

# SHERSINGH JOSEPH TUMBER-DÁVILA

A: Steele Hall, Rm 110, Dartmouth College, 38 College St, Hanover, NH 03755

E: SJTumberDavila@Dartmouth.edu

T: (603) 646-9217

W: SJTumber.com

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## PROFESSIONAL APPOINTMENT

**ASSISTANT PROFESSOR OF ENVIRONMENTAL STUDIES**

Jan 2024–Present

Dartmouth College, Hanover, NH

Graduate Program in Ecology, Evolution, Environment and Society

E.E. Just 1907 Faculty Fellow

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## EDUCATION

**PH.D. ENVIRONMENTAL EARTH SYSTEM SCIENCE**

July 2021

Stanford University, Stanford, CA

**Committee:** Robert B. Jackson\* (PI), Scott Fendorf\*, Alexandra G. Konings\*, Kabir Peay\*, H. Jochen Schenk<sup>†</sup>

\*Stanford University, <sup>†</sup>California State University Fullerton

**Dissertation Topic:** Research focuses on unearthing the dynamics governing the architecture of plant root systems to inform our understanding of the terrestrial carbon cycle. I analyzed the allometry and distribution of plant root systems via three unique approaches: 1) created the largest database of plant root system size and shape; 2) developed a novel plant image analysis software to determine the volumetric allometry of plant growth above- and below-ground; 3) used stable isotopes to understand plant resource uptake strategies under resource limitation, drought, and community competition.

**M.S. EARTH SYSTEM SCIENCE**

Jan 2019

Stanford University, Stanford, CA

Advisor: Rob Jackson

**Relevant Coursework:** Fundamentals of Modeling (ESS211); Remote Sensing of Land (ESS262);

Advanced Statistical Methods for Earth System Analysis (ESS260);

Analyzing Land Use in a Globalized World (ESS270); Advanced Geographic Information Systems (ESS165)

**B.S. ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY, MINOR IN FORESTRY**

June 2015

University of New Hampshire, Durham, NH

Presidential Honor Scholar

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## ACADEMIC AWARDS & FELLOWSHIPS

- |   |             |                                      |             |
|---|-------------|--------------------------------------|-------------|
| ▪ <b>E.E. Just 1907 Faculty Fellow</b>                    | <b>2023</b> | ▪ W. Emil Forman Award               | 2014        |
| ▪ LBNL ECOSS Inaugural Early Career Outstanding Scientist | 2023        | ▪ C.F. Marble Scholarship            | 2013 & 2014 |
| ▪ <b>UNH Diversity Hall of Fame</b>                       |             | ▪ Farrington Forestry Scholar        | 2013 & 2014 |
| ▪ <b>Alumni Award</b>                                     | <b>2022</b> | ▪ McNair Scholars Fellowship         | 2013        |
| ▪ Culture Lab innovation Fund Grant                       | 2022        | ▪ Rolf N. B. Haugen Memorial Fund    | 2013        |
| ▪ DEI Special Service Award                               | 2021        | ▪ Collins Fund Scholarship           | 2013        |
| ▪ <b>Rising Environmental Leader 2019 &amp; 2020</b>      |             | ▪ Albert Brown Scholarship           | 2012        |
| ▪ Diversity Innovation Fund Grant                         | 2019        | ▪ Lloyd Hawkensen Fund Scholarship   | 2012        |
| ▪ Certificate for Outstanding Achievement in Mentorship   | 2018        | ▪ University Honor's Program         | 2011        |
| ▪ <b>NSF Graduate Research Fellow</b>                     | <b>2017</b> | ▪ Dr. Roger Beattie Honor Roll       | 2011        |
| ▪ <b>Ford Foundation Predoctoral Fellow</b>               | <b>2017</b> | ▪ Doyle GCF Scholarship              | 2011        |
| ▪ Ford Foundation Honorable Mention                       | 2016        | ▪ JD Miller Memorial Scholarship     | 2011        |
| ▪ <b>EDGE-STEM Fellowship</b>                             | <b>2015</b> | ▪ DeSantis Memorial Scholarship      | 2011        |
| ▪ Dean's Scholarship                                      | 2011- 2015  | ▪ LaurelWood Garden Club Scholarship | 2011        |
| ▪ <b>Udall Fellowship</b>                                 | <b>2014</b> | ▪ LHS Alumni Scholarship             | 2011        |
| ▪ Stanford SURGE Fellowship                               | 2014        | ▪ Leon "Huck" Hannigan Award         | 2011        |
|   |             | ▪ Priscilla Eisner Scholarship       | 2011        |

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## PUBLICATIONS

\*Denotes trainees/mentees

**Tumber-Dávila SJ**, \*Lucey T, Boose ER, Laflower D, \*León-Sáenz A, Wilson BT, MacLean MG, Thompson JR. Hurricanes pose a substantial risk to New England forest carbon stocks. *Global Change Biology*. 2024. 30, e17259. <https://doi.org/10.1111/gcb.17259>

Chari NR\*, **Tumber-Dávila SJ**, Phillips RP, Bauerle TL, Brunn M, Hafner BD, Klein T, Obersteiner S, Reay MK, Ullah S, Taylor BN Estimating the global root exudate carbon flux. *Biogeochemistry*. 2024. 167 (7), 895–908. <https://doi.org/10.1007/s10533-024-01161-z>

Bachofen C, **Tumber-Dávila SJ**, Mackay DS, McDowell NG, Carminati A, Klein T, Stocker BD, Mencuccini M, Grossiord C. Tree water uptake patterns across the globe. *New Phytologist*. 2024. 242 (5), 1891–1910. <https://doi.org/10.1111/nph.19762>

Sriskandarajah N\*, Wüst-Galley C, Heller S, Leifeld J, Määttä T, Ouyang Z, Runkle BRK, Schiedung M, Schmidt MWI, **Tumber-Dávila SJ**, Malhotra A. Belowground plant allocation regulates rice methane emissions from degraded peat soils. *Scientific Reports*. 2024. 14 (1), 14593. <https://doi.org/10.1038/s41598-024-64616-1>

Provete DB, Moreno S, D’Bastiani E, Santiago-Rosario LY, **Tumber-Dávila SJ**. We Are Stronger Together: Building Community to Face Barriers for Latin American and Underrepresented Ecologists. *Bull Ecol Soc Am*. 2024. 105(4):e02180. <http://doi.org/10.1002/bes2.2180>

- Laughlin DC, Siefert A, Fleri JR, **Tumber-Dávila SJ**, Hammond WM, Sabatini FM, Damasceno G, Aubin I, Field R, Hatim MZ, Jansen S, Lenoir J, Lens, F, McCarthy, JK, Niinemets, Ü, Phillips, OL, Attorre, F, Bergeron Y, Bruun HH, Byun C, Čušterevska R, Dengler J, De Sanctis M, Dolezal J, Jiménez-Alfaro B, Hérault B, Homeier J, Kattge J, Meir P, Mencuccini M, Noroozi J, Nowak A, Peñuelas J, Schmidt M, Škvorc Ž, Sultana F, Ugarte RM, Bruelheide H. Rooting depth and xylem vulnerability are independent woody plant traits jointly selected by aridity, seasonality, and water table depth. *New Phytologist*. 2023. 240: 1774-1787. <https://doi.org/10.1111/nph.19276>
- Stocker BD, **Tumber-Dávila SJ**, Konings AG, Anderson MB, Hain C, Jackson RB. Global patterns of water storage in the rooting zones of vegetation. *Nature Geoscience*. 2023. <https://doi.org/10.1038/s41561-023-01125-2>
- Cheng, SJ, Gaynor KM, Moore AC, Darragh K, Estien CO, Hammond JW, Mills KL, Lawrence C, Baiz MD, Khadempour L, McCary MA, Ignace D, Rice MM, **Tumber-Dávila SJ**, Smith JA. Championing inclusive terminology in ecology and evolution. *Trends in Ecology & Evolution*. 2023. <https://doi.org/10.1016/j.tree.2022.12.011>
- Feldman A, Gianotti D, Dong J, Akbar R, Crow W, McColl K, Nippert J, **Tumber-Dávila SJ**, Holbrook NM, Rockwell F, Scott R. Remotely Sensed Soil Moisture Can Capture Dynamics Relevant to Plant Water Uptake. *Water Resources Research*. 2023. e2022WR033814. <https://doi.org/10.1029/2022wr033814>
- Tumber-Dávila, SJ**, Schenk, HJ, Du, E, Jackson, RB. Plant sizes and shapes above- and belowground and their interactions with climate. *New Phytologist*. 2022. 235: 1032-1056. <https://doi.org/10.1111/nph.18031>
- Tumber-Dávila SJ**, Malhotra A. Fast plants in deep water: introducing the whole-soil column perspective. *New Phytologist*. 2020. Jan;225(1):7-9. <https://doi.org/10.1111/nph.16302>
- Ouimette AP, Ollinger SV, Lepine LC, Stephens RB, Rowe RJ, Vadeboncoeur MA, **Tumber-Dávila SJ**, Hobbie EA. Accounting for carbon flux to mycorrhizal fungi may resolve discrepancies in forest carbon budgets. *Ecosystems*. 2019. Sep;16:1-5. <https://doi.org/10.1007/s10021-019-00440-3>

### SELECTED PUBLICATIONS IN PREPARATION/REVIEW

- Rice MM, **Tumber-Dávila SJ**, Baiz MD, Cheng, SJ, Darragh K, Estien CO, Hammond JW, Ignace DD, Khadempour L, Gaynor KM, Mills KL, Smith JA, Moore AC. Language Matters: Terminology in Ecology and Evolutionary Biology Disproportionately Harms Marginalized Groups. (In Review)
- Lu M, Wang S, Malhotra A, **Tumber-Dávila SJ**, Weintraub-Leff S, McCormack L, Wang XT, Jackson RB. A continental scale analysis reveals widespread root bimodality. bioRxiv. <https://doi.org/10.1101/2022.09.14.507823>. (In Review)
- Malhotra A, **Tumber-Dávila SJ**, Abramoff R, Hanson PJ, Harden JW, Hicks-Pries C, Lu D, Norby R, Riccuito D, Sihi D, Sulman B, Thornton P, Walker A, Werbin Z\*, Jackson RB, Iversen CM. The persistence of root carbon in soil: a review of data and modeling gaps. (In Review)

Malhotra A, JA Moore, S Weintraub, K Georgiou, A Asefaw-Berhe, S Billings, M-A de Graaff, JM Fraterrigo, S Grandy, E Kyker-Snowman, M Lu, C Meier, D Pierson, **SJ Tumber-Dávila**, K Lajtha, WR Wieder, RB Jackson. Root and soil carbon relationships across continental scales. (In Review)

**Tumber-Dávila, SJ**, Ouimette, AP, Vadeboncouer, MA, Lu, M, Asbjornsen, H, Ollinger, SV, Jackson, RB. The root system distributions and water uptake strategies of codominant trees in a northern temperate forest undergoing prolonged drought stress. (In Prep)

**Tumber-Dávila, SJ**, Schenk, HJ, Lu, F, Jackson, RB. The above- to belowground volume and biomass allometry of woody plants. (In Prep)

## CURRENT GRANTS

**REU Site: Summer Research Program in Ecology at Harvard Forest** 2024–2027  
National Science Foundation  
Role: Senior Personnel  
Total Award Amount: \$504,194.00

**Working Trees: Scaling Agroforestry Carbon Projects Across Agricultural Supply Chains** 2024-2026  
USDA SBIR  
Role: Senior Personnel/Collaborator  
Total Award Amount: \$588,282.00

## PENDING GRANTS

**LTER: Putting long-term data to work: Trajectories, responsiveness, and spatial scaling** 2025–2031  
National Science Foundation  
Role: Co-PI  
Total Award Amount: \$7,650,000.00

**Do clonal plants have a broader climatic niche than non-clonal plants? An analysis across two continents** 2025-2028  
Czech – American Scientific Cooperation  
Role: U.S. PI  
Total Award Amount: NA

**Catalyzing ecosystem restoration using advanced AI sensing technologies** 2025-2027  
Bezos Earth Fund AI for Climate and Nature Grand Challenge  
Role: Co-PI  
Total Award Amount: \$2,000,000.00

## UNFUNDED GRANTS

**Working Trees: Scaling Agroforestry Carbon Projects Across Agricultural Supply Chains** 2024  
USGS Climate Adaptation Science Center  
Role: Co-PI  
Total Award Amount: \$445,124.96

- Arctic regime shifts: Belowground mechanisms of the ongoing Tundra shrubification** 2024  
 Department of Energy  
 Role: Co-PI  
 Total Award Amount: \$1,000,000.00
- New approaches to quantify tree biomass for carbon accounting using technologies across scales** 2024  
 Schmidt Futures  
 Role: Co-PI  
 Total Award Amount: NA
- Conference Proposal: Ecology and Evolutionary Biology Language Project Workshop** 2024  
 NSF DEB  
 Role: PI  
 Total Award Amount: \$59,028.00
- A community approach towards more inclusive language in Ecology and Evolutionary Biology** 2023  
 Dartmouth Faculty of Arts and Sciences Conference Proposal  
 Role: PI  
 Total Award Amount: \$64,930.80
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## PRIOR RESEARCH EXPERIENCE

- LTER Postdoctoral Fellow** Sept 2021–Dec 2023  
 Harvard Forest, Harvard University, Petersham, NH  
 Supervisor: Jonathan Thompson  
 Modeling the future risk to Forest carbon due to ecological disturbances, climate change, and policy decisions.
- Graduate Student Research Fellow** Fall 2015–Summer 2021  
 Jackson Lab, Stanford University Earth System Science Department, Stanford, CA  
 Supervisor: Robert B. Jackson  
 Support from the NSF GRFP, Ford Foundation Predoctoral Fellowship, and EDGE-STEM Fellowship  
 Researcher in the Jackson lab, focusing on understanding the size and shape of plant root systems, and plant interactions with their environment and climate. We have found that roots show considerable plasticity across global climates, and we enhance the ability of earth systems modelers to correctly predict root system dynamics.
- Summer Undergraduate Research in Geosciences and Engineering (SURGE) Fellow** Summer 2014  
 The Welander Lab at the Stanford University School of Earth  
 Supervisors: Paula Welander, Laura Meredith, and Marco Keiluweit  
 Conducted independent research on the effects that increased atmospheric hydrogen concentrations will have on carbon decomposition by hydrogen consuming microbes.

**Invasive Species Internship**

Summer 2014

The Nature Conservancy, Great Bay Office, Newmarket, NH

Supervisor: Joanne S. Glode

Measured the ingrowth of invasive species at the Lubberland Creek Preserve.

Monitored, actively controlled, and mapped using GIS the locations of invasive plant species.

Learned the everyday responsibilities of conservation professionals.

**McNair Research Fellowship**

Fall 2012–Spring 2015

Quantifying Carbon Allocation to and Biomass of Mycorrhizal Fungi Across a Nitrogen and Tree Species Gradient in a northern temperate forest

Supervisors: Andrew P. Ouimette, Lucie C. Lepine, Matthew A. Vadeboncoeur, Scott V. Ollinger

Federal TRIO program with the goal of increasing graduate degree awards for students from underrepresented segments of society.

Used isotopes to quantify carbon allocation to mycorrhizal fungi.

Conducted an ingrowth study at Bartlett Experimental Forest using ergosterol as a biomarker

Allows for a comprehensive understand of the entire forest carbon budget and Total

Belowground Carbon Allocation (TBCA).

Found that mycorrhizae comprise of much of the ecosystem carbon budget which was missing from top-down estimates.

**Terrestrial Ecosystems Analysis Lab Researcher**

Winter 2012–Spring 2015

University of New Hampshire Earth Systems Research Center, Durham, NH

Supervisors: Scott V. Ollinger & Andrew P. Ouimette

Completed numerous research projects and often led a team of five or more.

Led fieldwork expeditions in Durham and the White Mountains of New Hampshire.

Used the following three methods: Camera Point, Hemiview and Lai 2000, to correlate leaf area index with remotely sensed data.

Analyzed stable isotopes and the ingrowth of roots and mycorrhizae to understand the cycling of carbon and nitrogen in temperate ecosystems.

**Mass Spectrometry Lab Technician**

Winter 2012–Fall 2013

University of New Hampshire Stable Isotope Laboratory, Durham, NH

Supervisors: Erik A. Hobbie & Andrew P. Ouimette

Ran Mass Spec Analysis and analyzed isotope results.

Oversaw and managed the lab including machine maintenance.

Worked with clients from numerous institutions and agencies.

**NH Agricultural Experiment Station Field Technician**

Fall 2011

College of Life Sciences and Agriculture, Durham, NH

Supervisors: Daniel J. Hocking & Kimberly J. Babbitt

Facilitated research of the effects that red-backed salamanders have on soil and ecosystem services.

Worked in a team to install, build, and map, the environments in which the research was be conducted. The experiment quantified the effect that salamanders had on litter and wood composition, potential nitrogen mineralization, nitrification rates, acorn germination, and foliar insect damage. The study found that the impact of red-back salamanders on ecosystem services are context dependent.

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## TEACHING EXPERIENCE

### CURRENT COURSES TAUGHT AT DARTMOUTH COLLEGE

#### Forest Ecology & Management (ENVS 31)

Fall Term

Natural and Physical Science with Lab Distributive and ENVS Major Core Course

Description: ENVS 31 introduces students to fundamental ecological concepts essential for comprehending forest ecology and management practices. With a focus on experiential learning, students will engage in immersive field trips, tree identification exercises, and forest inventory techniques. By the course's conclusion, students will emerge equipped with a deep appreciation for the complexities of forest ecosystems and the practical knowledge needed to contribute meaningfully to their conservation, sustainable management, and climate change mitigation in New England and beyond.

#### The Control of Nature (ENVS 80.18)

Spring Term

Technology or Applied Sciences Distributive & ENVS Major Critical Issues Requirement

Description: Embark on a journey that explores the convergence of speculative fiction and cutting-edge scientific advancements. This course delves into the realm of geoengineering technologies, designer genes, carbon removal technologies, renewable energy, and various transformational technologies that shape our understanding of society, the environment, and the climate. Contrary to its portrayal in cinematic works such as *Dune*, *Jurassic World*, and *Snowpiercer*, controlling the earth's climate is not mere science fiction. With a focus on ethical considerations and governance, this discussion-based course critically examines the potential consequences, both positive and negative, of manipulating the environment.

### OTHER TEACHING EXPERIENCE

#### Diversity and Inclusion in the Geosciences (DIG; EARTH 203) Co-instructor

Winter 2020 & 2021

Stanford University, School of EARTH, Stanford, CA

This course prepares students to address the participation and inclusion challenges uniquely faced in the geosciences. By bringing awareness to specific tools and tactics that improve learning and working environments, we hope to help others develop inclusive environments where diversity is valued and celebrated.

Manage the @StanfordDIG network to facilitate connections and share news on JDEI topics.

#### MESA Lead Instructor

Summer 2019–Summer 2020

MESA-College Track East Palo Alto, CA

In Collaboration with the Mathematics, Engineering, Science Achievement (MESA) program at UC San Francisco, I teach 10<sup>th</sup> grade College Track students about engineering and mathematics using hands-on project learning to get the students ACT ready, and learn about the future of the STEM workforce for underrepresented minority (URM) students.

#### Teaching Assistant

Spring 2016 & Spring 2019

Stanford University Earth Systems Department, Stanford, CA

Teaching Assistant for ESS 107/ EARTHSYS 107

The course introduces the science behind ways people alter and engineer the earth, critically examining the positive and negative consequences.

|  |                  |
|--|------------------|
| <b>Program Assistant</b>   | Summer 2016      |
| Stanford Earth Young Investigators High School Internship Program, Stanford, CA  |                  |
| Mentored a cohort of over 40 interns helping with research interests and college planning.                               |                  |
| Managed a blog describing intern experiences and projects throughout the program.  |                  |
| <b>Stanford SURGE Fellowship Program</b>   | Summer 2014–2021 |
| Stanford University Environmental Earth System Science Department, Stanford, CA  |                  |
| <b>Program Assistant</b>   | Summer 2018      |
| Managed a cohort of four scholars, teaching presentation, writing, networking, and graduate school preparation skills.   |                  |
| Facilitated program wide events and excursions.  |                  |
| <b>Research Mentor</b> in the Jackson Lab  | Summer 2017      |
| Designed a project for a SURGE Fellow on estimating the biomass of dead and live trees in the southern Sierra Mountains. |                  |
| Worked daily with mentee on methodology, scientific writing, and professional development.                               |                  |
| <b>Volunteer</b> , organized and led field experiences for undergraduate scholars.                                       | Summer 2016      |
| <b>SURGE Fellow</b> in the Welander Lab  | Summer 2014      |
| <b>Undergraduate Teaching Assistant</b>  | Spring 2013      |
| University of New Hampshire Department of Plant Biology, Durham, NH  |                  |
| Assisted in teaching a lab section of Introduction to Plant Biology.   |                  |
| Graded assignments, created lesson plans, and lectured.  |                  |
| Monitored students to help with coursework and approved projects.  |                  |

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## PROFESSIONAL, SOCIETAL & INSTITUTIONAL SERVICE (INCLUDING DIVERSITY, EQUITY, INCLUSION, JUSTICE, BELONGING+)

|   |                     |
|---|---------------------|
| <b>Grant Management Committee</b> , Dartmouth College   | Winter 2024–Present |
| Committee Member and Faculty Representative   |                     |
| Committee advises and sets policies regarding the use of the College’s Woodlands  |                     |
| Interacts with the College’s Climate Future’s Initiative  |                     |
| <b>Latin America &amp; The Caribbean Chapter</b> , Ecological Society of America  | 2022-Present        |
| Past-Chair & Advisor  | 2024-2025           |
| Chair   | 2023-2024           |
| Vice-Chair  | 2022-2023           |
| <a href="#">The objective of this Chapter</a> shall be to encourage research and education in ecology and its applications within Latin America (Mexico, Central America, South America, and the Caribbean) and to facilitate the participation of Latin American and the Caribbean students and scientists in the ESA. We organize sessions, events, and activities for our members in addition to creating community and advocating for our membership. |                     |
| <b>Summer Research Program in Ecology</b> , Harvard Forest REU  | 2022-Present        |
| Mentor & Volunteer  | 2022-Present        |
| Grant Senior Personnel  | 2024-2027           |



[The Harvard Forest Summer Research Program in Ecology](#) is an 11-week immersive research experience connecting undergraduate students to mentors and researchers in the pursuit of scientific inquiry

- Undergraduate Research Assistantships at Dartmouth (URAD)**, Dartmouth College 2024-Present  
 Research Advisor/Mentor  
 Provide research opportunities to Dartmouth undergraduates in the Tumber-Dávila Lab. To date we have had 7 URAD students through both off-term and on-term research projects
- Neukom Scholars Program**, Dartmouth College 2024-Present  
 Research Advisor/Mentor  
 This [program](#) funds enrolled undergraduates engaged in faculty-advised research in the development of novel computational techniques as well as the application of computational methods to problems in the Sciences, Social Sciences, Humanities, and the Arts.
- DEI Committee**, Long-Term Ecological Research (LTER) Network Fall 2021–Present  
 Co-Chair Community Building Working Group  
 Harvard Forest LTER Site-Representative  
 Hosted LTER Community Engagement Webinar-4/28/2022
- Code of Conduct Writing Group**, Harvard Forest Fall 2021–Present  
 Sub-committee member responsible for writing [Harvard Forest Code of Conduct](#)  
 Published in Fall 2022
- DEI Committee**, Harvard Forest Fall 2021–Present  
 DEI Committee Member
- DEI Committee**, AGU Biogeosciences Section Fall 2021–Present  
 DEI Committee Member
- CONSULTING AND ADVISORY ROLES**
- International Board of Advisors**, New Phytologist 2024-2027  
 Scientific Advisor for the Journal  
 Provide input for peer review, symposia, workshops and special programs related to the journal and the goals of the foundation
- Working Trees**, Silvopasture & Carbon Offset/Insect Technology Startup Spring 2022–Present  
 Advisory Board Member and Scientific Advisor
- Canopy**, Urban Forestry Stewardship and Advocacy Organization Fall 2016–Present  
 Member of the Education Committee  
 Education Leader for School Outreach  
 Volunteer for Teen Urban Forester (TUFs) Program  
 Host and Facilitator workshops on Forest Ecology.  
 Consultant for data collection and annual surveys.
- Yardstick PBC**, Soil Carbon Measurement Startup Spring 2021–Spring 2022

Paid scientific consultant focusing on providing trainings and protocols for measuring soil carbon.

### PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (AGU)
- Ecological Society of America (ESA)
- Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)

### PEER REVIEWING

- New Phytologist 2019, 2020, 2021, 2022, 2023, 2024
- Science 2023
- ESA Frontiers in Ecology and the Environment 2023
- Global Change Biology 2023
- Oecologia 2023
- Landscape Ecology 2022
- Plant Ecology & Diversity 2021 & 2022
- Earth's Future 2020 & 2021
- Ecology 2019

### GRANT PANELS AND REVIEWS

- EPSCoR Track-2**, National Science Foundation 2024  
Panelist
- Faculty Seed Grant and Pilot Funding Program**, Irving Institute-Dartmouth College 2024  
Grant Reviewer & Panelist
- DEB CAREER**, National Science Foundation 2023  
Ad-hoc Reviewer

### SCIENCE COMMUNICATION & OUTREACH

**To Be Seen**, Harvard University and Nipmuc Collaborative Spring 2022–Present  
Aimed at acknowledging Indigenous land in green spaces  
One outcome was the collaborative design and installation of the [Manchage Manexit](#) trail  
Led a successful [Culture Lab Innovation Fund Grant Proposal](#) (\$15,000)

**Con Ciencia en las Américas**, broadcasted via YouTube Live 2020–Present  
Founded a Spanish Language bi-weekly webinar series focused on sharing science to a broad Spanish speaking audience and highlighting scientists throughout Latin America in collaboration with the scientists at Antarctica.CL.

**Pertenecer/You Belong**, Stanford School of Earth 2017–Present  
Found and run a youth program aimed at exposing youth in underserved communities of the bay area and beyond to careers in academia and environmental sciences  
Have run 44 programs (to date) serving thousands of attendees in partnership with local organizations and public schools.  
Awarded the Diversity Innovation Fund Grant in acknowledgement of our efforts to show young students that they belong at places like Stanford.

**GeoKids**, Earth Science Program for Elementary Schools  
Soil Science Teacher

Fall 2015–Fall 2019

**Science Fridays**, Science Educational Outreach Program for 4<sup>th</sup> Graders  
Director  
Volunteer

Spring 2013–Spring 2015

Spring 2014–Spring 2015

## PRIOR INVOLVEMENTS

**Rising Environmental Leaders Program**, Stanford Woods Institute

2020 &amp; 2021

The Stanford Woods Institute is working to develop the next generation of environmental leaders.

Honed my leadership and communications skills to maximize the impact of my research.

Participants also are extended professional development and networking opportunities

including introductions to global leaders from government, NGOs, think tanks and business.

**Vice Provost for Graduate Education**, Stanford University

Fall 2017–Summer 2021

Enhancing Diversity in Graduate Education Mentor for two graduate students. Volunteer on panels to support the graduate student experience.

**Office of Community Standards**, Stanford University

Fall 2016–Winter 2021

Office of Community Standards Judicial Panel

Organizational Conduct Board

**Vice Provost for Teaching and Learning**, Stanford University

Fall 2017–Fall 2019

Teaching Liaison

Fall 2017–Fall 2019

Mentor in Teaching and Learning (MINT)

Winter 2018–Fall 2019

**Skill-Share Seminar Instructor**, Stanford School of Earth

Winter–Fall 2019

Seminar Series for students in the Stanford School of Earth meant to teach/learn new skills

"Professional Website Building - How did you do it?"

May 2019

"Making Canvas work for you: tips and tricks to assist TAs"

Feb 2019

**Ernest Houston Johnson Scholars Program (EJHS)**,

Fall 2016–Summer 2017

Black Community Services Center mentorship program

Graduate Mentor to two first-year undergraduates

Spring 2017

EJHS 2.0 Graduate Mentor to two second-year students

Fall 2016

**Sigma Alpha Epsilon**, Community Service and Philanthropic Organization

Spring 2012–Present

Cal Alpha Alumni Board Member

Spring 2016–Present

Member Educator

Summer 2013–Spring 2015

Community Service, Membership Development, and Judicial Board

Spring 2014

Scholarship Chairman

Spring 2013

**Order of the Omega**, Greek Honor Society

Fall 2013–Spring 2015

**Marble Scholars Program**, COLSA Ambassador

Fall 2013–Spring 2015

Represent the College of Life Sciences at Donor Events, Alumni Events, Open Houses, etc.

**McNair Scholars Program**

Fall 2012–Spring 2015

Focus on publishing research and attending PhD program after graduation

Numerous service opportunities representing the program and attending events for underrepresented groups on campus

**Xi Sigma Pi, National Forestry Honor Society**

Fall 2012–Spring 2015

President

Spring 2013–Spring 2015

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## TRAINEES

### GRADUATE STUDENTS AND POST-DOCS

Junior Burks- EEES PhD Student and E.E. Just Lutoff Fellow  
Thomas Muratore- Postdoctoral Trainee

Fall 2024–Present  
Fall 2024–Present

### STUDENT MENTEES

\*Primary Undergraduate Research Advisor, †Thesis Advisor, ‡Graduate Committee Member

Chloe Wiggins, Stanford '18

\*Alexis M. Wilson, Cornell '19

Elizabeth Pederson, University of New Hampshire '20

Bear Kim, Stanford '21

Emily Morgan Lacroix, Stanford (PhD) '22

Sarah Arriaga, Stanford '22

Julio Ballista, Stanford '22

Kevin Calderon, Stanford '22

Cher Pelesia Nomura, Stanford '22

Coral del Mar Valle Rodríguez, CUNY '22

Lydia Marie Villa, Stanford '22

Colette LaMonica Kelly, Stanford (PhD) '23

Malory Brown, Stanford (PhD) '23

Vanessa Yarelli Rodriguez, Stanford '23

Madeleine Torio Salem, Stanford '24

Cristina Winters, Humboldt State '24

Lorelei Wolf, Harvard '24

\*Ben Baraga, Pomona College '24

\*Maegan Beckage, University of Vermont '24

\*Agustín León-Sáenz, Harvard '25

\*†Lara Roelofs, Dartmouth '25

\*Claire Wigglesworth, Dartmouth '25

†Faustus Miranda, Dartmouth '25

\*Sky Hulse, CSCU-Ohio '25

\*Aliya Dhanji, Dartmouth '25

\*Lucy Coleman, Dartmouth '26

\*Tobin Yates, Dartmouth '26

‡Genevieve M. Goebel, EEES Dartmouth

‡JP Hellenbrand, Hunter CUNY

Grady Welsh, Dartmouth Post-Bacc

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## NOTABLE RECENT PRESENTATIONS & INVITED TALKS

### INSTITUTIONAL SEMINARS

- **“Getting to the root of carbon dynamics in Northeastern Temperate Forests.”** Yale Dept of EEB. New Haven, CT. November 13, 2024 (Invited Seminar)
- **“Forest Conversation Series-A look belowground.”** NRESS Program Seminar Series (UNH-NREN & ESRC). October 23, 2024 (Invited Seminar)
- **“Getting to the root of forest carbon and root system dynamics.”** LBNL ECOSSS, Berkeley, CA. December 5, 2023. (Invited Seminar)
- **“Plants & Climate Change: Unearthing the Ecology of Root Systems and the Future of Forest Carbon.”** Boston University Biology Department. Boston, MA. April 25, 2022. (Invited Seminar)
- **“Ecology Rooted in Lived Experiences.”** SUNY Cortland Artist & Lecture Series. Cortland, NY. March 28, 2022. (Invited Seminar)
- **“Getting to the root of it: Research advances in belowground ecology.”** MIT Climate + Ecology Lab. Cambridge, MA. February 23, 2022. (Invited Seminar)
- **“Roots: The hidden half of plant carbon.”** Biogeochemistry Seminar. Lawrence Livermore National Lab. November 10, 2021. (Invited Seminar)
- **“Unearthing the rooted world beneath our feet: A global analysis of the size and shape of plant root systems.”** *Harvard Forest Seminar Series*. October 27, 2021. (Invited Seminar)

- **“Forging a Path: Isotopes in Ecology.”** Macalester College Environmental Studies Program. February 24, 2021. (Invited Guest Lecture)
- **“Actionable Steps Towards Building Anti-Racist & Inclusive Lab Groups.”** *Behavioral Decisions and the Environment Group Meeting*. Stanford University. July 20, 2020. (Invited Seminar)
- **“The form and function of plant root systems.”** *Soil and Environmental Biogeochemistry Meeting*. Stanford University. May 20, 2020. (Invited Seminar)

### CONFERENCE/WORKSHOP PRESENTATIONS (INVITED/ORGANIZED)

- **“Root System Distribution and Tree Water Uptake Dynamics Across Various Disturbance Regimes and Edaphic Conditions.”** AGU Fall Meeting. Washington, DC. December 12, 2024. (Invited Presentation)
- **“Lowering Barriers: Empowering Latin American Geoscientists in the Global Community.”** AGU Fall Meeting. Washington, DC. December 09, 2024. (Invited Presentation)
- **“Publishing Our Ecology Across Languages and Borders.”** ESA Annual Meeting, Long Beach, CA. August 8, 2024. (Co-Organized Inspire Session)
- **“Nuestra Comunidad: The Role of Latin American Networks in Supporting Ecologists Throughout Their Careers.”** ESA Annual Meeting, Long Beach, CA. August 6, 2024. (Organized Oral Session)
- **“Root system architecture and plant water uptake dynamics: A case-study of root niche differentiation of co-dominant trees in a northeastern temperate forest.”** ESA Annual Meeting. Long Beach, CA. August 7, 2024. (Invited Oral Presentation)
- **“Hurricanes pose a major risk to New England forest carbon.”** ESA Meeting. Portland, OR. August 8, 2023. (Contributed Oral Presentation)
- **“Root system structure and dynamics in a northern temperate forest undergoing prolonged drought stress.”** Thompson Farm Annual Research Meeting, University of New Hampshire, Durham, NH. October 5, 2023. (Invited Oral Presentation)
- **“Championing Inclusive Terminology in Ecology and Evolution.”** ESA+CSEE Meeting. Montreal, CA. August 17, 2022. (Invited Oral Presentation)
- **“Approaches to make the Geosciences more Inclusive: Highlighting Student-Led initiatives.”** AGU Fall Meeting. New Orleans, LA. December 15, 2021. ED31A-03. (Invited Oral Presentation)
- **“Building research communities and networks across ALL of the Américas: One discussion at a time.”** ESA Annual Meeting Inspire Session. Virtual Meeting, 2021. (Invited Oral Presentation)
- **“Plant volumetric allometry and shape above- and belowground.”** AGU Fall Meeting. San Francisco, CA, 2020. B074-05. (Oral Presentation)
- **“Perteneceer: Introducing academic and geoscience careers to youth from under-served communities.”** AGU Fall Meeting. San Francisco, CA, 2020. ED017-08. (Oral Presentation)
- **“The size and shape of global plant root systems.”** AGU Fall Meeting. San Francisco, CA, 2019. (Oral Presentation)
- **“You Belong: Empowerment, Education, & Environment Program at Stanford Earth.”** AGU Fall Meeting. San Francisco, CA, 2019. (Oral Presentation)
- **“Grand Challenges: LatinX Representation in the Geosciences.”** AGU Fall Meeting. San Francisco, CA, 2019. (Invited Oral Presentation)

### PUBLIC OUTREACH EVENTS (ADULT & YOUTH)

- **“How to Love A Forest Book Event.”** Still North Books & Bar. Hanover, NH, October 22, 2024 (Invited Guest Speaker & Event Host)

- **"Why Forests are Essential for Us and the Planet."** Upper-Valley Forest and Conservation Collaborative. Hanover, NH, April 18, 2024. (Invited Oral Presentation and Panel Event)
- **"Leadership Meeting Career Panel."** ESA SEEDS. Petersham, MA, September 6, 2024 (Invited Panelist)
- **"Environmental Policy and Higher-Education Green Career Series."** [Canopy. \(Virtual\)](#). Palo Alto, CA, October 16, 2024 (Invited Panelist)

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## HIGHLIGHTED SCHOLARLY ACTIVITIES (INCLUDING CONFERENCES & WORKSHOPS)

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| <b>ESA Annual Conference</b> , Portland, OR  | Aug 2023                   |
| <b>LTER All Scientists Meeting</b> , Asilomar, CA  | Sep 2022                   |
| <b>ESA + CEE Annual Conference</b> , Montreal, QC CA   | Aug 2022                   |
| <b>Emerging Scholars Program</b> , Boston University, Boston, MA                                   | Apr 2022                   |
| <b>American Geophysical Union Fall Meeting</b> , New Orleans, LA                                   | Dec 2017 & 2021            |
| <b>LTER Science Council Meeting</b> , Virtual  | Nov 2021                   |
| <b>LANDIS-II Training Workshop</b> , Virtual   | Nov 2021                   |
| <b>ESA Annual Conference</b> , Virtual Meeting   | Aug 2021                   |
| <b>American Geophysical Union Fall Meeting</b> , San Francisco, CA                                 | Dec 2014, 2016, 2019, 2020 |
| <b>SACNAS- The National Diversity in STEM Conference</b>   | Oct 2019 & 2020            |
| <b>NSF-Alliances for Graduate Education and the Professoriate Research Exchange</b> , Stanford, CA | Oct 2019                   |
| <b>American Association of Hispanics in Higher Education-NASEM Meeting</b> , San Marcos, TX        | Sep 2019                   |
| <b>Conference of Ford Fellows</b> , Newport Beach, CA  | Oct 2018                   |
| <b>Global-Scale Root Trait and Soil Carbon Linkages Workshop</b> , Oak Ridge, TN                   | Aug 2018                   |
| <b>Conference of Ford Fellows</b> , Washington, DC   | Apr 2018                   |
| <b>ISCN Data Hackathon/All-Hands Meeting</b> , New Orleans, LA                                     | Dec 2017                   |
| <b>Southern Sierra Critical Zone Observatory Annual Meeting</b> , Shaver Lake, CA                  | Aug 2017                   |
| <b>AGU-SEG Hydrogeophysics Workshop</b> , Stanford, CA   | Jul 2017                   |
| <b>Udall Conference</b> , Tucson, AR   | Aug 2014                   |
| <b>Stanford Summer Research Conference</b> , Stanford, CA  | Aug 2014                   |
| <b>McNair Research Symposium</b> , Seattle, WA   | May 2014                   |
| <b>COLSA Undergraduate Research Conference</b> , Durham, NH  | Apr 2014                   |
| <b>Ivy Plus Symposium</b> , Cambridge, MA  | Mar 2014                   |
| <b>Compact for Faculty Diversity</b> , Arlington, VA   | Nov 2013                   |
| <b>Benjamin Thompson Society Banquet</b> , Keynote Speaker, University of New Hampshire            | Sep 2013                   |
| <b>John O. Moseley Leadership School</b> , Miami, FL   | Aug 2013                   |
| <b>The 50th Annual Hubbard Brook Cooperators' Meeting</b> , North Woodstock, NH                    | Jul 2013                   |
| <b>Undergraduate Research Conference</b> , University of New Hampshire                             | Apr 2011 & 2013            |
| <b>FuturesQuest</b> , leadership program in Indianapolis, IN                                       | Dec 2012                   |

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## MEDIA APPEARANCES

- "Freeze-thaw cycle causes early mud season in Hanover." The Dartmouth. February 19, 2024. <https://www.thedartmouth.com/article/2024/02/freeze-thaw-cycle-causes-early-mud-season-in-hanover>
  - "A Stormy Future for Carbon Offsets." Northern Woodlands. January 26, 2024. <https://northernwoodlands.org/discoveries/future-carbon-offsets>
  - "Dartmouth welcomes 43 new faculty members." The Dartmouth. January 4, 2024. <https://www.thedartmouth.com/article/2024/01/dartmouth-welcomes-43-new-faculty-members>
  - "Hurricane damage to forests could release huge amount of stored carbon." New Scientist. December 27, 2023. <https://www.newscientist.com/article/2408886-hurricane-damage-to-forests-could-release-huge-amount-of-stored-carbon/>
  - "All you need is lab." Radio Usach. July, 29, 2021. <http://www.radio.usach.cl/noticias/lo-mas-reciente/joseph-tumber-davila-en-5-a-10-anos-mas-ya-no-habra-temporada-de>.
  - "Cimpatico TV Climate Spotlight Interview." Kayla Hathaway. November 16, 2020. [https://youtu.be/dTI50T\\_avol](https://youtu.be/dTI50T_avol).
  - "Q&A: What does it mean to be Latinx in the geosciences?" Stanford Earth Insiders. September 22, 2020. <https://earth.stanford.edu/news/qa-what-does-it-mean-be-latinx-geosciences#gs.eu2hmj>.
  - "Paying it forward in science." Stanford Spotlights. May 28, 2018. <https://earth.stanford.edu/spotlights/paying-it-forward-science#gs.eu2g45>.
  - "Stanford Earth SURGE Alumni: Where Are They Now?" OMA. August 4, 2016. <https://earth.stanford.edu/news/stanford-earth-surge-alumni-where-are-they-now#gs.eu0k8f>.
  - "Stanford summer program brings more diversity to the earth sciences." Stanford News Reports. August 26, 2014. <https://news.stanford.edu/news/2014/august/surge-earth-sciences-082614.html>.
  - "Shersingh Joseph Tumber-Davila '15." UNH Today. January 20, 2014. <https://www.unh.edu/unhtoday/2014/01/shersingh-joseph-tumber-davila-15>.
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