

PERSONAL DETAILS

Meunier Félicien

Date of birth: 23/10/1989

Nationality: Belgian

[ORCID](#) | [Google scholar](#)



Félicien Meunier is a vegetation modeller focused on tropical forest ecology and climate science. At UCLouvain, he obtained MSc degrees in Environmental Sciences (2012) and Physics (2017), both with *Magna cum laude*. He then held an F.R.S.-FNRS doctoral fellowship investigating soil-plant relationships with functional-structural plant models (2013-2017). From 2017 to 2025, Meunier held several postdoctoral positions at Ghent University and at Boston University, during which he contributed to cutting-edge research in tropical ecology and land surface modelling. He currently holds a professorship at the VUB to investigate the impact of climate and land-use changes on the resilience of Afrotropical forests. Félicien Meunier has published 67 peer-reviewed articles. He has supervised 4 postdocs, 7 PhDs and 16 master's students.

Education

2025 - 2026	Certificate in Artificial Intelligence Faculty of science - UGent (Belgium)
2013 - 2017	PhD Environmental sciences Earth and Life Institute - UCLouvain (Belgium) <u>Supervisor:</u> Prof. M. Javaux
2015 - 2017	MSc Physics Faculty of sciences - UCLouvain (Belgium), <i>Magna cum laude</i>
2013 - 2015	MSc Physics Preparation Faculty of sciences - UCLouvain, <i>Magna cum laude</i>
2010 - 2012	MSc Environmental sciences Faculty of bioengineering - UCLouvain, <i>Magna cum laude</i>
2007 - 2010	BSc Bioengineering Faculty of bioengineering - UCLouvain, <i>Summa cum laude</i>

Current positions

2026 - 2030	Professor (0.1 FTE) - Researcher (0.9 FTE) HYDR - VUB (Belgium). Embedded in the B-Climate research group (Wim Thiery).
2026 - 2027	Visiting scientist Center of Excellence in Biodiversity and Natural Resource Management - University of Kigali (Rwanda)

Previous positions

2022 - 2026	Postdoctoral researcher Q-ForestLab - UGent (Belgium) <u>Supervisors:</u> Prof. Hans Verbeeck and Prof. Pascal Boeckx
2019 - 2022	Postdoctoral researcher CAVELab - UGent (Belgium) and Dietze Lab - BU (USA) <u>Supervisors:</u> Prof. Hans Verbeeck and Prof. Michael Dietze
2018 - 2020	Visiting scientist Dietze Lab - BU (USA) <u>Supervisor:</u> Prof. Michael Dietze
2017 - 2018	Postdoctoral researcher (ERC starting grant "TREECLIMBERS") CAVELab - UGent (Belgium) <u>Supervisor:</u> Prof. Hans Verbeeck

RESEARCH ACHIEVEMENTS

Early track record and key publications

As an early-career scientist, my academic trajectory has been shaped by a commitment to scientific excellence and broad interdisciplinary interests. I hold a PhD in Environmental Sciences (of "outstanding quality" according to my examination committee) as well as master's degrees in Physics and Environmental Sciences. This multidisciplinary training has enabled me to contribute to research fields as diverse as:

- **Sea-ice modelling:** For my master's thesis in Physics, I investigated how sea-ice rheology influences its spatial and temporal dynamics.
- **Agronomy:** During my PhD, I developed innovative functional-structural plant models that advanced the representation of soil-plant hydraulics.
- **Tropical ecology:** During my first postdoctoral period (2017–2022), I pioneered the use of vegetation models to investigate how lianas affect the carbon cycle of tropical forests. During my

second postdoctoral period (2022–2026), I led the development of regional vegetation models tailored to Afrotropical forests to investigate their resilience to climate change

- **Artificial intelligence and climate modelling:** my ERC Starting Grant runner-up project uses artificial-intelligence emulators of land-surface models to investigate how climate and land-use changes will affect Afrotropical forests.

Over time, my publication strategy has evolved from initially targeting technical journals (e.g., Journal of Ecology) to a balanced mix of publications in thematic and high-impact (e.g., Global Change Biology) journals. Below, I illustrate this evolution with publications from the three main periods of my scientific career (PhD thesis, PostDoc1, and PostDoc2, Figure 3).

Publication statistics

I have published 67 peer-reviewed articles, including 58 since completing my PhD and 43 without my PhD supervisor. More than half of these publications (34) were written as first (17), second (11), or last (6) author. My publication record includes five articles with more than 100 citations and six articles in journals with an impact factor above 10, such as Global Change Biology. As of October 2026, my work had received 2,232 citations and my h-index was 27. Source: Google Scholar

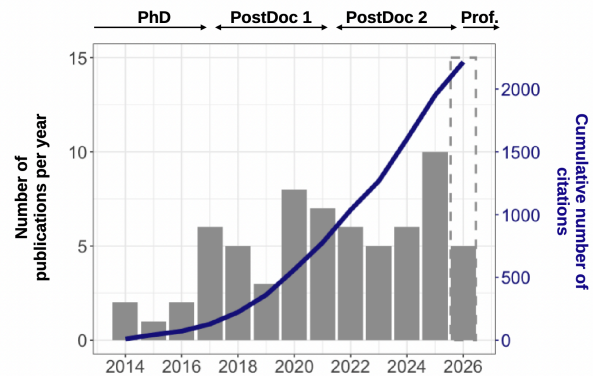


Figure 3: Track record and research periods

1. **Meunier F.**, Bauters M., Boeckx P., Ciais P., ... and Verbeeck H. 2025. “Projected shrinking of tropical vegetation biomass potential with future hydroclimatic shifts”. Environmental research letters. Peer-reviewed. IF 5.4, 1 citation ★,°

This study assesses the impacts of climate change on future forest carbon stocks, directly framing the central objective of Tropical-FORECAST.

2. Sibret T., **Meunier F.**, Crous K. Y., Lamotte S., ... and Boeckx P. 2026. “Canopy microclimate and leaf traits shape interspecies variation in photosynthetic temperature responses of evergreen tropical trees in the Congo Basin.” Global Change Biology. Peer-reviewed, IF 10.8. ★,+,°

This study provides essential data for constraining land-surface models and improving their representation of tropical forest responses to warming.

3. Sibret T., Peaucelle M., Crous K. Y., **Meunier F.**, ... and Verbeeck H. 2025. “Photosynthetic traits scale linearly with relative height within the canopy in an African tropical forest.” New Phytologist. Peer-reviewed, IF 8.7, 13 citations. ★,+,°

This study provides a novel approach for representing vertical variation in photosynthetic traits, which will support the parameterisation of LSMs in Tropical-FORECAST.

4. **Meunier F.**, Visser M., Shiklomanov A., Dietze M., ... and Verbeeck H. 2022. “Liana optical traits increase tropical forest albedo and reduce ecosystem productivity.” Global Change Biology. Peer-reviewed, IF 10.8, 41 citations ★,°

*Here, I was the first to quantify the effect of lianas on the carbon cycle of tropical forests and their energy balance. I did so by fusing multiple sources of data, available at different scales (leaf trait, UAV imagery and remote sensing data) into a LSM used as a data integration platform. In Tropical-FORECAST, similar data synthesis and assimilation techniques will be applied in **WPI** and **WP2** of Tropical-FORECAST.*

5. **Meunier F.**, Verbeeck H., Cowdery B., Schnitzer S., ... and Dietze M. 2021. “Unraveling the relative role of light and water competition between lianas and trees in tropical forests: A vegetation model analysis” Journal of Ecology. Peer-reviewed, IF 6.4, 60 citations ★,°

Here, I assimilated multiple datasets into a LSM to identify the most critical data gaps. To do so, I used PEcAn to run an uncertainty analysis of the PFT in ED2, which will also be used in Tropical-FORECAST.

6. di Porcia e Brugnera M., **Meunier F.**, Longo M., Moorthy S., ... and Verbeeck H. 2019. “Modeling the impact of liana infestation on the demography and carbon cycle of tropical forests.” Global Change Biology. Peer-reviewed, IF 10.8, 45 citations ★,+,°

In this study, I co-developed the first mechanistic representation of lianas in ED2, which is the main deliverable of the ERC starting grant TREECLIMBERS of Prof. H. Verbeeck.

7. **Meunier F.**, Verbruggen W., Verbeeck H. and Peaucelle M. 2022. “Low Sensitivity of Three Terrestrial Biosphere Models to Soil Texture over the South American Tropics.” Geoscientific Model Development. Peer-reviewed, IF 6.9, 6 citations ^{★.°}

This manuscript is the outcome of a model-intercomparison project that I led on the impact of soil parameters on Amazon tropical forest productivity. Similar multi-model ensembles will be key for WP2.

8. **Meunier F.**, Draye X., Vanderborght J., Javaux M., and Couvreur V. 2017. “A hybrid analytical-numerical method for solving water flow equations in root hydraulic architectures.” Applied Mathematical Modelling 52. Peer-reviewed, Impact factor (IF) 5.4, 48 citations [★]

In this study, I showed that the efficiency and accuracy of existing algorithms to solve water flow equations in hydraulic architectures could be improved by using exact solutions of differential equations.

9. **Meunier F.**, Rothfuss Y., Bariac T., Biron P., ... and Javaux M. 2017. “Measuring and modeling hydraulic lift of *Lolium multiflorum* using stable water isotopes” Vadose Zone Journal. Peer-reviewed (IF = 3.3), 57 citations [★]

This study combines unique greenhouse experimental data and a process-based model of water flows and isotope uptake to identify and quantify hydraulic lift in a crop.

10. Koch A., **Meunier F.**, Vanderborght J., Garré S., Pohlmeier A., and Javaux M. 2019. “Functional-structural root system model validation using a soil MRI experiment” Journal of Experimental Botany. Peer-reviewed, IF 5.6, 46 citations ^{★.+}

This study was the first to validate a functional-structural root system model. We did so by tracking the three-dimensional water and solute uptake of an individual root system with MRI.

[★]Paper from my PhD | [★]Paper from PostDoc1 | [★]Paper from PostDoc2 | ⁺(Co-)Supervisor | [°]Without my PhD supervisor

PEER RECOGNITION

Fellowships and grants

2026 - 2030	ERC-StG runner-up grant from the Research Foundation – Flanders (FWO), Belgium VUB <i>Personal project granted to the five best unsuccessful ERC-StG in Flanders</i>
2022 - 2025	Senior Postdoctoral fellowship of the Research Foundation – Flanders (FWO), Belgium UGent <i>competitive personal grant with a success rate < 30%.</i>
2022 - 2025	Postdoctoral fellowship of the Fund for Scientific Research (FNRS), Belgium UCLouvain <i>competitive personal grant with a success rate < 25%. Declined</i>
2019 - 2022	Junior postdoctoral fellowship of the Research Foundation – Flanders (FWO) Belgium. UGent <i>competitive personal grant with a success rate < 30%.</i>
2018 - 2020	Excellence mobility award from Wallonie-Bruxelles International (WBI), Belgium BU (USA) <i>competitive personal grant – success rate unknown.</i>
2018 - 2019	Excellence mobility award from the Belgian American Educational Foundation (BAEF) Belgium BU (USA) <i>competitive personal grant – success rate unknown.</i>
2013 - 2017	PhD research fellowship of the Funds for scientific research (FNRS), Belgium UCLouvain <i>competitive personal grant with a success rate < 25%.</i>

Presentations at conferences

I was invited to give various talks on my work, e.g., at the seminars of the Next-Generation Ecosystem Experiments (NGEE-Tropics), at the labs of Prof. Moorcroft (Harvard) and Prof. Pacala (Princeton). In total I have contributed to more than 50 (oral and poster) presentations at international conferences, including 20 oral contributions as presenting author. I was invited to present at the meeting of the Association of Tropical Biology and Conservation (ATBC) in 2024 in Kigali, Rwanda.

ADDITIONAL INFORMATION

Teaching activities

2025	Guest professor for the course “Earth System Modelling”, 2 x 2h ULB (Belgium)
2020 - 2025	Colecturer for the course ‘Vegetation modelling’ UGent (Belgium)
2018 - 2024	Teaching assistant for ‘Meteorology and ‘Vegetation modelling’ UGent (Belgium)
2022	Invited lecturer for the ‘International summer school in Advanced soil physics’ UCLouvain (Belgium)
2016 - 2018	Teaching assistant for the courses ‘Transport phenomena’ and ‘Physics’ UCLouvain

Supervision of graduate students and postdoctoral fellows

2017 - present	Direct supervision of: - 16 master’s students - 7 PhD students - 4 postdocs Member of the supervisory committees of two PhD students: S. Delecluse (with P. Defourny, UCLouvain), A. Koch (with M. Javaux, UCLouvain, completed).
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Reviewing activities and other academic contributions

2022 - present	Review editor for <i>Frontiers in Forests and Global Change</i> and <i>in silico plants</i> .
2015 - present	Reviewer for multiple journals, e.g., Nature Communications, Nature Climate change.
2024 - present	Convener of a session on lianas at ATBC 2024 (Rwanda), Remote sensing of tropical forests at AGU 2024 (USA), and Afrotropical forests at EGU 2026 (Austria).
2024	Co-lead of the “Modelling, data synthesis and integrative analyses” working group for the NASA scoping proposal <u>PANGAEA</u> .
2023	Guest editor for <i>Frontiers in Forests and Global Changes</i> .
2021	Organiser of a liana workshop with 20+ international experts.

Research mobility

Fieldwork	Democratic Republic of the Congo (total of 2 months) - Cambodia (1 month) - Morocco (2 months) - West Africa (Benin, Burkina Faso, and Togo, total of 3 months).
Research/ Education	University of Rwanda (One year), University of Nottingham, UK (3 months) - Boston University, USA (2 years), Università di Firenze, Italy (6 months, Erasmus) - INRAE Montpellier, France (1 month).

Collaborations

UGent	Marijn Bauters, Pascal Boeckx, Hans Verbeeck, Wannes Hubau, Fieke Van Coillie.
Belgium (excl. UGent)	Mathieu Javaux (Université catholique de Louvain), Pierre Defourny (Université catholique de Louvain), Jean-François Bastin (Université de Liège), Wim Thiery (VUB).
International	Marc Peaucelle (INRAE Bordeaux, France), Marco Visser (Leiden University, Netherlands), Michaël Dietze (Boston University, USA), Sruthi Moorthy (Oxford University, UK), Matteo Detto (Princeton, USA), Hannes De Deurwaerder (Virginia Tech, USA), Stefan Schnitzer (Marquette University, USA), Helene Muller-Landau (Smithsonian Tropical research institute, USA), Geertje van der Heijden (University of Nottingham, UK), Marcos Longo (Instituto Nacional de Pesquisas Espaciais, Brazil), Stephen Sitch (University of Exeter, UK), Philippe Ciais (LSCE, France), Georges-Noël Longandjo (ISTA, DRC)

Career breaks In 2024, I took two full-time parental leaves for a total of five months.