

GFOI R&D Session on integrating EO and ground data for enhanced forest-related biomass estimation

Workshop at ESA StatEO26, Frascati

07 May 2026, 11:45-13:30 , James Cook Room

Background

This workshop will delve into current needs and opportunities for integrating forest biomass information from forest inventories, national statistics and Earth Observation to strengthen the monitoring and reporting of forest biomass for environmental assessments and climate action. We will begin by reviewing the latest recommendations on using EO-based biomass products within MRV processes and international frameworks, as well as briefly touch upon ESA's Biomass mission advances. Building upon recent discussions led by the Global Forest Observations Initiative (GFOI), we will discuss three different pathways leading towards the integration of these datasets, namely (1) key considerations **informing the design of new ground-based campaigns** to ensure both compatibility with and added value from EO datasets; (2) lessons learned from experiences **combining and harmonizing** different existing in-situ data (e.g., National Forest Inventories, among others) for their integration with EO datasets; and (3) assessment of inferential strategies for the **integration of EO-based biomass datasets with in-situ data** to enhance the precision of biomass estimates at different geographical scales. These pathways aim to support a broad range of end users in biomass estimation for forest monitoring and management purposes.

The workshop will open with short presentations highlighting success stories and state-of-the-art examples on these themes, followed by a short round of questions. Afterwards, three parallel round-table discussion groups, focusing respectively on the three pathways for conceiving the integration of in-situ data, EO-based biomass datasets and national statistics.

The session will conclude with summary presentations from the three discussion groups, followed by closing remarks and next steps. We aim to map existing efforts, key considerations, best practices and research needs under these themes, bridging efforts in tropical and temperate regions, and ultimately summarizing these findings in a perspective paper or policy brief.

The policy brief or perspective paper will summarize the efforts, considerations, and best practices for integrating ground-based and EO data for forest-related biomass estimation, with examples ranging from tropical to temperate (European) forests. This an outcome envisioned from both this workshop and the insights from the upcoming GFOI R&D Exchange on Biomass Estimation.

Organizing team

Natalia Málaga Durán (GFZ), Daniela Requena Suarez (GFZ), Martin Herold (GFZ), Neha Hunka (ESA), Javier Garcia-Perez (FAO)

Location and number of participants, logistical details

James Cook Room, estimated attendance of ~40 participants

For the discussion session, three flipcharts will be used



Detailed agenda

Presentation/Discussion	Speaker	Time
Welcome words and introduction to the workshop	Neha Hunka (ESA)	11:50-11:55
Overview on GFOI recommendations on the use of EO-based biomass data in MRV procedures	Daniela Requena Suarez (GFZ)	11:55-12:00
Lightning Presentation Round	Neha Hunka moderates	12:00-12:30
Designing EO-compatible forest inventories: considerations and opportunities for improved biomass estimation	Johannes Breidenbach (NIBIO)	12:00-12:05
Harmonizing national statistics for integration with EO biomass maps to produce biomass increment estimates across Europe	Valerio Avitabile (JRC)	12:05-12:10
Integrating EO biomass maps with NFI data to enhance the precision of estimates	Natalia Málaga (GFZ)	12:10-12:15
Worldforest perspectives on the integration of NFI data information with EO products for small-area estimation: Case studies of Peru and Brazil	Christophe Sannier (GAF)	12:15-12:20
Quick Q&A		12:20-12:35
Discussion Sessions running in parallel		12:35-13:25
<u>Group 1:</u> Key considerations in the design-phase of field-campaigns	Javier García-Perez (FAO), and Giulia Costello	12:35-13:10
<u>Group 2:</u> Requirements and considerations when harmonizing existing NFI data to make it interoperable with EO data	Valerio Avitabile (JRC) and Daniela Requena (GFZ)	
<u>Group 3:</u> Current and emerging opportunities to integrate EO products with existing NFIs for enhancing biomass estimation for MRV or environmental monitoring purposes.	Natalia Málaga (GFZ) and Neha Hunka (ESA)	
Group feedback session (5 min per group)	Daniela Requena (GFZ)	13:10-13:25
Final remarks and next steps	Natalia Málaga (GFZ)	13:25-13:30

