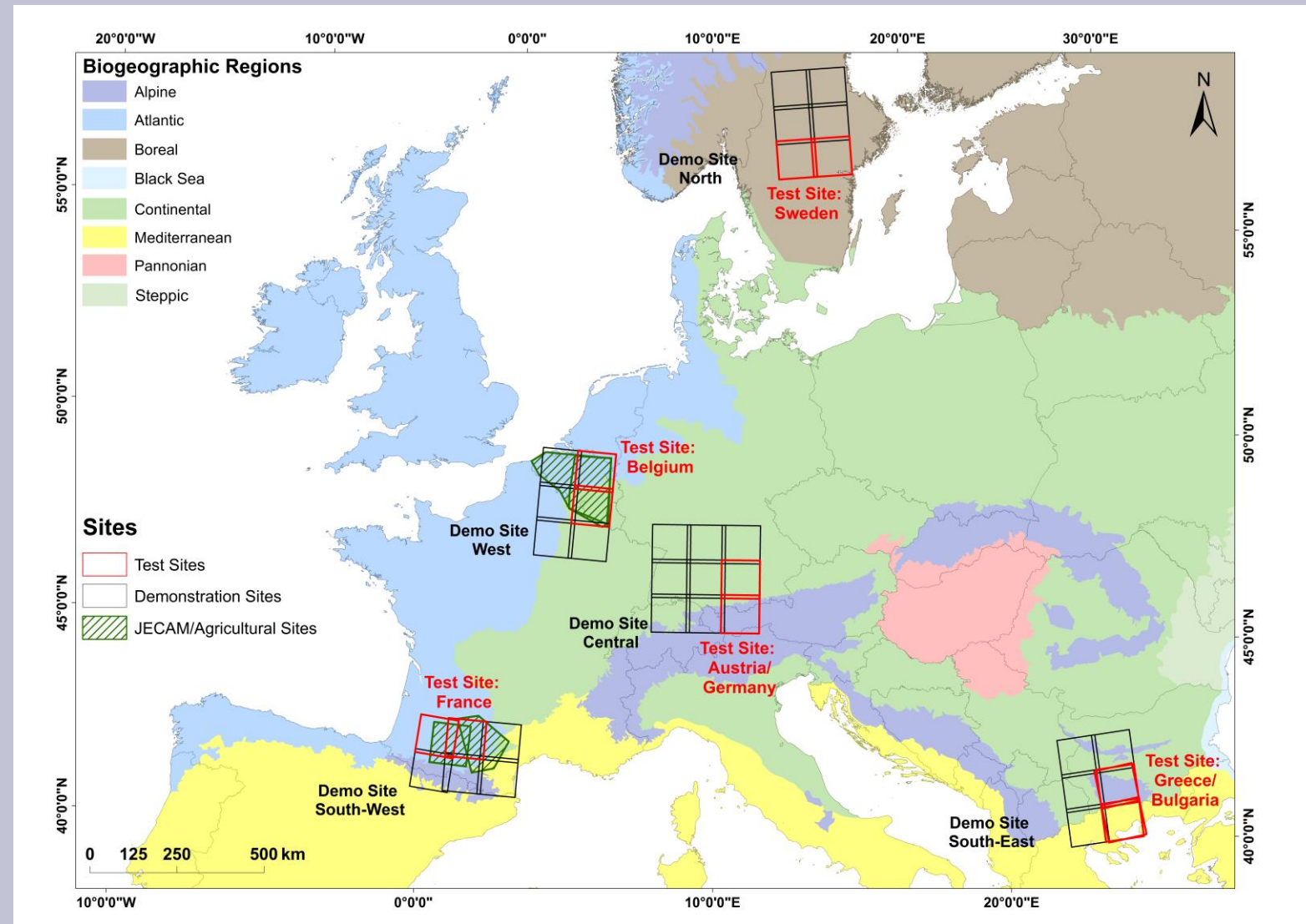# Sentinel-based Evolution of Copernicus Land Services – The ECoLaSS Project

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ECoLaSS – Evolution of Copernicus Land Services based on Sentinel data

Evolution of Copernicus Land Services based on Sentinel data

ECoLaSS

ECoLaSS: a Horizon 2020 project

Duration: Jan 2017– Dec 2019 (3 years)
GAF AG and Partners: SIRS, Joanneum Research, UCL, DLR

KEY OBJECTIVES: DEVELOPMENT OF…

- **Innovative Methods** based on high volume data processing of Sentinel (Optical and SAR) time series
- **Prototypes** for improved and novel next-generation operational Copernicus Land Services, which are demonstrated in large prototype sites of biogeographical diversity.
- an **Operationalization Framework** including benchmarking of prototypes in view of their innovation potential and technical excellence for operational service implementation into Copernicus Land Services from 2020 onwards.
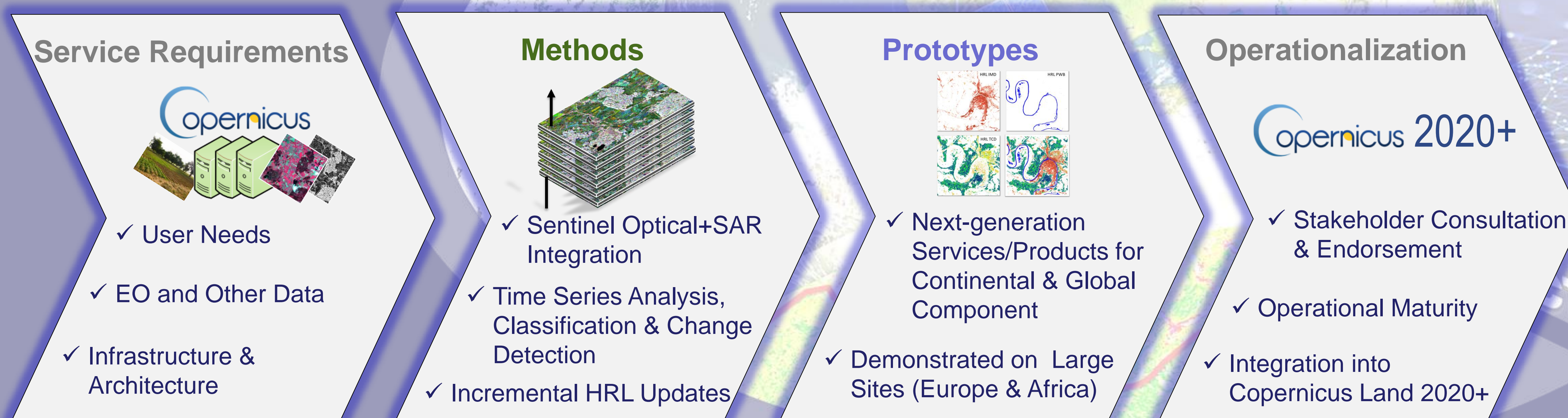

Prototype & Test-sites: European & African sites, towards European/global Services

Copernicus BACKGROUND

Copernicus Land Monitoring Service: provides EO-based spatial information related to bio-geophysical variables, Land Cover/Land Use characteristics & their changes over time. The related services are reflected in a Global, pan-European (Continental), Local and an In-situ Component. The Service is increasingly based on **Sentinel Data** from ESA.
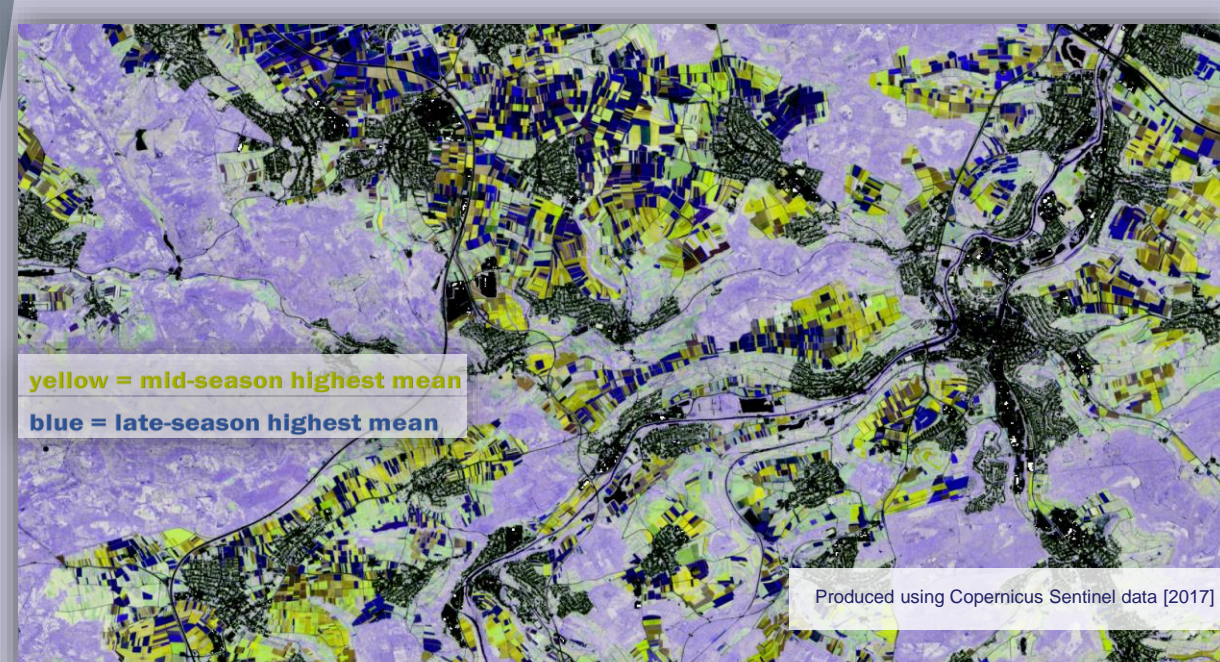
MULTIPLY 2018

PROJECT CONCEPT

Service Requirements	Methods	Prototypes	Operationalization
✓ User Needs	✓ Sentinel Optical+SAR Integration	✓ Next-generation Services/Products for Continental & Global Component	✓ Stakeholder Consultation & Endorsement
✓ EO and Other Data	✓ Time Series Analysis, Classification & Change Detection	✓ Demonstrated on Large Sites (Europe & Africa)	✓ Operational Maturity
✓ Infrastructure & Architecture	✓ Incremental HRL Updates		✓ Integration into Copernicus Land 2020+

ECoLaSS

TESTING & PROTOTYPES

High Resolution Layer (HRL)

- **Agriculture New!**
- **Grassland**
- **Imperviousness**
- **Forest**
- **New Products**

Crop Type Map and HRL Grassland 2015 (Germany)

- winter oilseed rape
- fallow
- potatoes
- winter bread wheat
- spring bread wheat
- winter rye
- winter barley
- spring barley
- spring oat
- silage maize
- winter triticale
- agrarian grassland
- meadows
- peas

HRL Grassland 2015
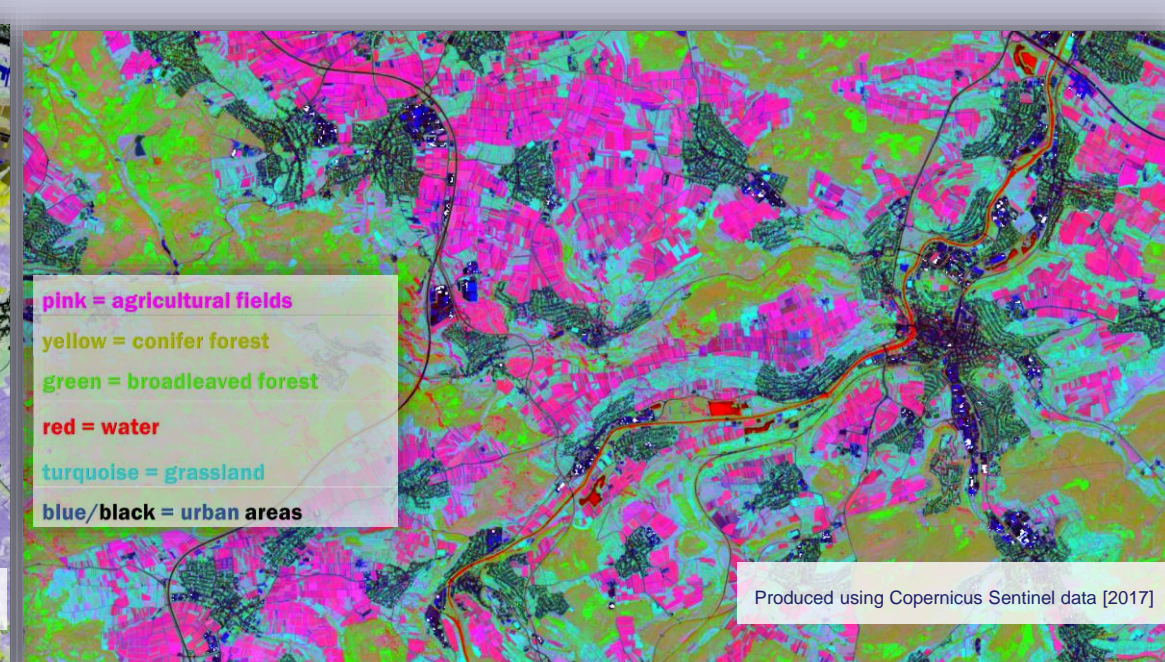
Mean NDVI of different time periods – showing agricultural dynamics

RGB composition:
NDVI std – NDVI min – Brightness median

Produced using Copernicus Sentinel (2017)

Maximum NDVI of different time periods – showing agricultural dynamics

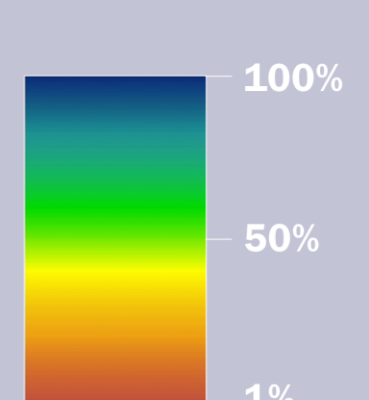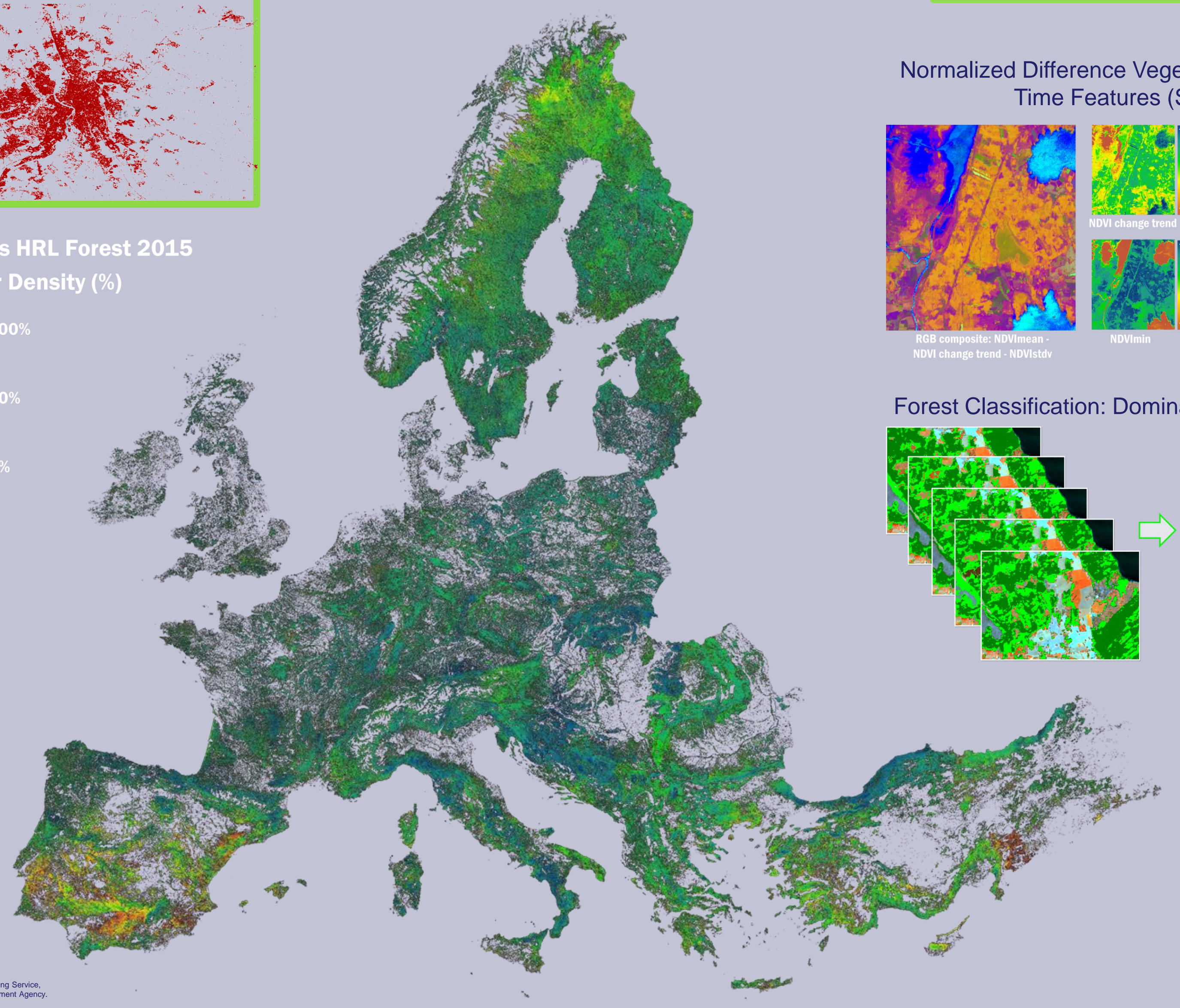IMD 2015 – Built-up mask (Toulouse, France)

Credits: Copernicus Land Monitoring Service, courtesy of the European Environment Agency.
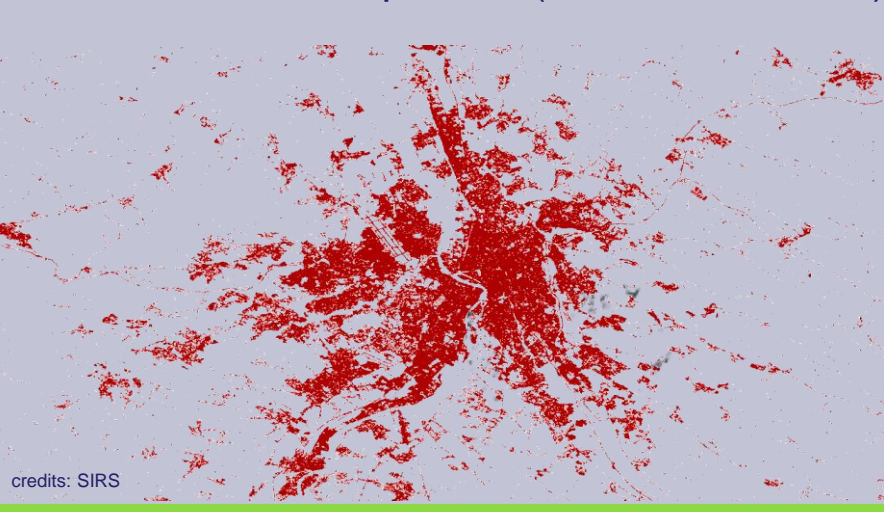
Copernicus HRL Forest 2015
Tree Cover Density (%)

100%
50%
1%

Normalized Difference Vegetation Index (NDVI) Time Features (Sweden)

Produced using Copernicus Sentinel (2016)
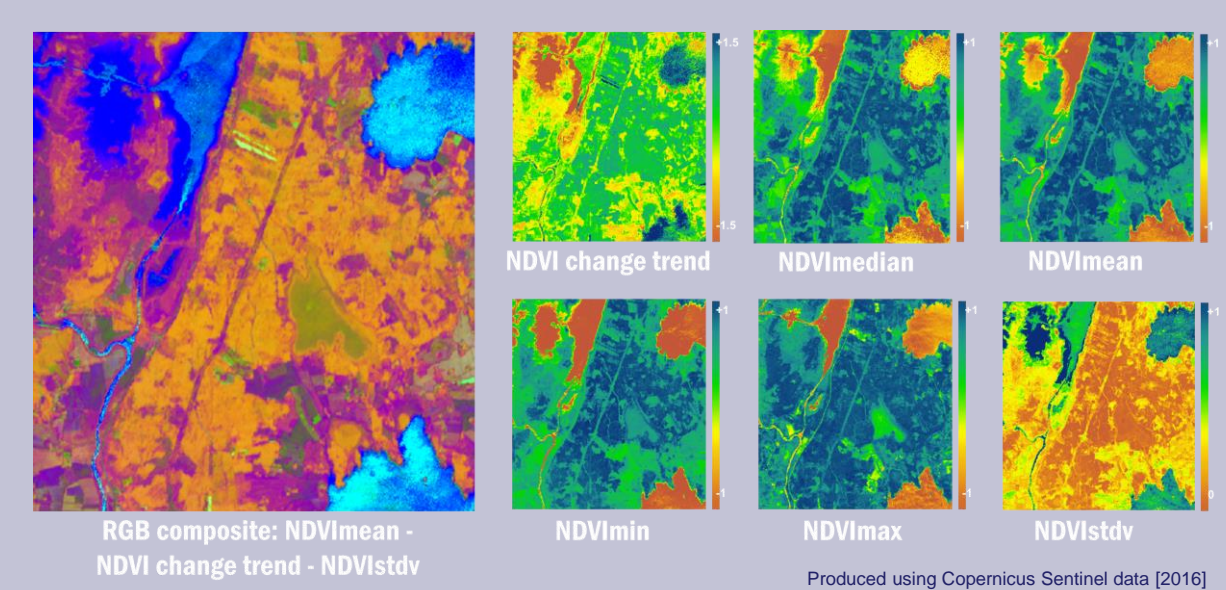
Forest Classification: Dominant Leaf Type (DLT)

Broadleaved Forest
Coniferous Forest

Credits: Copernicus Land Monitoring Service, courtesy of the European Environment Agency.
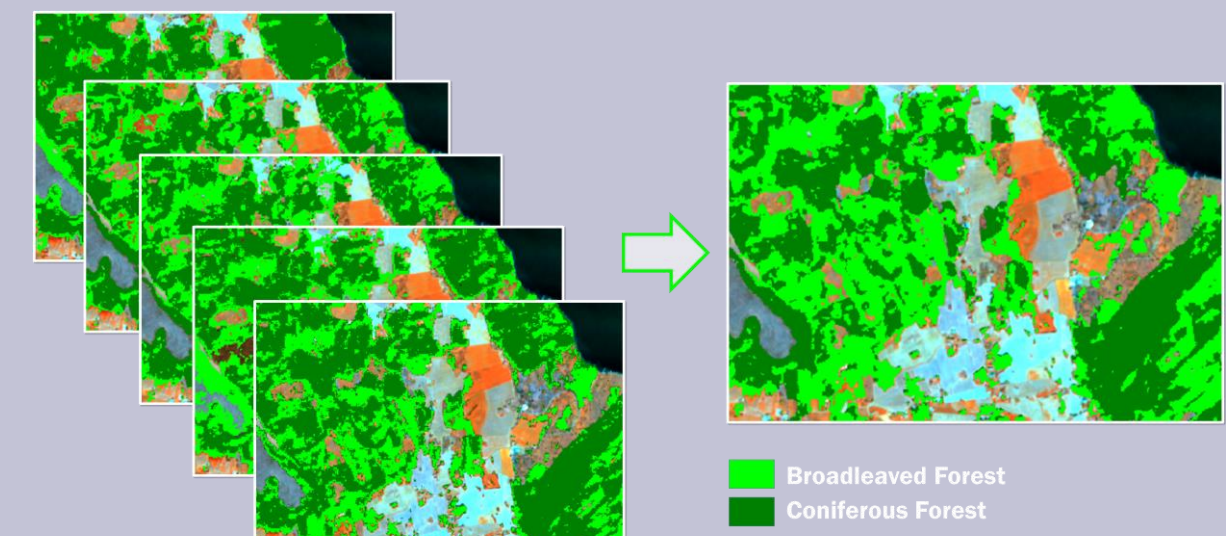
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GAF AG — an e-GEOS (ASI / Telespazio) Company
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