



UNIVERSITÀ  
DEGLI STUDI  
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Dipartimento di  
Ingegneria Civile  
e Ambientale

**INDICEE**

**International Doctorate in  
Civil and Environmental Engineering**



# SEMINAR

## RESEARCH TOWARDS USING SATELLITE REMOTE SENSING FOR A BETTER UNDERSTANDING OF TERRESTRIAL ECOSYSTEM FUNCTIONING IN A CHANGING CLIMATE

**Dr Gregory Duveiller**

**Leader of the Ecosystem Function  
from Earth Observation group**

Max Planck Institute for Biogeochemistry



**MONDAY**  
22 SEPT 2025



**TIME**  
2:30-3:30 pm



**LOCATION**  
Room 138 S.Marta



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We are currently living in an era of changing climate. The rate of change is faster than anything previously seen by current terrestrial ecosystems, meaning we are not in any sort of equilibrium anymore.

Under such conditions, it is crucial to monitor the state and function of these ecosystems. Satellite remote sensing provides an invaluable tool to do so. In the EFEO group at the Max Planck Institute for Biogeochemistry (MPI-BGC) we try to develop data-driven methodologies based on satellite data to better understand the functioning of ecosystems and thereby monitoring them in a changing climate. A key aspect in our approach is to recognise that land ecosystem and landscape are intrinsically complex, based on both the natural diversity within the landscape and on the effect humankind has on it. Instead of ignoring this complexity we instead try to embrace it and consider it as a feature of the system. In this talk I will present a general overview of the research direction of the EFEO group and I will provide some examples of the work we are currently doing including: (1) trying to catch tropical phenology by combining multi scale remote sensing; (2) characterising the effect of biodiversity on ecosystem functional properties; and (3) determining the effects of tree cover heterogeneity on cloud formation.

*The Seminar is free and open,  
for further information please contact  
Prof. Giovanni Forzieri ([giovanni.forzieri@unifi.it](mailto:giovanni.forzieri@unifi.it))*



## Dr. Gregory Duveiller

Leader of the Ecosystem Function from Earth Observation group  
Max Planck Institute for Biogeochemistry,  
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Jena, Germany

Gregory Duveiller holds a PhD in agronomical science and biological engineering from the Université catholique of Louvain (UCLouvain), Belgium. After his PhD, he spent 10 years working at the European Commission Joint Research Centre (JRC), in Ispra, Italy.

He has specialized in developing methods to combine different satellite remote sensing data streams to better monitor and understand land processes, including crop yield monitoring, land cover change and land-atmosphere interactions. Since 2021 he is a project group leader at the Max Planck Institute for Biogeochemistry in Jena, Germany.

His main research aims at improving our understanding of the role of terrestrial ecosystems in the Earth System by using data-driven yet process-based thinking applied to satellite Earth Observation data. A key focus is on exploring the complexity and diversity of terrestrial ecosystems, and how their specific functional properties affect land-atmosphere interactions. Topics explored under this umbrella include: (i) improving estimations of carbon, water and energy fluxes; (ii) studying the role of biodiversity (specifically functional diversity) to improve ecosystem resilience; (iii) exploring the biophysical effects of land use and land management on climate. As of September 2025, he has published over 78 peer-reviewed articles, 19 of which as first author. His current h-index is 45 with over 9700 citations in Google Scholar (GS) and over 6000 in Web of Science (WoS). He has also contributed to yearly reports describing the State of the Climate from 2019 until 2023.