

Curriculum Vitae for Dr. James R. Ehleringer

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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, Department of Biology, http://ecophys.utah.edu
1984-present	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:

2004-2013	Senior scientist	IsoForensics, Inc., Salt Lake City
2013-present	Consultant	IsoForensics, Inc., Salt Lake City
2016-present	Consultant	IsoAnalytics LLC, Salt Lake City

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

Certifications:

- Certified Approved Forensic Practitioner, Forensic Isotope Ratio Mass Spectrometry Network, 2013-2017 (<http://www.forensic-isotopes.org/fafp.html>)

Ecosystem Field Experience:

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

Forensic Stable Isotope Ratio Experience:

Anthropology	Bones, food, hair, teeth
Beverages	Beer, juices, milk, soft drinks, spirits, sparkling wines, water, wines
Biological	Animals, feathers, leaves, plants, soils, trees, tree rings, wood, wool
Controlled substances	Cocaine, heroin, marijuana, pseudoephedrine
Explosives	High energy, military, nitrates, peroxides
Foods	Carbohydrates, honeys, meats, oils, proteins, spirits, waters, wines
Gases	Carbon dioxide, methane, water vapor
Humans	Bone, body water, diets, fingernails, hair, teeth
Law enforcement	Bodies, controlled substances, explosives, food, manufactured materials
Manufactured	Clothing, inks, paper products
Microbes	Culture media, spores
Paper	Counterfeits, currencies, documents, paper materials
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 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)
Biology 5470/5475	Stable Isotope Biogeochemistry and Ecology, Lecture and Laboratory
Biology 6921	Isotopics, Seminar
Biology 7463/7465	Stable Isotope Biogeochemistry and Ecology, Lecture and Laboratory (http://www.stableisotopes.net)
Biology 7961	Global Changes and Society (http://environment.utah.edu/students/gcs.html)
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-present	IsoCamp, Stable Isotope Biogeochemistry and Ecology Lectures and Laboratory (Originator and coordinator), http://stableisotopes.net
Intermittent	Stable Isotopes in Forensics, Salt Lake City and Washington D.C.

Honors and Distinctions:

2016	Rosenblatt Prize, University of Utah
2016	Elected to 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-present	Biological and Environmental Research Advisory Committee (BERAC), U.S. Department of Energy
2015-present	Western Water Alliance, External Advisory Board
2015-present	Mountain Accord (central Wasatch Mountains), Environmental Subcommittee

Scientific Review Boards:

1983-2005, various years	NSF, panel member
1983, 1992	USDA, panel member
1991-2013, various years	DOE, panel member
2001, 2004	NASA, panel member
1986-1987	Plant Response to Environmental Stress, USDA-CRGO, Program Manager
1990-1992	National Research Council, Committee on Plant Sciences
1993-1994	U.S. Nuclear Waste Regulatory Board, panel member

Workshops and Events (Organizer or Co-organizer):

1984	Workshop on Future Needs in Physiological Ecology, Asilomar
1986	Stable Isotopes in Ecology, Lake Arrowhead
1990	Ecological Society of America, 75th Annual Meeting, Snowbird
1990	Workshop on Scaling in Ecology, Snowbird

- 1992 Carbon and Water Relations Perspectives from Stable Isotopes, Riverside
 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
 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
 2001 Atmospheric CO₂ and its Effects on Plants, Animals and Ecosystems, Snowbird
 2002 Stable Isotopes in Biosphere-Atmosphere Interactions, Banff
 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 On the Formation of a National Stable Isotope Network in NEON, Park City
 2005 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
 2006 Chair of DOE-BERAC Subcommittee review of elevated CO₂ ecosystem research within the Department of Energy
 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
 2009 Lead development of Global Change and Sustainability Center, University of Utah
 2010 Co-lead development 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

Publications (last ten years, 2007-2017):

364. Roden, J., and J.R. Ehleringer. 2007. Summer precipitation influences the stable oxygen and carbon isotopic composition of tree ring cellulose in *Pinus ponderosa*. *Tree Physiology* 27:491-501.
365. Domingues, T.F., L.A. Martinelli, and J.R. Ehleringer. 2007. Ecophysiological traits of plant functional groups in forest and pasture ecosystems from eastern Amazônia, Brazil. *Plant Ecology* DOI:10.1007/s1158-006-9251-z.
366. Cerling, T.E., L.K. Ayliffe, M.D. Dearing, J.R. Ehleringer, B.H. Passey, D.W. Podlesak, A.-M. Torregrossa, and A.G. West. 2007. Determining biological tissue turnover using stable isotopes: the reaction progress variable. *Oecologia* 151:175-189. DOI: 10.1007/s00442-006-0571-4
367. Pataki, D.E, T. Xu, Y.Q. Luo, and J.R. Ehleringer. 2007. Inferring ecosystem carbon cycling from the urban CO₂ dome. *Oecologia* DOI: 10.1007/s00442-006-0656-0
368. Pataki, D.E., C.-T. Lai, C.D. Keeling, and J.R. Ehleringer. 2007. Insights from stable isotopes on the role of terrestrial ecosystems in the global carbon cycle, p. 37-44. In J. Canadell, D.E. Pataki, and L.F. Pitelka (eds.), *Terrestrial ecosystems in a changing world*. Springer-Verlag, Berlin.
369. Bush, S.E., D.E. Pataki, and J.R. Ehleringer. 2007. Sources of variation in $\delta^{13}\text{C}$ of fossil fuel emissions in Salt Lake City, USA. *Applied Geochemistry* 22:715-723, DOI:10.1016/j.apgeochem.2006.11.001.

370. Bowen, G.J., J.R. Ehleringer, L.A. Chesson, E. Stange, and T.E. Cerling. 2007. Stable isotope ratios of tap water in the coterminous USA. *Water Resources Research* 43:W03419, doi:10.1029/2006WR005186.
371. Alstad, K.P., C.-T. Lai, L.B. Flanagan, and J.R. Ehleringer. 2007. Environmental controls on the carbon isotope composition of ecosystem respired CO₂ in contrasting forest ecosystems in Canada and USA. *Tree Physiology* 27:1361-1374.
372. West, J.B., J.R. Ehleringer, and T.E. Cerling. 2007. Geography and vintage predicted by a novel GIS model of wine δ¹⁸O. *Journal of Agricultural and Food Chemistry* 55:7075-7083.
373. Ehleringer, J.R., T.E. Cerling, and J. B. West. 2007. Forensic applications of stable isotope ratio analysis, pages 399-422. In R. D. Blackledge (ed.), *Forensic analysis on the cutting edge: new methods for trace evidence analysis*. Wiley Interscience.
374. Bowen, G.J., T.E. Cerling, and J.R. Ehleringer. Stable isotopes and human water resources: signals of change. . In Dawson, T.E., and R.T.W. Siegwolf (eds.), *Stable isotopes as indicators of ecological change*. Academic Press, San Diego.
375. Cerling, T.E., G.J. Bowen, J.R. Ehleringer, and M. Sponheimer. 2007. The reaction progress variable and isotope turnover in biological systems. In Dawson, T.E., and R.T.W. Siegwolf (eds.), *Stable isotopes as indicators of ecological change*. Academic Press, San Diego.
376. Ehleringer, J.R., and T.E. Dawson. 2007. Stable isotopes record ecological change, but a sampling network may be essential. In Dawson, T.E., and R. Siegwolf (eds.), *Stable isotopes as recorders of ecological change*. Academic Press, San Diego.
377. Martinelli, L.A., J.P.H.B. Ometto, F.Y. Ishida, T.F. Domingues, G.B. Nardoto, R.S. Oliveira, and J.R. Ehleringer. 2007. The use of carbon and nitrogen stable isotopes to track effects of land-use changes in the Brazilian Amazon region. In Dawson, T.E., and R.T.W. Siegwolf (eds.), *Stable isotopes as indicators of ecological change*. Academic Press, San Diego.
378. Williams, D.G., R.D. Evans, J.B. West, and J.R. Ehleringer. 2007. Applications of stable isotope measurements for early-warning detection of ecological change. In Dawson, T.E., and R.T.W. Siegwolf (eds.), *Stable isotopes as indicators of ecological change*. Academic Press, San Diego.
379. Hultine, K.R., S.E. Bush, A.G. West, and J.R. Ehleringer. 2007. Effect of gender on sap flux-scaled transpiration in a dominant riparian tree species: box elder (*Acer negundo*). *Journal of Geophysical Research* 112:G03S06, doi:10.1029/2006JG000232.
380. Hultine, K.R., S.E. Bush, A.G. West, and J.R. Ehleringer. 2007. Population structure, physiology and ecohydrological impacts of dioecious riparian tree species of western North America. *Oecologia* 154:85-93. DOI 10.1007/s00442-007-0813-0.
381. West, A.G., K.R. Hultine, K. Burtch, and J.R. Ehleringer. 2007. Seasonal variations in moisture use in a piñon-juniper woodland. *Oecologia* 153:787-798. DOI:10.1007/s00442-007-0777-0.
382. West, A.G., K.R. Hultine, T.L. Jackson, and J.R. Ehleringer. 2007. Differential summer moisture use by *Pinus edulis* and *Juniperus osteosperma* reflect contrasting hydraulic characteristics. *Tree Physiology* 27:1711-1720.

383. De Araujo, A.C., J.P.H. B. Ometto, A.J. Dolman, B. Kruijt, M.J. Waterloo, and J.R. Ehleringer. 2007. Implications of CO₂ pooling on δ¹³C of ecosystem respiration and leaves in Amazonian forest. *Biogeosciences Discussions* 4:4459-4506. www.biogeosciences-discuss.net/4/4459/2007/.
384. Podlesak, D.W., A.-M. Torregrossa, J.R. Ehleringer, M.D. Dearing, B.H. Passey, and T.E. Cerling. 2008. Turnover of oxygen and hydrogen isotopes in the body water, CO₂, hair, and enamel of a small mammal. *Geochimica et Cosmochimica Acta* 72:19-35.
385. Bush, S.E., D.E. Pataki, K.R. Hultine, A.G. West, J.S. Sperry, and J.R. Ehleringer. 2008. Wood anatomy constrains stomatal responses to atmospheric water vapor pressure deficit. *Oecologia* 156:13-20.
386. Ehleringer, J.R., G.J. Bowen, L.A. Chesson, A.G. West, D. Podlesak, and T.E. Cerling. 2008. Hydrogen and oxygen isotopes in human hair are related to geography. *Proceedings of the National Academy of Sciences USA* 105:2788-2793.
387. Chesson, L.A., D.W. Podlesak, A.H. Thompson, T.E. Cerling, and J.R. Ehleringer. 2008. Variation of hydrogen, carbon, nitrogen, and oxygen stable isotope ratios in an American diet: fast food meals. *Journal of Agricultural and Food Chemistry* 56:4084-4091.
388. West, A.G., K.R. Hultine, J.S. Sperry, S.E. Bush, and J.R. Ehleringer. 2008. Transpiration and hydraulic strategies in a piñon-juniper woodland. *Ecological Applications* 18:911-927.
389. West, J.B., A. Sobek, and J.R. Ehleringer. 2008. A simplified GIS approach to modeling global leaf water isoscapes. *PLoS One* (6): e2447. doi:10.1371/journal.pone.0002447.
390. Ehleringer, J.R., T.E. Cerling, J.B. West, D.W. Podlesak, L.A. Chesson, and G.J. Bowen. 2008. Spatial considerations of stable isotope analyses in environmental forensics, pages 36-53. In R.E. Hester and R.M. Harrison (eds.), *Issues in Environmental Science and Technology* volume 26. Royal Society of Chemistry Publishing, Cambridge.
391. Lai, C.-T., J.P.H.B. Ometto, L.A. Martinelli, J.A. Berry, T.F. Domingues, and J.R. Ehleringer. 2008. Life form-specific variations in leaf water oxygen-18 enrichment in Amazonian vegetation. *Oecologia* 157:197-210.
392. Nardoto, G., J.P.H.B. Ometto, J.R. Ehleringer, N. Higuchi, M. Bustamante, and L.A. Martinelli. 2008. Understanding the influences of spatial patterns on N availability within the Brazilian Amazon forest. *Ecosystems* doi:10.1007/s10021-008-9189-1.
393. Schwinning, S., J. Belnap, D.R. Bowling, and J.R. Ehleringer. 2008. Sensitivity of the Colorado Plateau to change: climate, ecosystems, and society. *Ecology and Society* 13(2): 28. [online] URL: <http://www.ecologyandsociety.org/vol13/iss2/art28/>
394. Hultine, K.R., T.L. Jackson, K.G. Burtch, S.M. Schaeffer, and J.R. Ehleringer. 2008. Elevated stream inorganic nitrogen impacts on a dominant riparian tree species: results from an experimental riparian stream system. *Journal of Geophysical Research, Biogeosciences* 113, G04025. doi:10.1029/2008JG000809.
395. Hultine, K.R., S.E. Bush, A.G. West, K.G. Burtch, D.E. Pataki, and J.R. Ehleringer. 2008. Gender specific patterns of above-ground allocation, canopy conductance and water use in a

- dominant riparian tree species: box elder (*Acer negundo*). *Tree Physiology* 28:1383-1394.
396. West, J.B., J.M. Hurley, and J.R. Ehleringer. 2009. The isotopic signatures of marijuana cultivation. I. Carbon and nitrogen stable isotopes describe the growth regime. *Journal of Forensic Science* 54:1-6. doi:10.1111/j.1556-4029.2008.00909.x
397. Chesson, L.A., J.R. Ehleringer, and T.E. Cerling. 2009. American fast food isn't all corn-based. *Proceedings of the National Academy of Sciences USA* 106(6):E8, doi:10.1074/pnas.0811787106.
398. Bowen, G.J., J.R. Ehleringer, L.A. Chesson, A. Thompson, D. Podlesak, and T.E. Cerling. 2009. Dietary and physiological controls on the hydrogen and oxygen isotope ratios of hair from mid-20th century indigenous populations. *American Journal of Physical Anthropology* doi:10.1002/ajpa.21008.
399. Bowen, G.J., J.B. West, B.H. Vaughn, T.E. Dawson, J.R. Ehleringer, M. L. Fogel, K. Hobson, J. Hoogewerff, C. Kendall, C.-T. Lai, C.C. Miller, D. Noone, H. Schwarcz, and C.J. Still. 2009. Isoscapes to address large-scale Earth science challenges. *EOS* 90:109-110.
400. Cerling, T.E., G. Wittemyer, J.R. Ehleringer, C.H. Remien, and I. Douglas-Hamilton. 2009. History of animals using isotope records (HAIR): a 6-year dietary history of one family of African elephants. *Proceedings of the National Academy of Sciences USA* 106:8093-8100. doi: 10.1073/pnas0902192106.
401. Dennison, P.E., P.L. Nagler, K.R. Hultine, E.P. Glenn, and J.R. Ehleringer. 2009. Remote monitoring of tamarisk defoliation and evapotranspiration following saltcedar leaf beetle attack. *Remote Sensing of Environment* 113:1462-1472. doi:10.1016/j.rse.2008.05.022.
402. Chesson, L.A., D.W. Podlesak, T.E. Cerling, and J.R. Ehleringer. 2009. Evaluating uncertainty in the calculation of non-exchangeable hydrogen fractions within organic materials. *Rapid Communications in Mass Spectrometry* 23:1275-1280.
403. West, J.B., J.M. Hurley, F.O. Dudas, and J.R. Ehleringer. 2009. The isotopic signatures of marijuana cultivation. II. Strontium isotopes relate to geographical origin. *Journal of Forensic Science* 54:1261-1269.
404. Hultine, K.R., J. Belnap, C. van Ripper, J.R. Ehleringer, P.E. Dennison, M.E. Lee, P.L. Nagler, K.A. Snyder, S.M. Uselman, and J.B. West. 2009. Biocontrol of tamarisk in the western United States: an event underway with significant ecological and societal implications. *Frontiers in Ecology and the Environment* 8:467-474; doi:10.1890/090031.
405. Chesson, L.A., D.W. Podlesak, B.R. Erkkila, T.E. Cerling, and J.R. Ehleringer. 2009. Isotopic consequences of consumer food choice: hydrogen and oxygen stable isotope ratios in foods from fast food restaurants *versus* supermarkets. *Food Chemistry* 119:1250-1256; doi:10.1016/j.foodchem.2009.07.046.
406. Thompson, A.H., L.A. Chesson, D.W. Podlesak, G.J. Bowen, T.E. Cerling, and J.R. Ehleringer. 2010. Stable isotope analysis of modern human hair collected along an Asian geographic transect. *American Journal of Physical Anthropology* 141:440-451.
407. Ehleringer, J.R., A.H. Thompson, D. Podlesak, G.J. Bowen, L.A. Chesson, T.E. Cerling, T. Park,

- P. Dostie, and H. Schwarcz. 2010. A framework for the incorporation of isotopes and isoscapes in geospatial forensic investigations, p. 357-387. In J. West, G.J. Bowen, T.E. Dawson, and K. Tu (eds.), *Isoscapes: understanding movement, pattern, and process on Earth through isotope mapping*. Springer Verlag, New York.
408. West, J.W., H. Kreuzer, and J.R. Ehleringer. 2010. Approaches to plant hydrogen and oxygen isoscapes generation, p. 161-178. In J. West, G.J. Bowen, T.E. Dawson, and K. Tu (eds.), *Isoscapes: understanding movement, pattern, and process on Earth through isotope mapping*. Springer Verlag, New York.
409. Hurley, J.M., J.B. West, and J.R. Ehleringer. 2010. Tracing retail marijuana in the United States: geographic origin and cultivation patterns. *International Journal of Drug Policy* 21:222-228. doi:10.1016/j.drugpo.2009.08.001
410. Hurley, J.M., J.B. West, and J.R. Ehleringer. 2010. Stable isotope models to predict region-of-origin and cultivation conditions of marijuana. *Science and Justice* 50:86-93.
411. Chesson, L.A., L.O. Valenzuela, S.P. O'Grady, T.E. Cerling, and J.R. Ehleringer. 2010. Hydrogen and oxygen stable isotope ratios of milk in the United States. *Journal of Agricultural and Food Chemistry* 58:2358-2363. doi:10.1021/jf904151c.
412. Chesson, L.A., L.O. Valenzuela, S.P. O'Grady, T.E. Cerling, and J.R. Ehleringer. 2010. Links between purchase location and the stable isotope ratios of bottled water, soda, and beer in the United States. *Journal of Agricultural and Food Chemistry* 58:7311-7316;doi:10.1021/jf1003539.
413. Ehleringer, J.R., and D.R. Sandquist. 2010. Photosynthesis: physiological and ecological considerations, pages . In. L. Taiz and E. Zeiger (eds.), *Plant physiology*, 5th edition, Sinauer Associates, Sunderland, MA.
414. Hultine, K.R., S.E. Bush, and J.R. Ehleringer. 2010. Ecophysiology of riparian cottonwood and willow before, during and after two years of soil water removal. *Ecological Applications* 20:347-361.
415. O'Grady, S.P., A.R. Wende, C.H. Remien, L.O. Valenzuela, L.E. Enright, L.A. Chesson, E.D. Abel, T.E. Cerling, and J.R. Ehleringer. 2010. The stable isotope signature of body water as a biomarker of aberrant water homeostasis: diabetes mellitus, an index case. *PLoS ONE* 5(7):e11699. doi:10.1371/journal.pone.0011699.
416. Lai, C.-T., and J.R. Ehleringer. 2010. Deuterium excess reveals diurnal sources of water vapor in forest air. *Oecologia* doi 10.1007/s00442-010-1721-2.
417. Chesson, L.A., G.J. Bowen, and J.R. Ehleringer. 2010. Analysis of the hydrogen and oxygen stable isotope ratios of beverage waters without prior water extraction using isotope ratio infrared spectroscopy. *Rapid Communications in Mass Spectrometry* 25:3205-3213; doi:10.1002/rcm.4759.
418. Hultine, K.R., P.L. Nagler, K. Morino, S.E. Bush, K.G. Burtch, P.E. Dennison, E.P. Glenn, and J.R. Ehleringer. 2010. Sap flux-scaled transpiration by tamarisk (*Tamarix* spp.), before, during and after episodic defoliation by the saltcedar leaf beetle (*Diorhabda carinulata*). *Agricultural and Forest Meteorology* 150:1467-1475; doi:10.1016/j.agrformet.2010.07.009.

419. Ehleringer, J.R., and S.M. Matheson Jr. 2010. Stable isotopes and courts. *Utah Law Review* 2010 (2):385-442.
420. Bush, S.E., K.R. Hultine, J.S. Sperry, and J.R. Ehleringer. 2010. Calibration of thermal dissipation sap flow probes for ring- and diffuse-porous trees. *Tree Physiology* 30:1545-1554.
421. O'Grady, S.P., L.E. Enright, J.E. Barnette, T.E. Cerling, and J.R. Ehleringer. 2010. Accuracy and precision of a laser-spectroscopy approach to the analysis of $\delta^2\text{H}$ and $\delta^{18}\text{O}$ in human urine. *Isotopes in Environmental and Health Studies* 46:476-483.
422. Rodushkin, I., D.C. Baxter, E. Engström, J. Hoogewerff, P. Horn, W. Papesch, J. Watling, C. Latkoczy, G. van der Peijl, S. Berends-Montero, J. Ehleringer, and V. Zdanowicz. 2011. Elemental and isotopic characterization of cane and beet sugars. *Journal of Food Composition and Analysis* 24:70-78. doi:10.1016/j.jfca.2010.05.005.
423. Chesson, L.A., B.J. Tipple, B.R. Erkkila, T.E. Cerling, and J.R. Ehleringer. 2011. B-HIVE: Beeswax Hydrogen Isotopes as Validation of Environment. Part 1. Bulk honey and honeycomb stable isotope analysis. *Food Chemistry* 125:576-581; doi:10.1016/j.foodchem.2010.09.050.
424. Kennedy, C.D., G.J. Bowen, and J.R. Ehleringer. 2011. Temporal variations of oxygen isotope ratios ($\delta^{18}\text{O}$) in drinking water: Implications for specifying location of origin with human scalp hair. *Forensic Science International* doi:10.1016/j.forsciint.2010.11.021.
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Manuscripts in press:

1. Chesson, L.A., B.J. Tipple, J.R. Ehleringer, T. Park, and E.J. Bartelink. Forensic applications of isotope landscapes ('isoscapes'): a tool for predicting region-of-origin in forensic anthropology cases. Chapter 11. In Clifford Boyd and Donna Boyd (eds.), *Forensic Anthropology: Theoretical Framework and Scientific Basis*. John Wiley and Sons, Ltd., New York.
2. Chau, T.H., B.J. Tipple, L. Hu, D.P. Fernandez, T.E. Cerling, and J.R. Ehleringer. 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* (in press)
3. Ehleringer, J.R. Interpreting stable isotope ratios in plants and plant-based foods. In J. Carter and L.A. Chesson (eds.), *Food Forensics – Stable Isotopes as a Guide to Authenticity and Origin*. Taylor & Francis Publishers. (in press)
4. Hall, S.J., E. Ogata, S.R. Weintraub, M.A. Baker, J.R. Ehleringer, C. Czimeczik, and D.R. Bowling. Convergence in nitrogen deposition and cryptic isotope composition across urban and agricultural valleys in northern Utah. *Journal of Geophysical Research – Biogeochemistry* (in press)

Manuscripts in review:

5. Cobley, L.A.E., D.E. Pataki, H.R. McCarthy, S. Martin, and J.R. Ehleringer. Building housing age and affluence influence plant and soil carbon and nitrogen in two semi-arid cities. *Journal of Geophysical Research Biogeochemistry* (in review)
6. Cotton, J.M., T.M. Mosier, T.E. Cerling, J.R. Ehleringer, K.A. Hoppe, and C.J. Still. Climate change drives northward expansion of C4 grasses in North America by 2100. *Proceedings of the National Academy USA* (in review)

7. 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. Evaluating the Community Land Model (CLM 4.5) at a coniferous forest site in northwestern United States using flux and carbon-isotope measurements. *Biogeosciences* (in review)
8. 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, and J.R. Ehleringer. 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* (in review)
9. Mouteva, G.O., J.T. Randerson, S.M. Fehri, S.E. Bush, J.R. Ehleringer, X. Xu, G.M. Santos, R. Kuprov, B.A. Schichtel, and C.I. Czimczik. Using radiocarbon to constrain black and organic carbon aerosol sources in Salt Lake City. *Journal of Geographical Research - Atmospheres* (in review)
10. Ryoo, J.M., I. Fung, and J.R. Ehleringer. Top-down estimates of urban CO₂ sources: a Salt Lake City case study. *Journal of Geophysical Research - Atmospheres* (in review)
11. Tipple, B.J., Y. Jameel, T.H. Chau, C.J. Mancuso, G.J. Bowen, A. Dufour, L.A. Chesson, and J.R. Ehleringer. Tap water isotopes reveal structure of the San Francisco Bay Area's water systems and adjustments during a major drought. *Water Research* (in review)

Graduate and Postgraduate Training:

Current graduate students: Christy Mancuso (PhD)	Past graduate students:	Past postdoctoral associates:
	Masters:	Julietta Aranibar
Current postdoctoral and research associates: None	Lesley Chesson	Melissa Berke
	Lori Ducharme	Gabriel Bowen
Current research faculty: Brett Tipple	Sylvia Englund	David Bowling
	Jillian Gregg	J. Renee Brooks
	Erin Hanlon	Susan Bush
	Brett Hesla	Nina Buchmann
	Susan Kammerdiener	Jonathan Comstock
	Susan Phillips	Todd Dawson
	Mark Smedley	Jeffrey Dukes
	Jebediah Williamson	R. David Evans
		Julianna Fessenden
	Ph.D.:	Lawrence Flanagan
	Susan Bush	Renate Gebauer
	Jonathan Comstock	Peter Harley
	Tomas Domingues	Kevin Hultine
	Lisa Donovan	Wen-yuan Kao
	Irwin Forseth	Helen Kreuzer-Martin
	Qin-nong Aaron Fu	Chun-Ta Lai
	Brent Helliker	Shenggong Li
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	Adam West	John Marshall
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		Shannon O'Grady
		Jean Ometto
		Diane Pataki
		David Podlesak
		John Roden
		William Schuster
		Susan Schwinning
		Alexandra Thompson
		Brett Tipple
		Luciano Valenzuela
		Julia Verville
		Joy Ward
		Jason West
		David Williams

Patents:

Podlesak, D., J.R. Ehleringer, and T.E. Cerling. Device and system to reconstruct travel history of an individual. U.S. Patent No. US20110125413A1, May 26, 2011.