

Richard P. Fiorella

Modeling and Observations of Earth Systems Group
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EDUCATION

- 2016 Ph.D., Geology, **University of Michigan - Ann Arbor**
Thesis advisor: Christopher J. Poulsen
- 2012 M.S., Earth and Environmental Sciences, **University of Michigan - Ann Arbor**
- 2009 B.S., Chemistry, **University of Pittsburgh**
B.A., Environmental Studies, **University of Pittsburgh**

PROFESSIONAL POSITIONS

- 2023- Scientist 2, **Los Alamos National Laboratory**
- 2026- Joint Appointment, **University of Michigan**
- 2023-2026 Research Scientist, **New Mexico Consortium**
- 2021-2025 Adjunct Assistant Professor, Geology and Geophysics, **University of Utah**
- 2021-2023 Director's Postdoctoral Fellow, **Los Alamos National Laboratory**
- 2019-2021 Faculty Fellow, Global Change and Sustainability Center, **University of Utah**
- 2019-2021 Research Assistant Professor, Geology and Geophysics, **University of Utah**
- 2018-2019 Postdoctoral Scholar, Biology, **University of Utah**
- 2016-2018 Postdoctoral Scholar, Geology and Geophysics, **University of Utah**

AWARDS

- 2023 Department of Energy Office of Science Early Career Research Award
- 2017 John Dorr Graduate Achievement Award,
Department of Earth and Environmental Sciences, University of Michigan
- 2013 Outstanding Student Research Award, Geological Society of America
- 2011 National Science Foundation Graduate Student Research Award

PUBLICATIONS

Author in bold, student/postdoc advisees in italics.

Submitted and in review publications

1. Still, C.J., Hawkins, L., Rastogi, B., Diehl, J., Arroyo-Vargas, P., Daly, C., Doolittle, C., **Fiorella, R.P.**, Hammond, B., Hanson, C., Harrington, C., Helbig, M., Jones, K., Lamanna, J., Mekonnen, Z., Page, G., Richardson, A., Riley, W.J., Rupp, D., Segura, C., Talberth, J., Telg, H., Vierra, B., Woodruff, D., Holz, A., Sibley, A., Schulze, M., and Beedlow P. (2026). Impacts of Extreme Heat: Tree and Forest Responses to the 2021 Pacific Northwest Heat Wave. Submitted to *Nature* on 2026-07-09.
2. *Velez-Pardo, M.*, Noone, D.C., and **Fiorella, R.P.** (2026). Global Isotopic Footprint in Urban Atmospheric Water Vapor. Submitted to *Nature Communications* on 2026-07-08.

3. Dillard, S.L., Marin-Spiotta, E., Andresen, C.G., Thomas, L., Thaler, E., Conroy, N., Renner, C., Santos, F., Breen, A.L., **Fiorella, R.P.**, Bennett, K.E. (2026). Repeated fire increases soil pyrogenic carbon storage in Alaskan Tundra. Submitted to *Permafrost and Periglacial Processes* on 2026-04-29.
4. Chen, H., Good, S.P., Caylor, K.K., **Fiorella, R.P.**, Haagsma, M., Wang, L. (2025). Methodological Divergence Drives Systematic Uncertainty in Transpiration Flux in Highly Vegetated Biomes. Submitted to *Nature Ecology & Evolution* on 2025-12-01.
5. Yang, D., Hantson, W., Brown, C., Murphy, B.A., Dillard, S.L., Zhu, X., Santos, F., Tao, J., Di Domenico, N., Tas, N., Dafflon, B., Bennett, K.E., **Fiorella, R.P.**, Lara, M.J., Mekonnen, Z.A., Griffiths, N.A., Farley, M., Orndahl, K., Kim, J.E., Hoy, E., Wang, J., Frost, G.V., Riley, W., Ely, K.S., Berner, L.T., Breen, A., Collins, A., Euskirchen, E., Fisher, J.B., Goetz, S.J., Giuntori, A., Hayes, D., Kumar, J., Massoud, E., Macander, M., Miller, C.E., Montesano, P., Myers-Smith, I.H., Rixen, C., Rogers, A., Rogers, B.M., Romanovsky, V., Serbin, S., Trotter, C., Watts, J., Wang, C., Bolton, W.R., and Iversen, C.M. (2025). Sources of Vegetation Heterogeneity in Arctic Tundra and Implications for Earth System Feedbacks. Submitted to *New Phytologist* on 2025-10-29.

Peer-reviewed publications

36. Dütsch, M., Fairall, C.W., Blossey, P.N., and **Fiorella, R.P.** (2026). A new theoretical framework for parameterizing nonequilibrium fractionation during evaporation from the ocean. *Journal of Advances in Modeling Earth Systems*, v. 18(3), doi: [10.1029/2025MS005229](https://doi.org/10.1029/2025MS005229)
35. Chen, H., Good, S.P., Caylor, K.K., **Fiorella, R.P.**, Wang, L. (2026). A hybrid Penman-Monteith and machine learning model for simulating evapotranspiration and its components. *Journal of Hydrology*, v. 668, doi: [10.1016/j.jhydrol.2026.134985](https://doi.org/10.1016/j.jhydrol.2026.134985)
34. Chen, H., Good, S.P., Zahn, E., Bou-Zeid, E., Caylor, K., **Fiorella, R.P.**, Haagsma, M., and Wang, L. (2026). Shifts in evapotranspiration components during heatwaves alter surface cooling. *Earth's Future*, v. 14(2), doi: [10.1029/2025EF006562](https://doi.org/10.1029/2025EF006562)
33. Bhattacharya, T., Fastovich, D., Maupin, C.R., Thompson, A.E., Feng, R., McClymont, E.L., Bong, H., Legrande, A.N., Dee, S., and **Fiorella, R.P.** (2026). Leaf wax hydrogen isotope ratios reflect storm track position over western North America. *Paleoceanography and Paleoclimatology*, v. 41(4), doi: [10.1029/2025PA005342](https://doi.org/10.1029/2025PA005342)
32. Bong, H., LeGrande, A. N., Dee, S., Zhu, J., Cauquoin, A., Ding, Q., **Fiorella, R.P.**, Dutrievoz, N., Tanoue, M., Frazer, M., Sarkar, M., Agosta, C., Yoshimura, K., Werner, M., Okazaki, A., Risi, C., Steen-Larsen, H. C., Casado, M., Wahl, S., Nusbaumer, J., Worden, J., Good, S., Bailey, A., Schneider, M., Noël, S., Mandal, S., Bowman, K., Li, Y., Schmidt, G. A. (2026). Water Isotope Model Intercomparison Project (WisoMIP): Present-day Climate. *Journal of Geophysical Research: Atmospheres*, v. 131(3), doi: [10.1029/2025JD044985](https://doi.org/10.1029/2025JD044985)
31. Huang, X., Zhang, Y., Gao, B., Abolt, C.J., Crumley, R.L., Demir, C., **Fiorella, R.P.**, Busey, B., Bolton, B., Painter, S.L., and Bennett, K.E. (2026). Runoff evaluation in an Earth System Land Surface Model for Permafrost Regions. *Geoscientific Model Development*, v. 19(3), doi: [10.5194/gmd-19-1193-2026](https://doi.org/10.5194/gmd-19-1193-2026)
30. Siler, N., **Fiorella, R.P.**, and Kukla, T. (2025). A unified interpretation of variability in precipitation isotope ratios. *Journal of Climate*, v. 38(6), doi: [10.1175/JCLI-D-4-0427.1](https://doi.org/10.1175/JCLI-D-4-0427.1)
29. Atkins, J., Aho, K., Chen, X., Elmore, A., **Fiorella, R.P.**, Luo, W., Lombardozzi, D., Lunch, C., Manak, L., de Pablo, L.X., Myers-Pigg, A., Record, S., Qiu, T., Reed, S., Ruddell, B., Strange, B., Torrens, C.,

- Yule, K., Richardson, A. (2025). Recommendations for developing, documenting, and distributing data products derived from NEON data. *Ecosphere*, v. 16(1), doi: [10.1002/ecs2.70159](https://doi.org/10.1002/ecs2.70159)
28. Haagsma, M., Finkenbiner, C.E., Noone, D.C., Bowen, G.J., Still, C., **Fiorella, R.P.**, Good, S.P. (2024). Using an isotope-enabled mass balance to evaluate existing land surface models. *Water Resources Research*, v. 60(12), doi: [10.1029/2024WR037530](https://doi.org/10.1029/2024WR037530)
 27. Carlo, A.D., Sterling, R.A., Mao, J., **Fiorella, R.P.**, Fortney, J.C., Unützer, J., and Wong, E.S. (2023). Characteristics of Veterans with Depression who use the Veterans Choice Program of the Veterans Health Administration. *Psychiatric Services*, v. 75(4), doi: [10.1176/appi.ps.202100731](https://doi.org/10.1176/appi.ps.202100731)
 26. Li, B., Good, S.P., **Fiorella, R.P.**, Finkenbiner, C.E., Bowen, G.J., Noone, D.C., Still, C.J., and Anderegg, W.R.L. (2023). Stable isotopes contain substantial additive information about terrestrial carbon and water cycling. *Environmental Research Letters*, v. 18, 094065, doi: [10.1088/1748-9326/acf4ab](https://doi.org/10.1088/1748-9326/acf4ab)
 25. Hawkins, L.R., Bassouni, M., Anderegg, W.R.L., Venturas, M., Good, S.P., Kwon, H., Hanson, C., **Fiorella, R.P.**, Bowen, G.J., and Still, C.J. (2022). Comparing model representations of physiological limits on transpiration at a semi-arid ponderosa pine site. *Journal of Advances in Modeling Earth Systems*, doi: [10.1029/2021MS002927](https://doi.org/10.1029/2021MS002927)
 24. Finkenbiner, C.E., Li, B., Spencer, L., **Fiorella, R.P.**, Allen, S.T., Good, S.P., Bowen, G.J., and Still, C.J. (2022). The NEON Daily Isotopic Composition of Environmental Exchanges Dataset. *Scientific Data*, v. 9, 353., doi: [10.1038/s41597-022-01412-4](https://doi.org/10.1038/s41597-022-01412-4)
 23. **Fiorella, R.P.**, Kannenberg, S.A., Anderegg, W.R.L., Monson, R.K., and Ehleringer, J.R. (2022). Heterogeneous isotope effects decouple conifer leaf and phloem sugar $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$. *Oecologia*, v. 198, p. 357-370, doi: [10.1007/s00442-022-05121-y](https://doi.org/10.1007/s00442-022-05121-y)
 22. Aron, P.G., Poulsen, C.J., **Fiorella, R.P.**, Levin, N.E., Acosta, R.P., Yanites, B.J., and Cassel, E.J. (2021). Variability and Controls on $\delta^{18}\text{O}$, d-excess, and $\Delta^{17}\text{O}$ in Southern Peruvian Precipitation. *Journal of Geophysical Research: Atmospheres*, v. 126(23), doi: [10.1029/2020JD034009](https://doi.org/10.1029/2020JD034009)
 21. **Fiorella, R.P.**, Siler, N., Nusbaumer, J., and Noone, D.C. (2021). Enhancing understanding of the hydrological cycle via pairing of process-oriented and isotope ratio tracers. *Journal of Advances in Modeling Earth Systems*, v. 13(10), doi: [10.1029/2021MS002648](https://doi.org/10.1029/2021MS002648)
 20. Follstad Shah, J.J., Bares, R., Bowen, B.B., Bowen, G.J., Bowling, D.R., Eiriksson, D.P., Fasoli, B., **Fiorella, R.P.**, Hallar, A.G., Horel, J.D., Hinnert, S.J., Jacques, A.A., Jamison, L.R., Lin, J.C., Mendoza, D.L., Mitchell, L.E., Pataki, D.E., Skiles, S.M., Smith, R.M., Wolf, M.A., and Brooks, P.D. (2021). The Wasatch Environmental Observatory: A mountain-to-urban research network in the semi-arid Western US. *Hydrological Processes*, v. 35(9), doi: [10.1002/hyp.14352](https://doi.org/10.1002/hyp.14352)
 19. **Fiorella, R.P.**, Good, S.P., Allen, S.T., Guo, J.S., Noone, D.C., Anderegg, W.R.L., Florian, C.R., Luo, H., Pingintha-Durden, N., and Bowen, G.J. (2021). Macroscale Patterns in Calibrated NEON Atmospheric Carbon Isotope Observations. *Journal of Geophysical Research: Biogeosciences*, v. 126(3), doi: [10.1029/2020JG005862](https://doi.org/10.1029/2020JG005862)
 18. Kannenberg, S.A., **Fiorella, R.P.**, Anderegg, W.R.L., Monson, R.K., and Ehleringer, J.R. (2021). Seasonal and diurnal trends in progressive isotope enrichment along needles in two pine species. *Plant, Cell, and Environment*, v. 44(1), p. 143-155, doi: [10.1111/pce.13915](https://doi.org/10.1111/pce.13915)
 17. Finkenbiner, C.E., Good, S.P., Allen, S.T. **Fiorella, R.P.**, and Bowen, G.J. (2021). A Statistical Method for the Temporal Downscaling of Geochemical Tracer Datasets. *Journal of Hydrometeorology*, v.

22(6), p. 1473-1486., doi: [10.1175/JHM-D-20-0142.1](https://doi.org/10.1175/JHM-D-20-0142.1)

16. Aron, P.G., Poulsen, C.J., **Fiorella, R.P.**, Matheny, A.M., and Veverica, T.J. (2020). An Isotopic Approach to Quantify Transpiration in a Mixed Deciduous Forest. *Ecohydrology*, v. 13(6), doi: [10.1002/eco.2229](https://doi.org/10.1002/eco.2229)
15. **Fiorella, R.P.**, Bares, R., Lin, J.C., and Bowen, G.J. (2019). Wintertime decoupling of urban valley and rural ridge water vapor revealed through stable water isotopes. *Atmospheric Environment*, v. 213, p. 337-348, doi: [10.1016/j.atmosenv.2019.06.022](https://doi.org/10.1016/j.atmosenv.2019.06.022)
14. Aron, P.G., Poulsen, C.J., **Fiorella, R.P.**, and Matheny, A.M. (2019). Stable Water Isotopes Reveal Effects of Intermediate Disturbance and Canopy Structure on Forest Water Cycling. *Journal of Geophysical Research: Biogeosciences*, v. 124(10), doi: [10.1029/2019JG005118](https://doi.org/10.1029/2019JG005118)
13. Putman, A.L., **Fiorella, R.P.**, Cai, Z., and Bowen G.J. (2019). A Global Perspective on Local Meteoric Water Lines: Meta-analytic Insight into Fundamental Controls and Practical Constraints. *Water Resources Research*, v. 55(8), doi: [10.1029/2019WR025181](https://doi.org/10.1029/2019WR025181)
12. **Fiorella, R.P.**, West, J.B., and Bowen G.J. (2019). Biased estimates of the isotope ratios of steady-state evaporation from the assumption of equilibrium between vapor and precipitation. *Hydrological Processes*, v. 33, p. 2576-2590, doi: [10.1002/hyp.13531](https://doi.org/10.1002/hyp.13531)
11. Bowen, G.J., Cai, Z., **Fiorella, R.P.**, and Putman, A.L. (2019). Isotopes in the Water Cycle: Regional-to Global-Scale Patterns and Applications. *Annual Reviews in Earth and Planetary Sciences*, v. 47, p. 453-479, doi: [10.1146/annurev-earth-053018-060220](https://doi.org/10.1146/annurev-earth-053018-060220)
10. Jameel, Y., Brewer, S., **Fiorella, R.P.**, Tipple, B.J., Terry, S., and Bowen, G.J. (2018). Isotopic reconnaissance of urban water supply system dynamics. *Hydrology and Earth System Science*, v. 22, p. 6109-6125, doi: [10.5194/hess-22-6109-2018](https://doi.org/10.5194/hess-22-6109-2018)
9. **Fiorella, R.P.**, Poulsen, C.J., and Matheny A.M. (2018). Seasonal patterns of water cycling in a deep, continental mountain valley inferred from stable water vapor isotopes. *Journal of Geophysical Research: Atmospheres*, v. 123(14), p. 7271-7291, doi: [10.1029/2017JD028093](https://doi.org/10.1029/2017JD028093)
8. **Fiorella, R.P.**, Bares, R., Lin, J.C., Ehleringer, J.R., and Bowen, G.J. (2018). Detection and variability of combustion-derived vapor in an urban basin. *Atmospheric Chemistry and Physics*, 18(12), P. 8529-8547, doi: [10.5194/acp-18-8529-2018](https://doi.org/10.5194/acp-18-8529-2018)
7. **Fiorella, R.P.** and Sheldon, N.D. (2017). Equable end Mesoproterozoic climate in the absence of high CO₂. *Geology*, v. 45(3), p. 231-234, doi: [10.1130/G38682.1](https://doi.org/10.1130/G38682.1)
6. Skinner, C.B., Poulsen, C.J., Chadwick, R., Diffenbaugh, N.S., and **Fiorella, R.P.** (2017). The role of plant CO₂ physiological forcing in shaping future daily-scale precipitation. *Journal of Climate*, v. 30(7), p. 2319-2340, doi: [10.1175/JCLI-D-16-0603.1](https://doi.org/10.1175/JCLI-D-16-0603.1)
5. Matheny, A.M., **Fiorella, R.P.**, Bohrer, G., Poulsen, C.J., Morin, T.H., Wunderlich, A., Vogel, C.S., and Curtis, P.S. (2016). Contrasting strategies of hydraulic control in two co-dominant temperate tree species. *Ecohydrology*, e1815, doi: [10.1002/eco.1815](https://doi.org/10.1002/eco.1815)
4. **Fiorella, R.P.**, Poulsen, C.J., Pillco Zolá, R.S., Jeffery, M.L., and Ehlers, T.A. (2015). Modern and long-term evaporation of central Andes surface waters suggests paleo archives underestimate Neogene elevations. *Earth and Planetary Science Letters*, 432, p. 59-72, doi: [10.1016/j.epsl.2015.09.045](https://doi.org/10.1016/j.epsl.2015.09.045)

3. **Fiorella, R.P.**, Poulsen, C.J., Pillco Zolá, R.S., Barnes, J.B., Tabor, C.R., and Ehlers, T.A. (2015). Spatiotemporal variability of modern precipitation $\delta^{18}\text{O}$ in the central Andes and Implications for Paleoclimate and Paleoelevation Estimates. *Journal of Geophysical Research: Atmospheres*, 120(10), p. 4630-4656, doi: [10.1002/2014JD022893](https://doi.org/10.1002/2014JD022893)
2. **Fiorella, R.P.** and Poulsen, C.J. (2013). Dehumidification over tropical continents reduces climate sensitivity and inhibits snowball Earth initiation. *Journal of Climate*, 26, p. 9677-9695., doi: [10.1175/JCLI-D-12-00820.1](https://doi.org/10.1175/JCLI-D-12-00820.1)
1. An, J., **Fiorella, R.P.**, Geib, S.J., and Rosi, N.L. (2009). Synthesis, structure, assembly, and modulation of the CO_2 adsorption properties of a zinc-adeninate macrocycle. *Journal of the American Chemical Society*, 131(4), p. 8401-8403, doi: [10.1021/ja901869m](https://doi.org/10.1021/ja901869m)

Commentaries

1. Bowen, G.J. and **Fiorella, R.P.** (2021). Water emissions put a damper on the coal-to-gas transition. *Proceedings of the National Academy of Sciences*, v. 118(5), e2024360118, doi: [10.1073/pnas.2024360118](https://doi.org/10.1073/pnas.2024360118)

MEDIA COVERAGE

5-1-2024	Following the Flow	1663 Magazine
8-8-2023	Congrats to scientists who won DOE Early Career Research Awards	LANLToday
8-8-2023	Four LANL scientists win research awards	Santa Fe New Mexican

GRANTS AND FUNDING

External

1. NA. "Probing water cycle processes and extremes in coastal and urban environments using water isotope ratio tracers and numerical tags." Department of Energy Office of Science, Office of Biological and Environmental Research, Earth and Environmental System Science Division, Earth System Model Development and Regional and Global Model Analysis Programs. \$2,500,000.
2. NA. "Improving ESS approaches to evapotranspiration partitioning through data fusion." Department of Energy Office of Science, Office of Biological and Environmental Research, Earth and Environmental System Science Division, Environmental System Science. \$399,000 total, \$39,000 to Los Alamos National Laboratory.
3. NA. "Collaborative Research: Testing controls on source, sink, and lifetime of atmospheric water with numerical tags and stable isotope ratios." National Science Foundation, Division of Atmospheric and Geospace Science, Climate and Large-Scale Dynamics Program, \$756,921 total, \$76,541 to University of Utah.
4. NA. "Collaborative Research: Testing controls on source, sink, and lifetime of atmospheric water with numerical tags and stable isotope ratios." National Science Foundation, Division of Atmospheric and Geospace Science, Climate and Large-Scale Dynamics Program, \$756,921 total, \$234,419 to New Mexico Consortium.
5. NA. Geological Society of America Graduate Student Research Grant, \$2,500.
6. NA. National Science Foundation, Graduate Research Fellowship Award, \$130,000.

Internal

1. NA. “Testing Rainfall Controls on Net Ecosystem exchange with the LANL Rainfall Simulator.” Center for Earth and Space Sciences Rapid Response Research and Development, \$62,251.
2. NA. “Using NEON Stable Isotope Data to Improve Ecosystem Simulation in Earth System Models.” Director’s Postdoctoral Fellowship, \$259,500.
3. NA. Graduate Student Research Fellowship, University of Michigan Biological Station, \$1,500.
4. NA. Scott Turner Award, University of Michigan Department of Earth and Environmental Sciences, \$2,400.
5. NA. Rackham International Research Award, University of Michigan, \$4,500.
6. NA. Rackham Graduate School Graduate Student Research Grant, University of Michigan, \$3,000.
7. NA. Scott Turner Award, University of Michigan Department of Earth and Environmental Sciences, \$2,400.
8. NA. Scott Turner Award, University of Michigan Department of Earth and Environmental Sciences, \$2,400.
9. NA. Rackham Graduate School Graduate Student Research Grant, University of Michigan, \$1,500.

ADVISING

Postdoctoral Researcher Mentoring

2025- Cansu Demir, Los Alamos National Laboratory
2024- Martin Velez Pardo, Los Alamos National Laboratory
2024- Shannon Dillard, Los Alamos National Laboratory

PhD Committee Member

2021-2024 Paige Austin, University of Utah

Graduate Student Interns

2024 Jada Langston, Los Alamos National Laboratory
2024 Cat Collins, Los Alamos National Laboratory
2023 Christopher Grover, New Mexico Consortium
2023 Dianne Deauna, New Mexico Consortium

Undergraduate Student Interns

2019-2020 Sierra Hymas, University of Utah
2019-2020 Hayley Lind, University of Utah

CONFERENCE PRESENTATIONS

57. Bong, H., LeGrande, A.N., Dee, S., Zhu, J., Cauquoin, A., **Fiorella, R.P.**, Ding, Q., Dutrievoz, N., Tanoue, M., Frazer, M., Sarkar, M., Agosta, C., Yoshimura, K., Werner, M., Okazaki, A., Risi, C., Steen-Larsen, H.C., Casado, M., Wahl, S., Nusbaumer, J., Worden, J., Good, S., Bailey, A., Schneider, M., Noël, S., Mandal, S., Bowman, K., Li, Y., and Schmidt, G.A. (2025). Stable Water

Isotope Intercomparison Group Phase 3: Present-day Climate. *American Geophysical Union Annual Meeting*. December 15-19, New Orleans, LA.

56. Kukla, T., **Fiorella, R.P.**, and Siler, N. (2025). The limits of modeling water isotopes from moisture convergence alone. *American Geophysical Union Annual Meeting*. December 15-19, New Orleans, LA.
55. Chen, H., Good, S.P., Matos, K., Allen, S.T., Cayor, K., **Fiorella, R.P.**, and Wang, L. (2025). A Systematic Review of Five Evapotranspiration Partitioning Methods Across NEON Sites. *American Geophysical Union Annual Meeting*. December 15-19, New Orleans, LA.
54. Still, C.J., Hawkins, L.R., Vierra, B., Jones, K., Helbig, M., **Fiorella, R.P.**, and Rastogi, B. (2025). Resilience and recovery from an extreme heat wave: the role of canopy structure and stature. *American Geophysical Union Annual Meeting*. December 15-19, New Orleans, LA.
53. Velez-Pardo, M., Noone, D.C., and **Fiorella, R.P.** (2025). A Robust Urban Signal in Atmospheric Water Vapor. *American Meteorological Society Annual Meeting*. January 25-29, 2026, Houston, TX.
52. Moy, C.K., Solander, K.C., Crumley, R.C., and **Fiorella, R.P.** (2025). Forecasting Alaskan River Temperature to Assess Salmon Viability. *American Geophysical Union Annual Meeting*. December 15-19, New Orleans, LA.
51. Dütsch, M., Fairall, C.W., Blossey, P.N., and **Fiorella, R.P.** (2025). A new theoretical framework for parameterizing nonequilibrium fractionation during evaporation from the ocean. *American Geophysical Union Annual Meeting*. December 15-19, New Orleans, LA.
50. Bennett, K.E., Bachand, C.L., **Fiorella, R.P.**, Trotter, C.W., Crumley, R.L., Wang, C., Dafflon, B., Sulman, B.N., Thornton, P.E., Iversen, C.M. (2024). Improved snow distribution for the Arctic. *International Conference on Arctic Research Planning*. March 20-28, Boulder, CO.
49. Macarewich, S., Welker, J., Zhu, J., Nusbaumer, J., Herrington, A., **Fiorella, R.P.**, Dar, S.S., Otto-Bliesner, B.L., Brady, E.C. (2024). Investigating Controls on the Isotopic Composition of Precipitation in the Continental United States using Numerical Tracers in the Community Earth System Model. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
48. **Fiorella, R.P.**, Chen, H., Good, S.P., Wang, L., Caylor, K., Zahn, E., and Bou-Zeid, E. (2024). Comparing observational constraints on T/ET from NEON sites to the CMIP6 ensemble. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
47. Chen, H., Good, S.P., Zahn, E., Bou-Zeid, E., Caylor, K., **Fiorella, R.P.**, Wang, L. (2024). Observed decline in transpiration and its fractional contribution to evapotranspiration during heatwaves. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
46. **Fiorella, R.P.**, Noone, D.C., Siler, N., Kukla, T., Velez-Pardo, M., Macarewich, S., and Nusbaumer, J. (2024). Linking water isotope ratios to water cycle changes using process-oriented numerical tracers. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
45. Velez-Pardo, M., Collins, C., Noone, D.C., and **Fiorella, R.P.** (2024). Using water isotope ratios in models and observations to improve mechanistic understanding of coastal urban hydroclimate. Case study of Houston, TX. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
44. Bennett, K.E., Bachand, C.L., **Fiorella, R.P.**, Trotter, C.W., Crumley, R.L., Sulman, B.N., Thornton, P.E., Iversen, C.M. (2024). Improved subgrid snow distribution in the E3SM land model for the

Arctic. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..

43. Zhang, Y., Huang, X., Abolt, C.J., Painter, S.L., Bennett, K.E., **Fiorella, R.P.** (2024). Evaluation of Earth System Model Representation of Subsurface Thermal Dynamics of Arctic Landscapes: Insight from an Intermodel Comparison at a Column Scale. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
42. Coon, E.T., Gao, B., Schwenk, J., Cooper, M.G., Zhou, T., **Fiorella, R.P.**, Rathore, S.S., Beisman, J.J., Hetland, R., Moulton, J.D., and Painter, S.L. (2024). Purpose-built modeling to inform climate impact mitigation. *American Geophysical Union Fall Meeting*. December 9-13, Washington, D.C..
41. Record, S., Malone, S., Albert, S., Aston, I., Balch, J.K., Balk, M., Betts, M.G., Blanchard, J.L., Crimmins, T., Dietze, M., Eichenwald, A.J., Eloie-Fadrosh, E.A., **Fiorella, R.P.**, Hensley, R., Hudson, A., Jirniec, V., Knott, J., LaDeau, S.L., Luther, D., Mabey, P., Marshall, M., Petruzza, S., Richardson, A.D., Rodriguez, J.M., Rubenstein, D., Serbin, S.P., Shepard, I., Sokol, E.R., Thoms, J.C., and Wall, C.C. (2024). Ten simple rules to promote FAIR and Open Science When Reusing Data from Ecological Research Networks. *Ecological Society of America Annual Meeting*. August 4-9, Long Beach, CA.
40. Bachand, C., Bennett, K., **Fiorella, R.P.**, and Crumley, R. (2023). Improving E3SM's Representation of Snow in the Arctic.. *American Geophysical Union Fall Meeting*. December 11-15, San Francisco, CA.
39. Kukla, T., Siler, N., **Fiorella, R.P.**, Laguë, M., Rugenstein, J.K.C, and Swann, A.L.S. (2023). Large isotopic signals in tropical precipitation require non-local hydrologic change.. *American Geophysical Union Fall Meeting*. December 11-15, San Francisco, CA.
38. Dütsch, M., Fairall, C.W., Blossey, P.N., and **Fiorella, R.P.** (2023). A new theoretical framework for parameterizing nonequilibrium fractionation during evaporation from the ocean.. *European Geophysical Union Annual Assembly*. April 23-28, Vienna, AT.
37. Henze, D., Noone, D., de Szoeke, S.P., **Fiorella, R.P.**, Blossey, P.N., and Bailey, A.R. (2022). Vertical structure of turbulence and fluxes across cloud mesoscale organizations from the WP-3D Orion Aircraft during ATOMIC.. *American Geophysical Union Fall Meeting*. December 12-16, Chicago, IL.
36. Good, S.P., Finkenbiner, C.E., Li, B., **Fiorella, R.P.**, Allen, S.T., Noone, D.C., Still, C.J., Anderegg, W.R.L., and Bowen, G.J. (2022). Hydrologic insights from NEON stable isotope observations. *Frontiers in Hydrology Meeting*. June 19-24, San Juan, PR.
35. Hawkins, L.R., Good, S.P., Fickle, J.C., Anderegg, W.R.L., Jarecke, C.M., **Fiorella, R.P.**, Noone, D.C., Bowen, G.J., Selker, J.S., and Still, C.J. (2022). The importance of soil hydraulic functions in regulating ecosystem drought stress responses in land process models.. *Frontiers in Hydrology Meeting*. June 19-24, San Juan, PR.
34. Li, B., Good, S.P., Finkenbiner, C.E., **Fiorella, R.P.**, Bowen, G.J., Still, C.J., Noone, D.C., and Anderegg, W.R.L. (2021). Stable isotopes contain unique additive information about carbon and water cycles in arid environments.. *American Geophysical Union Fall Meeting*. December 13-17, New Orleans, LA.
33. Allen, S.T., **Fiorella, R.P.**, Guo, J.S., Good, S.P., Austin, P.L., Hawkins, L.R., Finkenbiner, C.E., Noone, D.C., Still, C.J., Anderegg, W.R.L., and Bowen, G.J. (2021). Evapotranspiration partitioning and root water sources in a sagebrush shrubland.. *American Geophysical Union Fall Meeting*. December 13-17, New Orleans, LA.

32. Siler, N., **Fiorella, R.P.**, and Noone, D.C. (2021). A Unified Theory of Variability in Precipitation Isotope Ratios. *American Geophysical Union Fall Meeting*. December 13-17, New Orleans, LA.
31. Finkenbiner, C.E., Good, S.P., Li, B., **Fiorella, R.P.**, Allen, S.T., Bowen, G.J., Still, C.J., and Noone, D.C. (2021). Evaluation of Land Surface Model Evapotranspiration Partitioning using NEON Water Isotope Datasets across the United States.. *American Geophysical Union Fall Meeting*. December 13-17, New Orleans, LA.
30. Hawkins, L.R., Still, C.J., Bassouni, M., Anderegg, W.R.L., Riley, W.J., Lawrence, D.M., Mekonnen, Z.A., **Fiorella, R.P.**, Good, S.P., Bowen, G.J. (2021). Metrics, Measurements, and Methods for Advancing Ecosystem Model Evaluation. *American Geophysical Union Fall Meeting*. December 13-17, New Orleans, LA.
29. Guo, J.S., Allen, S.T., **Fiorella, R.P.**, Still, C.J., Anderegg, W.R.L., and Bowen, G.J. (2020). Vertical partitioning of root distributions correlated with ecophysiological characteristics: Initial results from NEON megapit data. *American Geophysical Union Fall Meeting*. December 1-17, virtual.
28. **Fiorella, R.P.**, Guo, J.S., Good, S.P., Allen, S.T., Anderegg, W.R.L., Finkenbiner, C., Hawkins, L.R., Noone, D., Still, C.J., and Bowen, G.J. (2020). Calibration strategies for NEON carbon and water vapor isotope observations and cross-network patterns.. *Ecological Society of America Annual Meeting*. August 3-6, virtual.
27. Allen, S.T., **Fiorella, R.P.**, Guo, J.S., Good, S.P., Noone, D.C., Anderegg, W.R.L., and Bowen, G.J. (2019). Canopy interception losses of rainfall in North American biomes.. *American Geophysical Union Fall Meeting*. December 9-13, San Francisco, CA.
26. **Fiorella, R.P.**, Kannenberg, S.A., Anderegg, W.R.L., Ehleringer, J.R., and Monson, R.K. (2019). A string-of-lakes in Ponderosa Pine needles: progressive leaf water and organic matter oxygen isotope enrichment and implications for tree-ring reconstructions.. *American Geophysical Union Fall Meeting*. December 9-13, San Francisco, CA.
25. Allen, S.T., **Fiorella, R.P.**, Guo, J.S., Good, S.P., Noone, D.C., Anderegg, W.R.L., and Bowen, G.J. (2019). Accounting for interception loss in evapotranspiration partitioning. *US CLIVAR Water Isotopes and Climate Workshop*.. October 1-3., Boulder, CO.
24. **Fiorella, R.P.**, Allen, S.T., Guo, J., Anderegg, W.R.L., Good, S.P., Noone, D.C., Still, C.J., West, J.B., and Bowen, G.J. (2019). Evaluating the assumption of equilibrium between precipitation and vapor using data and models.. *US CLIVAR Water Isotopes and Climate Workshop*.. October 1-3., Boulder, CO.
23. **Fiorella, R.P.**, Anderegg, W.R.L., Good, S.P., Noone, D.C., Still, C.J., and Bowen, G.J. (2019). Developing a continental-scale theory for predicting ecosystem transpiration with NEON flux tower measurements. *European Geophysical Union Annual Assembly*. April 10-14, Vienna, AT.
22. Putman, A.L., **Fiorella, R.P.**, Cai, Z., and Bowen, G.J. (2018). A global perspective on local meteoric water lines: Metanalytic insight into fundamental controls and practical constraints. *American Geophysical Union Fall Meeting*. December 10-14, Washington, D.C..
21. **Fiorella, R.P.**, West, J.B., Putman, A.L., Cai, Z., and Bowen, G.J. (2018). Spatial patterns of bias during steady-state evaporation from the assumption of equilibrium between vapor and precipitation. *American Geophysical Union Fall Meeting*. December 10-14, Washington, D.C..
20. Jameel, Y., Brewer, S., **Fiorella, R.P.**, Tipple, B.J., Bowen, G.J., and Terry, S. (2017). Estimates of water source contributions in a dynamic urban water supply system inferred via a Bayesian stable

- isotope mixing model.. *American Geophysical Union Fall Meeting*. December 11-15, New Orleans, LA.
19. **Fiorella, R.P.**, Bares, R., Lin, J.C., Strong, C., and Bowen, G.J. (2017). Variability in the combustion-derived fraction of urban humidity during Salt Lake City winter estimated from stable water vapor isotopes and its relationship to atmospheric stability and inversion structure. *American Geophysical Union Fall Meeting*. December 11-15, New Orleans, LA.
 18. **Fiorella, R.P.**, Hyland, E.G., and Sheldon, N.D. (2017). Reconciling Divergent Carbon Isotope Responses in Ocean and Terrestrial Proxy Records to Constrain Causal Mechanisms for the Early Eocene Climatic Optimum. *Climate and Biotic Events of the Paleogene 2017*. September 3-7, Alta, UT.
 17. **Fiorella, R.P.**, Noone, D.C., Frank, J., Williams, D.G., Johnson, J.E., and Bowen, G.J. (2017). Scaling point observations of water vapor isotope compositions to understand regional hydrologic cycling.. *Integrated Carbon and Water Ecological and Biogeochemical Synthesis*. February 27-28, Stevenson, WA.
 16. Sheldon, N.D., **Fiorella, R.P.**, and Mitchell, R.L. (2016). O₂, CH₄, and sustained Mesoproterozoic climate equability.. *American Geophysical Union Fall Meeting*. December 12-16., San Francisco, CA.
 15. Aron, P., Poulsen, C.J., and **Fiorella, R.P.** (2016). A direct measurement of the stable isotopes of transpired water vapor in a northern Michigan forest.. *American Geophysical Union Fall Meeting*. December 12-16., San Francisco, CA.
 14. **Fiorella, R.P.**, Poulsen, C.J., Matheny, A.M., Sanchez, C.R., Fotis, A.T., Morin, T.H., Vogel, C.S., Gough, C.M., Aron, P., Bohrer, G. (2016). Responses to an Intermediate Disturbance Revealed Through Stable Water Vapor Isotopes. *American Geophysical Union Fall Meeting*. December 12-16., San Francisco, CA.
 13. Matheny, A.M., Bohrer, G., **Fiorella, R.P.**, and Mirfenderesgi, G. (2016). Plant hydraulic traits govern forest water use and growth. *European Geophysical Union Annual Assembly*. April 17-22, Vienna, AT.
 12. Matheny, A.M., Bohrer, G., **Fiorella, R.P.**, and Mirfenderesgi, G. (2015). Proposed hydrodynamic model improves resolution of species-specific responses to drought and disturbance.. *American Geophysical Union Fall Meeting*. December 14-18, San Francisco, CA.
 11. **Fiorella, R.P.**, Matheny, A.M., Poulsen, C.J., and Bohrer, G. (2015). Constraints on water cycling in a deep mountain valley from stable water isotope and sap flux measurements. *American Geophysical Union Fall Meeting*. December 14-18, San Francisco, CA.
 10. Sheldon, N.D., **Fiorella, R.P.**, and Domagal-Goldman, S. (2015). A terrestrial perspective on Archean and Proterozoic habitability on Earth. *Astrobiology Science Conference, Abstract #7546*. June 15-19, Chicago, IL.
 9. Poulsen, C.J., Feng, R., and **Fiorella, R.P.** (2014). The Role of Topography on Continental Water Cycling and Water Stable Isotope Compositions over Geological Time Scales. *American Geophysical Union Fall Meeting*. December 15-19, San Francisco, CA.
 8. Hyland, E.G., **Fiorella, R.P.**, and Sheldon, N.D. (2014). Reexamining causal mechanisms for the Early Eocene Climatic Optimum.. *Geological Society of America Annual Meeting*. October 19-22, Vancouver, CA.

7. **Fiorella, R.P.**, Poulsen, C.J., Pillco Zolá, R.S., Jeffery, M.L., and Ehlers, T.A. (2014). Incorporating evaporation histories into paleoaltimetry reconstructions: an Andean case-study.. *Geological Society of America Annual Meeting*. October 19-22, Vancouver, CA.
6. Sheldon, N.D. and **Fiorella, R.P.** (2014). Mesoproterozoic Climate equability in the absence of high CO₂.. *Goldschmidt Conference*. June 8-13, Sacramento, CA.
5. **Fiorella, R.P.** and Poulsen, C.J. (2013). Paleogeographic controls on climate sensitivity and feedback strength and their impacts on snowball Earth initiation.. *American Geophysical Union Fall Meeting*. December 9-13, San Francisco, CA.
4. Poulsen, C.J. and **Fiorella, R.P.** (2013). Climate sensitivity in the pre-Cenozoic World. *Pre-Cenozoic Climate Workshop*. June 17-19, Toulouse, FR.
3. **Fiorella, R.P.**, Poulsen, C.J., Ehlers, T.A., Jeffery, M.L., and Pillco Zolá, R.S. (2012). Exceptional isotopic variability in stream waters of the central Andes: large scale or local controls?. *American Geophysical Union Fall Meeting*. December 3-7, San Francisco, CA.
2. Link, P., Goldner, A., Whadcoat, S., and **Fiorella, R.P.** (2012). Variability of oceanic and terrestrial water vapor sources in the Amazon Basin: An investigation using TES satellite and MERRA reanalysis at varying temporal resolutions. *American Geophysical Union Chapman Conference on Remote Sensing of the Terrestrial Water Cycle*. February 19-22, Kona, HI.
1. **Fiorella, R.P.**, Poulsen, C.J., Jablonowski, C., and Bitz, C.M. (2011). Resistance to Snowball Earth Initiation in the CAM3.1 Slab Ocean Model. *American Geophysical Union Fall Meeting*. December 5-9, San Francisco, CA.

PROFESSIONAL SERVICE

Technical Advisory Committees

2017-	Member, National Ecological Observatory Network Atmospheric Isotope Technical Working Group
2020-	Chair, National Ecological Observatory Network Atmospheric Isotope Technical Working Group
2024-2025	Secretary, National Ecological Observatory Network Science, Technology, and Education Advisory Committee
2022-2025	Member, National Ecological Observatory Network Science, Technology, and Education Advisory Committee

Conference Sessions

- American Geophysical Union, 2016, 2024

Funding Reviews

1. National Aeronautics and Space Administration (2021)
2. National Science Foundation (2019, 2021, 2022)

Journal Reviews

1. American Journal of Science (2022)
2. Atmosphere (2018, 2019, 2021)

3. Atmospheric Chemistry and Physics (2022, 2025)
4. Climate Dynamics (2021)
5. Climate of the Past (2017, 2022)
6. Communications Earth & Environment (2023)
7. Earth System Science Data (2020)
8. Earth and Planetary Science Letters (2021)
9. Earth and Space Science (2020)
10. Earth's Future (2025)
11. Ecohydrology (2022)
12. Environmental Data Science (2023)
13. Environmental Science and Technology (2025)
14. Geology (2018, 2019)
15. Geophysical Research Letters (2015, 2017, 2020, 2021, 2022)
16. Hydrological Processes (2019, 2020, 2021, 2022)
17. Hydrological Sciences Journal (2024)
18. Journal of Advances in Modeling Earth Systems (2025)
19. Journal of Climate (2017, 2018)
20. Journal of Experimental Botany (2021, 2022)
21. Journal of Geophysical Research: Atmospheres (2016, 2018, 2019, 2020, 2021, 2024)
22. Journal of Geophysical Research: Biogeosciences (2019, 2020, 2021, 2025)
23. Journal of Hydrology (2015, 2019)
24. Journal of Hydrology: Regional Studies (2021)
25. Journal of Hydrometeorology (2018, 2019, 2020)
26. Journal of Radioanalytical and Nuclear Chemistry (2025)
27. Limnology and Oceanography (2024)
28. Nature Communications (2024, 2025)
29. Nature Geoscience (2024, 2025)
30. New Phytologist (2021)
31. Oecologia (2020)
32. PeerJ (2018)
33. PloS One (2020)
34. Science Advances (2021, 2023)
35. Scientific Reports (2019, 2022)
36. Water (2020)
37. Water Resources Research (2017)
38. Wiley Interdisciplinary Reviews: Water (2023, 2024)

OUTREACH AND COMMUNITY INVOLVEMENT

- 2019 ACCESS Capstone Debate Judge, University of Utah, Salt Lake City, UT
- 2016 Science Fair Judge, Eastwood Elementary School, Salt Lake City, UT
- 2014 Contributing Editor, Science in the Classroom, scienceintheclassroom.org
- 2013 University of Michigan Museums Identification Day, Ann Arbor, MI

PROFESSIONAL AFFILIATIONS

- American Geophysical Union

- American Association for the Advancement of Science