

Michael Walter Burnett

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Education

- 2022–present **Ph.D. Candidate** | Ecology, Evolution, & Marine Biology | UC Santa Barbara
Committee: Hillary Young (co-advisor), Leander Anderegg (co-advisor), and Kelly Caylor
- 2019–2020 **M.S.** | Earth Systems | Stanford University
Thesis: Cloud Water Interception by a Montane Tropical Forest in Leeward Kohala, Hawai'i | Advisor: Peter Vitousek; Reader: Alexandra Konings
- 2014–2019 **B.S.** | Earth Systems, with Honors | Stanford University
Thesis: Nitrogen Fixation Detected through Natural Isotope Abundances across a Climate Gradient | Advisor: Peter Vitousek; Reader: Scott Fendorf

Professional Experience

- 2020–2023 Assistant Marine Coordinator | The Nature Conservancy, Kamuela, HI
- 2018–2019 Research Assistant | Remote Sensing Ecohydrology Group, Stanford, CA
- 2017–2018 Field Program Assistant | School of Earth Sciences, Stanford, CA
- 2017–2018 Student Advisor | Stanford Earth Systems Program, Stanford, CA
- 2017 Research Intern | Hopkins Marine Station, Pacific Grove, CA
- 2017 Planning Intern | US Bureau of Land Management, Washington, DC
- 2016 Sustainable Farming Intern | Bumi Langit Institute, Imogiri, Indonesia
- 2015 Research Intern | Stanford Department of Biology, Stanford, CA

Research Experience

Peer-reviewed Publications

- M.W. Burnett**, R. Ruggeri, K.K. Caylor, H.S. Young, L.D.L. Anderegg, 2026. "Estimating whole-tree sap flow in buttressed and irregular trunks." *Agricultural and Forest Meteorology* 388, 111357. DOI: [10.1016/j.agrformet.2026.111357](https://doi.org/10.1016/j.agrformet.2026.111357).
- S. Steibl, **M.W. Burnett**, N.D. Holmes, A. Wegmann, J.C. Russell, 2026. "Atoll biodiversity and environments: an AI-ready, interactive data portal for Indo-Pacific atolls." *Frontiers in Environmental Science* 13, 1723851. DOI: [10.3389/fenvs.2025.1723851](https://doi.org/10.3389/fenvs.2025.1723851).
- M.W. Burnett**, R. French, B. Jones, A. Fischer, A. Holland, I. Roybal, T. White, S. Steibl, L.D.L. Anderegg, H. Young, N.D. Holmes, A. Wegmann, 2024. "Satellite Imagery Reveals Widespread

- Coconut Plantations on Pacific Atolls.” *Environmental Research Letters* 19(12), 124095. DOI: [10.1088/1748-9326/ad8c66](https://doi.org/10.1088/1748-9326/ad8c66). (Featured on [Hawaii Public Radio](#), [Earth.com](#), [ABC Pacific Beat](#), [Pacific Media Network](#), and [more](#))
- M.W. Burnett**, D. Coleman, G. Saiz, K. Bacasen, M. Luccioni, K. Marshall, and P.M. Vitousek, 2023. “Microclimatic Effects of Kō (Sugarcane, *Saccharum officinarum*) Row Planting in the Leeward Kohala Field System, Hawaii Island.” *Pacific Science* 77(2-3), 163-175. DOI: [10.2984/77.2.3](https://doi.org/10.2984/77.2.3). (Featured on [BioOne Vista](#))
- M.W. Burnett**, A.E. Bobbett, C.E. Brendel, K. Marshall, C. von Sperber, E.L. Paulus, and P.M. Vitousek, 2022. “Foliar $\delta^{15}\text{N}$ patterns in legumes and non-N fixers across a climate gradient, Hawai‘i Island, USA.” *Oecologia* 198, 229-242. DOI: [10.1007/s00442-021-05089-1](https://doi.org/10.1007/s00442-021-05089-1).
- M. Ehbrecht, D. Seidel, P. Annighöfer, H. Kraft, M. Köhler, D.C. Zemp, K. Puettmann, R. Nilus, F. Babweteera, K. Willim, M. Stiers, D. Soto, H.-J. Boehmer, N. Fisichelli, **M. Burnett**, G. Juday, S.L. Stephens, and C. Ammer, 2021. “Global Patterns and Climatic Controls of Forest Structural Complexity.” *Nature Communications* 12, 519. DOI: [10.1038/s41467-020-20767-z](https://doi.org/10.1038/s41467-020-20767-z).
- M.W. Burnett**, G.R. Quetin, and A.G. Konings, 2020. “Data-driven Estimates of Evapotranspiration and its Controls in the Congo Basin.” *Hydrology and Earth System Sciences* 24(8), 4189-4211. DOI: [10.5194/hess-24-4189-2020](https://doi.org/10.5194/hess-24-4189-2020).
- S.T. Nelson, B. Barton, **M.W. Burnett**, J.H. McBride, L. Brown, & I. Spring, 2020. “The Lateral and Vertical Growth of Laterite Weathering Profiles, Hawaiian Islands, USA.” *Earth Surface Processes and Landforms* 45(12), 2940-2953. DOI: [10.1002/esp.4941](https://doi.org/10.1002/esp.4941).
- M.W. Burnett**, T.D. White, D.J. McCauley, G.A. De Leo, and F. Micheli, 2019. “Quantifying Coconut Palm Extent on Pacific Islands using Spectral and Textural Analysis of Very High Resolution Imagery.” *International Journal of Remote Sensing* 40(19), 7329-7355. DOI: [10.1080/01431161.2019.1594440](https://doi.org/10.1080/01431161.2019.1594440).

Reviewer for *Journal of Hydrology* (1), *Hydrology and Earth System Science* (1), *Journal of Mountain Science* (1), *Remote Sensing Applications: Society and Environment* (1).

Other Publications and Reports

- M. Burnett**, B. Langston, R. Most, C. Balzotti, W. Rice, and J. Rose, 2022. First Results from the Pelekāne Dryland Restoration Trials. Report prepared by The Nature Conservancy for the South Kohala Coastal Partnership. 22 pp.
- M. Burnett**, D. Minton, B. Seidel, C. Walsh, C. Wiggins, and R. Most, 2021. Kīholo Fishpond Restoration: 10-year Progress Report. Report prepared by The Nature Conservancy for NOAA. 32 pp.
- N. Fernandez, M. Carolyn Stewart, J. Rose, W. Rice, **M. Burnett**, and C. Hawkins, 2021. NRCS NWQI Watershed Assessment and Implementation Plan for Wai‘ula‘ula, Pelekāne, and Honokoa Watersheds. Report prepared by the Mauna Kea Soil and Watershed Conservation District for the Hawaii Department of Health. 125 pp.

- D. Minton, R. Most, R. Carr, **M. Burnett**, J. Rose, H. Lynch, and E. Conklin, 2021. Four-Year Post-closure Condition Assessment: 2020 Ka'ūpūlehu Marine Reserve Surveys. Report prepared by The Nature Conservancy for NOAA and the Ka'ūpūlehu Foundation. 78 pp.
- M. Burnett**, 2015. Mapping Vegetation Changes in the Lower Whitehouse Creek Watershed. Report prepared for the Amah Mutsun Land Trust. 11 pp.

Conference Presentations

- M. Burnett**, T. Dudley, K. Caylor, H. Young, and L.D.L. Anderegg, 2025, *Measuring Groundwater Depletion by Invasive Plants using Low-cost Physiological Sensors: Case Studies from Desert to Rainforest*. Poster presented at the AGU Fall Meeting, New Orleans, LA.
- S. Capita, **M. Burnett**, I. Lopez, S. Dewees, A.E. Frazier, and L.D.L. Anderegg, 2025, *Wind Stress as an Abiotic Filter: Shaping Trait Structure and Diversity in Coastal Sage Scrub*. Poster presented by S. Capita at the Ecological Society of America Annual Meeting, Baltimore, MD.
- M. Burnett**, K. Caylor, H. Young, and L.D.L. Anderegg, 2025, *Are Coconut Plantations Depleting Groundwater on Pacific Atolls?* Virtual presentation at the Annual Hawai'i Ecosystems Meeting, University of Hawai'i at Hilo.
- M.W. Burnett**, A. Wegmann, K. Caylor, H. Young, and L.D.L. Anderegg, 2025, *Mapping Freshwater Resilience and Conservation Potential on 270 Pacific Atolls*. Poster presented at the 2025 NASA BDEC Team Meeting, Washington, D.C.
- M.W. Burnett**, H. Young, L.D.L. Anderegg, 2024, *Are Coconut Plantations Depleting Groundwater on Pacific Atolls?* Presentation at the AGU Fall Meeting, Washington, D.C.
- M.W. Burnett**, H. Young, L.D.L. Anderegg, 2024, *Are Coconut Plantations Depleting Groundwater on Pacific Atolls?* Presentation at the Ecological Society of America Annual Meeting, Long Beach, CA.
- M.W. Burnett**, C.A. Braman, A. Kerrigan, H.S. Young, 2023, *Why are Coconut Crabs (Birgus latro L.) smaller and rarer in coconut plantations on a Pacific atoll?* Presentation at the Western Society of Naturalists Annual Meeting, Monterey, CA.
- M.W. Burnett**, R.M. French, B. Jones, A.S. Wegmann, 2023, *Mapping the Spread of Coconut Palms (Cocos nucifera) across 270 Pacific Atolls*. Presentation at the Ecological Society of America Annual Meeting, Portland, OR.
- M.W. Burnett**, J.E. Rose, K.A. Falinski, W. Rice, M.C. Stewart, C. Balzotti, S. Crysdale, 2021, *Testing Scalable Revegetation Strategies in the Arid Pelekāne Watershed (West Hawai'i Island)*. Virtual presentation at the Hawaiian Conservation Conference.
- M.W. Burnett**, R.M. French, T.D. White, Z. Yan, N. Holmes, A.S. Wegmann, 2021, *Mapping Coconut Palm Dominance on 270 Remote Pacific Islands using Very High Resolution Satellite Imagery*. Virtual presentation at the Hawaiian Conservation Conference.
- M.W. Burnett**, 2021, *Vegetation Restoration Trials in the Arid Pelekāne Watershed, West Hawai'i*. Virtual presentation at the Annual Hawai'i Ecosystems Meeting, University of Hawai'i at Hilo.
- M.W. Burnett**, K.L.D. Bacasen, P. Annighöfer, M.D. Luccioni, A.G. Konings, and P.M. Vitousek, 2020, *Cloud Water Interception by a Montane Tropical Forest in Leeward Kohala, Hawai'i*. Virtual presentation at the AGU Fall Meeting.

- B.J. Seidel, J. Rose, R. Most, **M.W. Burnett**, and M.C. Stewart, 2020, *South Kohala Coastal Partnership: Managing for Abundance*. Forum at the Hawaiian Conservation Conference.
- P.M. Vitousek, **M.W. Burnett**, C. von Sperber, and K. Casciotti, 2019, *Isotopic indicators and modelled controls of N cycling along a precipitation gradient in Hawai'i*. Presentation by P. Vitousek at the 104th Annual Ecological Society of America Meeting, Louisville, KY.
- T.D. White, **M.W. Burnett**, Z. Yan, D.J. McCauley, G.A. De Leo, and F. Micheli, 2019, *Tracking the World's Largest Land Crab: Coconut Crabs and Habitat Associations on Palmyra Atoll*. Poster presented at the 104th Annual Ecological Society of America Meeting, Louisville, KY. DOI: [10.7490/f1000research.1117375.1](https://doi.org/10.7490/f1000research.1117375.1)
- M. Burnett**, G. Quetin, and A. Konings, 2019, *Evapotranspiration in the Congo Basin Determined by a Remotely Sensed Water Balance*. Poster presented by A. Konings at the AMS 99th Annual Meeting, Phoenix, AZ.
- M. Burnett**, G. Quetin, and A. Konings, 2018, *Evapotranspiration in the Congo Basin Determined by a Remotely Sensed Water Balance*. Presentation by A. Konings at the AGU Fall Meeting, Washington, D.C.
- M. Burnett**, G. Quetin, and A. Konings, 2018, *Direct Estimation of Evapotranspiration and its Seasonality over the Congo Basin*. Poster presented by A. Konings at the AGU Chapman Conference on Hydrologic Research in the Congo Basin, Washington, D.C.
- M. Burnett** and P. Vitousek, 2018, *Nitrogen Fixation Detected with Natural Isotope Abundances across a Climate Gradient*. Presentation at the Annual Hawai'i Ecosystems Meeting, University of Hawai'i at Hilo.

Other Presentations and Outreach

- M. Burnett**, K. Caylor, H. Young, and L.D.L. Anderegg, 2026, *Coconut Plantations on Pacific Atolls: Ecological Legacies and Management Opportunities*. EEMB Departmental Seminar, UC Santa Barbara.
- M. Burnett**, A. Wegmann, B. Morgan, K. Caylor, H. Young, L. Anderegg, 2026, *Do Coconut Plantations Deplete Groundwater on Tropical Atolls?* Presentation at the EEMB Graduate Student Symposium, UC Santa Barbara (awarded Best Presentation).
- M. Burnett**, 2024, *Coconuts, Groundwater, and Giant Crabs: Ecological Legacies of Deforestation on Pacific Atolls*. Presentation in UCSB-EEMB's Science by the Pint outreach series, Draughtsman Aleworks, Goleta, CA.
- M. Burnett**, H. Young, L. Anderegg, A. Wegmann, 2023, *Mapping the Forests of the Pacific's Remote Atolls*. Presentation at the EEMB Graduate Student Symposium, UC Santa Barbara.
- M. Burnett**, R.M. French, N. Holmes, and A.S. Wegmann, 2021, *Mapping Coconut Palms Across 270 Pacific Islands from Satellite Imagery*. Virtual presentation at The Nature Conservancy's Annual Global Science Gathering.
- M. Burnett** and P. Vitousek, 2019, *Climate-Ecosystem Interactions along a Land Use Gradient in Hawai'i*. Poster presented at the 2019 Volpert Scholars Symposium, Stanford University.

- M. Burnett**, 2018, *Nitrogen Fixation Detected with Natural Isotope Abundances across a Climate Gradient*. Presentation at the Stanford EARTH Undergraduate Thesis Symposium, Stanford University.
- M. Burnett**, T.D. White, G.A. De Leo, and F. Micheli, 2018, *Tracking the World's Largest Land Crab: Coconut Crabs and Habitat Associations on Palmyra Atoll*. Poster presented at the April Symposium of Undergraduate Research and Public Service (ASURPS), Stanford University.
- A. Bobbett, C. Brendel, **M. Burnett**, and P. Vitousek, 2015, *Nutrient Cycling Along a Rainfall Gradient: Implications for a Traditional Hawaiian Agricultural System*. Poster presented at the Symposium of Undergraduate Research and Public Service (SURPS), Stanford University.

Teaching Experience

Mentorship

2025	Jared Umphress, undergraduate UC Santa Barbara
2025–2026	Minh Tri Ngo, undergraduate UC Santa Barbara
2024	Max Allen, undergraduate Lewis & Clark College
2024	Elizabeth Young, undergraduate Lewis & Clark College
2024–2026	Casey Wisely, undergraduate and MS student Occidental College; CSU Northridge
2024–2025	Fiona Jeweler*, undergraduate UC Santa Barbara
2024–2025	Rayna Ruggeri, undergraduate UC Santa Barbara
2023–2025	Rebecca Sandoval, undergraduate UC Santa Barbara
2023–2025	Kimberly Wong, undergraduate UC Santa Barbara
2023–2026	Talula Wilmot, undergraduate UC Santa Barbara
2023–2025	Nell Thompson*, undergraduate UC Santa Barbara
2023–2025	Marlys Kutach, undergraduate UC Santa Barbara
2023–2025	Gianna Choy, undergraduate UC Santa Barbara
2023–2025	Irina Roybal, undergraduate UC Santa Barbara
2023–2026	Alexander Fischer, undergraduate UC Santa Barbara
2023–2025	Schuyler Capita*, undergraduate UC Santa Barbara
2023	Mariana Mezic, undergraduate UC Santa Barbara
2023	Kinga Bihari, undergraduate UC Santa Barbara
2023	Beckett Staubs-Friedmann, undergraduate UC Santa Barbara
2023	Alexandra Sasha Holland, undergraduate UC Santa Barbara
2021	Barbara Brunschweiger, undergraduate Technical University of Munich
2018	Marina Luccioni, undergraduate Stanford University
2018	Kiara Bacasen, undergraduate Stanford University

* Supervised Honors Thesis

Teaching Assistantships

2023	EEMB 140L – Plant Ecology Laboratory UC Santa Barbara
2018	EARTHSYS 116 – Heritage and Sovereignty in Hawaii Stanford University
2018	EARTHSYS 117 - Earth Sciences of the Hawaiian Islands Stanford University

2018 EARTHSYS 118 - Ecology of the Hawaiian Islands | Stanford University

Invited Lectures

2022 Dryland Restoration in the Pelekāne Watershed | South Kohala Coastal Partnership

2021 Scientific Voyages: Observations and Basic Research to Applied Science | TU Munich

Grants & Awards

Academic Honors

2026 EEMB GSAC Graduate Mentorship Award | UC Santa Barbara

2026 EEMB Graduate Student Symposium – Best Presentation | UC Santa Barbara

2025 EEMB GSAC Graduate Mentorship Award | UC Santa Barbara

2020 Antarctic Service Medal | US Antarctic Program

2019 Certificate for Outstanding Achievement in Mentoring | Stanford University

2018 Miller-Marsden Prize for Innovative Environmental Research | Stanford University

2018 Dean's Award for Undergraduate Academic Achievement | Stanford University

2018 Departmental Honors | Stanford University

2018 First Prize | 1st Annual Stanford Big Earth Hackathon

Grants and Fellowships

2026 Simons Postdoctoral Fellowship in Plant Biology | Simons Foundation (\$360,000)

2025 Schmidt Family Foundation Environmental Solutions Grant | UC Santa Barbara (\$12,321)

2025 Faculty Senate Research Grant | UC Santa Barbara (with L. Anderegg; \$18,304)

2025 Office of Research Seed Program | UC Santa Barbara (with H. Young; \$9,420)

2025 Joseph H. Connell Field Ecology Research Fellowship | UC Santa Barbara (\$2,000)

2025 Schmidt Family Foundation Mentorship Grant | UC Santa Barbara (with M. T. Ngo; \$4,500)

2024 EEMB Graduate Research Grants | UC Santa Barbara (\$6,375)

2024 Benioff Scholars Program in Applied Environmental Science | UC Santa Barbara (\$6,000)

2023 Future Investigators in NASA Earth and Space Science (FINESST) | NASA (\$150,000)

2023 Faculty Senate Research Grant | UC Santa Barbara (with L. Anderegg; \$12,100)

2023 Schmidt Family Foundation Research Accelerator Award | UC Santa Barbara (\$8,000)

2022 Chancellor's Fellowship | UC Santa Cruz (\$32,000, declined)

2018 Volpert Scholarship | Stanford University (\$7,000)

2018 Explorer Grant | National Geographic Society (with T. White and J. Adler; \$20,000, declined)

2017 Mentoring Undergraduates in Research (MUIR) Grant | Stanford University (\$7,000)

2017 Undergraduate Advising and Research (UAR) Minor Grant | Stanford University (\$1,500)

2015 Vice Provost for Undergraduate Education (VPUE) Grant | Stanford University (\$7,000)

Skills and Certifications

AAUS Scientific Diver (Certified July 2019)

PADI Open Water, Advanced Open Water, and Nitrox SCUBA Certifications

DAN Emergency Oxygen and CPR Certifications (Renewed August 2023)

WMTC Wilderness First Aid Certification (2018)

Sawyer Trainings: Chainsaw Safety & Maintenance; Tree Felling (Arbor Global; 2021)

Programming experience: R (highly skilled), MATLAB, Python, Javascript, Arduino IDE

GIS experience: QGIS (highly skilled), ArcGIS, Google EarthEngine, ENVI, SeaDAS, OceanDataView, R, Agisoft

Hydrologic modeling software: SWAT, INVEST

Field instrumentation experience: Onset, METER Group, and Campbell weather stations; Garmin GPS receivers; HOBO, Zentra, and Kestrel data loggers; Xylem YSI water quality instruments; sap flow sensors; plant water potential measurements; hydrocast deployments; underwater instrument deployment and retrieval; extensive soldering and circuit design experience; time-domain electromagnetic induction (TEM)

Laboratory experience: Soil, vegetation, water, and filter sample collection/preparation, C/N elemental analysis, stable isotope analysis (C, N, O, H), ICP-OES trace element analysis, XRF, plant hydraulics