

LAURA K. MEREDITH

laurameredith@arizona.edu | www.laurameredith.com

1064 E. Lowell St., ENR2, University of Arizona, Tucson, AZ

CHRONOLOGY OF EDUCATION

- 2013 **Ph.D. Climate Physics and Chemistry**, Massachusetts Institute of Technology (MIT), Cambridge, MA. Dissertation thesis: Field measurement of the fate of atmospheric H₂ in a forest from canopy to soil. Advisor: Ronald G. Prinn.
- 2005 **B.S. Chemistry**, Summa Cum Laude, California Polytechnic State University, San Luis Obispo, CA.

CHRONOLOGY OF EMPLOYMENT

- 2017- **Assistant Professor**, School of Natural Resources and the Environment (SNRE), University of Arizona (UA). Affiliations with Hydrology and Atmospheric Sciences, Genetics and Global Change Graduate Interdisciplinary Programs, BIO5 Institute
- 2018-2021 **Director**, Biosphere 2 - Tropical Rain Forest, University of Arizona, Tucson, AZ.
- 2016 **Research Associate**, Scott Saleska Lab, Ecology and Evolutionary Biology, UA.
- 2014-2015 **Postdoctoral Fellow**, Paula Welander Lab, Earth Science, Stanford University, CA.
- 2006-2013 **Research and Teaching Assistant**, Ron Prinn Lab, MIT, Cambridge, MA.

PUBLICATIONS

Meredith Lab members underlined ; †Indicates significant product of Meredith lab. ^ co-first authorship

1. **L. K. Meredith**† and M. T. Tfaily. (2022) The case for representing volatile metabolites in microbial metabolomics. *Trends in Microbiology*, /10.1016/j.tim.2021.12.004. [Document online](#)
2. Honeker, L.K.^, G. A. Hildebrand^, J. Fudyma, E. Daber, D. Hoyt, S. E. Flowers, J. Gil-Loaiza, A. Kübert, I. Bamberger, C. R. Anderton, J. Cliff, S. Leichty, R. AminiTabrizi, J. Kreuzwieser, L. Shi, X. Bai, D. Velickovic, M. A. Dippold, S. N. Ladd, C. Werner, **L.K. Meredith**†, M. T. Tfaily†. (2022) Elucidating drought tolerance mechanisms in plant roots through ¹H-NMR metabolomics and MALDI-MS and NanoSIMS imaging techniques. *Environmental Science and Technology*. [Document online](#)
3. Gil-Loaiza, J., J. R. Roscioli, J. H. Shorter, T. H. M. Volkmann, W.-R. Ng, J. E. Krechmer, **L. K. Meredith**†. (2022) Versatile soil gas concentration and isotope monitoring: optimization and integration of novel soil gas probes with online trace gas detection. *Biogeosciences*, 19:165-184. 10.5194/bg-19-165-2022. [Document online](#).
4. Werner^, C., **L. K. Meredith**^, S. N. Ladd^, J. Ingrisch, A. Kübert, J. van Haren, M. Bahn, K. Bailey, I. Bamberger, M. Beyer, D. Blomdahl, J. Byron, E. Daber, J. Deleeuw, M. Dippold, J. Fudyma, J. Gil-Loaiza, L. K. Honeker, J. Hu, J. Huang, T. Klüpfel, J. Krechmer, J. Kreuzwieser, K. Kühnhammer, M. M. Lehmann, K. Meeran, P. K. Misztal, W.-R. Ng, E. Pfannerstill, G. Pugliese, G. Purser, J. R. Roscioli, L. Shi, M. Tfaily, J. Williams. (2021) Ecosystem fluxes during drought and recovery in an experimental forest. *Science*, 374(6574), 10.1126/science.abj6789. [Document online](#).
5. Sengupta, A., T. H. M. Volkmann, R. A. Danczak, J. C. Stegen, K. Dontsova, N. Abramson, A. S. Bugaj, M. J. Volk, K. A. Matos, A. A. Meira-Neto, A. Barberán, J. W. Neilson, R. M. Maier, J. Chorover, P. A. Troch, **L. K. Meredith**†. (2021) Contrasting community assembly forces drive microbial structural and functional responses to precipitation in an incipient soil system. *Frontiers in Microbiology*, 12, 10.3389/fmicb.2021.754698. [Document online](#)

6. [Buzzard, V.](#), [Gil-Loaiza, J.](#), Graf Grachet, N., [Talkington, H.](#), [Youngerman, C.](#), Tfaily, M. M., **L. K. Meredith**[†]. (2021) Green infrastructure influences soil health: biological divergence one year after installation. *Science of the Total Environment*. 801, 10.1016/j.scitotenv.2021.149644. [Document online](#).
7. [Honeker, L. K.](#), [K. R. Graves](#), M. M. Tfaily, J. E. Krechmer, **L. K. Meredith**[†]. (2021) The volatilome: a vital piece of the complete soil metabolome. *Frontiers in Environmental Science*. 9:113, 10.3389/fenvs.2021.649905. [Document online](#).
8. L. M. J. Kooijmans, A. Cho, J. Ma, A. Kaushik, K. D. Haynes, I. Baker, I. T. Luijckx, M. Groenink, W. Peters, J. Miller, J. A. Berry, J. Ogée, **L. K. Meredith**, W. Sun, K.-M. Kohonen, T. Vesala, I. Mammarella, H. Chen, F. M. Spielmann, G. Wohlfahrt, M. Berkelhammer, M. E. Whelan, K. Maseyk, U. Seibt, R. Commane, R. Wehr, M. Krol. (2021) Evaluation of carbonyl sulfide biosphere exchange in the Simple Biosphere Model (SiB4). *Biogeosciences*. 8:6547-6565, [Document online](#).
9. Roscioli[^], J.R. and **L. K. Meredith**[^], J. H. Shorter, [Gil-Loaiza, J.](#), T. H. M. Volkmann. (2021) Soil gas probes for monitoring trace gas messengers of microbial activity. *Scientific Reports*. 11:8327, [Document online](#).
10. K. Jordaan, R. Lappan, X. Dong, I. J. Aitkenhead, S. K. Bay, E. Chiri, N. Wieler, **L. K. Meredith**, D. A. Cowan, S. L. Chown, C. Greening. (2020) Hydrogen-oxidizing bacteria are abundant in desert soils and strongly stimulated by hydration. *mSystems* 5:e01131-20. [Document online](#).
11. M. E. Kroeger, **L. K. Meredith**, K. M. Meyer, [K. D. Webster](#), P. Barbosa de Camargo, L. Fonseca de Souza, S. Mui Tsai, J. van Haren, S. Saleska, B. J.M. Bohannan, J. L. M. Rodrigues, K. Nüsslein. (2020) Rainforest-to-pasture conversion stimulates soil methanogenesis across the Brazilian Amazon. *The ISME Journal*. 10.1038/s41396-020-00804-x. [Document online](#).
12. K. M. Meyer, A. H. Morris, [K. Webster](#), A. M. Klein, M. E. Kroeger, **L. K. Meredith**, [A. Brændholt](#), F. Nakamura, A. Venturini, L. Fonseca de Souza, K. L. Shek, R. Danielson, J. van Haren, P. Barbosa de Camargo, S. Mui Tsai, F. Dini-Andreote, J. M. S. de Mauro, K. Nüsslein, S. Saleska, J. L. M. Rodrigues, B. J. M. Bohannan. (2020) Belowground changes to community structure alter methane-cycling dynamics in Amazonia. *Environment International*, 145, 10.1016/j.envint.2020.106131. [Document online](#).
13. [P. Martínez-Sosa](#), J. E. Tierney, **L. K. Meredith**. (2020) Controlled lacustrine microcosms show a brGDGT response to environmental perturbations. *Organic Geochemistry*, 10.1016/j.orggeochem.2020.104041. [Document online](#).
14. **L. K. Meredith**, K. Boye, K. Savage, and R. Vargas. (2020) Formation and Fluxes of Soil Trace Gases. *Soil Systems*, 4(22), 22. [Document online](#).
15. Nayfach, S., Roux, S., Seshadri, R. et al. (**L. K. Meredith** contributed as a part of the IMG/M Data Consortium) A genomic catalog of Earth's microbiomes. *Nature Biotechnology* (2020). <https://doi.org/10.1038/s41587-020-0718-6> [Document online](#).
16. [C. Sayuri Nishisaka](#), [C. Youngerman](#), **L. K. Meredith**, J. Braga do Carmo, and A. Aparecido Navarrete. (2019) Seasonality increases N₂O emissions and denitrification gene abundance through soil and plant residue characteristics in citrus and eucalyptus plantations. *Frontiers in Environmental Science*, 7(11), 10.3389/fenvs.2019.00011. [Document online](#).
17. [A. Cueva](#), T. H. M. Volkmann, J. van Haren, P. Troch, and **L. K. Meredith**[†]. Variability and environmental controls of negative soil CO₂ fluxes: insights from a large-scale experimental hillslope. (2019) *Soil Systems*, 3(1), doi:10.3390/soilsystems3010010. [Document online](#).
18. **L. K. Meredith**, J. Ogée, K. Boye, E. Singer, L. Wingate, C. von Sperber, A. Sengupta, M. Whelan, [E. Pang](#), M. Keiluweit, N. Brüggemann, J. A. Berry, P. V. Welander. (2018) Soil exchange rates of COS and CO¹⁸O shift with the diversity of microbial communities and their carbonic anhydrase enzymes, *The ISME Journal*, doi: 10.1038/s41396-018-0270-2. [Document online](#).

19. **L. K. Meredith**, K. Boye, C. Youngerman, M. Whelan, J. Ogée, J. Sauze, L. Wingate. (2018) Coupled biological and abiotic mechanisms driving carbonyl sulfide production in soils. *Soil Systems*, 2(3), 37, doi:10.3390/soilsystems2030037. [Document online](#).
20. Volkmann, T. H. M., Sengupta, S., Pangle, L.A., Dontsova, K., Barron-Gafford, G. A., Harman, C. J., Niu, G.-Y., **Meredith, L. K.**, Abramson, N., Meira Neto, A. A., Wang, Y., Adams, J. R., Breshears, D. D., Bugaj, A., Chorover, J., Cueva, A., DeLong, S. B., Durcik, M., Ferre, T. P. A., Hunt, E. A., Huxman, T. E., Kim, M., Maier, R. M., Monson, R. K., Pelletier, J. D., Pohlmann, M., Rasmussen, C., Ruiz, J., Saleska, S. R., Schaap, M. G., Sibayan, M., Tuller, M., van Haren, J. L. M., Zeng, X., and Troch, P. A. (2018) Controlled Experiments of Hillslope Coevolution at the Biosphere 2 Landscape Evolution Observatory: Toward Prediction of Coupled Hydrological, Biogeochemical, and Ecological Change. In Jiu-Fu Liu and Wei-Zu Gu (Ed.), *Hydrology of Artificial and Controlled Experiments*, IntechOpen, doi:10.5772/intechopen.72325. [Document online](#).
21. Cueva A., **Meredith L. K.**, Volkmann T. H. M., Troch P. A., Sengupta A., Pangle L. A., Dontsova K., Barron-Gafford G. A., Harman C. J., Niu G.-Y., Abramson N., Meira-Neto A., Wang Y., Adams J. R., Brashears D. D., Bugaj A., Chorover J., DeLong S. B., Durcik M., Ferre T. P. A., Hunt E. A., Huxman T. E., Kim M., Maier R. M., Monson R. K., Pelletier J. D., Pohlmann M., Rasmussen C., Ruiz J., Saleska S. R., Schaap M. G., Sibayan M., Tuller M., van Haren J. L. M., Zeng X. (2018) Biosphere 2 – Landscape Evolution Observatory: Un experimento a gran escala (Biosphere 2 – Landscape Evolution Observatory: A large-scale experiment.). In: Estado Actual del Conocimiento del Ciclo del Carbono y sus Interacciones en México: Síntesis a 2018.
22. Whelan, M. E., Lennartz, S. T., Gimeno, T. E., Wehr, R., Wohlfahrt, G., Wang, Y., Kooijmans, L. M. J., Hilton, T. W., Belviso, S., Peylin, P., Commane, R., Sun, W., Chen, H., Kuai, L., Mammarella, I., Maseyk, K., Berkelhammer, M., Li, K.-F., Yakir, D., Zumkehr, A., Katayama, Y., Ogée, J., Spielmann, F. M., Kitz, F., Rastogi, B., Kesselmeier, J., Marshall, J., Erkkilä, K.-M., Wingate, **L. K., Meredith, L. K.**, He, W., Bunk, R., Launois, T., Vesala, T., Schmidt, J. A., Fichot, C. G., Seibt, U., Saleska, S., Saltzman, E. S., Montzka, S. A., Berry, J. A., and Campbell, J. E. (2018) Reviews and Syntheses: Carbonyl Sulfide as a Multi-scale Tracer for Carbon and Water Cycles. *Biogeosciences*, 15, 3625-3657, doi:10.5194/bg-15-3625-2018. [Document online](#).
23. R. M. Wilson, M. M. Tfaily, V. I. Rich, J. K. Keller, S. D. Bridgham, C. M. Zalman, **L. K. Meredith**, P. J. Hanson, M. Hines, L. Pfeifer-Meister, and S. R. Saleska. (2017) Hydrogenation of Organic Matter as a Terminal Electron Sink Sustains High CO₂:CH₄ Production Ratios During Anaerobic Decomposition. *Organic Geochemistry*, doi:10.1016/j.orggeochem.2017.06.011. [Document online](#).
24. **L. K. Meredith***, R. Commane, T. F. Keenan, S. T. Klosterman, J. W. Munger, P. H. Templer, J. Tang, S. C. Wofsy, and R. G. Prinn. (2017) Ecosystem fluxes of hydrogen in a mid-latitude forest driven by soil microbes and plants. *Global Change Biology*, doi:10.1111/gcb.13463. [Document online](#).
25. M. Khdhiri, L. Hesse, M. E. Popa, L. Quiza, I. Lalonde, **L. K. Meredith**, T. Röckmann, and P. Constant. (2015) Soil Carbon Content and Relative Abundance of High Affinity H₂-Oxidizing Bacteria Predict Atmospheric H₂ Soil Uptake Activity Better than Soil Microbial Community Composition. *Soil Biology and Biochemistry*, 85, 1-9, doi:10.1016/j.soilbio.2015.02.030. [Document online](#).
26. R. Commane, **L. K. Meredith***, I. T. Baker, J. A. Berry, J. W. Munger, S. A. Montzka, P. H. Templer, S. M. Juice, M. S. Zahniser, S. C. Wofsy. (2015) Seasonal fluxes of carbonyl sulfide in a mid-latitude forest. *PNAS*, 112(46), 14162-14167, doi:10.1073/pnas.1504131112. [Document online](#).
27. **L. K. Meredith***, R. Commane, J. W. Munger, A. Dunn, J. Tang, S. C. Wofsy, and R. G. Prinn. (2014) Ecosystem fluxes of hydrogen: a comparison of flux-gradient methods. *Atmospheric Measurement Techniques*, 7, 2787-2805, doi:10.5194/amt-7-2787-2014. [Document online](#).
28. **L. K. Meredith***, D. Rao, T. Bosak, V. Klepac-Ceraj, K. R. Tada, C. Hansel, S. Ono, and R. G. Prinn. (2014) Consumption of atmospheric H₂ during the life cycle of soil-dwelling actinobacteria. *Environmental Microbiology Reports*, 6(3), 226-238, doi:10.1111/1758-2229.12116. [Document online](#).

29. A. L. Ganesan, A. Chatterjee, R. G. Prinn, C. M. Harth, P. K. Salameh, A. J. Manning, B. D. Hall, J. Muhle, **L. K. Meredith***, R. F. Weiss, S. O'Doherty, and D. Young. (2013) The variability of methane, nitrous oxide and sulfur hexafluoride in Northeast India. *Atmospheric Chemistry and Physics* 13, 10633-10644, doi:10.5194/acp-13-10633-2013. [Document online.](#)

EXTRAMURAL GRANTS

All grants awarded as PI, Co-PI, and Senior Personnel (SP) while at University of Arizona.

- PI **Department of Energy (DOE) Facilities Integrating Collaborations for User Science**, *“Belowground genotype-phenotype controls on nitrogen use efficiency of a sorghum bioenergy crop.”*
Co-PIs: M. Tfaily, J. R. Roscioli, D. Pauli, J. Shorter, J. Krechmer, A. E. Arnold (\$142,546 value user facility award, Joint Genome Institute and Environmental Molecular Sciences Laboratory core facility use, 10/1/21-present)
- PI **National Science Foundation CAREER Atmospheric and Geospace Sciences (AGS) and Division of Environmental Biology (DEB)**: *“CAREER: Unearthing the role of belowground biology in biosphere-atmosphere VOC exchange.”* (\$757,945; UA 9/1/21-8/31/26)
- Co-PI **Department of Energy Office of Biological and Environmental Research (BER) Environmental Systems Science**: *“Trees as conduits for connecting belowground microbial processes to aboveground CH₄ emissions at the Terrestrial-Aquatic Interface”*. (\$999,260, PI: Scott Saleska; 09/01/2021-08/31/2023)
- SP **National Science Foundation Growing Convergence Research**: *“GCR: Growing a new science of landscape terraformation: The convergence of rock, fluids, and life to form complex ecosystems across scales”*. (\$3,513,801, PI: Scott Saleska; 09/01/2021-08/31/2026)
- PI **National Science Foundation (NSF) Division of Environmental Biology (DEB) #2034192**: *“SitS: Sniffing the Soil Volatilome: Decoding Microbial Interactions in Soil Systems using Subsurface Sensors.”* Co-PIs: J. Krechmer, D. Hagan, M. Tfaily (\$500,000; UA \$250,781; 1/1/21-12/31/23)
- PI **National Science Foundation (NSF) Atmospheric and Geospace Sciences (AGS) #1933280**: *“Advancing OCS as an independent atmospheric tracer for global photosynthesis through quantification of microbial-mediated sources and sinks in soils.”* Co-PIs: J. U'Ren, R. Commane, I. Baker (\$699,972; UA \$657,055; 1/15/20-12/31/22)
- Co-PI **Department of Energy (DOE) Office of Biological and Environmental Research (BER) Small Business Innovation Research (SBIR) Phase II DE-SC0018459** *“Spatially-Resolved Microbial Activity Probe Using Infrared Measurements of Nitrous Oxide and Methane Isotopes in Soil.”* Lead PI: Rob Roscioli, Aerodyne Research, Inc., Billerica, MA. (\$1,500,000; UA \$554,098; 5/28/19-5/27/21)
- Co-PI **Department of Energy (DOE) Facilities Integrating Collaborations for User Science**, *“Rhizosphere effects on soil organic matter decomposition and microbial activity in a tropical rainforest under drought: unearthing aggregate- to ecosystem-scale contributions to carbon cycling through whole-ecosystem stable isotope labeling.”* PI M. Tfaily, Co-PIs: L. Meredith, J. U'Ren, B. Hurwitz, C. Werner, M. Dippold (\$88,000 value user facility award, Joint Genome Institute and Environmental Molecular Sciences Laboratory core facility use, 9/1/19-present)
- SP **National Science Foundation Research Traineeship** Understanding Rules of Life: *“BRIDGES - Building Resources for InterDisciplinary training”*. (\$2,999,589, PI: Scott Saleska; 09/01/2020-08/31/2025)
- Co-PI **DOE Office of Biological and Environmental Research (BER) Small Business Innovation Research (SBIR) Phase I** *“Spatially-Resolved Microbial Activity Probe Using Infrared*

PI *Measurements of Nitrous Oxide and Methane Isotopes in Soil.*” Lead PI: Rob Roscioli, Aerodyne Research, Inc., Billerica, MA. (\$225,000; UA \$74,932; 5/3/18-1/8/19)
DOE Joint Genome Institute Community Science Program Small Scale Sequencing Award
“Life on LEO - spatiotemporal characterization of the diversity and metabolism of incipient microbial life on the Landscape Evolution Observatory.” Co-PIs: A. Sengupta, T. Volkmann, P. Troch. (\$0, sequencing award, 2017-2019).

PATENTS and INDUSTRY

2021 Patent application No. 63/187527 “IN SITU SOIL GAS PROBES AND SAMPLING SYTEMS” filed 12 May 2021.

HONORS AND AWARDS

2021 **NSF CAREER Award**, Atmospheric Chemistry and Ecosystem Science Programs
 2021 **Outstanding Faculty Mentor Award**, Undergraduate Biology Research Program, University of Arizona.
 2021 **Research Faculty of the Year Award**, Division of Agriculture, Life and Veterinary Sciences, and Cooperative Extension, University of Arizona.
 2021 **International Collaboration**, School of Natural Resources and the Environment, University of Arizona.
 2020 **University of Arizona Team Award for Excellence**, Leader of Biosphere 2 – Water, Atmosphere and Life Dynamics team.
 2020 **Campus RainWorks Challenge**, 2nd place national competition, Environmental Protection Agency (EPA).
 2019 **Teaching Innovation Grant**, College of Architecture, Planning, & Landscape Architecture, University of Arizona, UA.
 2019 **Campus RainWorks Challenge**, 2nd place national competition, EPA.
 2014-2015 **NSF Atmospheric and Geospace Sciences Postdoctoral Fellowship**, Stanford.
 2013 **Outstanding PhD Thesis Award**, Carl-Gustaf Rossby Prize, MIT
 2010 **Fellow for Sustainability**, Martin Family Society, MIT.
 2008 **Excellence in Teaching Award**, MIT
 2006-2008 **NSF Graduate Research Fellowship**, MIT.

TEACHING, ADVISING, AND MENTORSHIP

Teaching

2020-2022 **Teaching Fellow**, Biosphere 2 Innovative Faculty Teaching
 2018, 2021 **Ecosystem Genomics Seminar** (RNR696/496-005), 2-unit, upper division undergraduate/graduate course. *New course*
 2020, 21, 22 **Ecosystem Ecology** (RNR458/558), 3-unit, upper division undergraduate/graduate course using already developed materials.
 2019 **Ecology of Water Harvesting** (RNR696-004/496-002), 1-unit, upper and lower division collaborative course on the integration of ecological and aesthetic principles in landscape design. *New course* supported by **Teaching Innovation Grant**.
 2019 **Atmosphere-Biosphere Interactions** (RNR 555), 3-unit, graduate course. *Adapted to existing syllabus, developed all new course materials*
 2018 **Instructor** (RNR 322), SNRE field course, soil and microbial dynamics.

- 2016 **Short Course Instructor**, Biodiversity and conservation in the tropics: a molecular approach, Universidade de So Paulo (USP) CENA. (1 month before faculty position in Fall 2016)
- 2019 **Participant**, National Ecological Observatory Network (NEON) Faculty Mentoring Network.

Advising and Mentorship:

- **Masters theses advised:**
 - Meara Clark (advisor, SNRE, Fall 2021-current).
 - Peter Moma (advisor, SNRE, Fall 2018-Spring 2021).
- **Doctoral theses advised:**
 - C. Allison Newton (advisor, SNRE, Summer 2020-current).
 - S. Marshall Ledford (advisor, Genetics, Fall 2021-current).
- **Graduate students advised, not as primary advisor:**
 - Pablo Martinez Sosa (advised on microbiology, primary advisor Dr. Jessica Tierney, Geoscience, MS Spring 2017-Spring 2018, PhD Fall 2018-current).
 - Lia Crocker (advised on volatile organic compound measurements and interpretation, primary advisor Dr. Jana U'Ren, Biosystems Engineering, MS Spring 2020-current).
- **I have advised 25 undergraduate, 6 high school students, 5 postdocs, and 5 scientists.**

CONFERENCES AND SCHOLARLY PRESENTATIONS (last 3 years)

Invited Seminars

1. Ecology Seminar, Lawrence Berkeley National Lab, "Analytical Chemistry Seminar Series, University of Arizona, "Revealing ecosystem interactions through novel whole-ecosystem online stable isotope labeling and measurement approaches. Host Eoin Broodie (April 2021).
2. Analytical Chemistry Seminar Series, University of Arizona, "Revealing ecosystem interactions through novel whole-ecosystem online stable isotope labeling and measurement approaches." Host Neal Armstrong (February 2020).
3. Institut de Biologie de l'École Normale Supérieure, Ecology and Evolutionary Biology Seminar Series, "Linking microbial genes to emergent outcomes in soil systems." Host Regis Ferrière (May 2019).
4. TRIPODS Data Science Group, University of Arizona, "Biosphere 2 Science: Large Scale Research with Big Data Needs." Host Nirav Merchant (April 2019).
5. Ecosystem Genomics Initiative, BIO5 Institute, University of Arizona, "Microbe-mediated trace gas fluxes. An ecosystem genomics approach to link genes to atmospheric composition." Host Scott Saleska (Fall 2018).
6. Technical University of Munich, "Microbe-mediated trace gas fluxes: linking ecosystem genomics to atmospheric composition." Host Jia Chen (August 2018).

Invited* and First Author Conferences and Symposia Presentations

1. PittCon Conference and Expo, Chicago, IL (Oral). **Meredith, L. K.**, Werner, C., Ladd, N. "Revealing ecosystem interactions through novel whole-ecosystem online stable isotope labeling and measurement approaches" (March 2020).
2. * American Geophysical Union (AGU) Fall Meeting, San Francisco, CA (Oral). **Meredith, L. K.**, Gil-Loaiza, J., Roscioli, J. R., Shorter, J., Krechmer, J., Tfaily, M., U'Ren, J., Misztal, P., Singer, E., Commane, R., Buzzard, V., Ladd, N., Werner, C., Wingate, L., van Schaik, E., Mondy, S.

- “Integrating soil genomics into the study of biosphere-atmosphere trace gas fluxes” (December 2019).
3. American Geophysical Union (AGU) Fall Meeting, San Francisco, CA (Oral). **Meredith, L. K.** Unearthing links between microbial genomics and trace gas cycling. Centennial Session: Biogeosciences at the threshold of the next centennial (December 2019)
 4. American Geophysical Union (AGU) Fall Meeting, San Francisco, CA (Poster). **Meredith, L. K.,** Werner, C., Ladd, N., and the B2 WALD Team. Opportunities and Challenges for revealing ecosystem interactions through whole-ecosystem stable isotope labeling and experimentation: Lessons learned from the Biosphere 2 Water, Atmosphere, and Life Dynamics campaign. (December 2019).
 5. * European Geophysical Union General Assembly, Vienna, Austria. **Meredith, L. K., Cueva, A.**, Volkmann, T. H. M., U’Ren, J., Singer, E., van Haren, J., Troch, P. “Carbonyl sulfide (COS) as a tracer for plant carbon and water cycling: how do recent models from COS science perform in a controlled ecosystem?” (April 2019).
 6. European Geophysical Union (EGU) General Assembly, Vienna, Austria (Poster). **Meredith. L. K., Youngerman, C.**, Sengupta, A., Troch, P. A., Volkmann., T. H. M. Noninvasive methods for dynamic mapping of microbial populations across the landscape. (April 2019)
 7. * Soil Science Society of America, San Diego, CA. **Meredith, L. K. [Symposium](#):** A Multiscale Approach to Identifying Abiotic and Biotic Interactions That Shape C Dynamics in the Soil-Atmosphere Continuum and Across Latitudes. “From Soils to the Atmosphere: Characterizing Abiotic and Biotic Interactions That Dictate the Microbial Impact on Soil and Atmospheric Chemistry.” (January 2019).
 8. International Symposium on Microbial Ecology (ISME), Leipzig, Germany. (Poster). **Meredith. L. K.,** Sengupta, A., Youngerman, C., Troch, P. A., Volkmann., T. H. M. Noninvasive methods for dynamically mapping microbial populations across an artificial landscape. (August 2018)
 9. * Geobiology Gordon Research Conference (GRC), Galveston, TX. **Meredith, L. K.** “Using Trace Gases to Track Interactions Between Life and the Environment in Modern Soils and Evolving Landscapes.” (January 2018).

SYNERGISTIC ACTIVITIES & SERVICE

Local/State Service and Outreach

2021-	Member , Arizona Institutes for Resilience (AIR) University Advisory Council
2020	Panelist , Biosphere 2 Virtual EarthFest 2.
2020	Invited Speaker , Women in Data Science.
2020	Panelist , BIO5 Inspiring Women in STEM.
2019	Invited Speaker , Science Café Series, Tucson Botanical Garden.
2019	Panelist , Data Science & Broader Impacts, National Alliance for Broader Impacts.
2019	Participating Lab , Discover BIO5 Open House, over 500 public attendees, UA.
2018	Panelist , Interaction between Science and Art in Fred Fox School of Music presentation of Daniel Catán’s opera Opera, Biosphere 2.
2018	Participating Lab , SNRExpo, research materials and soil activities
2018	Panelist , “Negotiating the Job Offer” UA Postdoc Association.
2017	Panelist , “Debunking Faculty-Position Interview” UA Postdoc Association.
2017	Invited Speaker , Biosphere 2 “What if?” Series.

National/International Service and Outreach

2020-	AGU Fall Meeting Planning Committee, Biogeosciences Section
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- 2019-2020 **Co-Lead of International Research Campaign**, Biosphere 2 Water, Atmosphere, and Life Dynamics Campaign (B2 WALD) Lead (along with Drs. Christiane Werner and Nemiah Ladd of University of Freiburg). 5-month research campaign involving >90 participants, 14 institutions, 5 countries, \$5M in instrumentation, >20 media interviews. Novel controlled ecosystems-scale isotope labeling experimentation across drought in Tropical Rainforest biome. Lead of UA team awarded **University of Arizona Team Award for Excellence**.
- 2019 **Participant**, EMSL Ecotron workshop, DOE Pacific Northwest National Lab, Richland, WA. (20-21 May 2019)
- 2019, 20 **Convener**, European Geosciences Union (EGU) Fall Meetings
- 2017, 19, 20 **Convener**, American Geophysical Union (AGU) Fall Meetings
- 2018 **Lead Guest Editor**, MDPI Soil Systems, Special Issue on Formation and Fluxes of Soil Trace Gases (14 papers handled).
- 2018 **Speaker and Participant**, Biosphere 2 Workshop: Eco-Engineering of Life on Landscapes, Tucson, AZ. (17-18 May 2018)

Funding Agency Panels

- 2018-2021 Department of Energy (DOE), National Science Foundation (NSF), National Aeronautics and Space Administration (NASA)

Peer reviewer for Journals (30 journals and 1 chapter publisher, ca. 9 manuscripts/year)

Journals: Agronomy, Applied and Environmental Microbiology, Applied Soil Ecology, Atmospheric Chemistry and Physics, Atmospheric Pollution Research, Biogeosciences, Biology and Fertility of Soils, Elementa, Environmental Microbiology, Environmental Science and Technology, FEMS Microbiology Letters, Functional Ecology, JGR Biogeosciences, Geoderma, Geoscientific Model Development, Global Biogeochemical Cycles, Global Change Biology, Microbial Ecology, Molecules, Nature Reviews Chemistry, New Phytologist, PeerJ, Science of the Total Environment, Scientific Reports, Soil Biology and Biochemistry, Soil Ecology, Soil Science Society of America Journal, Soil Systems, Soils, The ISME Journal, Trends in Microbiology. **Book chapters:** American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA). **Books:** n/a.

SELECTED MEDIA COVERAGE OF RESEARCH

- 2020 COVID-19 Forces a Change in Plans for Researchers Studying Global Photosynthesis. [LINK](#)
- 2020 NPR Science Friday, Studying Drought, Under Glass. [LINK](#)
- 2019 NPR Here and Now, Studying Drought In An Enclosed Rainforest. [LINK](#)
- 2019 CAPLA Student Team Receives Award for Green Infrastructure Project. [LINK](#)
- 2019 Arizona Science, Arizona Public Media, Researching climate change at Biosphere 2. [LINK](#)
- 2019 Science Magazine, Unprecedented drought in an artificial ecosystem may reveal how rainforests will cope with climate change, doi:10.1126/science.aaz8799. [LINK](#)
- 2019 Arizona Science, Arizona Public Media, Studying Micro-Organisms at Biosphere 2. [LINK](#)