Copernicus KEN Workshop

Copernicus CLMS – HRL Forest: use case

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CLMS Components

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The Copernicus Land Monitoring Services provides geographical information on land cover and on variables related.

They are divided into three main components:

GLOBAL:

- Series of bio-geophysical products on the status and evolution of land surface, at global scale; mid/low spatial resolution and long term time series.

PAN-EUROPEAN:

- Satellite image mosaics, CLC, HRLs: allowing to monitor status, changes, developments, trends at high spatial resolution with regular update cycle.

LOCAL:

- Complementary information to previous component. Focus on different *hotspots.* Based on VHR imagery: Urban Atlas, Natura2000, Riparian Zones.

CLMS Pan-European Products

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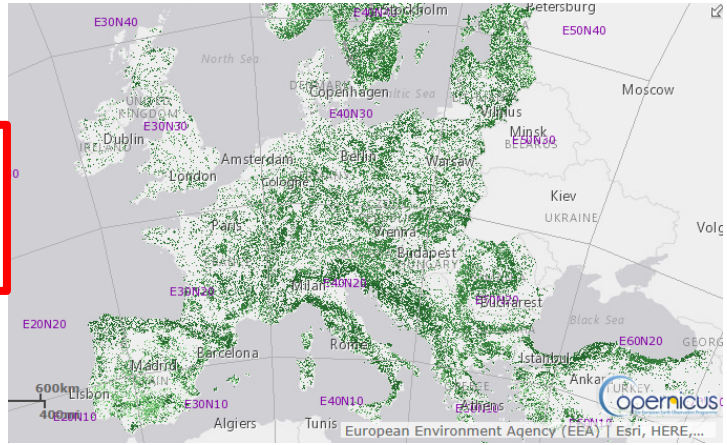
- ***Image Mosaics:*** HR (2012) and VHR (2012)
- ***CORINE Land Cover:*** Eionet NRC/LC producing *the national CLC databases*
- ***HRLs:***
  - Imperviousness
  - Forest:
    - Tree Cover Density
    - Forest Type / Dominant Leaf Type
  - Grassland
  - Wetlands
  - Permanent Water Bodies
- ***Reference Data:*** EU-DEM & EU-Hydro



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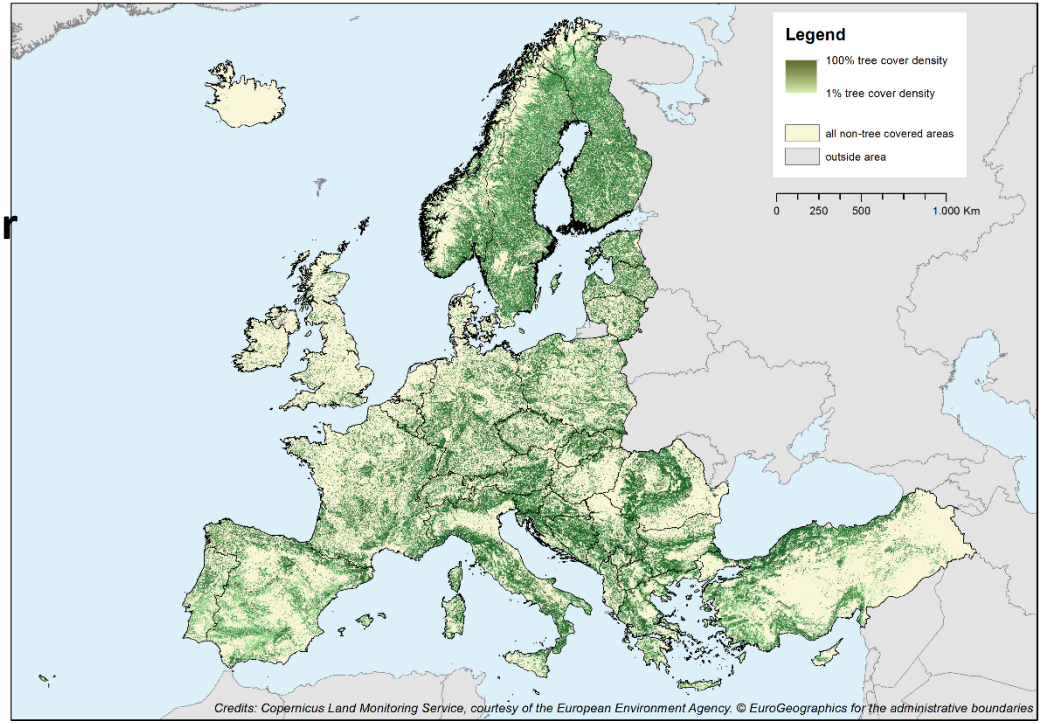
CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

PRODUCT:

- 20m pixel-based **Tree Cover Density 2015** (0-100%)
- Reference year 2015 (+/- 1 year)
- Mono-temporal product (one observation)



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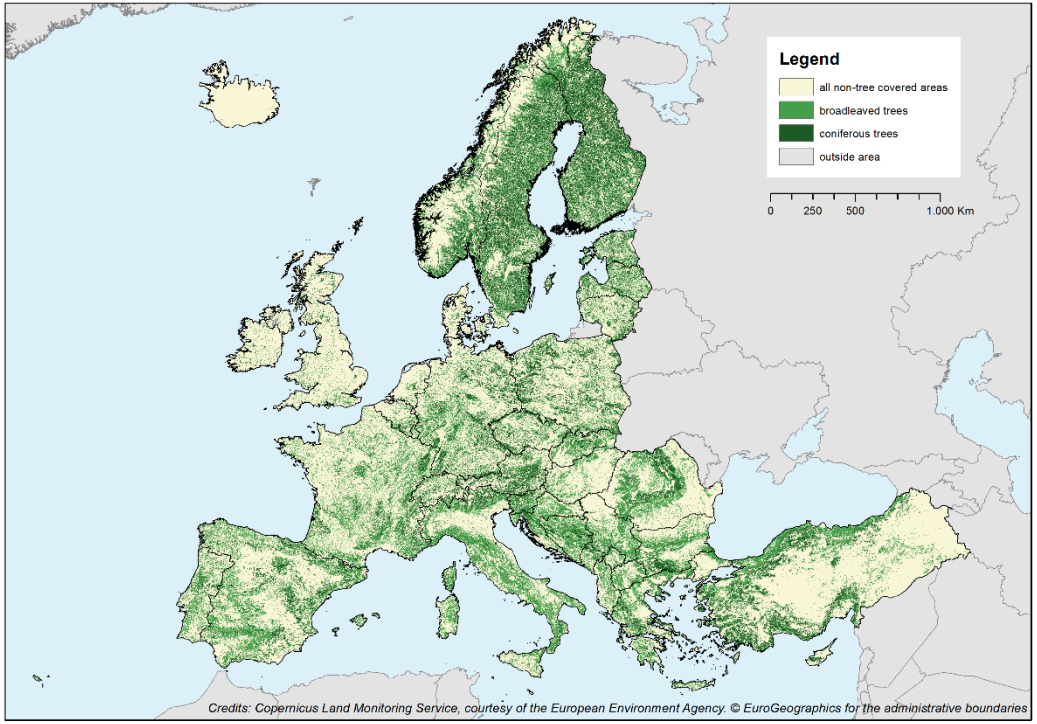
CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

PRODUCT:

- 20m pixel-based **Dominant Leaf Type 2015**
- Reference year 2015 (+/- 1 year)
- Multi-temporal product (1 - 10 observations)



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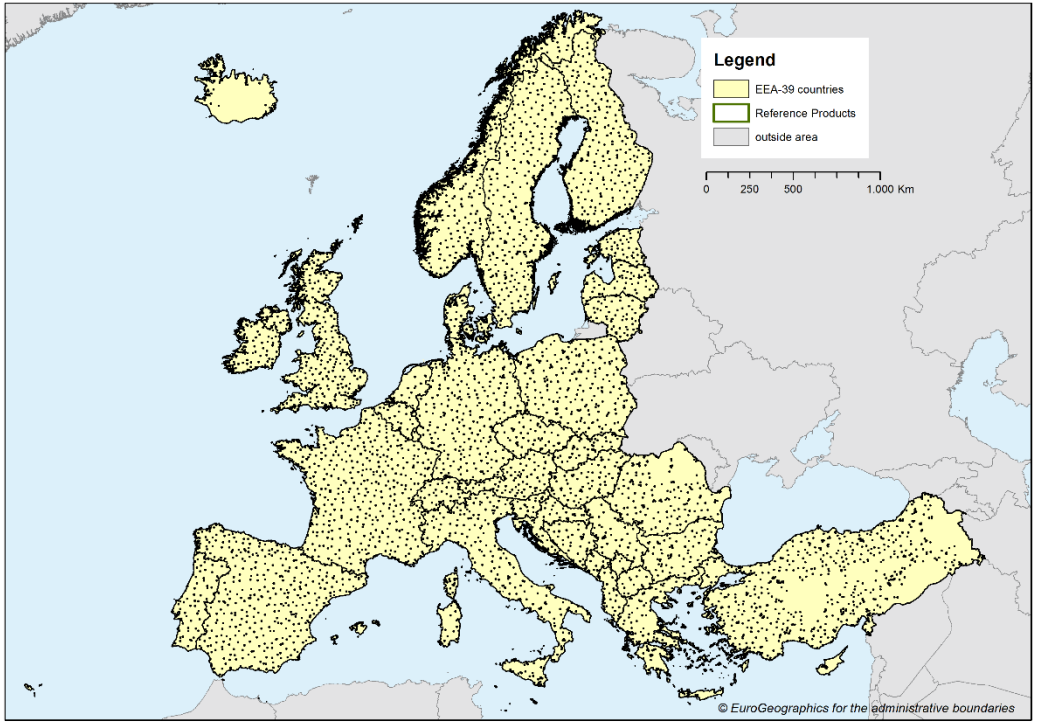
CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

PRODUCT:

- **HRL Forest Reference Database** for calibration and validation
- Reference years 2012/15 (+/- 1 year)
- Time-stable reference polygons/points for EEA-39



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CLMS HRL Forest – Expected Ancillary / In Situ Data

Dataset	Utilisation
GIO HRLs 2012 (Forest, Imperviousness, Water)	Input to the production (Reference samples to derive the initial Tree Cover Mask 2015, the Dominant Leaf Type product 2015 and to correct / produce the Dominant Leaf Type product 2012)
CORINE Land Cover (CLC 2012)	Input to the Accuracy Assessment (Stratification)
LUCAS 2012	Input to the Accuracy Assessment (Sampling Design)
Open Street Map	Input to the production (Reference samples to derive the initial Tree Cover Mask 2015, the Dominant Leaf Type product 2015 and to correct / produce the Dominant Leaf Type product 2012)
EU-DEM	Input to the EO data pre-processing (Topographic Normalisation)
EEA 1km reference grid	Retrieval of 100m x 100m grid; geometric reference for reference products (time stable Tree Cover / Leaf Type Density reference samples in 2012 and 2015) for calibration
EuroBoundaryMap v11 from EuroGeographics	Input Boundaries

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CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

- Description of the final product and requirements
  - >5,000 100x100m reference polygons (PSUs), aligned to the EEA reference grid in ETRS 1989 LAEA projection
  - >500,000 reference points (10x10 point grid per PSU)
  - Objective: calibration and validation of HRL Forest products
  - Requirements: Preferably full and up-to-date VHR data coverage across the full Area of Interest (EEA-39); NIR information almost mandatory for leaf type!

- In situ data (OI-Services) is mandatory for
  - Gap-filling due to shortcomings in the VHR data coverage:
    - Estimation of tree cover density (tree cover / no tree cover)
    - Discrimination of dominant leaf type (broadleaved / coniferous)
  - Internal quality control steps
  - Validation support

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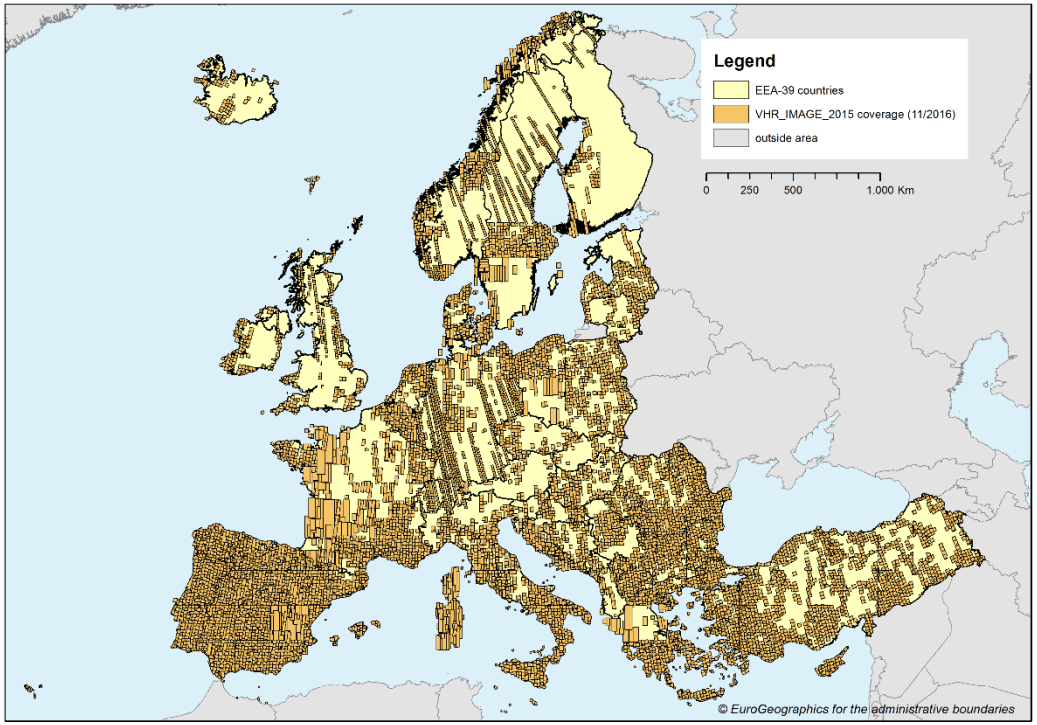
CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

VHR_IMAGE_2015

- Basis for the HRL Forest Reference Database (and Small Woody Features)
- Reference year 2015 (+/- 1 year)
- No full data coverage at production start available



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CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

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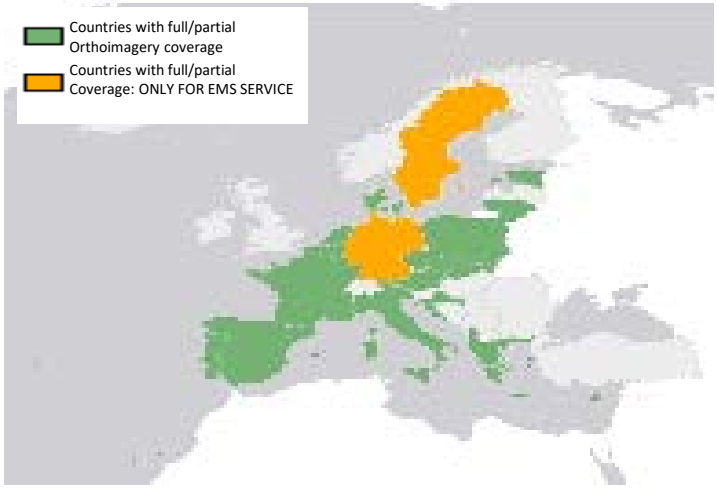
CORDA

- Provides a wide range of Ortho-Imagery services at national and/or regional level relevant for the HRL Forest Reference Database
- Largely heterogeneously regarding spatial, spectral and temporal resolution
- Available as WMS or download, depending on the country
- Still huge potential of improvement for harmonisation across Europe



Details : Orthoimagery. View services in Europe. Country full coverage (except Belgium, divided in three regions: Flanders, Brussels-Capital Region and Wallonia, and Slovakia, with parcial coverage). Germany and Sweden only for EMS. Resolution <= 0,5 m.

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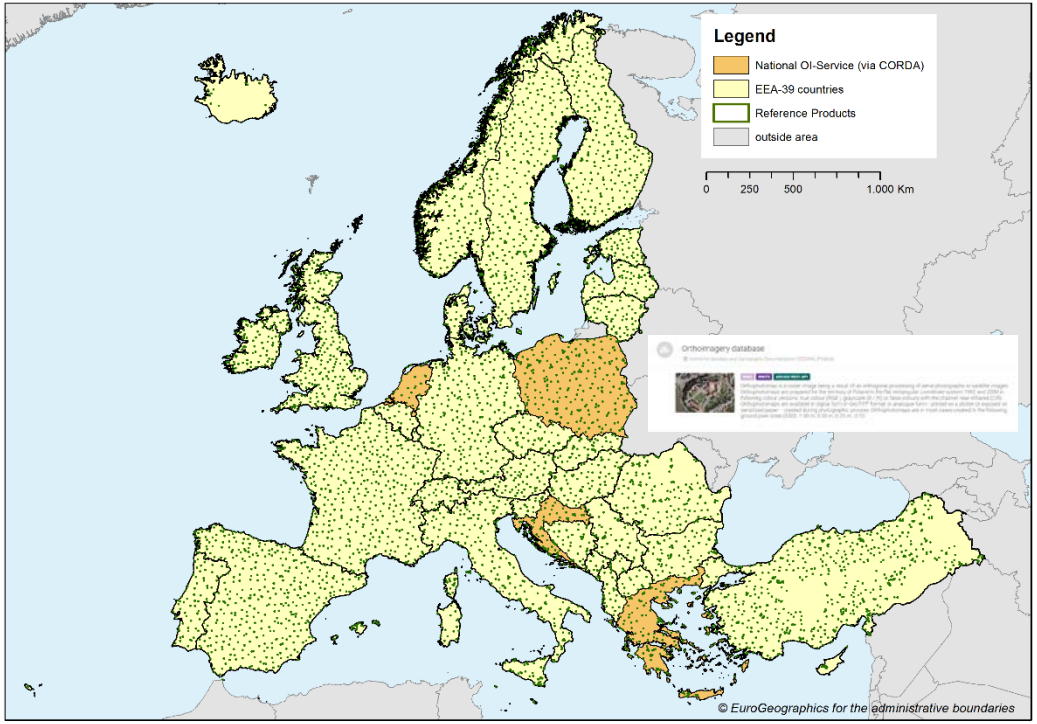
CLMS HRL Forest 2015 - Use Case: HRL Forest Reference Database

CORDA

- Helps to overcome shortcomings in existing pan-European data coverages
- Enabled the completion of the Reference Database
- Supports CSPs in their internal validation/QC



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