Nicholas J. Bouskill

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RESEARCH & PROFESSIONAL EXPERIENCE

Staff Scientist,
Climate and Ecosystems Sciences Division
July 2020 – present
Lawrence Berkeley National Laboratory, Berkeley, CA

Research Scientist (Career-track/ Career),
Climate and Ecosystems Sciences Division
Aug 2011 – July 2020
Lawrence Berkeley National Laboratory, Berkeley, CA

Postdoctoral Scholar,
Earth Sciences Division
Jan 2010 – Aug. 2011
Lawrence Berkeley National Laboratory, Berkeley, CA

Lecturer,
Princeton Environmental Institute
April 2008 – Nov. 2009
Princeton University, Princeton, NJ

Postdoctoral Scholar,
Dept. of Geosciences
Oct. 2007 – Jan. 2010
Princeton University, Princeton, NJ

EDUCATION

Montana State University, Bozeman, MT
& Plymouth University, Plymouth, UK
Ph.D, Environmental Microbiology & Biogeochemistry, Nov. 2007
Thesis:, The biogeochemistry of arsenic pollution in Rocky Mountain Rivers.

Plymouth University & Plymouth Marine Laboratories, Plymouth, UK
MSc: Ecotoxicology, May 2003

Plymouth University, Plymouth, UK
& University of Manchester, Manchester, UK
BSc, Biology & Microbiology, May 2002

PUBLICATIONS

see https://scholar.google.com/citations?user=8gdrERQAAAAJhl=en

Georgiou K, Koven CD, Wieder WR, Riley WJ, Pett-Ridge J, Bouskill NJ, et al. (in press). Mineral protection drives emergent soil carbon temperature sensitivity. Nature Geoscience

Zhu Q, Riley WJ, Tang J, Bouskill NJ (in press) Plant response to elevated carbon dioxide under competing hypotheses of nitrogen and phosphorus limitation. Ecological Applications.

Pavia et al., (2023). Genes and genome-resolved metagenomics reveal the microbial functional makeup of Amazon peatlands under geochemical gradients. Environmental Microbiology. doi.org/10.1111/1462-2920.16469

Chacon SS, Cusack DF, Khurram A, Bill M, Dietrich LH, Bouskill NJ (2023). Divergent responses of soil microorganisms to throughfall exclusion across tropical forest soils driven by soil fertility and climate history. Soil Biology and Biochemistry. doi.org/10.1016/j.soilbio.2022.108924

Dietterich L, Bouskill NJ, Brown M Castro B, Chacon S, Colburn L, Cordeiro A, Garca E, Gordon A, Gordon E, Hedgpeth A, Konwent W, Oppler G, Reu J, Tsiames C, Valdes E, Zeko A, Cusack D (2022). Effects of experimental and seasonal drying on soil microbial biomass and nutrient cycling in four lowland tropical forests. Biogeochemistry. doi.org/10.1007/s10533-022-00980-2

Dewey C, Nico P, Fox P, Bouskill NJ, Fendorf S (2022). Beaver dams overshadow climate extremes in controlling riparian hydrology and water quality. Nature Communications. doi.org/10.1038/s41467-022-34022-0

Mekonnen ZA, Riley WJ, Randerson JT, Shirley I, Bouskill NJ, Grant RF (2022). Wildfire exacerbates high-latitude soil carbon losses from climate warming. Environmental Research Letters. doi.org/10.1088/1748-9326/ac8be6

Cusack D, Dietterich L., Bouskill NJ, Chacon S, Cordeiro A, McFarlane K (2022). Panama Rainforest Changes with Experimental Drought (PaRChED): Initial Effects of Partial Throughfall Exclusion on Soil Dynamics in Lowland Forests across Variation in Rainfall and Soil Fertility. In H. C. Muller-Landau, S. J. Wright (Eds.), The First 100 Years of Research on Barro Colorado: Plant and Ecosystem Science: Smithsonian Institute.

Gushgari-Doyle S, Cabugao KGM, Chacon SS, Wu X, Bhattacharyya A, Bouskill NJ, Chakraborty R (2022) Characterizing natural organic matter transformations by microbial communities in terrestrial subsurface ecosystems: A critical review of analytical techniques and challenges. Frontiers in Microbiology. doi.org/10.3389/fmicb.2022.864895

Malik AA, Bouskill NJ (2022). Drought impacts on microbial trait distribution and feedback to soil carbon cycling. Functional Ecology. doi.org/10.1111/1365-2435.14010

Bouskill NJ, Mekonnen ZA, Zhu Q, Grant RF, Riley WJ (2022). Microbial contribution to post-fire tundra ecosystem recovery over the 21st century. Communications Earth and Environment. doi.org/10.1038/s43247-022-00356-2.

Wainwright H, Uhlemann S, Falco N, Bouskill NJ, Newcomer M, Dafflon B, Woodburn E, Franklin M, Minsley B, Williams KH, Hubbard SS (2022). Watershed zonation approach for tractably quantifying above- and belowground watershed heterogeneity and function. HESS. doi.org/10.5194/hess-26-429-2022

Riley WJ, Mekonnen ZA, Tang JY, Zhu Q, Bouskill NJ, Grant RF (2021). 21st Century tundra shrubification is controlled by non-growing season nutrient uptake. Environmental Research Letters.

Wan J, Tokunaga TK, Williams KH, Dong W, Newman AM, Brown W, Bill M, Beutler CA, Harvey-Costello N, Conrad ME, Bouskill NJ, Hubbard SS. (2021). Overlooked nitrous oxide emissions driven by bedrock weathering released reactive nitrogen. Nature

Geoscience.14, 217224. doi:10.1038/s41561-021-00717-0

Mekonnen Z, Riley WJ, Berner L, Bouskill NJ, Torn M, Iwahana G, Breen A, Myers-Smith I, Garcia Criado M, Liu Y, Euskirchen E, Goetz S, Mack M, Grant R (2021). Arctic tundra shrubification: a review of mechanisms and impacts on ecosystem carbon balance. Environmental Research Letters. 16(5). doi:10.1088/1748-9326/abf28b

Newcomer ME, Bouskill NJ, Wainwright H, Maavara T, et al., (2021). Hysteresis Patterns of Watershed Nitrogen Retention and Loss over the past 50 years in United States Hydrological Basins. Global Biogeochemical Cycles. doi:10.1029/2020GB006777

Maavara T, Siirila-Woodburn Erica R, Maina F, Maxwell RM,...Bouskill NJ (2021). Modeling geogenic and atmospheric nitrogen through the East River Watershed, Colorado Rocky Mountains. PLoS ONE 16(3): e0247907. doi:10.1371/journal.pone.0247907

Rogers BD, Newcomer ME, et al., (2021). Modeling the impact of riparian hollows on river corridor nitrogen exports. Frontiers in Water. doi:10.3389/frwa.2021.590314

Matheus Carnevali, et al., (2021). Meanders as a scaling motif for understanding of floodplain soil microbiome and biogeochemical potential at the watershed scale. Microbiome. doi:10.1101/2020.05.14.086363

Bouskill NJ, Riley WJ, Zhu Q, Mekonnen ZA, Grant RF (2020) Alaskan carbon-climate feedbacks will be weaker than suggested from short-term manipulations. Nature Communications. doi:10.1038/s41467-020-19574-3

Sorensen PO, Beller H, Bill M, Bouskill NJ, Hubbard SS, Karaoz U, Polussa A, Steltzer H, Wang S, Williams KH, Wu Y, Brodie EL (2020) The snowmelt niche differentiates three microbial life strategies that influence soil nitrogen availability during and after winter. Frontiers in Microbiology. doi:10.3389/fmicb.2020.00871

Kazuo I, Bouskill NJ, Brodie EL, Martiny J (2020) Phylogenetic conservation of soil bacterial responses to simulated global changes. Philosophical Transactions of the Royal Society, B. https://doi.org/10.1098/rstb.2019.0242

Cheng Y, Bouskill NJ, Brodie EL (2019) A Trait Based Modeling Approach to Exploring the Impacts of Species and Functional Diversity on Algal Community Productivity. Ecological Modelling. https://doi.org/10.1016/j.ecolmodel.2019.05.007

Bouskill NJ, Conrad ME, Hobson C, Cheng Y, Bill M, Brodie EL, Forbes M, Casciotti KL, Williams KH (2019). Evidence for microbial mediated nitrate cycling within floodplain sediments during groundwater fluctuations. Frontiers in Earth Sciences. doi: 10.3389/feart.2019.00189

Dwivedi D, Tang J, Bouskill NJ, Georgiou K, Chacon S, Riley W (2019). Abiotic and biotic controls on soil organo-mineral interactions: Developing model structures to analyze why soil organic matter persists. Reviews in Mineralogy and Geochemistry. http://dx.doi.org/10.2138/rmg.2019.85.11

Riley WJ, Sierra C, Tang JY, Bouskill NJ, Zhu Q, Abramoff R. (2019), Next generation soil biogeochemistry model representations: A proposed community open source model farm (BeTR-S). In Multi-scale Biogeochemical Processes in Soil Ecosystems: Critical Reactions and Resilience to Climate Changes, edited by Y.Yang, M. Keiluweit, N. Senesi and B. Xing.

Maavara T, Lauerwald R, Laruelle G, Akbarzadeh Z, Bouskill NJ, Van Cappellen P, Regnier P (2019) Nitrous oxide emissions from inland waters: Are the IPCC estimates too high? Global Change Biology. doi: 10.1111/gcb.14504

Eveillard D, Bouskill NJ, Vintache D, Gras J, Ward BB, Bourdon J. (2018) Probabilistic modeling of microbial networks for integrating partial quantitative knowledge within the nitrogen cycle. Frontiers in Microbiology. doi: 10.3389/fmicb.2018.03298

Hubbard S, Williams KH, Agarwal D, Banfield J, Bouskill NJ, et al., (2018), The East River, CO Watershed: A Mountainous Community Testbed for Improving Predictive Understanding of Multi-Scale Hydrological-Biogeochemical Dynamics. Vadose Zone Journal. DOI: 10.2136/vzj2018.03.0061

Delahaye B, Eveillard DE, Bouskill NJ (2017) On the power of uncertainties in microbial systems modelling: No need to hide them anymore. M-systems.

Bouskill NJ, Conrad ME, Bill M, Brodie EL, Cheng Y, Hobson C, Forbes, M, Casciotti KL, & Williams KH (2017) Evidence for microbial mediated nitrate cycling within floodplain sediments during groundwater fluctuations. Frontiers in Earth Science. https://doi.org/10.5194/bg-2017-212

Cheng Y, Hubbard C, Zheng L, Li Li, Ajo-Franklin J, Bouskill NJ (2017) Next generation modeling of microbial souring - parameterization through genomic information. International Biodeterioration and Biodegradation. http://dx.doi.org/10.1016/j.ibiod.2017.06.014

Yabusaki SB, Wilkins MJ, Fang Y, Williams KH, Arora B, Bargar J, Beller HR, Bouskill NJ, Brodie EL, et al., (2017) Water table dyanamics and biogeochemical cycling in a shallow variably-saturated floodplain. Environmental Science and Technology.

Bouskill NJ, Baran R, Wood TE, Ye Z, Bowen BP, Lim HC, Nico PS, Van Norstrand J, Zhao J, Silver WL, Northen TR, & Brodie EL. (2016) Belowground Response to drought in a tropical forest soil. I. Changes in microbial functional potential and metabolism. Frontiers in Microbiology. 7. 525

Bouskill NJ, Baran R, Wood TE, Ye Z, Bowen BP, Lim HC, Nico PS, Holman H-Y, Gilbert B, Silver WL, Northen TR, & Brodie EL. (2016) Belowground response to drought in a tropical forest soil. II. Changes in the microbial function impacts carbon composition. Frontiers in Microbiology. 7, 323.

Le Roux X, Bouskill NJ, Niboyet A, Barthes L, Dijkstra P, Field CB, Hungate HA, Lerondelle C, Pommier T, Tang J, Terada A, Tourna M, & Poly F. (2016) Predicting the responses of soil nitrite-oxidizers to multi-factorial global changes: A trait-based approach. Frontiers in Microbiology. 7, 628.

Lloret E, Pascual JA, Brodie EL, Bouskill NJ, Insam H, Juarez MFD, & Goberna M. (2016) Sewage sludge addition modifies soil microbial communities and plant performance depending on the sludge stabilization process. Applied soil ecology. 101. 37-46.

Cheng Y, Hubbard CG, Li Li, Bouskill NJ, Molins S, Zheng L, Sonnenthal E, Conrad ME, Engelbrekston A, Coates JD, & Ajo-Franklin J. (2016) A reactive transport model of sulfur cycling as impacted by perchlorate and nitrate treatments. Environmental science and technology. 50. 7010-18.

Bouskill NJ, Tang J, & Riley WJ (2014) Meta-analysis of high-latitude nitrogen-addition and warming studies uncovers crucial ecological mechanisms overlooked by land models. Biogeosciences. 11. 6969-6983.

Mason OU, Scott NM, Gonzalez A, Robbins-Pianka A, Baelum J, Kimbrel J, Bouskill NJ, Prestat E, et al., (2014) Metagenomics reveals sediment microbial community response to Deepwater Horizon oil spill. ISME Journal. 8. 1464-1475.

Scott NM, Hess M, Bouskill NJ, Mason OU, Jansson JK, & Gilbert JA. (2014) The microbial nitrogen cycling potential is impacted by polyaromatic hydrocarbon pollution of marine sediments. 5. 108

Bouskill NJ, Lim HC, Borglin S, Salve R, Wood TE, Silver WL, & Brodie EL. (2013) Pre-exposure to drought increases the resistance of tropical forest soil bacterial communities to extended drought. ISME Journal. 7. 384-394.

Rajeev L, da Rocha UN, Klitgord N, Luning EG, Fortney J, Axen SD, Shih PM, Bouskill NJ, et al., (2013) Dynamic cyanobacterial response to hydration and dehydration in a desert biological soil crust. ISME Journal. 7. 2178-2191.

Bouskill NJ, Tang J, Riley WJ, & Brodie EL (2012) Trait based representation of biological nitrification. Model development, testing, and predicting community composition. Frontiers in Microbiology. 3. 364.

Bouskill NJ, Eveillard D, Chien D, Jayakumar A, & Ward BB. (2012) Environmental factors determining ammonia-oxidizing organism distribution and diversity in marine environments. Environmental Microbiology. 14. 714-729.

Bouskill NJ, Eveillard D, O'Mullan GD, Jackson G, & Ward BB. (2011) Seasonal and annual reoccurrence in betaproteobacterial ammonia-oxidizing bacterial population structure. Environmental Microbiology. 13. 872-886.

Ward BB, & Bouskill NJ. (2011) The utility of functional gene arrays for assessing community composition, relative abundance, and distribution of ammonia-oxidizing bacteria and archaea. Methods in Enzymology. 496. 373-396.

Baran R, Bowen B, Bouskill NJ, Brodie EL, & Northen TR. (2011) Metabolite identification in Synechococcus sp. PCC 7002 using untargeted stable isotope assisted metabolite profiling. Analytical Chemistry. 82. 9034-9042.

Bouskill NJ, Barker-Finkel J, Galloway, TS, Handy RD, & Ford TE (2010) Temporal bacterial diversity associated with metal-contaminated river sediments. Ecotoxicology. 19. 317-328.

Bouskill NJ, Barnhart EP, Galloway TS, Handy RD, & Ford TE (2007) Quantification of changing Pseudomonas aeruginosa sodA, htpX and mt gene abundance in response to trace metal toxicity. FEMS Microbiology Ecology. 60. 276-286.

Bouskill NJ, Handy RD, Galloway TS, & Ford TE (2006) Development and application of microbial molecular biomarkers for assessing trace metal contamination. Marine Environmental Research. 62. 366-367.

Bouskill NJ, Handy RD, Ford TE, & Galloway TS (2006) Differentiating copper and arsenic toxicity using biochemical biomarkers in Asellus aquaticus and Dressena polymorpha. Ecotoxicology and Environmental Safety. 65. 342-349.

Hamner S. Tripathi A Kumar Mishra R, Bouskill NJ, Broadaway SC, Pyle BH, & Ford TE. (2006) The role of water use patterns and sewage pollution in incidence of water-borne enteric diseases along the Ganges River in Varanasi, India. International Journal of Environmental Health Research. 16. 113-132.

Submitted/ In revision

Bouskill NJ, Newcomer M, Carroll RWH, et al., (in revision). A tale of two catchments: Causality analysis and isotope systematics reveal mountainous watershed traits that regulate the retention and release of nitrogen. JGR-Biogeosciences.

Zhen Li, Riley WJ, Marschmann GL, Karoz U, Bouskill NJ, et al. (in revision). Wetland methane emissions are strongly sensitive to genome-inferred microbial trait distribution. Nature

Bouskill NJ, Chacon S, Voriskova J, Dietterich L, Liang Chen, Cusack D, Holman HY (submitted). Real-time bacterial metabolic response to rapid environmental fluctuations. Nature Communications.

Chacon SS, Cusack D, Bill M, Dietterich L, Louie K, Bowen B, Northen T, Bouskill NJ (submitted). The ISME Journal.

Non-peer-reviewed papers

Bouskill NJ (2023) Microbial responses to extreme weather events: Tundra fires. The International Microbiology Literacy Initiative

WHITE PAPERS

Bouskill NJ, Newcomer M, Zhu Q, Brown B, Bouchard K, Riley WJ, Brodie EL (2021). Enhanced prediction of terrestrial feedbacks to the coastal carbon cycle: using machine learning to improve sub-grid biogeochemical processes.

Newcomer M, Stavros N, Meyer RS, Pena J, Hester E, Pavlick E, Bouskill NJ (2021). A Fire Community Observatory: Interdisciplinary, AI-informed Post-Fire Rapid Response for improved water-cycle science at watershed scale.

Davidson B, Bouskill NJ (2017). The nitrogen economy: New science to improve nitrogen fluxes.

DATA PACKAGES

Published model runs at www.https://data.ess-dive.lbl.gov/

Bouskill NJ, Mekonnen ZA, Zhu Q, Grant RF, Riley WJ (2022). Microbial contribution to post-fire tundra ecosystem recovery over the 21st century. ESS Dive. https://doi.org/10.15485/1670465

Bouskill NJ, Riley WJ, Mekonnen ZA (2020). Alaskan carbon-climate feedbacks will be weaker than inferred from short-term manipulations: Alaskan Benchmark Data and Model runs. ESS Dive. https://doi.org/10.15485/1670465

Published data at www.https://data.ess-dive.lbl.gov/

Chacon S, Cusack D, Khurram A, Bill M, Dietterich L, Bouskill NJ (2022): 16S and ITS Amplicon Sequencing Fastq files and metadata from PARCHED Panama Tropical Forest soils, 2019-2020. Microbial environmental feedbacks and the evolution of soil organic matter, ESS-DIVE repository. Dataset. doi:10.15485/1874586

Bouskill NJ, Sorensen P, Conrad M, Bill M, Maavara T, Newman A, Brodie E, Williams K (2020): Natural abundance nitrate isotopes from Rifle and the East River Watershed, Colorado. Watershed Function SFA, ESS-DIVE repository. Dataset. doi:10.15485/1660462

Newcomer M, Bouskill NJ, Wainwright H, Maavara T, Woodburn E, Dwivedi D, Williams K, Hubbard S (2020): Gap-filled water quality, Normalized Differenced Vegetation Index, total nitrogen (nitrate and ammonia) deposition, and land cover data trends for the Continental United States. Watershed Function SFA, ESS-DIVE repository. Dataset. doi:10.15485/1647366

Sorensen P, Brodie E, Wang S, Bill M, Bouskill NJ (2019a): Soil Nitrogen, Water Content, Microbial Biomass, and Archaeal, Bacterial and Fungal Communities from the East River Watershed, Colorado collected in 2016-2017. Watershed Function SFA,

ESS-DIVE repository. Dataset. doi:10.15485/1577267

Sorensen P, Brodie E, Wang S, Bill M, Bouskill NJ (2019b): Sample Collection Metadata for Soil Cores from the East River Watershed, Colorado collected in 2017. Watershed Function SFA, ESS-DIVE repository. Dataset. doi:10.21952/WTR/1573029

FUNDING **Total funding Acquired:)**

Sole-PI: $3.8 million (not including user proposals)

Co-PI: $5 million (Out of a total ≥$60 includes only grants that I significantly contributed to in their scoping, planning, or writing)

DOE Earth System Sciences Division: *Watershed Function Scientific Focus Area: Functional Traits and Watershed Resilience.* Role: Co-Principal Investigator (Component lead). 2023-2027. $6.8 m (annually). Commitment: 5 mths/ yr.

DOE FICUS (JGI-EMSL): *Vertical aerosol profiling for aerosol-cloud-precipitation interactions in mountainous hydrological processes.* Role: Co-PI. Beginning: 2022 - present

DOE Biological System Sciences Division: Early Career Award: *Microbial environmental feedbacks and the evolution of soil organic matter.* Role: Principal Investigator. 2017 - 2022. $2.5 m (total). Commitment: 5 mths / yr.

DOE Subsurface Biogeochemical Research: *Molecular and Genomic insights into Nitrogen-Cycling Microbial Communities within the Riverton Subsurface.* Role: Co-Principal Investigator. 2017 - 2020. $1 m (annually). Commitment: 0.5 mths / yr.

DOE Subsurface Biogeochemical Research: *Scientific Focus Area: Watershed Function: Biogeochemical Dynamics from Genome to Watershed Scales.* Role: Co-Principal Investigator (Component lead). 2016 - 2023. $6.8 m (annually). Commitment: 2 mths / yr.

LBNL Laboratory Directed Research and Development Grants: *VISIBLE: Harnessing microbial volatile organic compounds for integrating soil biogeochemistry over temporal and spatial scales.* Role: Co-PI. 2019 - 2021. $0.3 m (annually). Commitment: 0.1 mths / yr.

DOE Earth System Sciences Division: *Scientific Focus Area: Next Generation Ecosystem Experiment (NGEE) Arctic.* Role: Ecosystem modeler. 2015 - 2023. $7 m (annually). Commitment: 2 mths/ yr.

DOE Advanced Light Source: *Climate history determines bacterial metabolic response to drought stress* Role: PI. >100 hours of beamtime on infrared beam 1.4.3. 2019 - 2023.

DOE JGI Community Sequencing Program: *Microbial environmental feedbacks and the evolution of soil organic matter.* Role: PI. Beginning: 2019 - present.

DOE FICUS (JGI-EMSL): *The synchronization of microbial and plant phenology in a mountainous watershed and its importance for nutrient retention under changing hydrologic regimes.* Role: Co-PI. Beginning: 2018 - 2021.

Completed: DOE Earth System Sciences Division: *Scientific Focus Area: Next Generation Ecosystem Experiment (NGEE) Tropics..* Role: Biogeochemistry lead (LBNL), 2014 - 2018. Commitment: 3 mths/ yr.

Completed: BP Energy Biosciences Institute: *Modeling and Geophysical Monitoring. Oil Reservoir Scale Reactive Transport Development.* 2012 - 2016. Commitment: 0.05 mths/ yr.

Completed: Laboratory directed research and development award: *Development of microbial trait-based models.* PI. $300k (total). 2011 - 2013.

AWARDS

Not including various travel awards

Department of Energy Early Career Award Program recipient: Microbial ecophysiological response to drought and feedback to the soil carbon cycle. 2017.*(awards outstanding early scientists at national laboratories, and universities)*

LBNL Spot Recognition of excellence, 2016, 2020.*Acknowledges and rewards outstanding individual and/or team workplace contributions*

TEACHING EXPERIENCE

PRINCETON UNIVERSITY

ENV. 204: *The Science, Policy, and Politics of Climate Change.* Co-taught with Professor Michael Oppenheimer. This course detailed the science and the policy of dealing with climate change at a global scale. The course enrollment was high (220), so I ran three breakout session a week with smaller groups.

ENV. 314: *Environmental Policy and the Current Situation in the New Europe* Co-taught with Dr. Pal Pepo. This course examined the successes and failure of East European Environmental Policy covering the period when Dr. Pepo served as the Hungarian Environment Minister. I prepared lectures and led discussions.

MONTANA STATE UNIVERSITY

BIOM. 452 *Environmental Microbiology and Biogeochemistry* Co-taught with Professor Tim Ford. This course introduced undergraduate students to environmental microbiology. Field work was a key aspect of the course, with stays at a Montana field camp a mandatory feature.

PLYMOUTH UNIVERSITY, UK

BIO. 102 *Biology and Environmental Microbiology Practical classes* Teaching assistant for hands-on experiments for incoming biology, marine biology, and microbiology undergraduates

Not listed are a number of guest lecturers I've provided to predominantly undergraduate classes at Montana State University, Princeton University and the University of California, Berkeley.

MENTORSHIP & PROFESSIONAL SERVICE

SUPERVISION

Research scientists: Yiwei Cheng (2019 - 2020, LBNL), Matthias Sprenger (2021 - present, LBNL).

Postdoctoral scholars: Yiwei Cheng (2013 - 2019, LBNL), Eva Llorett (2015 - 2017, LBNL), Taylor Maavara (2017 - 2019, LBNL), Jana Voriskova (2018-2019, LBNL), Stephany Chacon (2019- 2022, LBNL).

Graduate Student committees: Michael Pavia (Arizona State University).

Supervision: *Undergraduate students:* Elliot Barnhart (Montana State University),

Abbas Mohammed (Princeton University), Diana Chien (Princeton University), Tiffany Kwak (UC Berkeley), Amanda Caballero (University of Turabo, Puerto Rico), Sarah Newsham (Carlton College). Keana Johnson (Virginia State University), Tiffany Zhao (UC Berkeley).

Research Associates/ Lab managers: Aizah Khurram (2018 - 2022, LBNL), Helen Weierbach (2021-present), Markus Bill (2022 - present, LBNL).

Visiting Scientists: Damien Eveillard (Universitie de Nantes), Benoit Delahaye (Universitie de Nantes), Annelise Veraart (2015: Visiting postdoc from NIOO, Netherlands).

SERVICE

Editor: MSystems, Frontiers in Microbiology

Reviewer: AGU Advances, Biogeochemistry, Biogeosciences, Ecology, Ecotoxicology Journal, Environmental Microbiology, Environmental Science and Technology, Frontiers in Marine Science, Frontiers in Microbiology, Global Biogeochemical Cycles, Global Change Biology, The ISME Journal, Nature, Nature Climate Change, Nature Communications, Nature Ecology & Evolution, Nature Geoscience, Nature Microbiology, Proceedings of the National Academy of Sciences, Science Advances, Scientific Reports, Soil Biology and Biochemistry

Proposal Reviewer: American Association for the Advancement of Science, Department of Energy (Biological and Environmental Research program), European Science Foundation, National Science Foundation

LBNL-Earth and Environmental Science Area committee membership: Distinguished Scientist Seminar Series (Chair). Awards Committee (Representative for the Ecology Department), Inclusion, Diversity, Equity, and Accountability Committee.

Princeton University: Environmental Geochemistry and Geosciences Seminar series (organizer).

Public presentations: *Nitrogen: The World's most important biogeochemical cycle.* California Native Plant Society, San Francisco, December, 2013. *Et tu N_2?* Nerd Nite, San Francisco, CA. May 2012.

INVITED SEMINARS & CONFERENCE ATTENDANCE (since 2015)

PRESENTATIONS (invited only)

Bouskill NJ. *Landscape heterogeneity regulates nitrate export from mountainous watersheds* Department of Earth and Planetary Sciences, U.C. Berkeley, CA, 2023. Invited.

Bouskill NJ. *Landscape controls on nitrogen loss from mountainous watersheds* ESS-PI annual meeting. Bolger Center, MD, May, 2019. Invited.

Bouskill NJ. *Spatial and temporal nitrogen dynamics in mountainous systems* European Geosciences Union annual meeting. Vienna, Austria, April, 2019. Invited.

Bouskill NJ. *Informing reactive transport models with molecular biological data.* Dept. seminar. Earth System Sciences, Stanford University, Stanford, CA, Dec, 2018. Invited.

Bouskill NJ. *Informing reactive transport models with molecular biological data.* Plenary presentation. Workshop on Microbial Bioenergetics University of Waterloo, Waterloo Canada, July, 2018. Invited.

Bouskill NJ, Zhu Q. *Incorporating the nitrogen and phosphorus cycles into Land Models*

ESS-PI annual meeting. Bolger Center, MD, May, 2018. Invited.

Bouskill NJ, King E, Karaoz U, Steefel C, Brodie EL. *Informing reactive transport models with molecular biological data. opportunities and challenges.* Geoscience Dept. Tubingen University. Tubingen, Germany, April, 2018. Invited.

Bouskill NJ, Riley WJ, Zhu Q. *Coupled nutrient cycling determines the tropical forest trajectory under elevated carbon dioxide.* Ecological Society of America Annual Meeting. Portland, OR, August, 2017. Invited

Bouskill NJ. *Trait-based approaches towards representing the microbial nitrogen cycle.* Ecological Society of America Annual Meeting. Portland, OR, August, 2017. Invited

Bouskill NJ. *Microbial metabolic response to drought - with implication for tropical forest carbon cycling.* SIMB, Denver, CO, August, 2017. Invited

Bouskill NJ. *Nitrogen cycling within Earth System Models. Challenges, opportunities and recent developments.* The nitrogen economy workshop. Oak Ridge National Laboratory. Oak Ridge, TN. September, 2016. Invited.

Bouskill NJ, Llorett E, Brodie EL. *Phosphorus cycling in tropical forests: Experimental observations and model simulations.* NGEE-Tropics Annual Meeting, Washington DC. August, 2016. Invited.

Bouskill NJ. *A trait-based approach to elucidating microbial contributions to phosphorus cycling in tropical forests.* Terrestrial phosphorus cycling workshop, Townsend, Tennessee. May, 2016. Invited.

Bouskill NJ. *Phosphorus and nitrogen cycling in tropical forests.* NGEE-Tropics terrestrial biogeochemistry workshop. San Juan, PR. June 2015. Invited.

INVITED PARTICPANT

Community Watershed Workshop. Pacific Northwest National Laboratory, Richland, WA. September, 2019.

Community Watershed Workshop. Mount Crested Butte, CO. September, 2018.

Workshop on Microbial Bioenergetics. University of Waterloo, Waterloo Canada, July, 2018.

Coastal Nitrogen Chatroulette. Woods Hole, MA. September, 2014.

CESM Workshop. Boulder, CO. August, 2015

Terrestrial-Aquatic Interface Scoping workshop. Rockville, MD. August, 2016.

Review Panels: National Science Foundation: July 2020; Department of Energy panels: April 2017; 2018; 2019.

SELECTED POSTERS (first author only)

Bouskill NJ, Khurram A, Chacon S, Turner BL, Diettrich L, Cusack D. *Drought impacts on microbial metabolic function along a tropical forest precipitation gradient* American Geophysical Society Virtual Annual meeting. Dec. 2020

Bouskill NJ, Mekonnen Z, Zhu Q. Riley WJ. *The role of belowground communities in tundra recovery from wildfire* NASA Arctic and Boreal Vulnerability Experiment.

Virtual Meeting. July. 2020

Bouskill NJ. *The Watershed Function Scientific Focus Area* American Geophysical Society Annual meeting. San Francisco, CA. Dec. 2019

Bouskill NJ. Sorensen PO, Bill M, Brodie EL, Carroll RWH, Conrad ME et al., *Spatial and temporal dynamics of nitrogen within a mountainous watershed.* European Geoscience Union Annual meeting. Vienna, Austria. April. 2018

Bouskill NJ, Sorensen PO, Bill M, Brodie EL, Carroll RWH, Conrad ME et al., *Spatial and temporal dynamics of nitrogen within a mountainous watershed.* Catchment Science Gordon Research Conference. Lewiston, ME. June, 2017.

Bouskill NJ, Beller H, Wan J, Sorensen PO, Banfield J, Bill M, Brodie EL, Carroll RWH, et al., *Spatial and temporal dynamics of carbon and nitrogen within a mountainous watershed.* Environmental System Science PI meeting, Potomac, MD, 2017.

Bouskill NJ, Grant R, Riley WJ. *Sensitivity of soil permafrost to winter warming. Modeled impacts of climate change.* American Geophysical Union Annual meeting. San Francisco, CA. December, 2016.

Bouskill NJ, Conrad ME, Cheng Y, Forbes M, Brodie EL, Bill M, Casciotti KL, Williams KH. *Nitrogen cycling in an alluvial aquifer during groundwater fluctuations.* American Geophysical Union Annual meeting. San Francisco, CA. December, 2015.

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CONFLICTS OF INTEREST

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