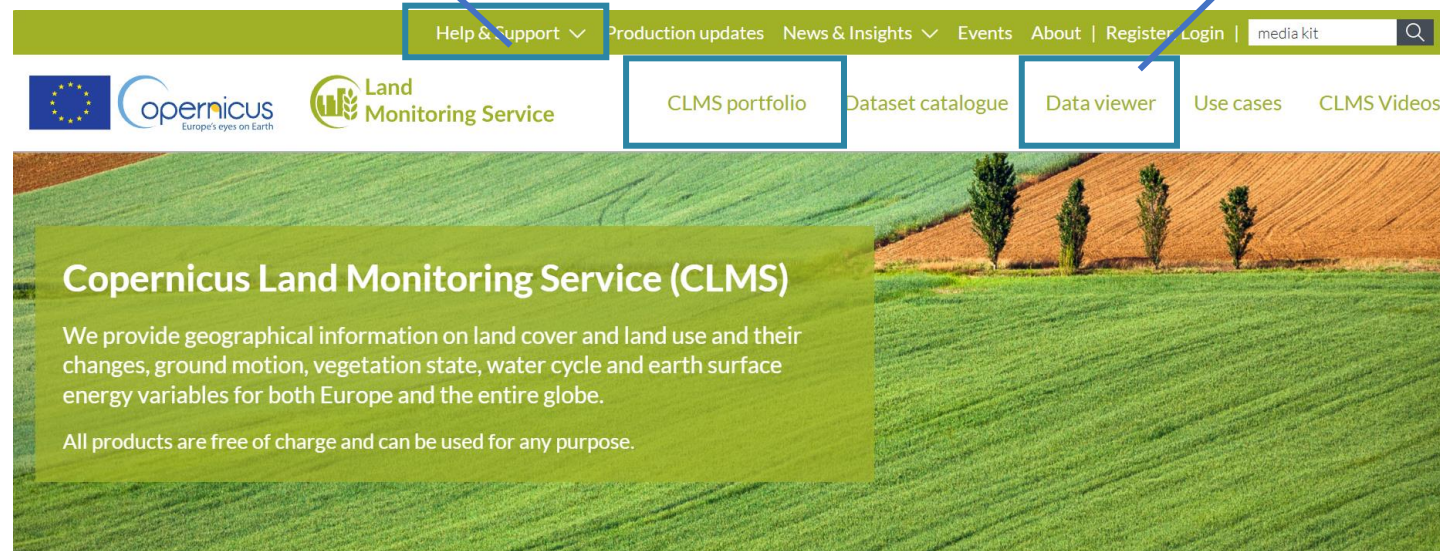
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How to guides

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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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