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Education

Ph.D. Ecology and Evolutionary Biology University of Colorado, Boulder, CO 2006
Committee Chair: Dr. Alan Townsend. Dissertation Title: Influence of tectonics and atmospheric deposition on nutrient sources to tropical forests of the Osa Peninsula, Costa Rica.

B.S. Biology, Virginia Tech, Blacksburg, VA 1996

Professional Experience

Research Soil Scientist, U.S. Geological Survey	10/2010-present
Adjunct Professor, Dept. of Geography, University of Denver	9/2012-12/2012
Mendenhall Postdoctoral Fellow, U.S. Geological Survey	10/2008-10/2010
Post-doctoral Researcher, University of California, Santa Barbara	8/2006-10/2008
Biologist, Stable Isotope Laboratory, U.S. Geological Survey	4/2004-6/2006
Physical Science Technician, Stable Isotope Laboratory, U.S. Geological Survey	1/2001-4/2004
Contractor, Stable Isotope Laboratory, U.S. Geological Survey	5/1999-1/2001
Technician, Center for Environmental and Hazardous Materials Studies, Virginia Tech	9/1994-5/1996

Peer Reviewed Publications

Bern, C.R., Shah, A.K., Benzel, W.M., Lowers, H.A. In review. The distribution and composition of REE-bearing minerals in placers of the Atlantic and Gulf coastal plains, USA. *Journal of Geochemical Exploration*.

Bern, C.R., Thompson, A., and Chadwick, O.A. 2015. Quantification of colloidal and aqueous element transfer in soils: The dual-phase mass balance model. *Geochimica et Cosmochimica Acta* 151:1-18, doi: 10.1016/j.gca.2014.12.008.

Bern, C.R., Clark, M.L., Schmidt T.S., Holloway, J.M., McDougal R.R. 2015. Soil disturbance as a driver of increased stream salinity in a semiarid watershed undergoing energy development. *Journal of Hydrology* 524:123-136. doi: 10.1016/j.jhydrol.2015.02.020

Bern, C.R., Chadwick, O.A., Kendall, C. and Pribil, M. 2015. Steep gradients of volcanic and marine sulfur in Hawaiian rainfall and ecosystems. *Science of the Total Environment*, doi:10.1016/j.scitotenv.2015.02.001

Gallegos, T.J., **Bern, C.R.,** Birdwell, J.E., Haines, S.S.,Engle. M. 2015. "The Role of Water in Unconventional in Situ Energy Resource Extraction Technologies," In Food, Energy, and Water, ed. Satinder Ahuja, Elsevier, Boston, 2015, Pages 183-215.

Bern, C.R., Boehlke, A.R., Engle M.A, Geboy N. J., Schroeder, K.T., Zupancic, J.W. 2013. Shallow groundwater and soil chemistry response to 3 years of subsurface drip irrigation using coalbed-methane-produced water. *Hydrogeology Journal*. doi: 10.1007/s10040-013-1058-0

Khomo, L., **Bern, C.R.,** Hartshorn, A.S., Rogers, K.H. Chadwick, O.A. 2013. Chemical transfers along slowly eroding catenas developed on granitic cratons in southern Africa. *Geoderma*. doi:10.1016/j.geoderma.2013.03.023

Bern C.R., Breit, G.N., Healy, R.W., Zupancic, J., Hammack. R. 2013. Deep subsurface drip irrigation using coal-bed sodic water: Part I. Water and solute movement. *Agricultural Water Management*. doi:10.1016/j.agwat.2012.11.014

Bern C.R., Breit, G.N., Healy, R.W., Zupancic, J. 2013. Deep subsurface drip irrigation using coal-bed sodic water: Part II. Geochemistry. *Agricultural Water Management*. doi:10.1016/j.agwat.2012.11.013

Bern, C.R., Chadwick, O.A., Hartshorn, A.S., Khomo, L.M., Chorover, J. 2011. A mass-balance model to separate and quantify colloidal and solute redistributions in soil. *Chemical Geology*. doi:10.1016/j.chemgeo.2011.01.014

Bern, C.R. and White, A.F. 2011. A model for assessing, quantifying, and correcting for index element mobility in weathering studies. *Applied Geochemistry.* doi:10.1016/j.apgeochem.2011.03.016

Engle, M.A., **Bern, C.R**., Healy, R.W., Sams, J.I., Zupancic, J.W., Schroeder, K.T. 2011. Tracking solutes and water from subsurface drip irrigation application of coalbed methane produced waters, Powder River Basin, Wyoming. *Environmental Geochemistry.* doi:10.1306/eg.03031111004

Bern, C.R. and Chadwick, O.A. 2010. Quantifying colloid mass redistribution in soils and other physical mass transfers. In Birkle, P. and Torres-Alvarado, I.S. (eds.) Water-Rock Interaction. pp. 765-768.

Bern, C.R., Brzezinski, M.A. Beucher, C., Ziegler, K., and Chadwick, O.A. 2010. Weathering, dust and biocycling effects on soil silicon isotope ratios. *Geochimica et Cosmochimica Acta*. doi:10.1016/j.gca.2009.10.046

Wanty,R.B., Verplanck, P.L., **Bern C.R.**, SanJuan, C., deWitt, E.H. Klein, T.L. Fey, D. Schmidt, T.S. Church, S.E.. Weathering rates in alpine catchments of central Colorado, USA. . In Birkle, P. and Torres-Alvarado, I.S. (eds.) Water-Rock Interaction. pp. 273-276

Bern, C. R. 2009. Soil chemistry in lithologically diverse datasets: The quartz dilution effect. *Applied Geochemistry,* 24: 1429-1437, doi: 10.1016/j.apgeochem.2009.04.013

Chadwick, O.A., Derry, L.A., **Bern, C.R.**, Vitousek, P.M. 2009. Changing sources of strontium to soils and ecosystems across the Hawaiian Islands. *Chemical Geology*, 267: 64-76, doi:10.1016/j.chemgeo.2009.01.009

Bern, C. R., and A. R. Townsend. 2008. Accumulation of atmospheric sulfur in some Costa Rican soils, *J. Geophys. Res.*, 113, G03001, doi:10.1029/2008JG000692

Stegall, V. K., S. D. Farley, L. D. Rea, K. W. Pitcher, R. O. Rye, C. L. Kester, **C. R. Bern**. 2008. The discrimination of carbon and nitrogen isotopes from milk to serum and vibrissae in Alaska Steller sea lions (*Eumetopias jubatus*). *Can. J. Zool.* 86(1): 17-23.

Bern, C. R., S. Porder and A. R. Townsend. 2007. Erosion and landscape development decouple strontium and sulfur in the transition to dominance by atmospheric inputs. *Geoderma* 142: 274-284, doi:10.1016/j.geoderma.2007.08.016

Bern, C. R., A. R. Townsend, and G. L. Farmer. 2005. Dominance of parent-material strontium in a tropical forest on highly weathered soils. *Ecology* 86(3): 626-632. doi:10.1890/03-0766

Farmer, A. H., M. Abril, M. Fernandez, J. Torres, C. Kester, and **C. Bern**. 2004. Using stable isotopes to associate migratory shorebirds with their wintering locations in Argentina. *Ornitologia Neotropical* 15: 337-384.

Iko, W. M., C. L. Kester, **C. R. Bern**, R. C. Stendell, and R. O. Rye. 2003. Isotope variations in white-tailed kites from various habitats in California: possible limitations in assessing prey utilization and population dynamics. *Isotopes Environ. Health Stud.* 39(2): 159-167.

Farmer, A. H., R. Rye, G. Landis, **C. Bern**, C. Kester, and I. Ridley. 2003. Tracing the pathways of Neotropical migratory shorebirds using stable isotopes: A pilot study. *Isotopes Environ. Health Stud.* 39(2): 169-177.