

Curriculum Vitae for Dr. James R. Ehleringer

University	School of Biological Sciences	Telephone: 801-971-6004
Address:	University of Utah, 257 S 1400 E	Web: http://ehleringer.net
	Salt Lake City, Utah 84112-0840	E-mail: jim.ehleringer@utah.edu

Education:

B.S.	San Diego State University	1972
M.S.	San Diego State University	1973
Ph.D.	Stanford University	1977

University of Utah Affiliations:

2000-present	Distinguished Professor, School of Biological Sciences, http://ecophys.utah.edu
2000-present	Adjunct Distinguished Professor of Geology & Geophysics
1984-2023	Director, Stable Isotope Ratio Facility for Environmental Research (SIRFER); http://sirfer.utah.edu
2009-2015	Director, Global Change and Sustainability Center http://environment.utah.edu
2013-2016	Member, UU Sustainability leadership team, http://sustainability.utah.edu
2008-2010	Research Director, Entrada Field Station, http://riomesa.utah.edu
1993-1996	Chair of Biology, Department of Biology, http://biology.utah.edu
1984-2000	Professor, Department of Biology
1980-1984	Associate Professor, Department of Biology
1977-1980	Assistant Professor, Department of Biology

Commercial Affiliations:

2004-2020	Senior scientist or advisor	IsoForensics, Inc., Salt Lake City
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Certifications:

- Certified Approved Forensic Practitioner, Forensic Isotope Ratio Mass Spectrometry Network, 2013-present (<http://www.forensic-isotopes.org/fafp.html>)

Research Expertise:

- Plant physiological ecology and ecosystem ecology
- Stable isotope ecology
- Greenhouse gases in natural ecosystems and urban regions
- Stable isotope forensics
- Stable isotopes in plants, animals, hydrology, foods, beverages, and plant products

Ecosystem Field Experiences:

Agricultural	Amaranth, castor bean, common bean, cotton, sunflower
Alpine tundra	Colorado
Arid and semi-arid	Argentina, Arizona, Australia, California, Chile, Mexico, Nevada, Utah
Temperate forests	California, Canada, Maine, Massachusetts, Oregon, Utah, Washington
Tropical rainforests	Brazil, China, French Guiana, Puerto Rico
Urban	Salt Lake Valley, Utah

Forensic Stable Isotope Ratio Experiences:

Anthropology	Bones, food, hair, teeth
Beverages	Beer, juices, milk, coffees, soft drinks, spirits, wines, bottled water, coconut water

Biology - animals	Feathers, tissues, teeth, hair, wool
Biology - microbes	Culture media, spores
Biology - plants	Leaves, tree rings, wood, cellulose, inflorescences
Controlled substances	Cocaine, heroin, marijuana, pseudoephedrine
Explosives	High energy, military, nitrates, peroxides
Foods	Beer, carbohydrates, coconut waters, coffees, honeys, meats, oils, proteins, spirits, wines
Gases	Carbon dioxide, methane, water vapor
Humans	Body water, bone, diet history, fingernails, hair, teeth, travel history
Law enforcement	Controlled substances, explosives, food, fraud, manufactured materials, unidentified decedents,
Manufactured items	Clothing, counterfeits, currencies, documents, inks, paper products
Waters	Drinking water, groundwater, surface water, plants, precipitation, rivers

Courses developed and taught at the University of Utah; current year teaching is in bold:

Biology 1620	Fundamentals of Biology II YOUTUBE channel
Biology 3960	Fresher Seminar and Lab: Stable Isotopes – You Are What You Eat (http://www.ehleringer.net/fresher.html)
Biology 5460/5465	Plant Ecology in a Changing World, Lecture and Laboratory (http://www.plantecology.net) YOUTUBE channel
Biology 5470/5475	Stable Isotope Biogeochemistry and Ecology, Lecture and Laboratory
Biology 6921	Isotopes Seminar
Biology 7463/7465	Stable Isotope Biogeochemistry and Ecology, Lecture and Laboratory (http://www.stableisotopes.net). YOUTUBE channel
Sustainability 6000	Global Changes and Society (originally Biology 7961) (https://environment.utah.edu/students/gcsc-courses)
Honors 3700	Think Tank – Wasatch Water: Evaporating Opportunities (http://honors.utah.edu/students/engaged-learning/praxis-labs/ecosystem-services-and-the-american-dream/)

National and International Instructional Courses Developed:

1996-2023	IsoCamp, Stable Isotope Biogeochemistry and Ecology Lectures and Laboratory (Originator and coordinator), http://stableisotopes.net YOUTUBE channel
1996-2014	Government applications of stable isotopes in forensics

Honors and Distinctions:

2017	Outstanding Education Program in Earth and Space Science Award, American Geophysical Union
2016-present	The Ehleringer Prize, annual named prize recognizing an outstanding graduate student ecological publication in <i>Oecologia</i> each year
2016	Rosenblatt Prize for Excellence, University of Utah
2016	Elected as member of the U.S. National Academy of Sciences
2016	Elected as Fellow of the Ecological Society of America
2008	Elected as Fellow of the American Geophysical Union
2000	Elected Distinguished Professor, University of Utah
1999	Governors Medal for Science and Technology, State of Utah
1999	Elected as Fellow of the American Association for Advancement of Science
1998	Students Choice Award for Teaching, University of Utah
1988	Distinguished Research Award, University of Utah

1984	Alexander von Humboldt Fellowship
1978	Murray Buell Award, Ecological Society of America
1974-1977	Carnegie Predoctoral Fellow, Carnegie Institution of Washington, Stanford
1974	Achievement Rewards for College Scientists (ARCS) Scholarship
1971	Outstanding Graduating Senior, Sciences, San Diego State University
1969-1971	Golden Scholarship, San Diego State University

Professional Service:

Editorial Boards:

Editorial Board	Oecologia	1982-present
Editor-in-chief	Oecologia	1989-2006
Editorial Board	Physiological Ecology Series, Academic Press	1988-2004
Editorial Board	Plant Cell Environment	1992-2012
Editorial Board	Trends in Plant Science	1998-2007
Editorial Board	Tree Physiology	1998-2014
Editorial Board	Functional Ecology	1986-2000
Section Head	Physiological Ecology, Faculty of 1000	2004-2010

Advisory Boards and Consortia:

1986-2011	Ecology Institute Board (Terrestrial Ecology), Oldendorf
1992-1994	Physiological Ecology Section, Ecological Society of America, Chair
1997-2003	Global Change and Terrestrial Ecosystems (GCTE), Focus 1 Office, Core Project of the International Geosphere Biosphere Program (IGBP), Chair
1997-2006	Biosphere-Atmosphere Stable Isotope Network (BASIN), Chair
1997-2010	Biosphere-Atmosphere Stable Isotope Network (BASIN), Steering Committee
1998-2003	Carbon Science Working Group, IGBP
1999-2003	Global Change and Terrestrial Ecosystems (GCTE), Vice Chair
2000-2009	Max-Planck-Institut für Biogeochemie, Advisory Board
2002-2008	NITECRIME, member
2004-2005	Research Infrastructure Committee, National Ecological Observatory Network
2007-2009	National Ecological Observatory Network (NEON), Board of Directors
2004-present	Founding member, Forensic Isotope Ratio Mass Spectrometry Network, FIRMS
2006-2018	Biological and Environmental Research Advisory Committee (BERAC), DOE
2015-2018	Western Water Alliance, External Advisory Board
2018-2022	Friends of Alta, board member
2020-2022	Development of the Environmental Dashboard for the Central Wasatch Commission (with Phoebe McNealy, DIGIT Lab)

Scientific Review Boards:

1983-2005, various years	NSF, panel member
1983-1992, various years	USDA, panel member
1986-1987	Plant Response to Environmental Stress, USDA-CRGO, Program Manager
1990-2017, various years	DOE, panel member
1990-1992	National Research Council, Committee on Plant Sciences
1993-1994	U.S. Nuclear Waste Regulatory Board, panel member
2001-2004, various years	NASA, panel member
2016-2022	Division of Environment and Life Sciences (DELS) Advisory Panel, U.S. National Academy of Sciences

Workshops and Events (Organizer or Co-organizer):

- 1984 Workshop on Future Needs in Physiological Ecology, Asilomar (product is article)
- 1986 Stable Isotopes in Ecology, Lake Arrowhead (product is book)
- 1990 Ecological Society of America, 75th Annual Meeting, Snowbird
- 1990 Workshop on Scaling in Ecology, Snowbird (product is book)
- 1992 Carbon & Water Relations Perspectives from Stable Isotopes, Riverside (book product)
- 1995 Ecological Society of America, 80th Annual Meeting, Snowbird
- 1997 Biosphere-Atmosphere Stable Isotope Network Workshop, Snowbird
- 1998 Biosphere-Atmosphere Stable Isotope Network Workshop, Barcelona (article product)
- 2000 GCTE International Science Conference, Barcelona
- 2000 Controls Over Soil Respiration and Decomposition Workshop (GCTE), Jena
- 2000 Ecological Society of America, 85th Annual Meeting, Snowbird
- 2000 CO₂ Boundary Layer Budget Flux Methods Workshop, Gubbio (article product)
- 2001 Atmospheric CO₂ and its Effects on Plants, Animals and Ecosystems, Snowbird (product is book)
- 2002 Stable Isotopes in Biosphere-Atmosphere Interactions, Banff (product is book)
- 2003 Stable Isotopic Signals of the Terrestrial Biosphere: Linking Ecosystem C fluxes to Isotopic Signals of Plant Components, Orvieto
- 2004 Partitioning of Fluxes Between the Biosphere and the Atmosphere Across Spatial Scales, Interlaken
- 2004 Organized formation of a National Stable Isotope Network in NEON, Park City
- 2005 Lead development of stable isotopes in the National NEON Plan, Tucson
- 2005 Lead coordinator for purchase and development of the Entrada Ranch in southern Utah as a University facility for research, teaching, and outreach (now Rio Mesa Center)
- 2006 Chair of DOE-BERAC Subcommittee review of elevated CO₂ ecosystem research within the Department of Energy (product is report)
- 2006 Lead coordinator to develop site locations and RFI responses for NEON research in the Great Basin (Domain 15)
- 2006 Isotopes as Recorders of Ecological Change, Tomar (product is book)
- 2009 Lead development of Global Change and Sustainability Center, University of Utah
- 2010 Co-lead development and implementation of EPSCoR Track-1: iUTAH, Urban Transitions and Aridregion Hydro-sustainability
- 2015 Co-lead, Workshop on the Development of an IFL Urban Observatory, BERAC, DOE (now a DOE program)

Publications (last ten years, 2014-2024):

- 447. Chesson, L.A., B.J. Tipple, J.D. Howa, G.J. Bowen, J.E. Barnette, T.E. Cerling, and J.R. Ehleringer. 2014. Stable isotopes in forensic applications. In H.D. Holland and K.K. Turekian (eds.), *Treatise of Geochemistry*, Second Edition, vol. 14, pages 285-317. Oxford, London.
- 448. Thompson, A.H., A.S. Wilson, and J.R. Ehleringer. 2014. Hair as a geochemical recorder: ancient to modern, pages 371-393. In H.D. Holland and K.K. Turekian (eds.), *Treatise of Geochemistry*, Second Edition, vol. 14. Oxford, London
- 449. Remien, C., F.R. Adler, L.A. Chesson, L.O. Valenzuela, J.R. Ehleringer, and T.E. Cerling. 2014. Deconvolution of isotope signals from bundles of multiple hairs. *Oecologia* 175:781-789. doi: 10.1007/s00442-014-2945-3
- 450. Howa, J.D., M.J. Lott, L.A. Chesson, and J.R. Ehleringer. 2014. Carbon and nitrogen isotope ratios of factory produced RDX and HMX. *Forensic Science International* 240:80-87.

Doi:10.1016/j.forsciint.2014.04.013

451. Howa, J.D., M.J. Lott, L.A. Chesson, and J.R. Ehleringer. 2014. Isolation and stable nitrogen isotope analysis of ammonium ions in ammonium nitrate pills using sodium tetraphenylborate. *Rapid Communications in Mass Spectrometry* 28:1530-1534, <http://dx.doi.org/10.1002/rcm.6929>
452. Chesson, L.A., B.J. Tipple, J.E. Barnette, T.E. Cerling, and J.R. Ehleringer. 2014. The potential for application of ink stable isotope ratio analysis in questioned document examination. *Science & Justice*, doi:10.1016/j.scijus.2014.05.010
453. Ehleringer, J.R., and D.R. Sandquist. 2014. Photosynthesis: physiological and ecological considerations, pages 245-268. In L. Taiz, E. Zeiger, I.M. Moller, and A. Murphy (eds.), *Plant physiology and development*, 6th edition, Sinauer Associates, Sunderland, MA.
454. Howa, J.D., M.J. Lott, and J.R. Ehleringer. 2014. Observations and sources of carbon and nitrogen isotope ratio variation of pentaerythritol tetranitrate (PETN). *Forensic Science International* 244:152-157.
455. Bender, R.L., D. L. Dufour, L.O. Valenzuela, T.E. Cerling, M. Sponheimer, J.C. Reina, and J.R. Ehleringer. 2014. Stable isotopes (carbon, nitrogen, sulfur), diet, and anthropometry in urban Colombian women: investigating socioeconomic differences. *American Journal of Human Biology* doi:10.002/ajhb.2264
456. Tipple, B, M. Berke, B. Hambach, J.S. Roden, and J.R. Ehleringer. 2014. Predicting leaf wax *n*-alkane ²H/¹H ratios: controlled water source and humidity experiments with hydroponically grown trees confirm predictions of Craig-Gordon model. *Plant, Cell and Environment* 38:1035-1047. doi:10.1111/pce.12457.
457. Good, S.P., C. D. Kennedy, J.C. Stalker, L. A. Chesson, L. O. Valenzuela, M. M. Beasley, J. R. Ehleringer, and G.J. Bowen. 2014. Patterns of local and non-local water resource use across the western United States determined via stable isotope intercomparisons. *Water Resource Research* 50(10):8034-8049. doi:10.1002/2014WR015884.
458. Bush, S.E., F.M. Hopkins, J.T. Randerson, C.T. Lai, and J.R. Ehleringer. 2015. Design and application of a mobile ground-based observatory for continuous measurements of atmospheric trace-gas and criteria pollutant species. *Atmospheric Measurement Techniques Discussions* 8:33-63. doi:10.5194/amtd-8-33-2015.
459. Mallia, D.V., J.C. Lin, S. Urbanski, J.R. Ehleringer, and T. Nehrkorn. 2015. Impacts of upstream wildfire emissions on CO, CO₂, and PM_{2.5} concentrations in Salt Lake City, Utah. *Journal of Geophysical Research: Atmospheres* doi: 10.1002/2014JD022472.
460. Taylor, A.J., C.T. Lai, F. Hopkins, S. Wharton, K. Bible, X. Xu, C. Phillips, S. Bush, and J. R. Ehleringer. 2015. Radiocarbon-based partitioning of soil respiration in an old-growth coniferous forest. *Ecosystems* doi:10.1007/s10021-014-9839-4
461. Gorski, G., C. Strong, S.P. Good, R. Bares, J.R. Ehleringer, and G.J. Bowen. 2015. Vapor hydrogen and oxygen isotopes reflect water of combustion in the urban atmosphere. *Proceedings of the National Academy of Sciences USA* 112:3247-3252. Doi:10.1073/pnas.1424728112.
462. Walsh, T.C., O.L. Miller, B.B. Bowen, Z.A. Levine, and J.R. Ehleringer. 2015. The sphere of

- sustainability: lessons from the University of Utah's Global Change and Society. *Journal of Water Resources Planning and Environment*. doi 10.1061/(ASCE)WR.1943-5452.0000514.
463. Hale, R.L., A. Armstrong, M.A. Baker, S. Bedingfield, D. Betts, C. Buahin, M. Buchert, T.A. Crowl, R.R. Dupont, J. R. Ehleringer, J. Endter-Wada, C. Flint, J. Grant, S. Hinners, Daniel Horns, J. Horsburgh, D. Jackson-Smith, A. S. Jones, C. Licon, S. E. Null, A. Odame, D.E. Pataki, D. Rosenberg, M. Runburg, P. Stoker, and C. Strong. 2015. iSAW: Integrating structure, actors, and water to study socio-hydro-ecological systems. *Earth's Future* 3:110-132. doi: 10.1002/2014EF000295
464. Lott, M.J., J.D. Howa, L.A. Chesson, and J.R. Ehleringer. 2015. Improved accuracy and precision in $\delta^{15}\text{N}_{\text{AIR}}$ measurements of explosives, urea, and inorganic nitrates by EA-IRMS using thermal decomposition. *Rapid Communications in Mass Spectrometry* 29:1381-1388.
465. Zazzo, A., T.E. Cerling, J.R. Ehleringer, A. Mooney, F.J. Monahan, and O. Schmidt. 2015. Isotopic composition of sheep wool records seasonality of climate and diet. *Rapid Communications in Mass Spectrometry* 29:1357-1369.
466. Ehleringer, J.R., L.A. Chesson, L.O. Valenzuela, B.J. Tipple, and L.A. Martinelli. 2015. Stable isotopes trace the truth: from adulterated foods to crime scenes. *Elements* 11:259-264.
467. Hall, S.J., R.L. Hale, M.A. Baker, D.R. Bowling, and J.R. Ehleringer. 2015. Riparian plant isotopes reflect anthropogenic nitrogen perturbations: robust patterns across land use gradients. *Ecosphere* 6(10):article200. <http://www.esajournals.org/doi/pdf/10.1890/ES15-00319.1>
468. Berke, M.A., B.J. Tipple, B. Hambach, and J.R. Ehleringer. 2015. Life-form specific gradients in compound specific $\delta^2\text{H}$ of modern leaf waxes along a North American monsoonal transect. *Oecologia* 179:981-997. doi: 10.1007/s00442-015-3432-1
469. Gurney, K.R., P. Romero-Lankao, K.C. Seto, L.R. Hutyrá, R. Duren, C. Kennedy, N.B. Grimm, J.R. Ehleringer, P. Marcotullio, S. Hughes, S. Pincetl, M.V. Chester, D.M. Runfola, J.J. Feddema, and J. Sperling. 2015. Tracking urban emissions on a human scale. *Nature* 525:179-181.
470. Hopkins, F.M., E.A. Kort, S. E. Bush, J.R. Ehleringer, C.T. Lai, D.R. Blake, and J.T. Randerson. 2016. Spatial patterns and source attribution of urban methane in the Los Angeles Basin. *Journal of Geophysical Research Atmospheres* 121: doi:10.1002/2015JD024429.
471. Patarasuk, R., K.R. Gurney, D. O'Keeffe, Y. Song, J. Huang, P. Rao, M. Buchert, J. Lin, D. Mendoza, and J.R. Ehleringer. 2016. Urban high-resolution fossil fuel CO_2 emissions quantification and exploration of emission drivers for potential policy questions. *Urban Ecosystems* 19:1013-1039. doi: 10.1007/s11252-016-0553-1.
472. Tipple, B.J., B. Hambach, J.E. Barnette, L.A. Chesson, and J.R. Ehleringer. 2016. The influences of cultivation setting on inflorescence lipid distributions, concentrations, and carbon isotope ratios of *Cannabis* sp. *Forensic Science International* 262:233-241. doi:10.1016/j.forsciint.2016.03.029
473. Cerling, T.E., J.E. Barnette, G.J. Bowen, L.A. Chesson, J.R. Ehleringer, C.H. Remien, P. Shea, B.J. Tipple, and J.B. West. 2016. Forensics stable isotope biogeochemistry. *Annual Review of Earth and Planetary Sciences* 44:175-206.

474. Ehleringer, J.R., J. Barnette, Y. Jameel, B.J. Tipple, and G.J. Bowen. 2016. Urban water – a new frontier in isotope hydrology. *Isotopes in Environmental and Health Studies* 52:477-486. doi: 10.1080/10256016.2016.1171217.
475. Szejner, P., W.E. Wright, F. Babst, S. Belmecheri, V. Trouet, S.W. Leavitt, J.R. Ehleringer, and R.K. Monson. 2016. Latitudinal gradients in tree-ring carbon and oxygen isotopes reveal differential climate influences of the North American Monsoon System. *Journal of Geophysical Research: Biogeosciences* doi 10.1002/2016/JG003460
476. Howa, J.D., M.J. Lott, L.A. Chesson, and J.R. Ehleringer. 2016. Isolation of components of plastic explosives for isotope ratio mass spectrometry. *Forensic Chemistry* doi 10.1016/j.forc.2016.07.003
477. Jameel, Y., S. Brewer, S.P. Good, B.J. Tipple, J.R. Ehleringer, and G.J. Bowen. 2016. Tap water isotope ratios reflect urban water system structure and dynamics across a semi-arid metropolitan area. *Water Resources Research* 52: doi:10.1002/2106WR019104.
478. Chesson, L.A., J.D. Howa, M.J. Lott, and J.R. Ehleringer. 2016. A component-specific approach for applying isotope ratio mass spectrometry to explosives. *Forensic Chemistry* 2:9-14. doi:10.1016/j.forc.2016.08.003.
479. Hopkins, F.M., J.R. Ehleringer, S.E. Bush, R.M. Duren, C.E. Miller, C.-T. Lai, Y.-K. Hsu, V. Carranza, and J.T. Randerson. 2016. Mitigation of methane emissions in cities: how new measurements and partnerships can contribute to emissions reductions strategies. *Earth Futures* DOI 10.1002/2016EF000381.
480. Mallick, K., I. Trebs, E. Boegh, L. Giustarini, M. Schlerf, D. Drewery, L. Hoffman, C. von Randow, B. Kruijt, A. Arujo, S. Saleska, J.R. Ehleringer, T. Domingues, J.P. Ometto, A. Nobre, O. Morales, M. Hayek, J.W. Munger, and S. Wofsy. 2016. Canopy-scale biophysical controls of transpiration and evaporation in the Amazon Basin. *Hydrology and Earth System Sciences* 20:4237-4264. Doi:10.519/hess-20-4237-2016
481. Kimball, S., J.L. Funk, D.R. Sandquist, and J.R. Ehleringer. 2016. Ecophysiological considerations for restoration, pages 153-181. In Palmer, M.A., J.B. Zedler, and D.A. Falk (eds.), *Foundations of Restoration Ecology*. Second Edition. Island Press, New York.
482. Ehleringer, J.R., S. Daniel, S. Torti, B. Bowen, and T. Parks. 2016. *Embedded in Nature: The University of Utah Field Stations*. University of Utah, Salt Lake City. 120 pages. ISBN 978-0-692-81221-1.
483. Chau, T.H., B.J. Tipple, L. Hu, D.P. Fernandez, T.E. Cerling, and J.R. Ehleringer. 2017. Reconstruction of travel history using coupled $\delta^{18}\text{O}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ measurements of hair. *Rapid Communications in Mass Spectrometry* 31:583-589.
484. Hall, S.J., E. Ogata, S.R. Weintraub, M.A. Baker, J.R. Ehleringer, C. Czimeczik, and D.R. Bowling. 2016. Convergence in nitrogen deposition and cryptic isotope composition across urban and agricultural valleys in northern Utah. *Journal of Geophysical Research – Biogeochemistry* 121:2340-2355.
485. Tipple, B.J., Y. Jameel, T.H. Chau, C.J. Mancuso, G.J. Bowen, A. Dufour, L.A. Chesson, and J.R. Ehleringer. 2017. Stable hydrogen and oxygen isotopes of tap water reveal structure of the

- San Francisco Bay Area's water systems and adjustments during a major drought. *Water Research* 119:212-224.
486. Ehleringer, J.R. Interpreting stable isotope ratios in plants and plant-based foods. 2017. In J.F. Carter and L.A. Chesson (eds.), *Food Forensics – Stable Isotopes as a Guide to Authenticity and Origin*, pages 46-62. CRC Press Taylor & Francis Group, Boca Raton.
487. Raczka, B., S.C. Biraud, J.R. Ehleringer, C.-T. Lai, J.B. Miller, D.E. Pataki, S.R. Saleska, M.S. Torn, B.H. Vaughn, R. Wehr, and D.R. Bowling. 2017. Does vapor pressure deficit drive the seasonality of $\delta^{13}\text{C}$ of the net land-atmosphere CO_2 exchange across the United States? *Journal of Geophysical Research, Biogeosciences* 122: doi:10.1002/2017JG003795.
488. Mouteva, G.O., J.T. Randerson, S.M. Fahri, S.E. Bush, J.R. Ehleringer, X. Xu, G.M. Santos, R. Kuprov, B.A. Schichtel, and C.I. Czimczik. 2017. Using radiocarbon to constrain black and organic carbon aerosol sources in Salt Lake City. *Journal of Geographical Research – Atmospheres* 122, doi:10.1022/2017JD026519.
489. Duarte, H.F., B.M. Raczka, D.M. Ricciuto, J.C. Lin, C.D. Koven, P.E. Thornton, D.R. Bowling, C.-T. Lai, K.J. Bible, and J.R. Ehleringer. 2017. Evaluating the Community Land Model (CLM 4.5) at a coniferous forest site in northwestern United States using flux and carbon-isotope measurements. *Biogeosciences* 14:4315-4340. doi: /10.5194/bg-14-4315-2017.
490. Cook, C.S., B. Erkkila, S. Chakraborty, B.J. Tipple, T.E. Cerling, and J.R. Ehleringer. 2017. *Stable isotope biogeochemistry and ecology laboratory manual*. First Edition. Kindle Direct Publishing, Seattle. Available at Amazon.com. 181 pages. ISBN 978-1-973-34908-2.
491. Chesson, L.A., B.J. Tipple, J.R. Ehleringer, T. Park, and E.J. Bartelink. 2018. Forensic applications of isotope landscapes ('isoscapes'): a tool for predicting region-of-origin in forensic anthropology cases, pages 127-148. Chapter 8. In C.C. Boyd and D.C. Boyd (eds.), *Forensic Anthropology: Theoretical Framework and Scientific Basis*. John Wiley and Sons, Ltd., New York.
492. Howa, J., J.E. Barnette, L.A. Chesson, M.J. Lott, and J.R. Ehleringer. 2018. TATP isotope ratios as influenced by worldwide acetone variation. *Talanta* 181:125-131. <https://doi.org/10.1016/j.talanta.2018.01.001>.
493. Valenzuela, L.O., S. P. O'Grady, L. E. Enright, M. Murtaugh, C. Sweeney, and J.R. Ehleringer. 2018. Evaluation of childhood nutrition by dietary survey and stable isotope analyses of hair and breath. *American Journal of Human Biology* e23103. <https://doi.org/10.1002/ajhb.23103>.
494. Tipple, B.J., L.O. Valenzuela, and J.R. Ehleringer. 2018. Strontium isotope ratios of human hair record intra-city variations in tap water source. *Scientific Reports* 8:3334. <https://doi.org/10.1038/s41598-018-21359-0>.
495. Mitchell, L.E., J.C. Lin, D.R. Bowling, D.E. Pataki, C. Strong, A.J. Schauer, R. Bares, S.E. Bush, B.B. Stephens, D. Mendoza, D. Mallia, L. Holland, K.R. Gurney, and J.R. Ehleringer. 2018. Long-term urban carbon dioxide observations reveal spatial and temporal dynamics related to urban characteristics and growth. *Proceedings of the National Academy of Sciences USA* 115:2912-2917. <https://doi.org/10.1073/pnas.1702393115>.
496. Mitchell, L.E., E.T. Crossman, A.A. Jacques, B. Fasoli, L. Leclair-Marzolf, J. Horel, D.R. Bowling, J.R. Ehleringer, and J.C. Lin. 2018. Monitoring of greenhouse gases and pollutants

- across an urban area using a light rail public transit platform. *Atmospheric Environment* 187:9-23. <https://doi.org/10.1016/j.atmosenv.2018.044>.
497. Fiorella, R.P., R. Barnes, J.C. Lin, J.R. Ehleringer, and G.J. Bowen. 2018. Detection and variability of combustion-derived vapor in an urban basin. *Atmospheric Chemistry and Physics* 18:8529-8547. <https://doi.org/10.5194/acp=18-8529-2018>.
498. Mancuso, C.J., and J.R. Ehleringer. 2019. Resident and non-resident fingernail isotopes reveal diet and travel patterns. *Journal of Forensic Sciences* 64:77-87. <https://doi.org/10.1111/1556-4029.13856>
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Today and over the years: undergraduate, staff, graduate, and postgraduate training:

Incredible staff:

*Sagarika Banerjee
 Ryan Bares
 Janet Barnette
 Suvankar Chakraborty
 Thuan Chau
 Lesley Chesson
 Craig Cook
 Tamsie Cooper
 Kim Davis
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 Avery Driscoll
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 Lisa Fleisher
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 *Laurie Mecham
 Shela Patrickson
 Susan Phillips
 Heather Rasmussen
 Leah Richardson
 Andy Schauer
 Beth Blackmore Sherrill
 Erik Stange
 Brett Starr

* current

Masters/Ph.D. students:

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 Lesley Chesson
 Jonathan Comstock
 Tomas Domingues
 Lisa Donovan
 Lori Ducharme
 Sylvia Englund
 Irwin Forseth
 Qin-nong Aaron Fu
 Jillian Gregg
 Erin Hanlon
 Brent Helliker
 Brett Hesla
 Susan Kammerdiener
 Christy Mancuso
 Susan Phillips
 Darren Sandquist
 Mark Smedley
 Kenneth Werk
 Adam West
 Jebediah Williamson

Undergraduate researchers:

Nic Bitter
 Kelly Burtsch
 Creed Clayton
 Stephannie Covarrubias
 Lindsey Enright
 Mindy Fuller-Holbrook
 Donna House
 Megann Hunter
 Ka-Voka (Simone) Jackson
 Iman Jahromi
 Tim Jackson
 Suzanne Khachaturyan
 Steve Klassen
 Tegan Lengyel
 Jamie Mausberg
 Kevin Rapp
 Sean Schaeffer
 Jed Sparks
 Lynda Sperry
 Kathleen Treseder
 Erik Wettstein
 Elizabeth Young

Postdoctoral associates:

Julietta Aranibar
 Lynda Ayliffe
 Melissa Berke
 Gabriel Bowen
 David Bowling
 J. Renee Brooks
 Susan Bush
 Nina Buchmann
 Jonathan Comstock
 Todd Dawson
 Henrique Duarte
 Jeffrey Dukes
 R. David Evans
 Julianna Fessenden
 Richard Fiorella
 Lawrence Flanagan
 Renate Gebauer
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 Kevin Hultine
 Steve Kannenberg
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