

Forest Carbon Monitoring



**Forest Carbon
Monitoring**

Project aim

Information on forest biomass and carbon is in high demand by forestry stakeholders. This project will develop remote sensing based user-centric approaches for forest carbon monitoring, helping to shift economies towards carbon neutral futures.

We aim to develop and implement a prototype of a remote sensing based monitoring and accounting platform with consistent results on carbon stock. The platform aims to act as a prototype of an operational system for standardized forest biomass and carbon monitoring, offering:

1

A selection of statistically robust monitoring methods designed for accurate large-scale and small-scale carbon accounting. This removes barriers that prevent fact-based decision making regarding forest carbon stocks.

2

Cloud processing capabilities to unleash the potential of the increased volumes of high-resolution satellite data and other large datasets.



Why remote monitoring?



Comprehensive

Wall-to-wall, also for regions without forest inventories



Transparent

Openly available data used with published methodologies



Detailed

High resolution monitoring of global forests



Cost-effective

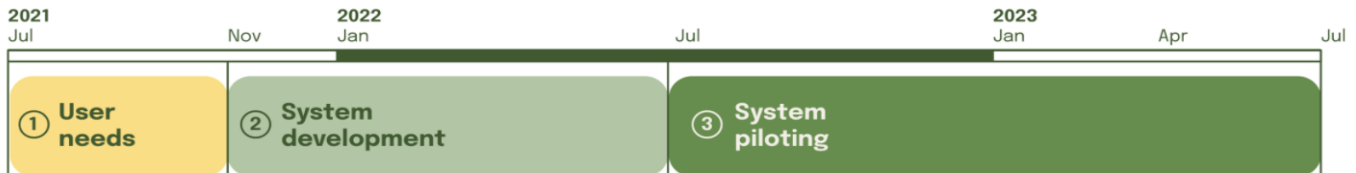
Frequent data acquisition and long-term systems at low cost

VTT



Timeline of the project

The project started with user requirements gathering and review of the state of the art in satellite based forest carbon monitoring. In the system development phase, optimal algorithm chains for various user profiles will be developed. The last year of the project will focus on system piloting through demonstration cases.



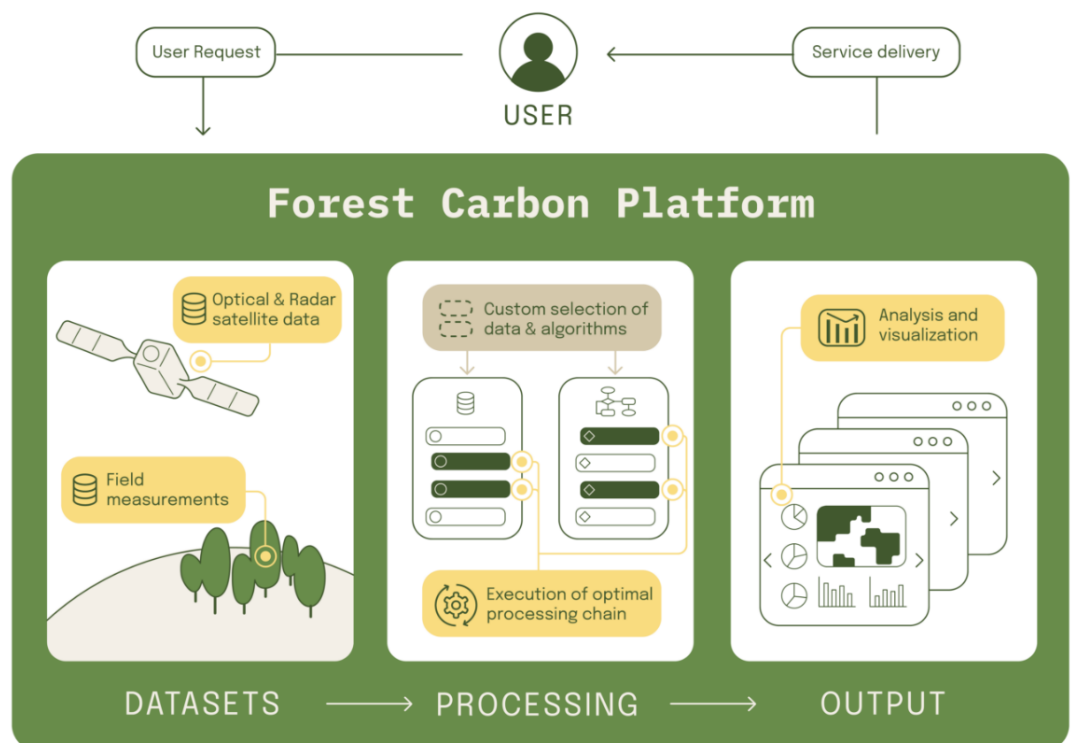
High level framework of the monitoring platform

The forest biomass and carbon estimates will be computed by predicting forest structural variables using versatile remotely sensed data with ground reference data. The structural forest variable values are transformed to biomass and equivalent CO₂ values using process based ecosystem models.

The main data source is optical satellite imagery but particularly for the extensive area mapping, also imaging radar data are utilized. Space-borne and airborne laser scanner data are used as additional information sources.

Key features

- 1** Close integration of in-situ and remotely sensed data.
- 2** Process-based forest ecosystem carbon modelling integrated into the system.
- 3** Flexibility to user needs ranging from private company area monitoring to continental



For whom?

Forest owners and managers will be able to access and visualise information that support them in forest management reporting.

Regional and National Administrators will be able to provide local estimates of biomass and enable timely change monitoring.

Organisations involved in **Carbon Trading** will be fortified by accurate and timely tools that help verify the effectiveness of carbon mitigation versus baseline.

International Organisations will be able to gather consistent forest monitoring data over large areas to support policy definition, evaluation and research purposes.

For the **Society at large**, the availability of data on forest biomass and development in a more accurate, frequent, and multiple levels will help mitigate deforestation, forest degradation, and inappropriate land use.

Testing and demonstration

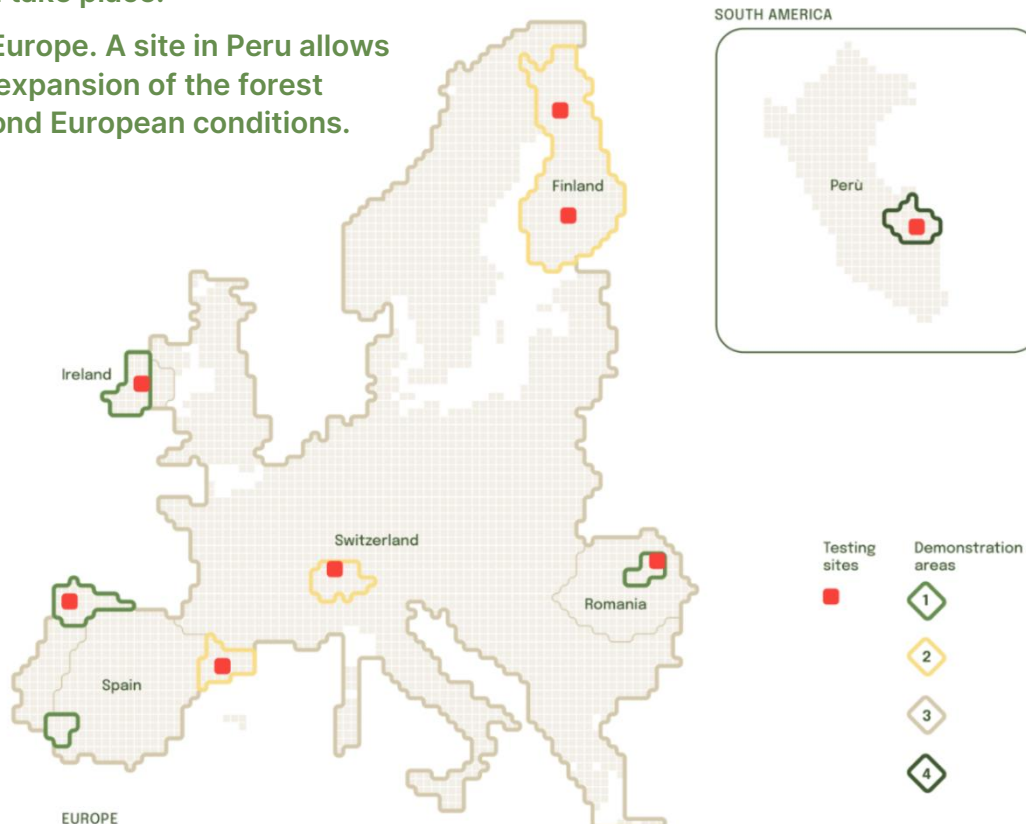
Algorithms will be tested in eight testing sites during the first year. During the second year, full-scale demonstrations will take place.

The focus of the project is in Europe. A site in Peru allows initial investigation for future expansion of the forest carbon platform concept beyond European conditions.

Local level demonstrations
(1) designed to meet private company needs.

Provincial to national level demonstrations (2 and 4) aimed primarily at administrative agencies.

Continental level demonstration (3) in Europe.



Background

Forests have a key role in the fight against climate change. Managed forests can restore increasing carbon stocks while simultaneously providing a sustainable supply of products, that are renewable, recyclable and have a smaller carbon footprint than several substitutes. In addition to carbon, the forests of the world are essential elements in maintaining healthy ecosystem interaction and biodiversity on Earth.

Several international and national initiatives require regular reporting of forest biomass and carbon. These include most importantly the initiatives related to the:

- Paris Agreement of the Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC)
- European Union's LULUCF Regulation (2018/841), which is the third pillar of EU climate action, alongside the EU Emissions Trading System and the Effort Sharing Regulation (2018/842).
- UN Sustainable Development Goals (SDG)
- EU Green Deal, under which certification schemes for carbon farming and carbon removals are expected to be formulated under the proposed EU New Forest Strategy for 2030

In addition to government level actors, private companies from local businesses to global corporates are paying increasing attention to carbon neutrality and are looking at various ways to reduce and compensate their carbon footprint.

There is an urgent need for related services, applications and solutions that will increase significantly in the coming years.

For more information

Visit our website:

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

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