



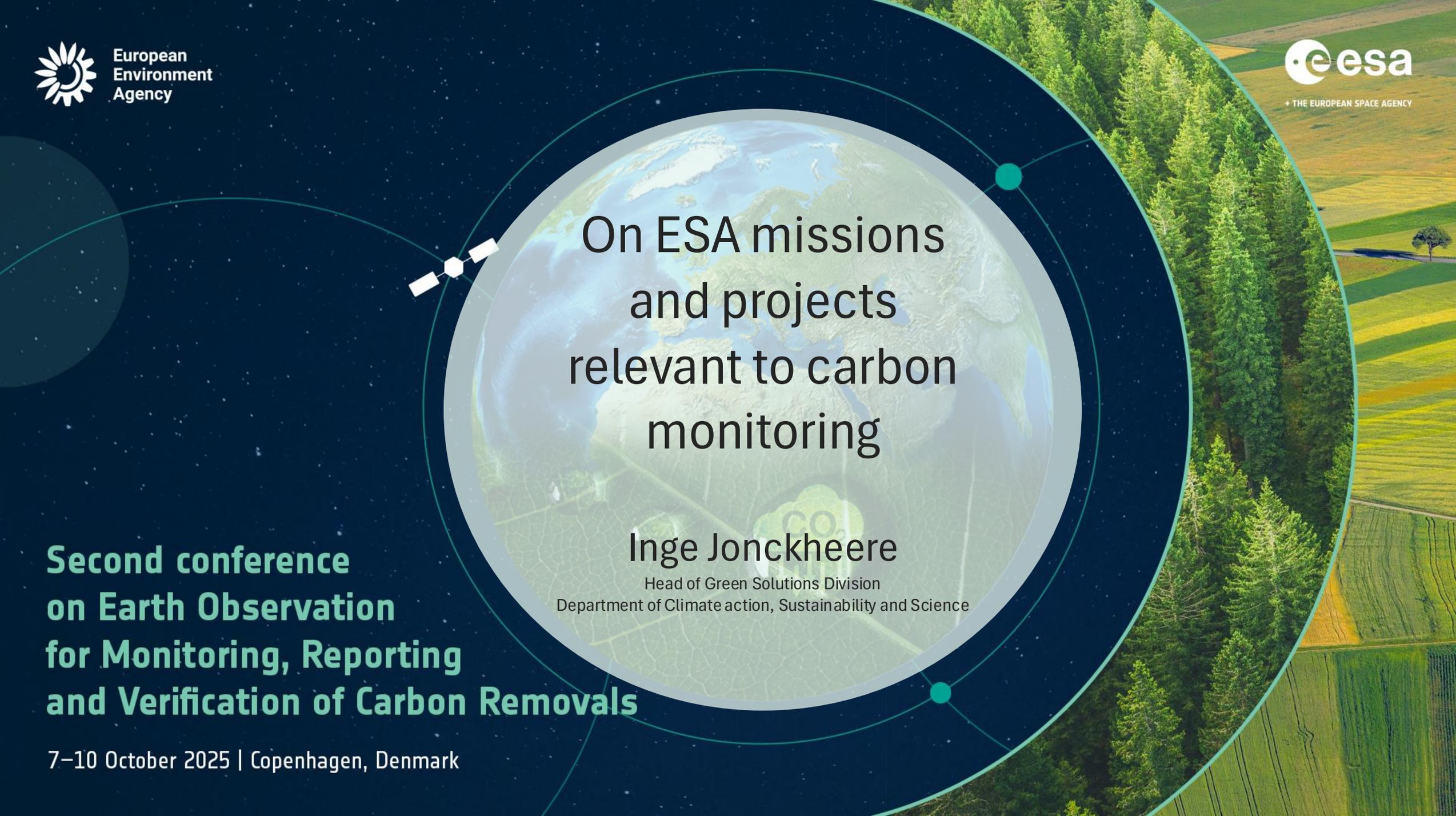
Opening remarks by the European Space Agency

Inge Jonckheere

Head of Green Solutions Division
Department of Climate action, Sustainability and Science

**Second conference
on Earth Observation
for Monitoring, Reporting
and Verification of Carbon Removals**

7–10 October 2025 | Copenhagen, Denmark



On ESA missions and projects relevant to carbon monitoring

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Sentinel-1

C-band Radar Mission



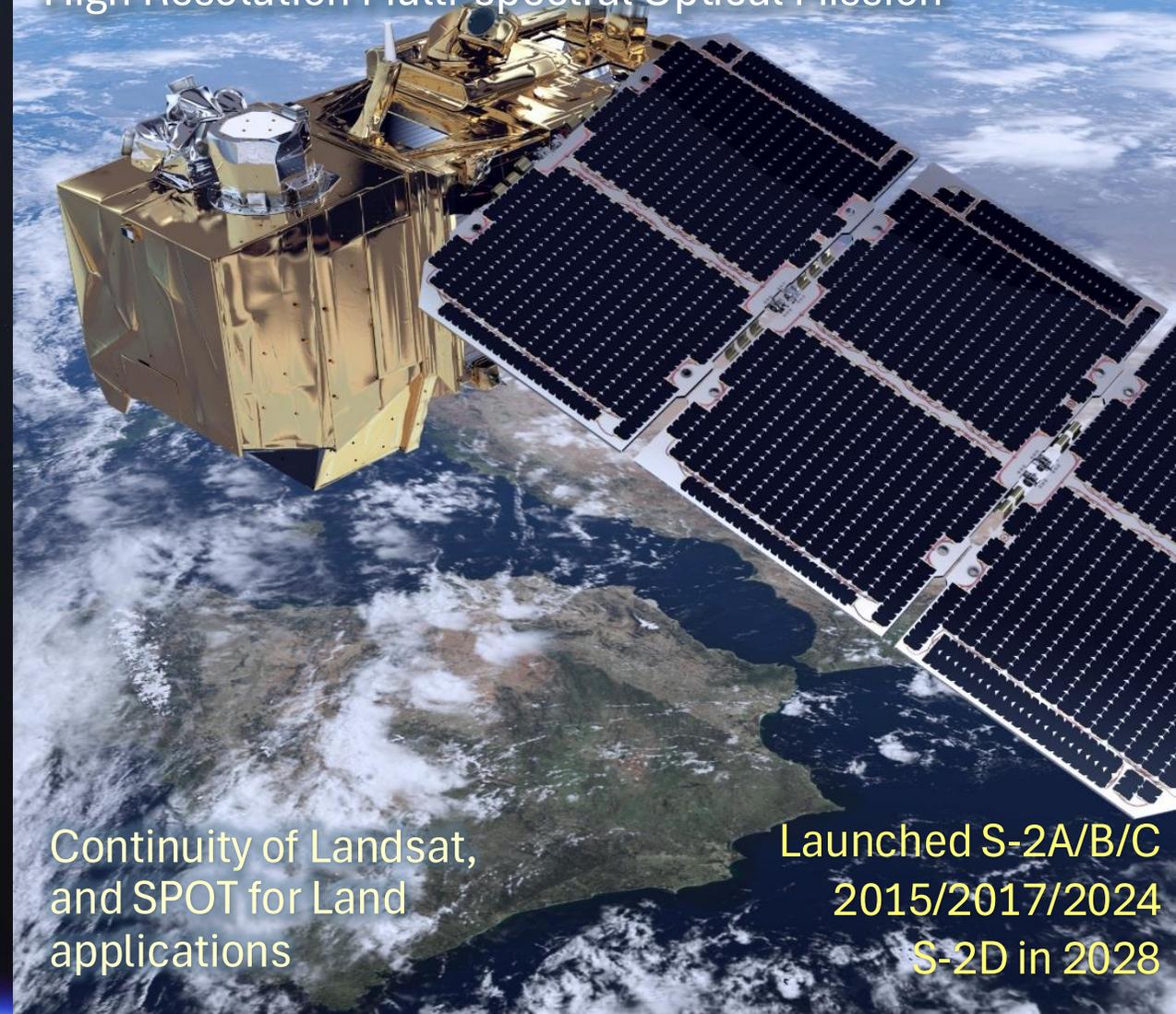
Launched S-1A/B/C
2014/2016/2024
S1-D in November 2025

SAR imaging for all weather,
day/night applications,
interferometry



Sentinel-2

High Resolution Multi-spectral Optical Mission



Continuity of Landsat,
and SPOT for Land
applications

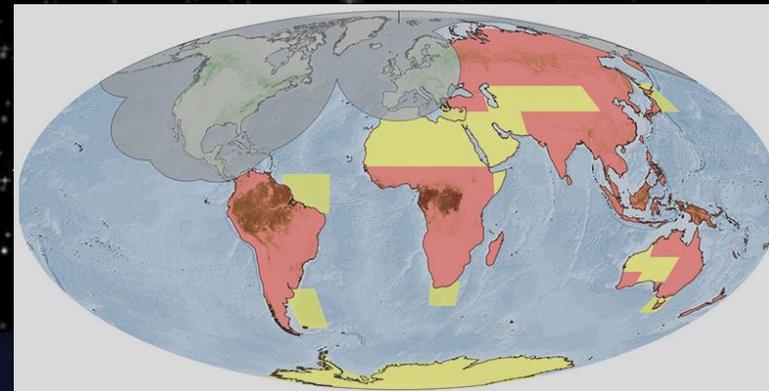
Launched S-2A/B/C
2015/2017/2024
S-2D in 2028



Biomass



Observation targets



- Forest Height: 200 m
- Forest Disturbance: 50 m
- Above Ground Biomass: 200 m

Providing maps of forest biomass stocks, disturbance and growth

Using PolSAR backscatter, PolInSAR coherence and multi-baseline PolSAR (TomoSAR)

Launched April 2025



COPERNICUS SENTINEL EXPANSION MISSIONS

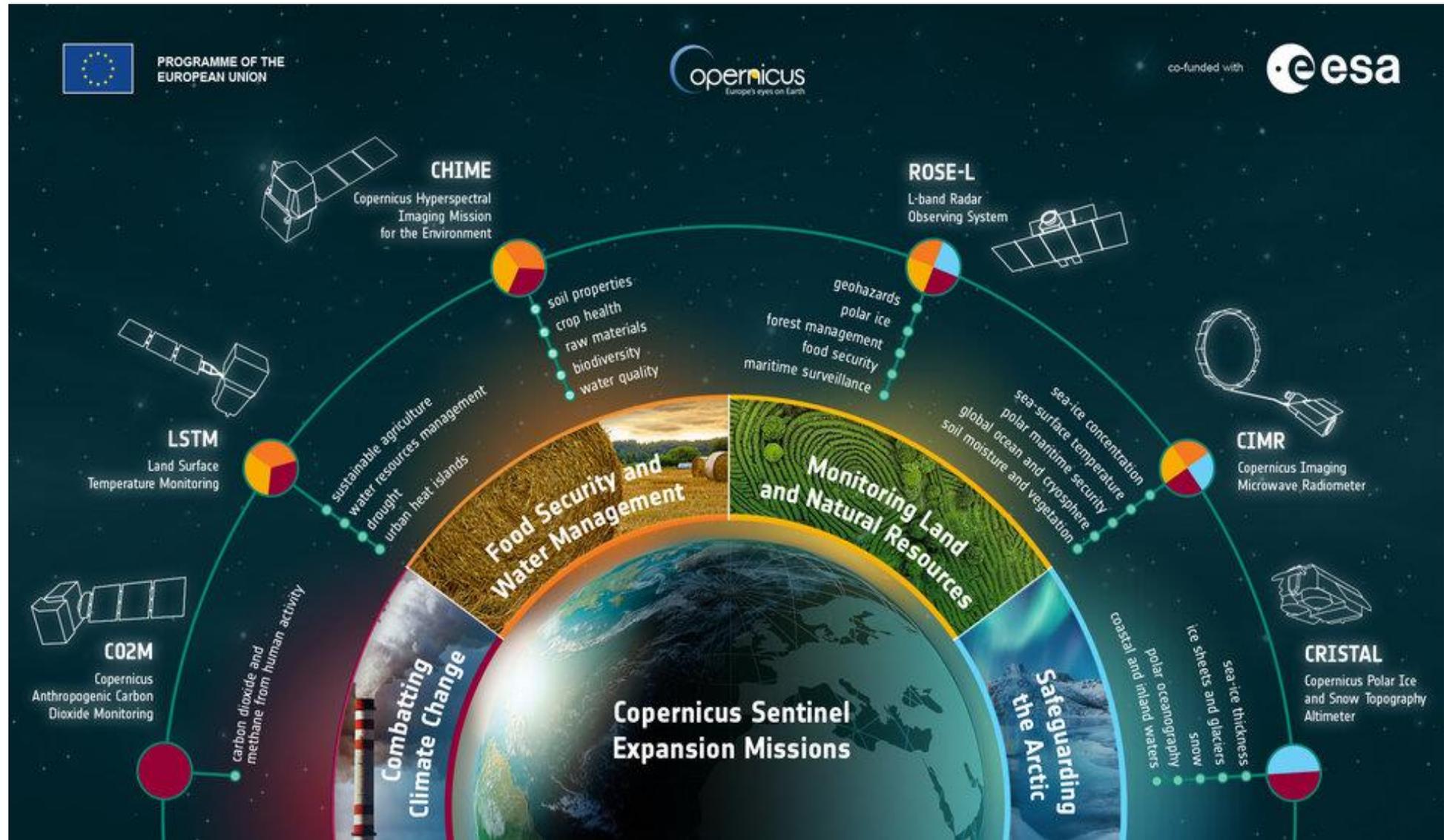


PROGRAMME OF THE EUROPEAN UNION



Sentinel Expansion missions are being developed to

- Address EU policy and gaps in Copernicus user needs
- Expand the current capabilities of the Copernicus Space Component.

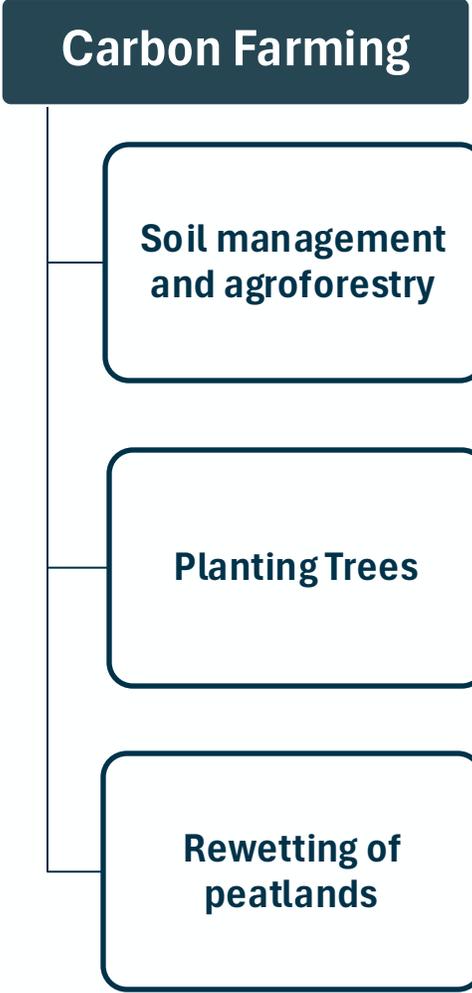




From missions... ...to solutions

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Carbon Farming

Soil management and agroforestry

Planting Trees

Rewetting of peatlands



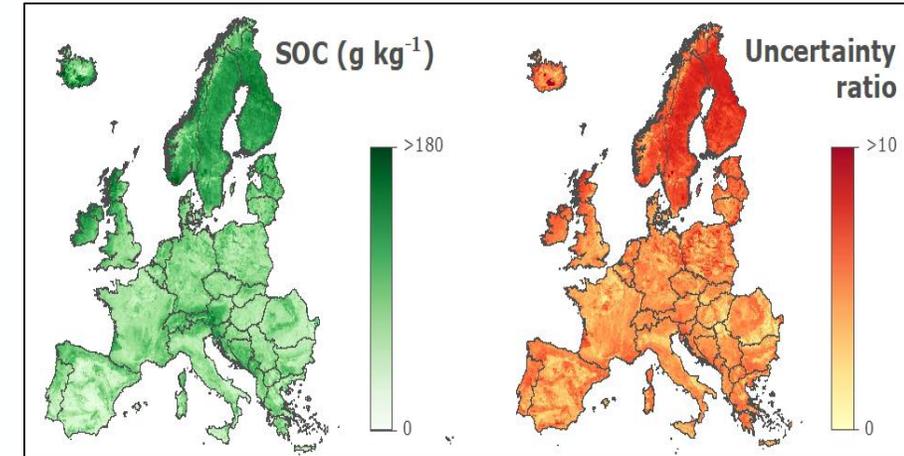
Validation with National Reporting Centers data sets

- Wallonia: Very high accuracy ($\geq 90\%$)
- Czech Republic: Tendency to overpredict SOC values
- Macedonia: Mosaiced crops difficult SOC pixel assignation

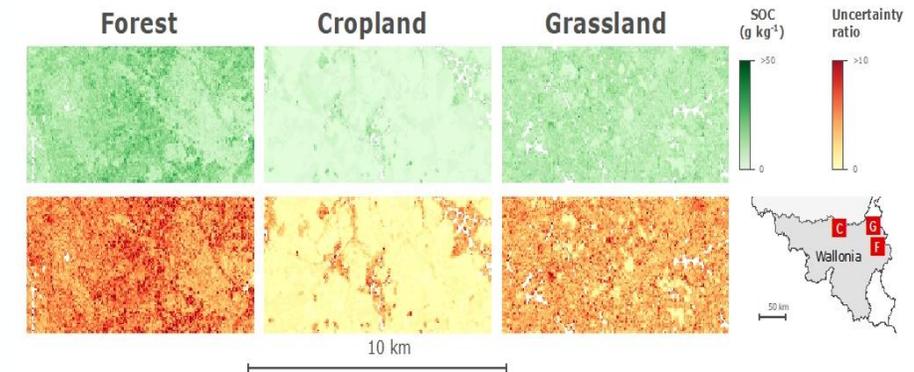
Data: <https://gui.world-soils.com/>



European Topsoil SOC



Regional Topsoil SOC



<https://doi.org/10.1016/j.geoderma.2024.117113>

Carbon Farming

Soil management and agroforestry

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Use case demonstrations

Primary EO data:
Sentinel-1 and Sentinel-2

Coverage:
From private company forests to European wide mapping

Outputs:
Over 100 products delivered to users. Example product viewing and downloading at:
portal.forestcarbonplatform.org/

Demonstration types

1 Local

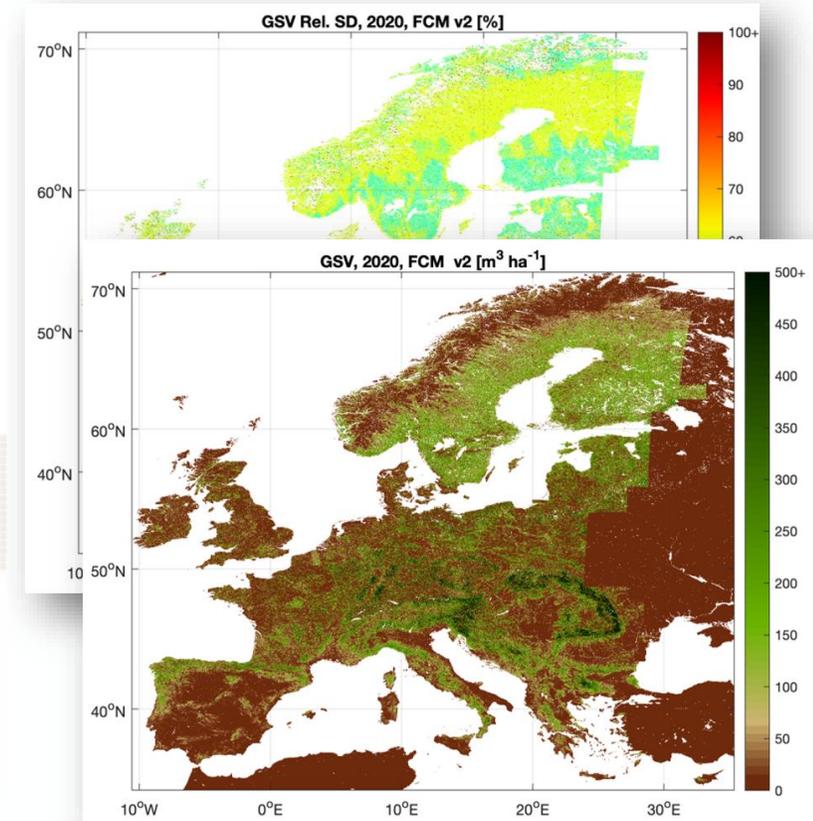
2 Provincial/national

3 Continental

4 Tropical



Forest structure variable, biomass, and growth and loss products



<https://www.forestcarbonplatform.org/>



[OBJ-A] Enhance EO-based methodologies related to monitoring, reporting and Verification of carbon removals, and more specifically in the field of Carbon Farming

[OBJ-B] Demonstrate compliance of these methodologies into carbon removals certifications

- ➔ With specific focus on EU CRCF Regulation (but also open to national/international standards)
- ➔ Issue carbon farming sequestration/soil emissions reduction unit under CRCF Registry

Starting by the end 2025

2-year project

[OBJ-C] Actively follow related carbon markets' development, support the mapping of a pool of EO tools and services and build capacity across stakeholders

EO4MRV – Expected take-home messages

- Identify and define EO products critical for compliance with LULUCF regulation in 2030.
- Receive insights into which EO applications are considered most relevant for CRCF (baseline, monitoring, verification, mapping, uncertainty).
- Co-design EO4MRV 2026 with stakeholders, aiming for trusted solutions and integration into operational frameworks.





Thank you

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