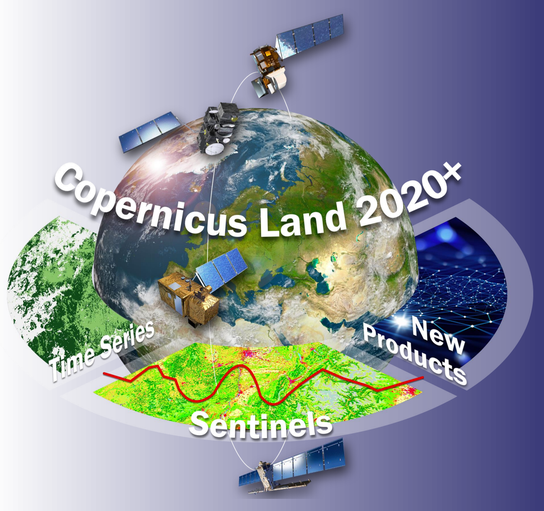

Sentinel-based Evolution of Copernicus Land Services on Continental and Global Scale

Horizon 2020
www.ecolass.eu

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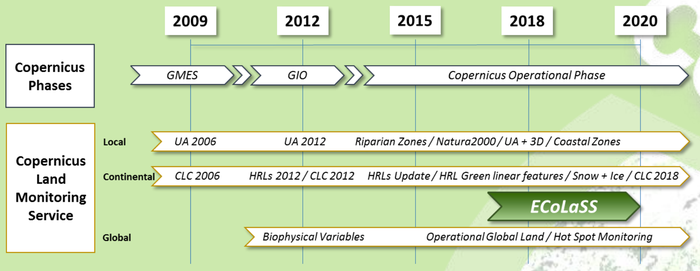
4: Université catholique de Louvain (UCL) – Earth and Life Institute (ELI); 5: German Aerospace Center (DLR) – German Remote Sensing Data Center (DFD)

ECoLaSS – Evolution of Copernicus Land Services based on Sentinel data

ECoLaSS: a Horizon 2020 project

- **Duration:**
  Jan 2017– Dec 2019 (3 years)
- **Location:**
  European & African sites (→ towards global Service)
- **Team:**
  GAF (Coordinator), SIRS, Joanneum Research, UCL, DLR



ECoLaSS will develop several prototypes of new or enhanced Copernicus Land Services of the Continental and the Global Component, which will make full use of high data volume processing of dense time series of SAR and Optical Sentinel (and other) EO data.
These prototypes shall be suggested to EC and the relevant decision-makers for qualifying as candidates for operational integration into the future Copernicus Land Monitoring Service from 2020 onwards.

Key Objectives: Development of…

- **Innovative Methods** based on high volume data processing of Sentinel (Optical and SAR) time series to improve existing and develop novel products and services for the pan-European and Global Copernicus Land Components.
- **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.

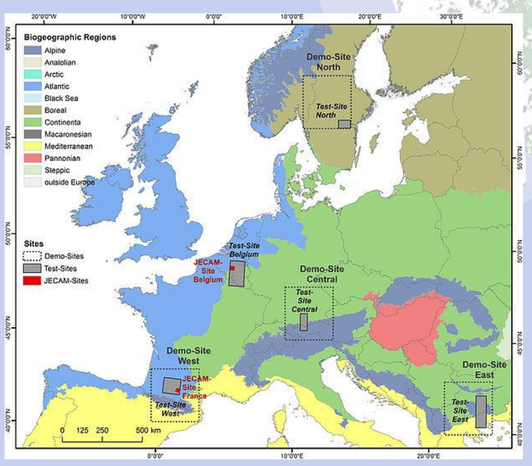
Copernicus Background

Copernicus: European Earth Observation (EO) programme headed by the European Commission (EC) in partnership with the European Space Agency (ESA). Six operational Copernicus services on the earth's main sub-systems (i.e. Land, Atmosphere, Oceans) and on cross-cutting processes (i.e., Climate Change, Emergency and Security).

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.

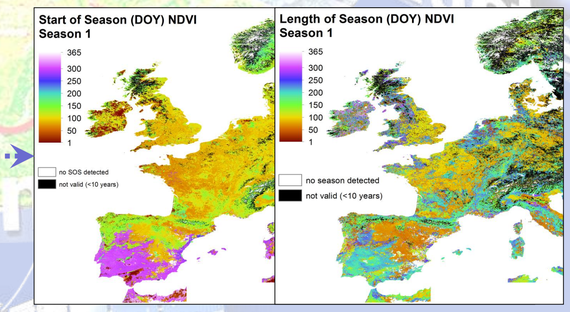
WORLDCOVER 2017

Test & Prototype Sites



- **Four selected prototype sites** (100.000 km²) cover most important environmental zones of Europe and different EEA-39 member states.
  - **Test sites** within prototype sites
  - **JECAM sites**: specific in-situ data
- **Three African sites** (10.000 km²) in Mali, Democratic Republic of Congo and South Africa cover a wide range of land diversity → Global Perspective
  - **JECAM sites:** Mali, South Africa

Indicators from High Spatial & Temporal Data



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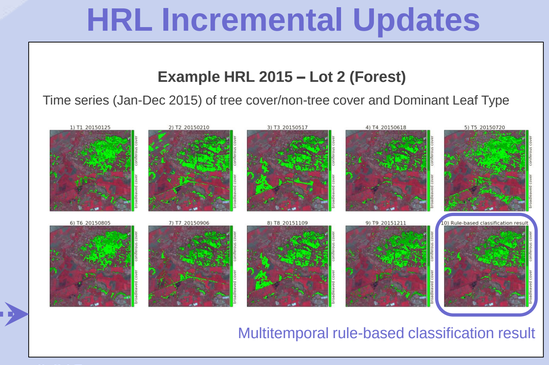
HRL Incremental Updates



Multitemporal rule-based classification result

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Service Requirements

- ✓ User Needs
- ✓ EO and Other Data
- ✓ Infrastructure & Architecture

Methods

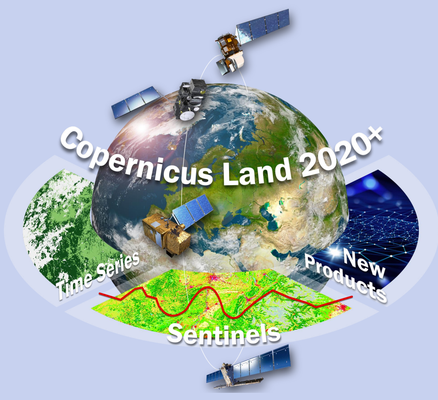
- ✓ Sentinel Optical+SAR Integration
- ✓ Time Series Analysis, Classification & Change Detection
- ✓ Incremental HRL Updates

Prototypes

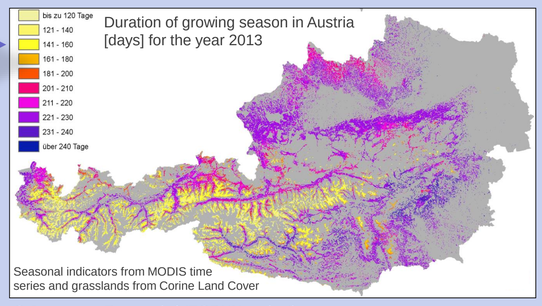
- ✓ Next-generation Services/Products for Continental & Global Component
- ✓ Demonstrated on Large Sites (Europe & Africa)

Operationalization

- ✓ Stakeholder Consultation & Endorsement
- ✓ Operational Maturity
- ✓ Integration into Copernicus Land 2020+



Permanent Grassland Identification



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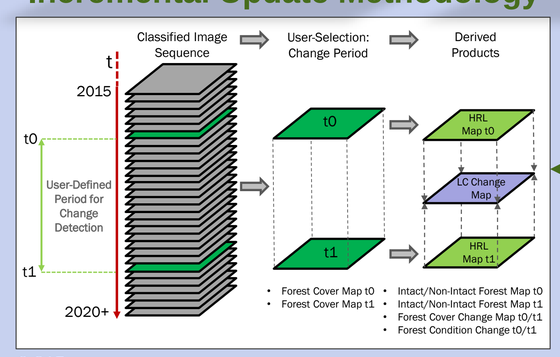
Incremental Update Methodology



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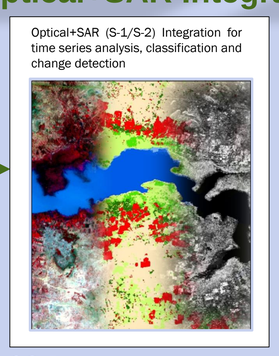
Optical+SAR Integration



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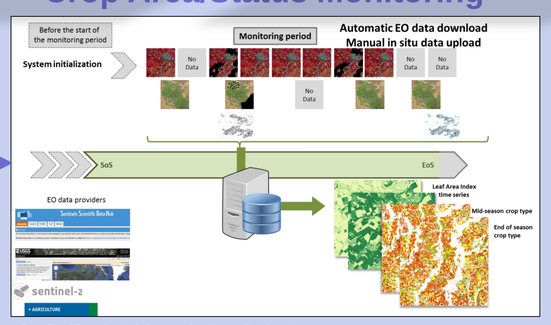
Crop Area/Status Monitoring



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Impact

- **Prototypes for EEEs** → ECoLaSS will develope and benchmark several prototypes that will serve as reference to EEEs for independent assessment of the Copernicus Land Service evolution.
- **User Communities** → ECoLaSS will promote the innovation potential of new land monitoring services/applications to diverse user communities.
- **Copernius Economy** → ECoLaSS will develop new opportunities for a wide range of dedicated applications to the market from 2020 onwards. The project will thus contribute to a growing "Copernicus Economy" by boosting (new) Copernicus Land Services and value-added applications (Downstream Services).

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GAF AG — an e-GEOS (ASI / Telespazio) Company
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Evolution of Copernicus Land Services based on Sentinel data ECoLaSS