

---

## Melanie A. Mayes

---

Environmental Sciences Division  
Climate Change Science Institute  
Oak Ridge National Laboratory  
P.O. Box 2008  
Oak Ridge, TN 37831-6038  
(865) 574-7336  
mayesma@ornl.gov  
<https://www.ornl.gov/staff-profile/melanie-mayes>

Earth and Planetary Sciences Department  
Biosystems Engineering and Soil  
Science Department  
University of Tennessee  
Knoxville, TN 37996  
(865) 742-1774  
mmayes@utk.edu

### Education

Ph.D., Geological Sciences (2006)  
University of Tennessee, Knoxville, TN  
*Thesis: Solute Transport and U(VI) Reactivity  
in Natural Heterogeneous Sediments*

M.S., Geological Sciences (1999)  
University of Tennessee, Knoxville, TN  
*Thesis: Multispecies Contaminant Transport in  
Undisturbed Columns of Weathered  
Fractured Saprolite*

B.S., Geological Sciences (1995)  
University of Missouri, Columbia, MO

### Positions Held

**Senior Staff Scientist** *September, 2002 – present*  
*Oak Ridge National Laboratory (UT-Battelle)*

- Develop innovative methods to measure and model mechanistic hydrobiogeochemical controls of carbon, metal, and nutrient cycling
- Develop proposals, manage research projects, interface with sponsors, prepare manuscripts
- Build a national and international collaboration network, organize scientific sessions and workshops
- Organize field activities at DOE and other national and international research sites
- Promoted from Assistant to Associate Scientist (2006), Staff Scientist (2010), Senior Scientist (2016)

**Joint Faculty University of Tennessee** *December, 2008 – present*  
*Biosystems Engineering and Soil Science Department (since 2016)*  
*Earth and Planetary Sciences Department (since 2008)*

- Mentor graduate research assistants and undergraduate researchers

**Post-masters Research Associate** *February, 1999 – September, 2002*  
*Oak Ridge Institute for Science and Education*

### Management Experience

**Biogeochemical Dynamics Group Lead** *October 2020 – present*

**Multiscale Environmental Processes Team Lead** *September, 2014 – September 2020*

- Primary supervisor for researchers at the staff (5), visiting faculty (4), post-doctoral (13), post-masters (4), graduate (7), post-graduate (10), undergraduate (>30), and high school (2) levels
- Generate research topics appropriate for researchers with diverse backgrounds and levels of expertise, provide funding to accomplish science goals
- Assist staff with performance and career planning, provide consistent and constructive feedback

- Active engagement with faculty and students from Historically Black Colleges and Minority Enrolling Institutions, through DOE’s Visiting Faculty Program (VFP), DOE’s Minority Serving Institutions Partnership Program (MSIPP), ORNL's LDRD program, the GEM Fellowship program, and through direct collaborations
- *Training*: Developing Leadership Potential (2017), Effective Leadership Practices (2016), Leadership Fundamentals at the Center for Creative Leadership (2015), 7 Habits of Highly Effective People (2015), Management Boot Camp (2015), Directorate mentoring program (2014-2015), Presentation Skills (2014), Influencing with Integrity (2013)

### **Awards and Recognition**

- *US Department of Energy Early Career Award* (2016)
- *Significant Event Award* NGEE Tropics proposal, ORNL (2015)
- *Knoxville YWCA Honoree in Science and Technology* (2015)
- *Fellow, American Association for the Advancement of Science* (2014)
- *Stanley Auerbach Award for Excellence in Environmental Sciences* Environmental Sciences Division, ORNL (2011)
- *Young Alumna Award for Professional Promise* Earth and Planetary Sciences Department, University of Tennessee (2011)
- *Associate Editor of Excellence* Soil Science Society of America Journal (2011)
- *Editor’s Citation for Excellence in Manuscript Review* Soil Science Society of America Journal (2006)
- *Outstanding Mentor Award* US Department of Energy Office of Science Undergraduate Research Program (2004)

### **Professional and Community Service**

#### ***Editorial Service***

- Associate Editor, Biogeochemistry (2020-2022)
- Editor, The Second State of the Carbon Cycle Report, a 'Highly Influential Scientific Assessment' informing the National Climate Assessment, sponsored by the US Global Change Research Program (2015–2018)
- Associate Editor, Soil Science Society of America Journal, S-1 Soil Physics Division (2007–2012)

#### ***Science Advisory***

- *User Executive Committee* (elected), Environmental Molecular Sciences Laboratory (2018-2021)
- *Organizer*, International Decade of Soils Workshop, Boulder CO, sponsored by Carbon Cycle Interagency Working Group (2016)
- *Carbon Cycle Scientific Steering Group*, US Global Change Research Program (2015–2018)
- *Review Panels*: National Science Foundation Division of Evolutionary Biology (2019), DOE Small Business Innovation Research Program (2019), DOE Office of Science Graduate Student Research (2017–2020), National Academy of Science US-Egypt Science and Technology Cooperation Program (2015, 2017, 2020), DOE Biological and Environmental Research National Lab Subsurface Biogeochemical Research Program Science Focus Area (2013), DOE Biological and Environmental Research Subsurface Biogeochemical Research Program for University proposals (2010)
- *ORNL Panels*: Distinguished Fellows Committee Chair (2018–2020), Laboratory Directors Research and Development Program Biocomplexity review panel (2018–2019), Named Fellows Review committee (2017–2018), Seed Fund committee (2015–2017), UT-Battelle Awards Night Head of Early Career and Postdoctoral Award Committee (2015), Environmental Sciences Division committee for excellence in post-graduate research, administrative support, operational support, and technical support (2015–2018)

- UTK Earth and Planetary Sciences Undergraduate Program Committee (2013–2014)

### ***Professional Society Membership***

- American Geophysical Union (since 2001)
  - Organized scientific sessions at fall international meeting yearly since 2013
- Soil Science Society of America (since 2001)
- International Union of Soil Scientists (since 2001)
- American Association for the Advancement of Science (since 2008)
- Ecological Society of America (since 2018)

### ***Community Activism***

- Chairperson, WaysSouth Responsible Transportation in Appalachia (July 2012–present), Board member (April 2010–2013), Volunteer in Science Communications (2008–2010)
- Board Member, Tennessee Citizens for Wilderness Planning (December 2017–present), member since 2012
- Member, Advocates for the Future of Oak Ridge Reservation (2014–present)
- Science Advisor for Lindquist Environmental Appalachian Fellowship (2010–2011)

### ***Invited Outreach Lectures***

- Southeast Regional Climate Conference "A Critique of *The Uninhabitable Earth* in Light of Recent US Government Reports" (August 2020)
- Knox County Public Library 'Books Sandwiched In', "*The Uninhabitable Earth—Life After Warming*" by David Wallace-Wells (2019) <https://www.knoxlib.org/about/news-and-publications/podcasts/books-sandwiched-podcast>
- "Carbon and Climate in North America: Summaries of Recent US Government Reports"
  - Oak Ridge ORION Astronomy Club (2019)
  - State of Tennessee Sierra Club Annual Meeting Fall Creek Falls State Park (2019)
  - Oak Ridge Institute of Continuing Education (2019)
  - National Ocean and Atmospheric Administration Science Webinar (2019) <https://www.nodc.noaa.gov/seminars/>
  - Harvey Broome Group, Sierra Club Knoxville TN (2019)
- North Georgia University, "Soil Carbon and Nutrient Cycling in Tropical Environments" (2019)
- Lecture, "Soils, microbes, carbon, & climate"
  - Knoxville STEM Academy (2018)
  - West High School (2018)
- ORNL 75th Anniversary Lab Day (event for the public), "Tales of an Environmental Scientist" (2018)

### **Research Grants and Contracts**

- “A Comprehensive Framework for Modeling Emissions from Tropical Soils and Wetlands” (**principal investigator**), U.S. Dept. of Energy, Office of Biological and Environmental Research, Climate and Environmental Science Division, Early Career Award 2016-2021, \$2,500,000.
- “Collaborative Research: Elucidating Unifying Principles Of Soil C-N Coupling Using A Continental-Scale Grassland Experimental Network” (**co-principal investigator**), National Science Foundation, 2016-2021, \$2,700,000.
- “Predicting Climate Feedbacks from Microbial Function in Tropical Ecosystems” (**principal investigator**) ORNL Laboratory Directors Research and Development Program, 2014-2016, \$764,000.
- “Mercury Technology Development Plan for Remediation of the Y-12 Plant and East Fork Poplar Creek” (**task lead**), URS–CH2M Oak Ridge (UCOR), 2014-open, \$1,800,000/year.
- “Development of *in situ* biomembrane liners for algal bioenergy” (**task lead**), U.S. Dept. of Energy, Bioenergy Technologies Office, 2015-2017, \$210,000.

- “Next Generation Ecosystem Experiment – Tropics” (**contributing investigator**) U.S. Dept. of Energy Office of Biological and Environmental Research, Climate and Environmental Science Division, 2014-2018, \$30,000,000.
- “Incorporating Rhizosphere Interactions and Soil Physical Properties into a Soil Carbon Degradation Model through Experimenting across Ecotypes”, (**co-principal investigator**) U.S. Dept. of Energy, Office of Biological and Environmental Research, Climate and Environmental Science Division, 2013-2016, \$988,000.
- “Testing the Microbial-ENzyme Decomposition (MEND) Model of Soil Carbon and Nitrogen Cycling at Serra do Mar, São Paulo”, (**co-principal investigator**), Energy and Environmental Sciences Directorate, ORNL, 2013, \$10,000.
- “Terrestrial Ecosystem Scientific Focus Area” (**theme leader**) U.S. Dept. of Energy, Office of Biological and Environmental Research, Climate and Environmental Science Division, 2013-2019, <http://tes-sfa.ornl.gov/>, \$8,000,000/year.
- “Incorporating Molecular-Scale Mechanisms Stabilizing Soil Organic Carbon into Terrestrial Carbon Cycle Models” (**principal investigator**) ORNL Laboratory Directors Research and Development Program, 2011-2013, \$635,000.
- “Climate Change Mitigation Scientific Focus Area” (**theme leader**) U.S. Dept. of Energy, Office of Biological and Environmental Research, Climate and Environmental Science Division, 2006-2012, \$1,100,000/y.
- “Mobility of Particulate and Dissolved Munitions Constituents in the Vadose Zone at Operational Ranges” (**principal investigator**) U.S. Dept. of Defense, Strategic Environmental Research and Development Program, 2009-2012, \$380,000/y.
- “Role of Microenvironments and Transition Zones in Subsurface Reactive Contaminant Transport” (**external collaborator**) U.S. Dept. of Energy, Environmental Remediation Science Program, Pacific Northwest National Laboratory Subsurface Focus Area, 2008-2012, \$200,000/y.
- “Quantification of Hydrological, Geochemical, and Mineralogical Processes Governing the Fate and Transport of Uranium over Multiple Scales in Hanford Sediments” (**principal investigator**) U.S. Dept. of Energy, Environmental Remediation Science Program, 2006-2008, \$500,000/y.
- “Hydrological and Geochemical Controls on the Fate and Transport of Cr(VI), U, and CoEDTA in Undisturbed Sediments from the Hanford 200E Area” (**principal investigator**) Tank Farm Vadose Zone Group of CH2M HILL Hanford Group, Inc., 2004-2008, \$150,000/y.
- “Coupled Hydrological and Geochemical Processes Governing the Fate and Transport of Radionuclides and Toxic Metals in the Hanford Vadose Zone” (**co-principal investigator**) U.S. Dept. of Energy, Environmental Management Science Program, 2003-2005, \$300,000/y.

### Quantitative Academic Indicators

**63 publications** in journals with selective editorial policy, **1** U.S. government report, **3** book chapters, **>2300 citations** received in the international scientific literature according to Google Scholar (<http://scholar.google.com/citations?user=aJ3y4FcAAAAJ>), **H-index = 28**, **i-10 index = 41**.

### U.S. Government Report

USGCRP, 2018: Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report [Cavallaro, N., G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 878 pp., <https://doi.org/10.7930/SOCCR2.2018>.

*SOCCR2 is a “Highly Influential Scientific Assessment” and as such contains cited information that meets the standards of the Information Quality Act. SOCCR2 followed federal information quality, transparency, and accessibility guidelines, undergoing peer review by the National Academies of Science, Engineering, & Medicine, public review, and numerous United States Federal interagency reviews. SOCCR2 involved over 200 authors from Federal, university, and non-profit research communities.*

*In addition to the components of SOCCR2 listed below, I was the Lead Science Editor for Chapters 2, 12, 17, and 19.*

Birdsey, R., M. A. Mayes, P. Romero-Lankao, R. G. Najjar, S. C. Reed, N. Cavallaro, G. Shrestha, D. J. Hayes, L. Lorenzoni, A. Marsh, K. Tedesco, T. Wirth, and Z. Zhu, 2018: Executive summary. In Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report [Cavallaro, N., G. Shrestha, R. Birdsey, M.A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 21-40, <https://doi.org/10.7930/SOCCR2.2018.ES>.

Shrestha, G., N. Cavallaro, L. Lorenzoni, A. Seadler, Z. Zhu, N. P. Gurwick, E. Larson, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, and P. Romero-Lankao, 2018: Highlights. In Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report [Cavallaro, N., G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1-4, <https://doi.org/10.7930/SOCCR2.2018.Highlights>.

Shrestha, G., N. Cavallaro, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, N. P. Gurwick, P. J. Marcotullio, and J. Field, 2018: Preface. In Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report [Cavallaro, N., G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 5-20, <https://doi.org/10.7930/SOCCR2.2018.Preface>.

Birdsey, R., N. P. Gurwick, K. R. Gurney, G. Shrestha, M. A. Mayes, R. G. Najjar, S. C. Reed, and P. Romero-Lankao, 2018: Appendix D. Carbon measurement approaches and accounting frameworks. In Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report [Cavallaro, N., G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 834-838, doi: <https://doi.org/10.7930/SOCCR2.2018.AppD>.

## **Peer-Reviewed Manuscripts**

### *Students, postdoc/postmasters*

1. **Sihi, D.**, Xu, X., Ortiz, M.S., O’Connell, C.S., Silver, W.L., López-Lloreda, C., Brenner, J.M., Quinn, R.K., Phillips, J.R., Newman, B.N., and Mayes, M.A. (2020) Representing methane emissions from wet tropical forest soils using microbial functional groups constrained by soil diffusivity. *Biogeosciences Discussion* doi:10.5194/bg-2020-222.
2. Wang, G., Huang, W., Zhou, G., Mayes, M.A., Zhou, Z. (2020). Modeling the processes of soil moisture in regulating microbial and carbon-nitrogen cycling. *Journal of Hydrology* 585: 124777. doi.org/10.1016/j.jhydrol.2020.124777.
3. **Moore, J.A.M.**, Sulman, B.N., Mayes, M.A., Patterson, C.M., Classen, A.T. (2019) Plant roots stimulate the decomposition of complex, but not simple, soil carbon. *Functional Ecology* 34(4):899-910.
4. **Rewcastle, K.E.**, **Moore, J.A.M.**, **Henning, J.A.**, Mayes, M.A., Patterson, C.M., Wang, G., Metcalfe, D.B., Classen, A.T. (2020) Investigating drivers of microbial activity and respiration in a forested bog. *Pedosphere* 30(1): 135–145, doi:10.1016/S1002-0160(19)60841-6.

5. Efroymson, R.A., *Pattullo, M.B.*, Mayes, M.A., Mathews, T.J., ***Mandal, S.***, and Schoenung, S. (2020) Exploring the sustainability and sealing mechanisms of unlined ponds for growing algae for fuel and other commodity-scale products. *Renewable and Sustainable Energy Reviews* 121:109708.
6. ***Li, Z., Yao, Q.***, Guo, X., Crits-Christoph, A., Mayes, M.A., Hervey VI, W.J., Lebeis, S.L., Banfield, J.F., Hurst, G.B., Hettich, R.L., and Pan, C. (2019) Genome-resolved proteomic stable isotope probing of soil microbial communities using <sup>13</sup>CO<sub>2</sub> and <sup>13</sup>C-methanol. *Frontiers in Microbiology* 10:2706 doi: 10.3389/fmicb.2019.02706
7. Crowther, T.W., van den Hoogen, J., Averill, C., Wan, J., Keiser, A.D., Mayes, M.A., Mo, L., Maynard, D.S. (2019) The global soil community and its control on biogeochemistry. *Science* 365: eaav0550. DOI: 10.1126/science.aav0550.
8. Hui, D., *Porter, W.*, Phillips, J.R., Aidar, M.P.M., Lebreux, S.J., Schadt, C.W., and Mayes, M.A. (2019) Phosphorus rather than nitrogen enhances CO<sub>2</sub> emissions in tropical forest soils: Evidence from a laboratory incubation study. *European Journal of Soil Science* DOI: 10.1111/ejss.12885.
9. Johs, A., ***Eller, V.A.***, Mehlhorn, T.L., Brooks, S.C., Harper, D.P., Mayes, M.A., Pierce, E.M., and Peterson, M.J. (2019) Deissolved organic matter reduces the effectiveness of sorbents for mercury removal. *Science of the Total Environment* 690:410-416.
10. ***Liang, J.***, Wang, G., Riccuito, D.M., Gu, L., Hanson, P.J., Wood, J.D., Mayes, M.A. (2019) Evaluating the E3SM Land Model at a temperate forest site using flux and soil water measurements. *Geoscientific Model Development* 12, 1601-1612.  
<https://doi.org/10.5194/gmd-12-1601-2019>
11. Wang, G., ***Huang, W.***, Mayes, M.A., Liu, X., Zhang, D., Zhang, Q., Han, T., and Zhou, G. (2019) Soil moisture drives microbial controls on carbon decomposition in two subtropical forests. *Soil Biology & Biochemistry* 130:185-194. doi.org/10.1016/j.soilbio.2018.12.017.
12. *Pattullo, M.B.*, Mayes, M.A., ***Mandal, S.***, Mathews, T.J., Dunlap, J., Perfect, E., McKay, L.D., *Nield, E.V.*, and Efroymson, R.A. (2019) Soil sealing by algae: An alternative to plastic pond piners for outdoor algal cultivation. *Algal Research* 38, 101414.
13. *Singh, S.*, Yan, S., Sorochan, J., Stier, J., Mayes, M.A., Zhuang, J., and Jagadamma, S. (2019) Soil carbon and nutrient contents under turfgrass, row crops and pristine ecosystems. *Soil Science Society of America Journal* 83:458-465.
14. Li, J., Wang, G., Mayes, M.A., Allison, S.D., Frey, S.D., Shi, Z., Hu, X.-M., Luo, Y., and Melilo, J.M. (2018) Reduced carbon use efficiency and increased microbial turnover with soil warming. *Global Change Biology* 25(3):900-910. doi: 10.1111/gcb.14517.
15. ***Brenner, J.***, *Porter, W.*, Phillips, J.R., Childs, J., Yang, X., and Mayes, M.A. (2018) Phosphorus sorption on tropical soils with relevance to Earth system model needs. *Soil Research* 57(1):17-27. doi:10.1071/SR18197
16. *Johnston, E.R.*, *Kim, M.*, Hatt, J.K., Phillips, J.R., ***Yao, Q.***, ***Song, Y.***, Hazen, T.C., Mayes, M.A., and Konstantinidis, K.T. (2018) Phosphorus addition increases tropical forest soil respiration primarily by deconstraining microbial population growth. *Soil Biology & Biochemistry* 130: 43-54.
17. ***Dickson, J.O.***, Mayes, M.A., Brooks, S.C., Mehlhorn, T.L., Lowe, K.A., Earles, J.K., *Goñez-Rodriguez, L.*, Watson, D.B., and Peterson, M.J. (2019) Source relationships between streambank soils and streambed sediments in a mercury-contaminated stream. *Journal of Soils & Sediments*  
<https://doi.org/10.1007/s11368-018-2183-0>
18. Sulman, B.N., ***Moore, J.A.M.***, ***Abramoff, R.***, Averill, C., Kivlin, S., Georgious, K., Sridhar, B., Hartman, M., Wang, G., Wieder, W.R., Bradford, M.A., Lou, Y., Mayes, M.A., Morrison, E., Riley, W.J., Salazar, A., Schimel, J.P., Tang, J., and Classen, A.T. (2018) Multiple models and experiments underscore large uncertainty in soil carbon dynamics. *Biogeochemistry*  
<https://link.springer.com/article/10.1007/s10533-018-0509-z>
19. *Liu, C.*, Dang, X., Mayes, M.A., Chen, L., Zhang, Y. (2018) Effect of long-term irrigation patterns on phosphorus forms and distribution in the brown soil zone. *PloS one*, 12(11):e0188361.  
<https://doi.org/10.1371/journal.pone.0188361>

20. **Yao, Q., Li, Z., Song, Y.,** Wright, S.J., Guo, X., **Biswas, A.,** Tringe, S.G., Tfaily, M.M., Paša-Tolic, L., Hazen, T.C., Turner, B.L., Mayes, M.A., and Pan, C. 2018. Community Proteogenomics Reveals the Systemic Impact of Phosphorus Availability on Microbial Functions in Tropical Soil. *Nature Ecology and Evolution*, DOI:10.1038/s41559-017-0463-5.
21. Li, J., **Jian, S.,** de Joff, J.P., Lane, C.S., Wang, G., Mayes, M.A., Hui, D. (2018) Differential effects of warming and nitrogen fertilization on soil respiration and microbial dynamics in switchgrass croplands. *Global Change Biology Bioenergy* doi: 10.1111/gcbb.12515.
22. **Abramoff, R.Z.,** Xu, X., Hartman, M., O'Brien, S., Feng, W., Davidson, E.A., Finzi, A.C., Moorhead, D., Schimel, J., Torn, M.S., and Mayes, M.A. 2017. The Millennial Model: In Search of Measurable Pools and Transformations for Modeling Soil Carbon in the New Century. *Biogeochemistry*, DOI:<https://doi.org/10.1007/s10533-017-0409-7>.
23. Mayes, M.A., Lajtha, K., and Bailey, V. 2016. Advancing Soil Carbon Cycle Science: Workshop to celebrate 2015–2024 International Decade of Soil; Boulder, Colorado, 14–16 March, 2016. EOS Meeting report <https://eos.org/meeting-reports/advancing-soil-carbon-cycle-science>
24. **Jian, S.,** Li, J., Chen, J., Wang, G., Mayes, M.A., Dzantor, K.E., Hui, D., and Luo, Y. 2016. Soil extracellular enzyme activities, soil carbon and nitrogen storage under nitrogen fertilization: A meta-analysis. *Soil Biology and Biochemistry* 101: 32-43. DOI:10.1016/j.soilbio.2016.07.003
25. **LeDoux, S.T.,** Szykiewicz, A., Mayes, M.A., Faiia, A., McKinney, M., and Dean, W. 2016. Chemical and isotope compositions of shallow groundwater in areas impacted by hydraulic fracturing and surface mining in the Central Appalachian Basin, Eastern United States. *Applied Geochemistry* 71:73-85.
26. **Moore, J.A.M., Jiang, J.,** Patterson, C.M., Mayes, M.A., Wang, G., Classen, A.T. 2015. Interactions among roots, mycorrhizae, and free-living microbial communities differentially impact soil carbon processes. *Journal of Ecology* 103:1442–1453. doi: 10.1111/1365-2745.12484.
27. Wang, G., **Jagadamma, S.,** Mayes, M.A., Schadt, C., **Steinweg, J.M.,** Gu, L., and Post, W.M. 2015. Microbial dormancy improves development and experimental validation of ecosystem model. *The ISME Journal* doi:10.1038/ismej.2014.120.
28. **Jagadamma, S., Steinweg, M.,** and Mayes, M.A. 2014. Influence of substrate chemistry on carbon decomposition and microbial community composition. *Biogeosciences* 11:4665-4678.
29. Wang, G., Mayes, M.A., Gu, L., and Schadt, C.W. 2014. Representation of dormant and active microbial dynamics for ecosystem modeling. *PLOS One* 9(2):e89252.
30. Li, J., **Wang, G.,** Allison, S.D., Mayes, M.A., and Luo, Y. 2014. Soil carbon sensitivity to temperature, carbon use efficiency, and model complexity in two microbial-ecosystem models. *Biogeochemistry* doi:10.1007/s10533-013-9948-8.
31. Petridis, L., Ambaye, H., **Jagadamma, S.,** Kilbey II, S.M., Lokitz, B., Lauter, V., and Mayes, M.A. 2014. Spatial arrangement of organic compounds on model mineral surface: Implications for soil organic matter stabilization. *Environmental Science and Technology* 48: 79-84, <http://dx.doi.org/10.1021/es403430k>.
32. **Jagadamma, S., Steinweg, J.M.,** Mayes, M.A, **Wang, G.,** and Post, W.M. 2013. Mineral control on decomposition of added and native organic carbon in soils from diverse eco-regions. *Biology and Fertility of Soils* 49, doi: 10.1007/s00374-013-0879-2.
33. **Jagadamma, S.** and Mayes, M.A. 2013. The role of sorption on mineralization of carbon in soils. *JSM Environmental Science & Ecology* 1(1): 1005.
34. **Jagadamma, S.,** Mayes, M.A., Zinn, Y.L., Gísladóttir, G., and Russell, A.E. 2013. Sorption of organic carbon compounds to the fine fraction of surface and subsurface soils. *Geoderma* 213:79-86.
35. Hui, D., Mayes, M.A., **Wang, G.,** and Post, W.M. 2013. Kinetic parameters of phosphatase: A quantitative synthesis. *Soil Biology and Biochemistry* 65:105-113.
36. **Sharma, P.,** Mayes, M.A., Tang, G. 2013. Role of soil organic carbon and colloids in fate of TNT, RDX and HMX in training range soils. *Chemosphere* 92(8): 993-1000. doi: 10.1016/j.chemosphere.2013.03.028

37. **Steinweg, J.M., Jagadamma, S., Frerichs, J.,** and Mayes, M.A. 2013. Activation energy of extracellular enzymes in a global suite of soils. *PLoS ONE* 8(3): e59943. doi:10.1371/journal.pone.0059943.
38. Martin, M., Mayes, M.A., *Heal, K.,* Brice, D.J., and Wullschleger, S. 2013. Investigation of laser-induced breakdown spectroscopy and multivariate analysis for differentiating inorganic and organic C in a variety of soils. *Spectrochimica Acta Part B* 87: 100–107.
39. Mayes, M.A., **Jagadamma, S.,** Ambaye, H., Petridis, L., and Lauter, V. 2013. Neutron reflectometry reveals the internal structure of natural organic matter deposited onto an aluminium oxide. *Geoderma* 192:182-188. doi: 10.1016/j.geoderma.2012.07.025.
40. **Wang, G.,** Post, W.M., Mayes, M.A. 2013. Parameterizing an enzyme-mediated soil organic carbon decomposition model. *Ecological Applications*, 23(1): 255-272. doi: 10.1890/12-0681.1.
41. **Jagadamma, S.,** Mayes, M.A., and Phillips, J.R. 2012. Selective sorption of dissolved organic carbon compounds by temperate soils. *PLoS ONE* 7(11): e50434. doi:10.1371/journal.pone.0050434.
42. **Wang, G.,** Post, W.M., Mayes, M.A., *Frerichs, J.,* and **Jagadamma, S.** 2012. Parameter estimation for models of ligninolytic and cellulolytic enzyme kinetics. *Soil Biology & Biochemistry* 48:28-38, doi 10.1016/j.soilbio.2012.01.011.
43. Mayes, M.A., *Heal, K.,* Brandt, C., Phillips, J.R., and Jardine, P.M. 2012. Relation between soil order and Langmuir parameters for sorption of dissolved organic carbon. *Soil Science Society of America Journal* 76:1027-1037, doi:10.2136/sssaj2011.0340.
44. *Lavoie, B.,* Mayes, M.A., and McKay, L.D. 2011. Transport of explosive residue surrogates in saturated porous media. *Water, Air, and Soil Pollution*, doi: 10.1007/s11270-011-0999-y.
45. Garten, Jr., C.T. Brice, D.J., Castro, H.F., Graham, R.L., Mayes, M.A., Phillips, J.R., Post III, W.M., Schadt, C.W., Wullschleger, S.D., Tyler, D.D., Jardine, P.M. Jastrow, J.D., Matamala, R., Miller, R.M., Moran, K.T., Vugteveen, T., Izaurralde, R.C., Thomson, A.M., West, T.O., Amonette, J.E., Bailey, V.L., Metting, F.B., and Smith, J.L. 2011. Response of “Alamo” switchgrass tissue chemistry and biomass to nitrogen fertilization in west Tennessee, USA. *Agriculture, Ecosystems, & Environment* 140: 389-297, <http://orproxy.lib.utk.edu:2052/10.1016/j.agee.2010.12.016>.
46. *Cropper, S.C.,* Perfect, E., **van den Berg, E.H.** and Mayes, M.A. 2010. Comparison of average and point capillary pressure-saturation functions determined by steady-state centrifugation. *Soil Science Society of America Journal* 75: 17-25, doi: 10.2136/sssaj2009.0373.
47. **Tang, G.,** Mayes, M.A., Parker, J.C., and Jardine, P.M. 2010. CXTFIT/Excel – A modular adaptable approach for parameter estimation and uncertainty/sensitivity analysis. *Computers and Geosciences* 36:1200-1209, doi: 2052/10.1016/j.cageo.2010.01.013.
48. *Stewart, B.D.,* Mayes, M.A., and Fendorf, S.E. 2010. Impact of uranyl-calcium-carbonato complexes on uranium(VI) adsorption to synthetic and natural sediments. *Environmental Science and Technology* 44:928-934.
49. Garten, Jr., C.T., Smith, J.L., Amonette, J.E., Bailey, V.L., Brice, D.J., Gonzalez, H.F., Graham, R.L., Gunderson, C.A., Izaurralde, R.C., Jardine, P.M., Jastrow, J.D., Kerley, M.K., Matamala, R., Mayes, M.A., Metting, F.B., Miller, R.M., Moran, K., Post III, W.M., Sands, R.D., Schadt, C.W., Phillips, J.R., Thomson, A.M., Tyler, D.D., Vugteveen, T., West, T.O., and Wullschleger, S.D. 2010. Intra-annual changes in biomass, carbon, and nitrogen dynamics at 4-year old switchgrass field trials in West Tennessee, USA. *Agriculture, Ecosystems, and Environment* 136: 177-184.
50. Mayes, M.A. Review of *Soil Carbon Sequestration and the Greenhouse Effect*. 2010. R. Lal and R.F. Follett, Co-editors; Soil Science Society of America Special Publication 57 2nd Edition. 2009. *Vadose Zone Journal* 9:202-203.
51. Mayes, M.A., **Tang, G.,** Jardine, P.M., McKay, L.D., Yin, X.L., Pace, M.N., Parker, J.C., Zhang, F., Mehlhorn, T.L., and *Dansby-Sparks, R.N.* 2009. Influence of sedimentary bedding on reactive transport parameters under unsaturated conditions. *Soil Science Society of America Journal* 73:1938-1946, doi:10.2136/sssaj2008.0317

52. **Tang, G.**, Mayes, M.A., Parker, J.C., Yin, X.L., Watson, D.B., and Jardine, P.M. 2009. Improving parameter estimation for column experiments by multi-model evaluation and comparison. *Journal of Hydrology* 376, 567–578. doi:10.1016/j.jhydrol.2009.07.063.
53. **Tang, G.**, Alshawabkeh, A.N. and Mayes, M.A. 2008. Automatic time stepping with global error control for groundwater flow models. *Journal of Hydrologic Engineering* 13(9):803-810.
54. **Tang, G.**, Perfect, E., **van den Berg, E.H.**, Mayes, M.A. and Parker, J.C. 2008. Estimating effective hydraulic parameters of unsaturated layered sediments using a Cantor Bar composite medium model. *Vadose Zone Journal* 7:493-499 (doi:10.2136/vzj2007.0013).
55. Pace, M.N., Mayes, M.A., Jardine, P.M., McKay, L.D, Yin, X.L., Mehlhorn, T.L., Liu, Q., and H. Gürleyük. 2007. Transport of Sr<sup>2+</sup> and SrEDTA<sup>2-</sup> in partially-saturated and heterogeneous sediments. *Journal of Contaminant Hydrology* 91:267-287 (doi:10.1016/j.jconhyd.2006.11.006).
56. Gwo, J.-P., Mayes, M.A., and Jardine, P.M. 2007. Quantifying the physical and chemical mass transfer processes for the fate and transport of Co(II)EDTA in a partially-weathered limestone-shale saprolite. *Journal of Contaminant Hydrology* 90:184-202 (doi: 10.1016/j.jconhyd.2006.09.013).
57. Jardine, P.M., Mayes, M.A., Mulholland, P.J., Hanson, P.J., Tarver, J.R., Luxmoore, R.J., McCarthy, J.F., and Wilson, G.V. 2006. Vadose zone flow and transport of dissolved organic carbon at multiple scales in humid regimes. *Vadose Zone Journal* 5:140-152, doi: 10.2136/vzj2005.0036.
58. Ginder-Vogel, M., Borch, T., Mayes, M.A., Jardine, P.M., and Fendorf, S.E. 2005. Chromate reduction and retention processes within Hanford sediments. *Environmental Science and Technology* 39:7833-7839.
59. Mayes, M.A., Mehlhorn, T.L., and Jardine, P.M. 2005. Coupled hydrological and geochemical processes influencing the transport of chelated metals in the ORNL vadose zone and groundwater. *In: ACS Symposium Series 910: Biogeochemistry of Chelating Agents*, Nowack, B. and Van Briesen, J., Eds., pp. 297-315.
60. Mayes, M.A., Yin, X.L., Pace, M.N., and Jardine, P.M. 2005. Rates and mechanisms of Co(II)EDTA<sup>2-</sup> interactions with sediments from the Hanford site. *In: ACS Symposium Series 910: Biogeochemistry of Chelating Agents*, Nowack, B. and Van Briesen, J., Eds., pp. 278-296.
61. Mayes, M.A., Pace, M. N., Jardine, P.M., Fendorf, S.E., Farrow, N.D., Yin, X.L, and Zachara, J.M. 2005. Coupled hydrological and geochemical processes governing the fate and transport of Sr and U in the Hanford vadose zone. *In: ACS Symposium Series 904: Subsurface Contamination Remediation Accomplishments of the Environmental Management Science Program*, Zachry, T., and Berkey, E., Eds., pp. 229-250.
62. Mayes, M.A., Jardine, P.M., Mehlhorn, T.L., Bjornstad, B.N., Ladd, J.L., and Zachara, J.M. 2003. Transport of multiple tracers in variably saturated humid region structured soils and semi-arid region laminated sediments. *Journal of Hydrology* 275: 141-161, doi: 10.1016/S0022-1694(03)00039-8.
63. Pace, M.N., Mayes, M.A., Jardine, P.M., Mehlhorn, T.L., Zachara, J.M., and Bjornstad, B.N. 2003. Quantifying the effects of small-scale heterogeneities on flow and transport in undisturbed cores from the Hanford Formation. *Vadose Zone Journal* 2: 664-676, doi: 10.2113/2.4.664.
64. Gwo, J.P., D’Azevedo, E.F., Frenzel, H., Mayes, M.A., Yeh, G.-T., Jardine, P.M., Salvage, K.M., and Hoffman, F.M. 2001. HBGC123D: a high performance computer model of coupled hydrological and biogeochemical processes. *Computer and Geosciences* 27: 1231-1242.
65. Mayes, M.A., Jardine, P.M., Larsen, I.L., Brooks, S.C., and Fendorf, S.E. 2000. Multispecies transport of metal-EDTA and chromate complexes through undisturbed columns of weathered fractured saprolite. *Journal of Contaminant Hydrology* 45: 243-265, doi: 10.1016/S0169-7722(00)00108-X.
66. Jardine, P.M., Fendorf, S.E., Mayes, M.A., Larsen, I.L., Brooks, S.C., and Bailey, W.B. 1999. Fate and transport of hexavalent chromium in undisturbed heterogeneous soil. *Environmental Science and Technology* 33: 2939-2944.

## Data Products, Reports, and Technical Manuscripts

- Mathews, T.J., Mayes, M.A., Brooks, S.C., Johs, A., Nair, S., **Muller, K.**, *Goñez-Rodríguez, L.*, DeRolph, C., Hills, A.D., Carter, E., McManamay, R., Watson, D.B., and Peterson, M.J. (2019) Mercury Remediation Technology Development for Lower East Fork Poplar Creek—FY2019 Update. ORNL/SPR-2019/1243. Oak Ridge: Oak Ridge National Laboratory.
- Sihi, D.**, López-Lloreda, C., **Brenner J. M.**, Quinn R. K., Phillips J. R., Mayes, M. A. (2020) Soil chemistry data across a catena in the Luquillo Experimental Forest, Puerto Rico, A Comprehensive Framework for Modeling Emissions from Tropical Soils and Wetlands, doi:10.15485/1618870, 2020.
- Sihi, D.**, López-Lloreda, C. **Brenner J. M.**, Quinn R. K., Phillips J. R., Newman B. D., Mayes, M. A. (2020) Porewater data across a catena in the Luquillo Experimental Forest, Puerto Rico. A Comprehensive Framework for Modeling Emissions from Tropical Soils and Wetlands, doi:10.15485/1618869, 2020.
- Sihi, D.**, Salazar-Ortíz, M., Mayes, M. A. (2020) Soil chamber fluxes (CO<sub>2</sub> and CH<sub>4</sub>) across a catena in the Luquillo Experimental Forest, Puerto Rico, A Comprehensive Framework for Modeling Emissions from Tropical Soils and Wetlands, doi:10.15485/1632882, 2020.
- Kluber, L. A.**, Phillips, J. R., Wang, W., *Singh, S.*, Jagadamma, S., Schadt, C. W., Mayes, M. A. (2020) Soil respiration and microbial biomass from soil incubations with <sup>13</sup>C labeled additions. Oak Ridge National Laboratory, TES SFA, U.S. Department of Energy, Oak Ridge, Tennessee, U.S.A. <https://doi.org/10.3334/CDIAC/ormlsfa.010>.
- Brenner, J.M.**, Porter, W.S., Phillips, J.R., Mayes, M.A. (2018) Phosphorus sorption to tropical soils with relevance to Earth system model needs. <https://doi.org/10.15486/ngt/1434046>.
- Peterson, M.J., Brooks, S.C., Mathews, T.J., Mayes, M.A., Johs, A., McManamay, R., Watson, D.B., Muller, K., *Goñez Rodríguez, L.*, DeRolph, C., Nair, S. (2018) Mercury Remediation Technology Development for Lower East Fork Poplar Creek—FY2018 Update. ORNL/SPR-2018/912. Oak Ridge: Oak Ridge National Laboratory.
- Rebecca Ann Efroymsen, Matthew H Langholtz, Kristen Johnson, Bryce Stokes, Craig C Brandt, Maggie R Davis, Chad Hellwinckel, Keith L Kline, Laurence M Eaton, Jennifer Dunn, Christina E Canter, Zhangcai Qin, Hao Cai, Mr Michael Wang, D Andrew Scott, Henrietta I Jager, May Wu, Miae Ha, Latha Malar Baskaran, Jasmine A Kreig, Benjamin Rau, Augustine Muwamba, Carl Trettin, Sudhanshu Panda, Devendra M Amatya, Ernest W Tollner, Ge Sunn, Liangxia Zhang, Kai Duan, Ethan Warner, Yimin Zhang, Daniel Inman, Annika Eberle, Alberta Carpenter, Garvin Heath, Dylan Hettinger, Gangsheng Wang, Nate J Sutton, Ingrid Karin Busch, Deahn M Donner, T Bently Wigley, Dr Darren A Miller, Andre Coleman, Mark Wigmosta, *Molly Pattullo*, Melanie Mayes, Chris Daly, Mike Halbleib, Cristina Negri, Anthony F Turhollow Jr, Ian Bonner, Virginia H Dale. 2017. 2016 Billion-Ton Report: Advancing Domestic Resources for a Thriving Bioeconomy, Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1. ORNL/TM-2016/727. Oak Ridge National Laboratory, Oak Ridge, TN.
- Peterson, M.J., Mayes, M.A., Brooks, S.C., Mathews, T.J., Johs, A., Watson, D.B., McManamay, R., *Goñez Rodríguez, L.*, Muller, K., Smith, J., DeRolph, C., Olsen, T., Morris, J., Pierce, E., Lowe, K., Jones, M. 2018. Mercury remediation technology development for lower East Fork Poplar Creek—2017 progress report. ORNL/TM-2017/480. Oak Ridge National Laboratory, Oak Ridge, TN.
- Peterson, M.J., Mayes, M.A., Brooks, S.C., Mathews, T.J., Johs, A., Watson, D.B., McManamay, R., **Dickson, J.O.**, **Eller, V.**, Smith, J., Mehlhorn, T., Olsen, T., Morris, J., *Goñez Rodríguez, L.*, Lowe, K., C.R. **Poteat, M.D.**, DeRolph, C. 2017. Mercury remediation technology development for lower East Fork Poplar Creek—FY 2016 progress report. ORNL/SR-2016/494. Oak Ridge National Laboratory, Oak Ridge, TN.
- Peterson, M.J., Brooks, S.C., Mathews, T.J., Mayes, M.A., Johs, A., Watson, D.B., McManamay, R., **Dickson, J.O.**, **Eller, V.**, Smith, J., Mehlhorn, T., Olsen, T., Morris, J., *Goñez Rodríguez, L.*, Lowe, K.,

- C.R. **Poteat, M.D.**, DeRolph, C. 2016. Mercury remediation technology development for lower East Fork Poplar Creek—FY 2015 progress report. ORNL/SR-2016/494. Oak Ridge National Laboratory, Oak Ridge, TN.
- Watson, D., Bevelheimer, M., Brandt, C., DeRolph, C., Brooks, S., Mayes, M., Olsen, T., **Dickson, J.**, Peterson, M., and Ketelle, D. 2017. Evaluation of lower East Fork Poplar Creek mercury sources—Model update. Oak Ridge National Laboratory ORNL/SR-2016/503, Oak Ridge, TN, 128 pp.
- Dickson, J.**, Mayes, M., Earles, J., Mehlhorn, T., Lowe, K., Peterson, M., Pierce, E. 2016. Soil Investigation of Lower East Fork Poplar Creek. ORNL/TM-2015/374. Oak Ridge National Laboratory, Oak Ridge, TN.
- Peterson, M. J., Brooks, S.C., Mathews, T.M., Mayes, M.A., Johs, A., Watson, D.B., **Poteat, M.D.**, and Pierce, E. 2014. Mercury Remediation Technology Development for Lower East Fork Poplar Creek. ORNL/SPR-2014/645, Oak Ridge National Laboratory, Oak Ridge, TN.
- Jagadamma, S.**, Mayes, M.A., **Steinweg, J.M.**, **Wang, G.**, Post, W.M. 2014. Organic carbon sorption and decomposition in selected global soils. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, U.S.A. <http://dx.doi.org/10.3334/CDIAC/ornlsfa.002>

### Recent Presentations and Posters

- Li, J., **Jian, S.**, Wang, G., **Kluber, L.A.**, Schadt, C.W., Mayes, M.A. 2019. Multi-year incubation experiments boost confidence in model projections of long-term soil carbon dynamics (B21K-2362) American Geophysical Union, December 9-13, San Francisco, CA.
- Sihi, D.**, **Zheng, J.**, **Brenner, J.**, Phillips, J.R., **Singh, S.**, Pett-Ridge, J., Jagadamma, S., López-Lloreda, C., Mayes, M.A. 2019. Oscillating redox conditions controlled greenhouse gas dynamics in wet tropical forest soils. (B24E-07) American Geophysical Union, December 9-13, San Francisco, CA.
- Jian, S.**, Li, J., Wang, G., Mayes, M.A., **Kluber, L.A.**, Schadt, C.W. 2019. Seeking the best-fit microbial parameters via model calibrations: site-specific single dataset or cross-site multiple datasets? (B41I-2443) American Geophysical Union, December 9-13, San Francisco, CA.
- Song, Y.**, and Mayes, M.A. 2019. Microbial functional diversity mitigates projected soil carbon loss in response to climate change (B51G-2317). American Geophysical Union, December 9-13, San Francisco, CA.
- Mayes, M.A.**, **Brenner, J.**, Phillips, J., **Sihi, D.**, **Song, Y.**, Ottinger, S., López Lloreda, C., **Singh, S.**, Jagadamma, S., Tfaily, M.M., Paša-Tolic, L., Pan, C. 2019. Topographic controls over greenhouse gas emissions from Puerto Rican rainforest soils. Joint Genome Institute User Meeting, April 2-9, San Francisco, CA.
- Mayes, M.A.**, **Song, Y.**, Wang, D., **Sihi, D.**, Quinn, R., Phillips, J.R., **Brenner, J.**, Pan, C., **Yao, Q.**, **Johnston, E.R.**, **Kim, M.**, and Konstantinidis, K.T. 2018. Upscaling strategies for quantitative modeling of soil microbial metagenomics in a biogeochemical model. American Geophysical Union, December 10-14, Washington, D.C. (invited).
- Song, Y.**, Gu, L., and **Mayes, M.A.** 2018. Upscaling decomposition kinetics from enzyme to ecosystem: Developing a kinetic parameter database for metagenomics-informed soil biogeochemical models. American Geophysical Union, December 10-14, Washington, D.C.
- Sihi, D.**, **Mayes, M.A.**, Xu, X., **O'Connell, C.**, Silver, W., López-Lloreda, C., Yudkin, B., Quinn, R., **Zheng, J.**, **Brenner, J.**, Phillips, R., Gonzalez, G., and Newman, B. 2018. Evaluating a microbial functional group-based model to explain greenhouse gas productions and consumptions from Puerto Rican tropical forest soils. American Geophysical Union, December 10-14, Washington, D.C.

- Mayes, M.A.**, Birdsey, R., Romero-Lankao, P., Reed, S., Najjar, R., Marcotullio, P., West, T., Hristov, A., Cavallaro, N., and Shrestha, G. 2018. State of the carbon cycle in North America: Carbon management experiences and opportunities. American Geophysical Union, December 10-14, Washington, D.C.
- Birdsey, R., **Mayes, M.A.**, Reed, S., Najjar, R., Romero-Lankao, P., Cavallaro, N., and Shrestha, G. 2018. State of the carbon cycle in North America: Key findings from assessing a decade of science, decisions, and management impacts. American Geophysical Union, December 10-14, Washington, D.C.
- Li, J., *Jian S.*, de Koff, J., Lane, C., Wang, G., **Mayes, M.A.**, and Hui, D. 2018. Differential effects of warming and nitrogen fertilization on soil respiration and microbial dynamics in switchgrass croplands. American Geophysical Union, December 10-14, Washington, D.C.
- Chatterjee, A., Huntzinger, D.N., and **Mayes, M.A.**, and SOCCR2 Chapter 19 contributing authors. 2018. Future of the north American carbon cycle. American Geophysical Union, December 10-14, Washington, D.C.
- Mayes, M.A.**, *Song, Y.*, *Yao, Q.*, Pan, C., Wang, G., Yang, X., Turner, B.L., Wright, S.J., *Johnston, E.R.*, *Kim, M.*, Konstantinidis, K.T., Quinn, R., *Sihl, D.*, Tfaily, M., Paša-Tolic, L. 2018. Incorporating microbial “omics” information into a soil biogeochemical model: A novel model scheme to regulate microbial functions and soil carbon dynamics. Ecological Society of America, August 5-10, New Orleans, LA.
- López-Lloreda, C.D., McDowell, W.H., **Mayes, M.A.**, Potter, J.D., and Newman, B.D. 2018. Hurricanes Irma and María drove a pulse of salts through soils and streams of a tropical watershed. Ecological Society of America, August 5-10, New Orleans, LA.
- Liang, J.*, *Singh, S.*, Jagadamma, S., Riccuito, D.M., Gu, L., Hanson, P.J., Wood, J., Schadt, C.W., Wang, G., and **Mayes, M.A.** Asymmetric responses of microbial respiration to extreme drought and wetting. Ecological Society of America, August 5-10, New Orleans, LA.
- Moore, J.A.M.*, *Henning, J.A.*, Patterson, C., **Mayes, M.A.**, and Classen, A.T. 2018. Investigating the influence of the rhizosphere on carbon dynamics in a tropical forest. Ecological Society of America, August 5-10, New Orleans, LA.
- Li, Z.*, *Yao, Q.*, Guo, X., Biswas, A., **Mayes, M.A.**, Lebeis, S.L., Hurst, G.B., Hettich, R.L., and Pan, C. 2018. Organism-resolved meta-omics analysis reveals molecular details of nutrient metabolism in plant-selected rhizosphere communities. Ecological Society of America, August 5-10, New Orleans, LA.
- Yao, Q.*, *Li, Z.*, *Song, Y.*, Wright, S.J., Guo, X., Biswas, A., Tringe, S.G., Hazen, T.C., Turner, B.L., **Mayes, M.A.**, and Pan, C. 2017. Characterizing microbe response to p availability in panama soils by long term fertilization. DOE Joint Genome Institute annual meeting, March 20-23, Walnut Creek, CA.
- Johnston, E.R.*, *Kim, M.*, Hatt, J.K., Phillips, J.R., *Yao, Q.*, *Song, Y.*, Pan, C., Hazen, T.C., **Mayes, M.A.**, and Konstantinidis, K.T. 2017. Phosphate addition increases CO<sub>2</sub> respiration in tropical soils primarily by promoting microbial growth. Multi-omics for Microbiomes Conference, August 1-3, Pasco, WA.
- Mayes, M.A.**, *Song, Y.*, *Yao, Q.*, Pan, C., Hazen, T.C., Wang, G., Yang, X., *Li, Z.*, *Biswas, A.*, Wright, S.J., Turner, B.L., *Johnston, E.R.*, *Kim, M.*, Konstantinidis, K.T., Thornton, P., Tfaily, M., Paša-Tolic, L., and Tringe, S.G. 2017. Linking proteogenomics with a soil carbon decomposition model.”Multi-omics for Microbiomes Conference, Aug 1-3, Pasco, WA.
- Johnston, E.R.*, *Kim, M.*, Hatt, J.K., Phillips, J.R., *Yao, Q.*, *Song, Y.*, Pan, C., Hazen, T.C., **Mayes, M.A.**, and Konstantinidis, K.T. 2017. Phosphate addition increases CO<sub>2</sub> respiration in tropical soils primarily by promoting microbial growth. Argonne Soil Metagenomics Meeting, November 1-3, Lemont, IL.

- Mayes, M.A.**, Abramoff, R.Z., Xu, X., Hartman, M.D., Feng, W., Davidson, E., Finzi, A., Moorhead, D., Schimel, J., and O'Brien, S.L. Measurable pools of soil carbon for carbon cycle modeling. American Geophysical Union, December 12-16, San Francisco, CA, 2016 (invited).
- Mayes, M.A.**, Reed, S.C., Najjar, R., Romero-Lankao, P., and Birdsey, R.B. State of the Carbon Cycle of North America: Overarching Findings. American Geophysical Union, December 12-16, San Francisco, CA, 2016.
- Song, Y., Yao, Q.**, Wang, G., Yang, X., Pan, C., *Johnston, E. Kim, M.*, Konstantinidis, K.T., Hazen, T.C., Turner, B.L., Wright, S.J., and **Mayes, M.A.** Integrating “omics” data into a biogeochemical model: A new model scheme to predict climate feedbacks from microbial function in tropical ecosystems. American Geophysical Union, December 12-16, San Francisco, CA, 2016.
- Jian, S., Celada, S., de Koff, Guo, C.*, **Mayes, M.A.**, Wang, G., and Li, J. Soil respiration, microbial biomass and exoenzyme activity in switchgrass stands under nitrogen fertilization management and climate warming. American Geophysical Union, December 12-16, San Francisco, CA, 2016.
- Wang, G., Huang, W., Zhou, G., **Mayes, M.A.** Soil moisture drives microbial controls on carbon decomposition in two subtropical forests. American Geophysical Union, December 12-16, San Francisco, CA, 2016.
- Wang, G., and **Mayes, M.A.** Explicit representation of microbial and enzyme functions in terrestrial ecosystem model. The 16th International Symposium on Microbial Ecology, Montreal, CA, 2016 (invited).
- Wang, G., Thornton, P.E., Yuan, F., Tang, G., Yang, X., **Mayes, M.A.**, and Hoffman, F.M. Incorporating microbial mechanisms into the ACME land model. Ecological Society of America, August 7-12, Ft. Lauderdale, FL, 2016.
- Mayes, M.A.**, Reed, S., Thornton, P.E., Lajtha, K., Bailey, V.L., Shrestha, G., Jastrow, J.D., and Torn, M.S. The contribution of soils to North America’s current and future. American Geophysical Union, December 14-18, San Francisco, CA, 2015.
- Mayes, M.A.**, Jiang, J., Wang, G., Classen, A., Schadt, C.W., Hawkes, C.V., Keitt, T. Tradeoffs in incorporating microbial function into soil organic carbon decomposition models. Ecological Society of America, August 10-14, Baltimore, MD, 2015 (invited).
- Wang, G., Thornton, P.E., **Mayes, M.A.**, Hoffman, F.M. Soil carbon and nitrogen mineralization with flexible soil and microbial C:N ratios. Ecological Society of America, August 10-14, Baltimore, MD, 2015 (invited).
- Todd-Brown, K., **Mayes, M.A.** Modeling the gap: Scaling soil carbon models from the microbe to the globe. Ecological Society of America, August 10-14, Baltimore, MD, 2015.
- Johnston, E.R., Li, Z., Harris, A., Turner, B.L., Wright, S.J., Pan, C., Konstantinidis, K.T., Hazen, T.C., **Mayes, M.A.** Predicting climate feedbacks: metabolic response of soil microbial communities to phosphorus and oxygen availability in tropical ecosystems. May 30 – June 2, New Orleans, LA, 2015.
- Allison, S., Li, J., Luo, Y., **Mayes, M.A.**, and Wang, G. Insights from intercomparison of microbial and conventional soil models. American Geophysical Union, December 15-19, San Francisco, CA, 2014 (invited).
- Wang, G., **Mayes, M.A.**, Thornton, P.E., and Hoffman, F. Soil carbon and nitrogen mineralization with flexible soil and microbial C:N ratios. American Geophysical Union, December 15-19, San Francisco, CA, 2014.

- Mayes, M.A.**, Dabbs, J.M., Steinweg, J.M., Schadt, C.W., Kluber, L., Wang, G., Jagadamma, S. Measures of microbial biomass for soil carbon decomposition models. American Geophysical Union, December 15-19, San Francisco, CA, 2014.
- Goswami, S., Wullschleger, S., **Mayes, M.A.**, Polsky, Y., McIntyre, T. A smart sensor network for near real time data quality flagging and archiving of environmental data. American Geophysical Union, December 15-19, San Francisco, CA, 2014.
- Mayes, M.A.**, Post, III, W.M., Ambaye, H., Petridis, L., Jagadamma, S., Wang, G., Lauter, V., Steinweg, J.M., and Kilbey II, S.M. Current understanding and future directions: The form and function of the organo-mineral interface. Complex Soil Systems Conference, LBNL, September 2-5, Berkeley, CA, 2014.
- Mayes, M.A.**, Wang, G., Tang, G., Xu, X., and Jagadamma, S. Including microbial assimilation in carbon cycle models: letting data guide model development. American Geophysical Union, December 9-13, San Francisco, CA, 2013 (invited).
- Wang, G., **Mayes, M.A.**, Gu, L., and Schadt, C.W. Representation of dormant and active microbial dynamics for ecosystem modeling. American Geophysical Union, December 9-13, San Francisco, CA, 2013.
- Hui, D., **Mayes, M.A.**, and Wang, G. Kinetic parameters of phosphatase: A quantitative synthesis. Ecological Society of America, August 4-9, Minneapolis, MN, 2013.
- Mayes, M.A.** Development and testing microbial enzyme decomposition with the \*MEND\* model. June 27, Shenyang Agricultural University, China, 2013 (invited).
- Mayes, M.A.** Introduction to ORNL and science talk. June 30, Shenyang Agricultural University, China, 2013 (lecture).
- Steinweg, J.M., Dabbs, J., Jagadamma, S., Schadt, C.W., and **Mayes, M.A.** Relationships between measurable soil carbon pools and microbial community composition. Soil Ecology Society, June 11-14, Rutgers University, Camden, NJ, 2013.
- Jagadamma, S., Steinweg, J.M., and **Mayes, M.A.** Influence of substrate chemistry on organic carbon decomposition and microbial community. Soil Ecology Society, June 11-14, Rutgers University, Camden, NJ, 2013.
- Ambaye, H., Lauter, V., **Mayes, M.A.**, Jagadamma, S., and Petridis, L. Understanding the internal structure of layered organic compounds deposited on mineral surface using neutron reflectivity. American Physics Society, Baltimore MD, March 18-20, 2013.
- Wang, G., **Mayes, M.A.**, Jagadamma, S., Steinweg, J.M., and Post, W.M. Microbial controls on soil organic matter decomposition: Testing the MEND model with lab-scale incubation experiments. North American Carbon Program, February 4-7, Albuquerque, NM, 2013.
- Mayes, M.A.** Modeling microbial and molecular scale mechanisms of organic carbon cycling. University of Tennessee Earth and Planetary Sciences Department, January 10, Knoxville, TN, 2013 (invited).