Tim Rademacher

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Current positions

University of Vermont — *Burlington, USA*

Scientific Director of the Proctor Maple Research Center and Assistant Professor in Plant Biology — *2024-present*

University of Quebec in Outaouais — *Ripon, Canada*

Adjunct professor at the Institute of Temperate Forest Science — *2023-present*

Postdoctoral Research

Centre Acer — *Saint-Hyacinthe, Canada*

Permanent researcher in forest ecophysiologie and sustainable development — *2022-2024*

University of Quebec in Outaouais — *Montreal, Canada*

Supervisor: Prof. Jérôme Dupras, Canada Research Chair of Ecological Economics — *2021-2023*

Harvard University — *Cambridge, USA*

Supervisor: Prof. Missy Holbrook, Director of the Harvard Forest — *2017-present*

Northern Arizona University — *Flagstaff, USA*

Principle investigator: Prof. Andrew Richardson — *2017-2022*

Education

PhD in Physical Geography, University of Cambridge — *Cambridge, UK*

Advisor: Dr. Andrew D. Friend — *November 2016*

- Title: "Dynamics and patterns of residence time of carbon in vegetation and soils at regional to global scales"

BA in Natural Sciences, University of Cambridge — *Cambridge, UK*

Advisors: Prof. Howard Griffiths and Dr. Andrew D. Friend — *2012*

- Prize for best dissertation in Plant Sciences, entitled: "Application of a mechanistic single tree growth model to simulate climatic constraints on beech growth (*Fagus sylvatica* L.) along an altitudinal gradient on Mount Vermio, Northern Greece".

Selected presentations over the past year

About trees and taps — *Quebec City, Canada*

Invited speaker at Laval University — *2024*

Carbon and maple sugaring: Facts, fiction, and unknowns — *Fredericton, Canada*

Invited plenary speaker at the Annual General Assembly of the New Brunswick Maple Syrup Association — *2024*

Carbon and what it all means: Budgets, stocks, sequestration, and neutrality — *Montreal, Canada*

Invited Board of directors meeting of the International Maple Syrup Institute — *2023*

Maintaining sugarbush production in a changing environment — *Moose Creek, Canada*

Invited plenary speaker at the Eastern Ontario Maple Syrup Producers' Association — *2023*

Publications

Published

Buttò, Peltier & **Rademacher** (2025) ,"*From division to 'divergence': to understand wood growth across timescales, we need to (learn to) manipulate it*", ***New Phytologist***, https://doi.org/10.1111/nph.20390

Silvestro, Deslauriers, Prislan, **Rademacher**, Rezaie, Richardson, Vitasse, Rossi (2025) ,"*From Roots to Leaves: Tree Growth Phenology in Forest Ecosystems*", ***Current Forestry Reports***, https://doi.org/10.1007/s40725-025-00245-9

Deng, Liao, **Rademacher**, Xu, Du, Zheng, Fu, Zhang (2025) ,"*Species-specific influences of competition and tree size on drought sensitivity and resistance for three planted conifers in northern China*", ***Forest Ecosystems***, https://doi.org/10.1016/j.fecs.2025.100295

Rademacher, Corriveau, Durand, Houde, Sadiki, Ouellet, Gilbert, Lagacé (2024) ,"*Tapping below the lateral line does not reduce maple sap yield or quality*", ***Trees, Forests, People***, 100712, 10.1016/j.tfp.2024.100712

Mantova, Johnson, Antebi, Beery, Blumstein, Cohen, Defavari, Feng, Feuer, Gersony, Hammond, John, Marchin, Mau, Miller, Nibbelink, Ossola, Paquette, **Rademacher**, Rissanen, Shemesh-Mayer, Skelton, Wilkening, Preisler (2024) ,"*Monitoring urban trees across the world. Report from the Urban Trees Ecophysiology Network (UTEN) inaugural workshop*", ***New Phytologist***, https://doi.org/10.1111/nph.19621

Zhang, Liu & **Rademacher** (2023) ,"*Higher latewood to earlywood ratio increases resistance of radial growth to severe droughts in larch*", ***Science of the Total Environment***, https://doi.org/10.1016/j.scitotenv.2023.169165

Zhang, **Rademacher**, Liu, Wang & Manzanedo (2023) ,"*Fading regulation of diurnal temperature ranges on drought-induced growth loss for drought-tolerant tree species*", ***Nature Communications***, https://doi.org/10.1038/s41467-023-42654-z

Rademacher, Cliche, Bouchard, Sassamoto Kurokawa, Rapp, Deslauriers, Messier, Rossi, Dupras, Filotas & Delagrange (2023) ,"*TAMM review : On the importance of tap and tree characteristics in maple sugaring*", ***Forest Ecology and Management***, https://doi.org/10.1016/j.foreco.2023.120896

Li , Manzanedo, Jiang, Ma, Du , Zhao ,**Rademacher**, Dong, Hiu, Kang, Wang, Wu, Cui & Pederson (2023) ,"*Reassessment of growth-climate relations indicates the potential for decline over Eurasian boreal larch forests*", ***Nature Communications***, https://doi.org/10.1038/s41467-023-39057-5

Zhang, Gou, **Rademacher**, Wang, Li, Sun, Wang & Cao (2023) ,"*Interaction of age and elevation on cambial phenology and wood formation in Juniperus przewalskii in a cold and arid region*", ***Agriculture and Forest Meteorology***, https://doi.org/10.1016/j.agrformet.2023.109480

Rademacher, Fonti, LeMoine, Fonti, Bowles, Chen, Eckes-Shephard, Friend & Richardson (2022) ,"*Insights into source/sink controls on wood formation and photosynthesis from a stem chilling experiment in mature red maple*", ***New Phytologist***, https://doi.org/10.1111/nph.18421

Lv, **Rademacher**, Huang, Zhang & Zhang (2022) ,"*Prolonged drought duration, not intensity, reduces growth recovery and prevents compensatory growth of oak trees*", ***Agricultural and Forest Meteorology***, https://doi.org/10.1016/j.agrformet.2022.109183

Zhang, Manzanedo, Li, Lv, Wang, Xu, Hou, Huang, & **Rademacher** (2022) ,"*Reduced diurnal temperature range mitigates drought impacts on larch tree growth in North China*", ***Science of the Total Environment***, https://doi.org/10.1016/j.scitotenv.2022.157808

Chen*, **Rademacher***, Fonti, Eckes-Shephard, LeMoine, Fonti, Richardson, & Friend (2021) ,"*Inter-annual and inter-species tree growth explained by wood phenology*", ***New Phytologist***, https://doi.org/10.1111/nph.18195

Miller*, **Rademacher***, Fonti, Seyednasrollah, & Richardson (2022) ,"*Assessing intra-annual density fluctuations across and along white pine's stem*", ***Botany***, https://doi.org/10.1139/cjb-2021-0218

Beyer, Hua, Martin, Manica & **Rademacher** (2022) ,"*Relocating cropland could drastically reduce the environmental footprint of food production*", ***Nature Communications Earth & Environment***, https://doi.org/10.1038/s43247-022-00360-6

Rademacher, Seyednasrollah, Basler, Chen, Mandra, Miller, Lin, Orwig, Pederson, Pfister, Wei & Richardson (2021) ,"*The Wood Image Analysis and Dataset (WIAD): open-access visual analysis tools to advance the ecological data revolution*", ***Methods in Ecology and Evolution***, https://doi.org/10.1111/2041-210X.13717

Zhang, Xu, Jiang, Mandra, **Rademacher** & Pederson (2021) ,"*Higher plasticity of water uptake in spruce than larch in an alpine habitat*", ***Agricultural and Forest Meteorology***, https://doi.org/10.1016/j.agrformet.2021.108696

Zhang, Lv, Xu, Huang, & **Rademacher** (2021) ,"*Dryness decreases average growth rate and increases drought sensitivity of Mongolian oak trees in North China*", ***Agricultural & Forest Meteorology***, https://doi.org/10.1016/j.agrformet.2021.108611

Rademacher, Fonti, LeMoine, Fonti, Basler, Chen, Friend, Seyednasrollah, Eckes-Shephard, & Richardson (2021) ,"*Manipulating phloem transport affects wood formation but not nonstructural carbon reserves in an evergreen conifer*", ***Plant, Cell and Environment***, https://doi.org/10.1111/pce.14117

Jucker, Amano, Bell, Garnett, Geffert, Guth, Hacket-Pain, Luke, Mumby, Nunes, **Rademacher**, Rose, Schleicher, Simmons, Zabala, & Mukherjee (2021) ,"*Steps to diversify priority-setting research in conservation: Reflections on de Gracia 2021*", ***Conservation Biology***, https://doi.org/10.1111/cobi.13790

Beyer & **Rademacher** (2021) ,"*Species Richness and Carbon Footprints of Vegetable Oils: Can High Yields Outweigh Palm Oil's Environmental Impact?*", ***Sustainability, 13(4), 1813***, https://doi.org/10.3390/su13041813

Zhang, Li, Manzanedo, Pederson, D'Orangeville, Lv, Wang, Xu, Zou, Hou, Huang & **Rademacher** (2020) ,"*High risk of growth cessation of planted larch under extreme drought*", ***Environmental Research Letters***, https://doi.org/10.1088/1748-9326/abd214

Manzanedo, HilleRisLambers, **Rademacher** & Pederson (2020) ,"*RETRACTED: Evidence of unprecendented rise in growth synchrony from global tree ring records*", ***Nature Ecology & Evolution***, https://doi.org/10.1038/s41559-020-01306-x

Pugh, **Rademacher**, Shafer, Steinkamp, Barichivich, Beckage, Haverd, Harper, Heinke, Nishina, Rammig, Sato, Arneth, Hantson, Hickler, Kautz, Quesada, Smith & Thonicke (2020) ,"*Understanding the uncertainty in global forest carbon turnover*", ***Biogeosciences***, https://doi.org/10.5194/bg-17-3961-2020

Rademacher, Basler, Eckes-Shephard, Fonti, Friend, Le Moine & Richardson (2019) ,"*Using phloem transport manipulation to advance knowledge of carbon dynamics and use in trees*", ***Frontiers in Forests and Global Change***, https://doi.org/10.3389/ffgc.2019.00011

Henriksson & **Rademacher** (2019) ,"*Stem Compression: A Means to Reversibly Reduce Phloem Transport in Tree Stems*", ***In: Liesche J. (eds) Phloem. Methods in Molecular Biology, vol 2014. Humana, New York, NY***, https://doi.org/10.1007/978-1-4939-9562-2_24

Carbone, Seyednasrollah, **Rademacher**, Basler, Le Moine, Beals, Beasley, Greene, Kelroy & Richardson (2019) ,"*Flux Puppy - an open source software application and portable system design for low-cost manual measurements of CO_2 and H_2O fluxes*", ***Agricultural and Forest Meteorology***, https://doi.org/10.1016/j.agrformet.2019.04.012

Zhang, Manzanedo, D'Orangeville, **Rademacher**, Li, Bai, Hou, Chen, Zhou, Song & Pederson (2019) ,"*Snowmelt and early to mid-growing season water availability augment tree growth during rapid warming in southern Asian boreal forests*", ***Global Change Biology***, https://doi.org/10.1111/gcb.14749

Friend, Eckes-Shephard, Fonti, **Rademacher**, Rathgeber, Richardson & Turton (2019) ,"*On the need to consider wood formation processes in global vegetation models and a suggested approach*", ***Annals of Forest Science***, https://doi.org/10.1007/s13595-019-0819-x

Jucker, Wintle, Shackelford, Bocquillon, Geffert, Kasoar, Kovacs, Mumby, Orland, Schleicher, Tew, Zabala, Amano, Bell, Bongalov, Chambers, Corrigan, Durán, Duvic-Paoli, Emilson, Fonseca da Silva, Garnett, Green, Guth, Hacket-Pain, Hinsley, Igea, Kunz, Luke, Lynam, Martin, Nunes, Ockendon, Pavitt, Payne, Plutshack, **Rademacher**, Robertson, Rose, Serban, Simmons, Emilson, Tayleur, Wordley & Mukherjee (2018) ,"*Ten-year assessment of the 100 priority questions for global biodiversity conservation*", ***Conservation Biology***, https://doi.org/10.1111/cobi.13159

Hayat, Hacket-Pain, Pretzsch, **Rademacher** & Friend (2017) ,"*Modelling tree growth taking into account source and sink limitations*", ***Frontiers in Plant Sciences***, https://doi.org/10.3389/fpls.2017.00182

Thurner, Beer, Ciais, Friend, Ito, Kleidon, Lomas, Quegan, **Rademacher**, Schapphoff, Tum, Wiltshire & Carvalhais (2017) ,"*Evaluation of climate-related carbon turnover processes in global vegetation models for boreal and temperate forests*", ***Global Change Biology***, https://doi.org/10.1111/gcb.13660

Friend, Lucht, **Rademacher**, Keribin, Betts, Cadule, Ciais, Clark, Dankers, Falloon, Ito, Kahana, Kleidon, Lomas, Nishina, Ostberg, Pavlick, Peylin, Schaphoff, Vuichard, Warszawski, Wiltshire & Woodward (2014) ,"*Carbon residence time dominates uncertainty in terrestrial vegetation responses to future climate and atmospheric CO_2*", ***Poceedings of the National Academy of Sciences***, https://doi.org/10.1073/pnas.1222477110

Nishina, Ito, Beerling, Cadule, Ciais, Clark, Falloon, Friend, Kahana, Kato, Keribin, Lucht, Lomas, **Rademacher**, Pavlick, Schaphoff, Vuichard, Warszawaski & Yokohata (2014) ,"*Quantifying uncertainties in soil carbon responses to changes in global mean temperature and precipitation*", ***Earth System Dynamics***, https://doi.org/10.5194/esd-5-197-2014

Warszawski, Friend, Ostberg, Frieler, Lucht, Schaphoff, Beerling, Cadule, Ciais, Clark, Kahana, Ito, Keribin, Kleidon, Lomas, Nishina, Pavlick, **Rademacher**, Buechner, Piontek, Schewe, Serdeczny & Schellnhuber (2013) ,"*A multi-model analysis of risk of ecosystem shifts under climate change*", ***Environmental Research Letters***, https://iopscience.iop.org/article/10.1088/1748-9326/8/4/044018/meta

Selected Grants, Honours and Awards

Grants

2023	**Créneau Acéricole**, Principal investigator of a study looking at the effects of drought on maple sugaring (60 500 $ CAD over one year).	*Saint-Hyacinthe, Canada*
2023	**Créneau Acéricole**, Principal investigator of a study looking at the environmental drivers and dynamics of sap runs (423 111 $ CAD over three years).	*Saint-Hyacinthe, Canada*
2023	**Round table of maple sugaring of the Quebec Ministry of Agriculture, Fisheries and Food**, Principal Investigator of a project investigating the variability of maple growth across its distribution (62 583 $ CAD) over two years.	*Saint-Hyacinthe, Canada*
2023	**Round table of maple sugaring of the Quebec Ministry of Agriculture, Fisheries and Food**, Co-investigator of a project that aims to quantify the effect of tapping below the lateral line (105 417 $ CAD over two years).	*Saint-Hyacinthe, Canada*
2023	**Social Sciences and Humanities Research Council of Canada**, Organisation of a conference entitled « Maple forests in a changing environment » as part of the 90e congress of the Acfas (24 677 $ CAD for the event)	*Montréal, Canada*
2020	**Climate Change Solutions Fund**, Principle investigator on a project aiming to integrate the witness tree social media project in biology curricula in schools and to build a network of witness trees providing real-time eco-physiological data (74 998 US-$ over two years).	*Cambridge, USA*
2019	**Microsoft AI for Earth**, Principle investigator on labelling grant to prepare wood images for use of artificial intelligence (max. award of 15 000 US-$ over 12 months).	*Washington, USA*
2019	**Save the Redwoods League**, Co-investigator on a phenological study of needle and branch growth in the tree tops of redwoods and giant sequoias (24 337 US-$ over six months).	*San Francisco, USA*
2017	**NSF-DEB Plant Growth**, Co-investigator on a collaborative NERC-NSF grant with a NERC portion of £366 851 (NE/P011462/1) and a NSF portion of 533 254 US-$ (DEB-1741585).	*Cambridge, USA*

Prizes

2022	**Winner of Breakthrough of the year in Science Engagement by Falling Walls Foundation**, for our success with the witness tree project to connect to people to nature.	*Berlin, Germany*
2019	**Runner-up of the 2019 Research Pitching Competition by Slush and Skolar**, where the eight best postdocs from all fields of research from all around the world pitch bold ideas for a 100 000 € award.	*Helsinki, Finland*
2012	**W.P. Brian Prize**, for best final-year project in Plant Sciences at the University of Cambridge (£250).	*Cambridge, UK*
2011	**Dean's Award St. Edmund's College**, for services to the student body (£100).	*Cambridge, UK*

Bursaries and Scholarships

Multiple	**Multiple bursaries and scholarships (totalling more than 100 000 $)** , for his excellence and commitment to studies, sport, and social causes.	*Various*

Teaching and Advisory Activities

Course coordinator

School of Urban Planning and Landscape Architecture, University of Montreal *2022 - present*

- Design and teach two classes (3 credits and 45 hours each) on "Ecology and sustainable development" and "Plant ecology" to 1^{st}- and 2^{nd}-year students in landscape architecture.
- Organise guest lecturers, excursions and evaluations.

Departments of Geography, Plant Sciences, and Zoology, University of Cambridge *2015 & 2016*

- Updated and taught eight one-hour lectures in "Modelling Earth's Atmosphere", "Life in a Changing Environment" and "Conservation Biology" to more than 200 final-year undergraduate students.
- Taught a 10-hour practical R course to Master's in Geographical Research program.

Advisor

Harvard University, Northern Arizona University, and Cambridge University *2016-2019*

- Recruited and advised seven undergraduate students including five from underrepresented minorities for the Harvard Forest Summer Research Experience for Undergraduates Program.
- Advised four undergraduate students in informatics for their final year group project, which was to develop a fieldwork smartphone application to measure, graph and analyse respiration rates (published in *Agricultural and Forest Meteorology*).
- Mentored Master's student in mathematics leading to scientific article.

Teaching Assistant: Supervisor, Field and Laboratory Instructor

University of Cambridge *2016*

- Supervised (small group teaching) first-, second- and third-year students in across departments (more than 1200 person hours over three years), including laboratory projects, domestic (i.e., East Mersea and Wicken Fen) and foreign field trips (Tenerife).

News

2025	**Atals Obscura**, "For Nova Scotians, Local Maple Syrup Is a Disappearing Pleasure" (Mar 6).	*Nova Scotia, Canada*
2024	**Across the Fence**, "Talking trees and Talking Maple with Tim Rademacher (Dec 17).	*Burlington, USA*
2024	**PPAQ**, Episode 4 of the podcast "Station acéricole" (Feb 1).	*Longueil, Canada*
2023	**Radio Canada**, "Maple syrup is under threat" (Mar 30).	*Montréal, Canada*
2023	**Journal de Montréal**, "Les changements climatiques profitent a nos érablières" (Mar 10).	*Montreal, Canada*
2023	**Bloomberg News**, "Maple Syrup's $1.5 Billion Industry Splinters as Winters Get Warmer" (Feb 11).	*Winnipeg, Canada*
2023	**Forêts de chez nous**, "Les érablières face aux changements climatiques" (Feb 7).	*Longueil, Canada*
2022	**Olga Golovina**, "Дуб, що веде Twitter, мультики на уроках та науковий хіп-хоп: найцікавіше з Falling Walls Berlin" (Nov 24).	*Ukraine*
2022	**Progrès Forestier**, "Les érablières, les érables, et le sirop: aperçu d'un secteur en forte croissance dans un environnement en mutation" (Jul 24).	*Sherbrooke, Canada*
2022	**NousTV Beauce-Appalaches**, Expert panel on the future of maple surgaring in a changing climate (May 24).	*Saint-George-de-Beauce, Canada*
2022	**The Energy Mix**, "Warming Could Boost Food Security in Northern Canada, But Major Questions Remain" (May 11).	*Toronto, Canada*
2022	**Animal MX**, "¿Ya lo sigues? Este árbol tuitea sobre la crisis climática y cómo affecta su vida" (May 8).	*Mexico*
2022	**Harvard Gazette**, "Relocating farmland to cut carbon emissions amid warming world" (Apr 21).	*Cambridge, USA*
2022	**Bulletin des agriculteurs**, "Les érablières face aux changements climatiques" (Apr 21).	*Montreal, Canada*
2022	**Moteur de Recherche**, "Les effets des changements climatiques sur les érablières" (Feb 18).	*Montreal, Canada*
2021	**The Conversation**, "To save forests, researchers are hooking trees up to Twitter" (Oct 11).	*London, UK*
2021	**Internet of Nature podcast**, "on creating the tree that is live tweeting climate change" (Sep 1).	*Netherlands*
2020	**Replenish Earth**, interview for the London Climate Action Week (Nov 14).	*London, UK*
2020	**KNAU**, radio feature on the witness tree social media project (May 13).	*Flagstaff, USA*
2019	**New York Times Upfront**, *The Tree Tweeting about Climate Change* (Nov 18).	*New York, USA*
2019	**Channel 5 Boston (TV)**, witness tree social media project featured in Chronicle show (Oct 15).	*Boston, USA*
2019	**Boston 25 News (TV)**, witness tree social media project in news and climate special (Sep 16).	*Boston, USA*
2019	**NWS**, *"Tweeting Tree" of Ghent now has a brother at Harvard Forest* (Aug 21).	*Brussels, Belgium*
2019	**Channel 3 Worcester (TV)**, witness tree social media project featured in the evening news (Aug 16).	*Worcester, USA*
2019	**Boston Globe**, *Self-tweeting tree is Harvard's newest climate change educator* (Aug 15).	*Boston, USA*
2019	**The Weather Channel (TV)**, one blog post and two TV segments on the witness tree project (Aug 15).	*Atlanta, USA*

2019 **National Public Radio**, witness tree featured in ”All things considered” (Aug 14). *Washington, USA*

2019 **Harvard Gazette**, *A red oak live tweets climate change* (Aug 13). *Cambridge, USA*

2019 **Mental Floss**, *A Massachusetts Tree Is Live-Tweeting Its Perspective on Climate Change* (Jul 26). *New York, USA*

2019 **blog IT plus**, online blog post on the witness tree social media project (Jul 26). *USA*

2019 **Atlas Obscura**, *The Tree That Is Live-Tweeting Climate Change* (Jul 25). *USA*