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- Personal*** Born: 14 August 1951, Tripoli, Libya
Home: 3206 Lochinvar Dr.; Durham, NC 27705 USA
Married to Susan Adam Richter, three children: Daniel, Christina, Benjamin
- Education*** Ph.D. Soil Science, Minor in Statistics, Duke University, Durham, 1980
Graduate coursework: Soil Science, Statistics, Ecology, and Forestry at
Mississippi State and North Carolina State Universities, 1976-8
B.A., Philosophy, Lehigh University, Bethlehem, PA, 1973
- Employment*** Full and Associate Professor of Soils and Ecology, Nicholas School of the
Environment, 1987-present
Visiting Associate Professor of Soils, Instituto Tecnológico de Costa Rica,
Cartago, 1993-4
Assistant Professor of Soils and Watershed Management, School of Natural
Resources, University of Michigan, 1984-87
Research Associate, Environmental Sciences Division, Oak Ridge National
Laboratory, 1980-84
- Leadership
Positions*** PI and Director, Calhoun Experimental Forest Long-Term Soil-Ecosystem
Experiment and Critical Zone Observatory, 1988-present
PI and Director, International Network of Long-Term Soil-Ecosystem
Experiments, 2005-present
Co-Founder, Working Groups on Soil Change, International Union of Soil
Sciences and Soil Science Society of America, Chair, 2009-present
Co-Director and Co-Founder of Southern Center for Sustainable Forests, NCSU-
Duke-NCDENR, 1997-2010
Member, Critical Zone Science Team that articulated and successfully lobbied
NSF to create a Critical Zone science program, 2003-2009
Director of Graduate Studies, Duke's interdepartmental University Program in
Ecology, 2004-2011
Chair, NSOE's Forest Resource Management, Resource Ecology, and Ecosystem
and Conservation Sciences Programs, Duke University, 1988-2000
Chair, Society of American Foresters Reaccreditation Review Committee,
NSOE, 1997-1998; 2010-2012

- Boards of Directors*** Organization for Tropical Studies, Durham, NC, 1990-2000
North Carolina Governor's Forestry Council, Raleigh, 1998-present
Biomass Energy Resource Center, Montpelier, VT, 2007-2012
Forest History Society, Durham, NC, 2011-present
- Recent Honors*** Russell Lecture, British Soil Science Society, Lancaster, UK, 2013
Goldschmidt Conference Keynote Address in Geochemistry, 2013
Soil Systems and Critical Zone Processes Conference, Invited Speaker, Monte Verita, Switzerland, 2013
Penn State University, Interdepartmental Critical Zone Presentation, State College, 2013
Beijing Normal University's Hydropedology Keynote Address, 2013
Chinese Academy of Agricultural Sciences, Soil Organic Carbon Keynote Address, Beijing, 2012
Plum Creek Conference on Forests and Energy, Keynote Address, University of Montana, Missoula, 2009
Keynote (one of four) for the Opening of Smithsonian Museum Exhibit on Soils, "Dig It!", National Academy, Washington DC, 2008
Nelson Lecture, Mississippi State University, State College, 2005
- Teaching*** Teaching in the Nicholas School and University in soil science and management, ecosystem ecology, earth sciences, forestry, and bioenergy in graduate, professional, and undergraduate degree programs (First Year Undergraduate to PhD). Teaching includes lectures, discussions, writing and quantitative analyses, and seminars; field and indoor laboratories; and field trip courses to meet environmental managers at their own projects.
- Coursework*** **active classes regularly taught*
*ENV 049 Into the Woods, First Year Undergraduate Seminar, 14-16 students, 2008-present
*ENV 221/721 Soils and Ecosystems, 3 unit lecture with weekly laboratories; 12-50 students, 1987-present
*ENV 262/762 Forest Management Traveling Seminar, 1 unit field trips and speaker stimulated discussions. Every other semester with changing topic: 12-20 students, 1997 - present
*ENV 266/766 Forest Ecology of Southern Appalachian Mountains, 1 unit Environmental history readings and field trip, 12-25 students, 1987 - present
*ENV 298.70/870 Fire Ecology and Management Seminar, 2005-present, alternate years
*ENV 299.19/799.19 Independent Studies, 1-3 units, various topics, to undergraduate, professional, and graduate students, 1988 - present
*ENV 364/701 Forest Measurements, 4-units, 12-18 students, 2011-present
*UPE 301/701 Ecology Advanced Readings, 4 units, historical and contemporary ecosystem ecology readings, 8-12 PhD students, 2006-present, alternate years

Previous Duke Coursework

- ENV 201 Forest Resources Field Skills, 2 unit field laboratory, 12-24 students, 1989-2010
- ENV 213 Forest Ecosystems, 3 unit lecture with weekly laboratory; 15-30 students, 1988-2004, 2012
- ENV 278 Conservation and Sustainable Development, 3 unit lecture and case-study field problems course, jointly taught with NCSU and UNC; Richter co-led course with Prof. Jan Laarman, NCSU, and J. Terborgh, Duke for about five years, 30 to >60 students, 1988-1995
- ENV 298.13 Ecological Applications, 3 unit lecture and discussion, coordinated and led by Richter and co-taught with five NSOE ecology faculty, 1996 only, 40 students
- ENV 298.14 Forest Sustainability and Certification, with NCSU on video with live link throughout the state of NC, 2002
- ENV 299.19 Tropical Watershed Management, 1 unit lecture and seminar, 12 students, 1993
- ENV 299.19 Tropical Soil Resources, 2 unit lecture and laboratory, 12 students, 1993
- UPE 303S/BIO311S UPE Ecology Seminar, 1 unit, 24-35 students, 2001-2003
- ENV 321 Advanced Readings in Soil Science, 1 unit, readings and discussion, 5-12 students, 1995-present

Other Teaching

- “Fertility of Acid Soils in the Tropics”, co-taught with D. Zeaser in Spanish for foresters and ecologists in Costa Rica, 1994
- OTS teacher in Tropical Biology with Dr. Luis Diego Gómez; Soils and Ecosystems of Cerro de la Muerte, Costa Rica, 1994
- OTS teacher in Tropical Managed Ecosystems with Dr. Jenny Reynolds-Vargas; Soil Infiltration in Andisols Managed for Coffee, 1992

Research

Richter’s research links soils with ecosystems and the wider environment. He has mainly focused on how humanity is transforming Earth’s soils as natural systems, specifically how land-uses alter soil processes and properties on time scales of decades, centuries, and millennia. He is the lead author with his PhD student Daniel Markewitz (Professor at University of Georgia) of *Understanding Soil Change*, a widely reviewed Cambridge book on this subject. Richter and his colleagues work to expand the concept of soil as the full biogeochemical weathering zone of the Earth’s crust, ie, the Earth’s belowground Critical Zone, sometimes tens of meters deep. The research examines decadal to millennial changes in the chemistry and cycling of soil C, N, P, Ca, K, Mg, and trace elements B, Fe, Mn, Cu, Be, Zr, and Zn across full soil profiles as deep as 30-m. Since 1988, Richter has directed the Long-Term Calhoun Soil-Ecosystem Experiment (LTSE) in the Piedmont of South Carolina, a collaborative study with the USDA Forest Service that quantifies how soils form as natural bodies and are transformed by human action, and a study that has grown to be a model for such long-term studies. In 2005, Richter initiated

the first comprehensive international networking and inventory project of the world's LTSEs, using an advanced-format website that networked metadata on 250 experiments in real-time. The LTSEs project has held three workshops at Duke University, the Center for Environmental Farming Systems, Calhoun Experimental Forest, and Coweeta Hydrologic Laboratory, hosting representatives from Africa, Asia, Australia, Europe, and the Americas. Richter has turned the LTSEs networking effort to research, and is currently proposing the first soil sampling (to 1-m depth) of the world's finest LTSEs in an interdisciplinary study of soil sustainability. Richter has helped initiate two Working Groups in the International Union of Soil Sciences and the Soil Science Society of America to promote the science of soils as human-natural systems and has recently been invited to join a third that is part of the International Commission on Stratigraphy effort to evaluate the renaming of the contemporary geologic epoch the Anthropocene. Richter has written in the peer-reviewed literature on all of these projects.

Ph.D. Advisees, all of whom have been instrumental in advancing this research

- Spiguel, Maria C. 1988. Nitrogen cycling in three contrasting *Quercus* (oak) ecosystems
- Reynolds, Jenny S. 1988. Nitrogen cycling in intensively managed coffee plantation ecosystems in the Valle Central, Costa Rica
- Babbar, Liana. 1990. Nitrogen cycling in coffee plantations with shade trees in Costa Rica
- Dai KoHsiu. 1994. Soil cation exchange reactions and effects of acid deposition on soil solution chemistry: the role of aluminum
- Markewitz, Daniel. 1995. Soil acidification, soil potassium availability, and biogeochemistry of aluminum and silicon in a 34-year-old loblolly pine (*Pinus taeda* L.) ecosystem in the Calhoun Experimental Forest, South Carolina
- Korfmacher, Karl. 1996. Changes in land use and water quality in the Yadkin River basin, NC, 1951-90: A time-series and GIS analysis
- Billings, Sharon. 1998. Effects of rainfall exclusion on soil carbon gases and water relations in two boreal forest ecosystems
- Krishnaswamy, Jagdish. 1999. Effects of forest conversion on soils and hydrology in the Terraba River Basin, Costa Rica
- O'Neill, Kathy P. 2000. Changes in carbon dynamics following wildfires from forest soils in the interior of Alaska
- Oh NeungHwan. 2002. Chemical weathering of three Piedmont soils in North Carolina
- Fimmen, Ryan 2004. Organic geochemistry of the South Carolina Piedmont: Decomposition, mineral associations, and ferrollysis. (with Prof. D. Vasudevan)
- DeMeester, Julie. 2009. Effects of invasive grasses on restored-riparian N cycling
- Li Jianwei. 2009. Effects of land-use history on soil macro- and trace elements in the Southern Piedmont of North America
- Jackson, Jason A. 2010. Molecular approaches to estimating soil fungal diversity and community shifts in response to land-use change. (with Prof. R. Vilgalys)
- Mobley, Megan A. 2011. Effects of forest-ecosystem development on slow-turnover soil carbon

Bacon, Allan R. 2014. Pedological and anthro-pedological change in soils at the Calhoun Experimental Forest
Brecheiser, Zachary. 2017. New PhD student starting 2013

Selected External Research Funding

NSF Geosciences Directorate, 2013-2018. Evolution and recovery dynamics of Earth's Critical Zones subsequent to agriculturally forced land degradation: Calhoun Critical Zone Observatory, 15 investigators, 6 universities, \$5 million
CarboSylva, USAID, USDA Forest Service, 2012-2013. Inventory of soil carbon in the forests of Gabon. \$125,000
USDA Forest Service, 2012-2013. Resampling of long-term forest plots in the Black Mountains, NC. \$10,000
Wallace Genetic Foundation, 2012-2013. Research planning for coordinated sampling of the world's long-term soil experiments. \$35,000
USDA Forest Service, 2009-2010. Wood Education and Resource Center. \$50,000
NSF-EAR, 2008-2010. New insights into soil-regolith genesis and structure. \$20,000
NSF-Bio, 2007-2012. Collaborative Research: New Analyses of 50-Year Net Ecosystem Productivity Including Long Lag Time Carbon Accretions in Ageing Secondary Forests. \$275,000
NSF-RCN, 2006-2012. RCN: Global Soil Change Community Networking Chronosequence Studies and Long-term Soil Experiments. \$425,000
Andrew W. Mellon Foundation, 2002-2008. Temporal and spatial reassembly of soil microbial communities and organic matter in post-disturbance forests; an interdisciplinary soil ecology research and training project. \$500,000
NSF-EAR, 2006-2008. Development of a cyberinfrastructure system for studies of the Critical Zone. \$50,000
USDA-NRI, 2005-2008. Improving the science of soil change: Conference to evaluate research at the world's long-term soil experiments (LTSEs), \$10,000
Duke Center for Global Change, 2004-2006. Soils Working Group to Initiate First Global Inventory of Long-Term Soil-Ecosystem Experiments, \$30,000.
NSF-Ecology-LTREB Program. 2001-2006. Long-term soil-ecosystem studies at the Calhoun Experimental Forest. \$280,000
NSF-Biocomplexity Program. 2001-2003. Simplification and recovery of biocomplexity of soils long used for agriculture and forestry. \$83,000
USDA-Forest Service, Effects of ice damage on coniferous and deciduous temperate forests. \$9,000
USDA-Forest Service, Forty years of Fraser fir (*Abies fraseri*) regeneration following balsam woolly adelgid (*Adelges piceae*) depredation in the Black Mountains of North Carolina. \$9,000
Pinchot Institute, Forest certification on the Duke Forest (with NC State University and the State of North Carolina). \$50,000
US-EPA & NC-DENR. 1998-2000. Ecological evaluation of chip mills in North Carolina. \$125,000
USDA FS Cooperative Research Program. 1999-2002. Establishment of three long-term soil-ecosystem studies in the southeastern forest: the Calhoun, SETRES, and Butler Forests. \$230,000

USDOE. 1996-2002. Effects of elevated CO₂ on belowground processes: interactions on throughfall and soil-water chemistry. About \$300,000

USDA FS Cooperative Research Program. 1997-1998. Project initiation to evaluate fertilizer leaching at the SETRES Experimental Forest. \$15,000

USDA-NRI. 1996-1999. Thirty-four year N and P budgets at the Calhoun Experimental Forest. \$80,000

NSF. 1993-1998. Carbon sequestration in soils and ecosystems at the Calhoun Experimental Forest. \$250,000

US AID. 1992-1996. Indigenous tree reforestation in degraded pastures in southern Costa Rica. \$800,000

USDA. 1992-1995. Long-term acidification at the Calhoun Experimental Forest. \$100,000

PUBLICATIONS

Book

Richter, D.D. and D. Markewitz. 2001. *Understanding Soil Change: Soil Sustainability over Millennia, Centuries, and Decades*. Cambridge University Press, UK, 255 pp. (paperback summer 2007).

Popular Press Op-Eds

Richter, D.deB. 2012. NC Wind Project Could Kill Eagles. *Charlotte Observer*. June 28

Richter, D.deB. 2011. Bound to Tangle with a Turbine. *News and Observer*. Nov. 16

Richter, D.deB. 2010. Good Wood Energy. *News and Observer*, April 26

Richter, D.deB. 2010. Will Duke Twice Become a Leader in Renewable Energy? *Duke Chronicle*, September

Richter, D.deB. 2009. High School in Duke Forest Would Harm Natural Area. *Durham Herald Sun*, June 24

Richter, D.deB. and J.T. Karakash. 2008. Time to Stop Wasting Durham's Yardwaste. *Durham Herald Sun*, July

Richter, D.deB. and J.T. Karakash, 2008, Turn Yard "Waste" into Opportunity. *Durham Herald Sun*, February

Richter, D.D. 2007. Navy Fails to Use Common Sense about Birds and Jets. *Charlotte Observer*. April 1

Richter, D.D. 2007. Warming Up to a Market in Carbon. *Raleigh News and Observer*. Jan. 2

Richter, D.D. 2006. Why the Modest Coverage of the World's Most Spectacular Sporting Event? *Durham Herald-Sun*. July

Richter, D.D. 2006. The Road to Ruination of a Park. *Raleigh News and Observer*. Mar. 3

Richter, D.D. 2005. The OLF vs. North Carolina's Serengetti. *Raleigh News and Observer*. December

Peer-review journal papers and book chapters

1) Richter, D.deB, A.R. Bacon, S.A. Billings, D. Binkley, M. Buford, M.A. Callahan, A.E. Curry, R.L. Fimmen, A.S. Grandy, P.R. Heine, M. Hofmockel, J.A. Jackson, E. Lemaster, J. Li, D. Markewitz, M.L. Mobley, M.W. Morrison, M. Strickland, T. Waldrop, and C.G. Wells. 2013. Evolution of a half-century of soil and ecosystem

- research at the Calhoun Experimental Forest. In *Research for the Long Term*. Springer-Verlag. New York (in press).
- 2) Lawrence, G., D.deB. Richter. 2013. Measuring environmental change by repeated soil sampling: a North American perspective. *Journal of Environmental Quality* (in press).
 - 3) Mobley, M.L, D.deB. Richter, and P.R. Heine. 2013. Accumulation and decay of woody detritus in a humid subtropical secondary pine forest. *Canadian Journal of Forest Research* 43: 1-10.
 - 4) Richter, D.deB., D.H. Yaalon. 2012. "The changing model of soil" revisited. *Soil Science Society of America Journal* 76: 766-778.
 - 5) Bacon, A.R., D.deB. Richter, P.R. Bierman, and D.H. Rood. 2012. Coupling meteoric ¹⁰Be with pedogenic losses of ⁹Be to improve soil residence time estimates on an ancient North American interfluvium. *Geology* 40: 847-850. doi: 10.1130/G33449.1.
 - 6) Robins, N.A., N. Hagan, S. Halabi, H. Hsu-Kim, R.D. Espinoza Gonzales, M. Morris, G. Woodall, D.deB. Richter, P. Heine, T. Zhang, A. Bacon, J. Vandenberg. 2012. Estimations of historical atmospheric mercury concentrations from mercury refining and present-day soil concentrations of total mercury in Huancavelica, Peru. *Science of The Total Environment* 426: 146-154.
 - 7) Smith, P., C.A. Davies, S. Ogle, G. Zanchi, J. Bellarby, N. Bird, R.M. Boddey, N.P. McNamara, D. Powlson, A. Cowie, M. vanNoordwijk, S.C. Davis, D.deB. Richter, L. Kryzanowski, M.T. vanWijk, J. Stuart, A. Kirton, D. Eggar, G. Newton-Cross, T.K. Adhya, A.K. Braimoh. 2012. Towards an integrated global framework to assess the impacts of land use and management change on soil carbon: current capability and future vision. *Global Change Biology* 18: 2089–2101. doi: 10.1111/j.1365-2486.2012.02689.x
 - 8) Li, J.W., D. deB. Richter. 2012. Effects of two-century land-use changes on soil iron crystallinity and accumulation in Southeastern Piedmont region, USA. *Geoderma* 173-174: 184-191. doi:[10.1016/j.geoderma.2011.12.021](https://doi.org/10.1016/j.geoderma.2011.12.021)
 - 9) Zalasiewicz, J., A. Cearreta, P. Crutzen, E. Ellis, M. Ellis, J. Grinevald, J. McNeill, C. Poirier, S. Price, D.deB. Richter, M. Scholes, W. Steffen, D. Vidas, C. Waters, M. Williams, and A.P. Wolfe. 2012. Response to Autin and Holbrook on "Is the Anthropocene an issue of stratigraphy or pop culture?" *GSA Today* 22:e21-e22. doi: 10.1130/GSATG162C.1.
 - 10) Sachs, J. D., Remans, R., Smukler, S. M., Winowiecki, L., Andelman, S. J., Cassman, K. G., D.deB. Richter ... and P.A. Sanchez. 2012. Effective monitoring of agriculture: a response. *Journal of Environmental Monitoring* 14: 738-742.
 - 11) Billings, S.A., S.E. Ziegler, W.H. Schlesinger, R. Benner, D.deB. Richter. 2012. Predicting carbon cycle feedbacks to climate: Integrating the right tools for the job. *EOS Transactions* 93: 188.
 - 12) Richter D.deB., R.A. Houghton. 2011. Gross CO₂ fluxes from land-use change: implications for global emission reductions and increasing sinks. *Carbon Management* 2: 4 1-47.
 - 13) Richter, D. deB., A.R. Bacon, M.L. Mobley, C.J. Richardson, S.S. Andrews, L. West, S. Wills, S. Billings, C.A. Cambardella, N. Cavallaro, J.E. DeMeester, A.J. Franzluebbers, et al. 2011. Human-soil relations are changing rapidly: Proposals

- from SSSA's cross-divisional soil change working group. *Soil Sci. Soc. Am. J.* 75:2079–2084. doi:10.2136/sssaj2011.0124
- 14) Hagan, N., N. Robins, H. Hsu-Kim, S. Halabi, M. Morris, G. Woodall, T. Zhang, A. Bacon, D. deB. Richter, and J. Vandenberg. 2011. Estimating historical atmospheric mercury concentrations from silver mining and their legacies in present-day surface soil in Potosí, Bolivia. *Atmospheric Environment* 45: 7619-7626.
 - 15) Arias D., J. Calvo-Alvarado, D.deB. Richter, and A. Dohrenbusch. 2011. Productivity, aboveground biomass, nutrient uptake and carbon content in fast-growing tree plantations of native and introduced species in the Southern Region of Costa Rica. *Biomass and Bioenergy* 35: 1779-1788.
 - 16) Rasmussen, C., S. Brantley, D.deB. Richter, A. Blum, J. Dixon, A.F. White. 2011. Strong climate and tectonic control on plagioclase weathering in granitic terrain. *Earth and Planetary Science Letters* 301: 521-530.
 - 17) Cheng, L., J. Zhu, G. Chen, X. Zheng, N.-H. Oh, T.W. Rufty, D. deB. Richter, and S. Hu. 2010. Atmospheric CO₂ enrichment facilitates cation release from soil. *Ecology Letters* 13: 284–291. doi: 10.1111/j.1461-0248.2009.01421.x
 - 18) Grandy, A.S., S.A. Billings, D.deB. Richter. 2010. Saving our soils. *Frontiers in Ecology and Environment* 8: 171.
 - 19) Strickland, M.S., M.A. Callahan, C.A. Davies, C.L. Lauber, K. Ramirez, D.deB. Richter, N. Fierer, M.A. Bradford. 2010. Rates of *in situ* carbon mineralization in relation to land-use, microbial community and edaphic characteristics. *Soil Biology and Biochemistry*. 42: 260-269.
 - 20) Sachs, J., and 24 co-authors including D.deB. Richter 2010. Monitoring the world's agriculture. *Nature* 466: 558-560. doi:10.1038/466558a.
 - 21) Billings, S.A., Hungate, B.A., Ziegler, S., Richter, D.deB. 2010. A call to investigate drivers of soil organic matter retention vs. mineralization in a high CO₂ world. *Soil Biology and Biochemistry* 42: 665-668. doi:10.1016/j.soilbio.2010.01.002.
 - 22) DeMeester, J.E., D.deB. Richter. 2010. Changes in nitrogen cycling when the Asian grass, *Microstegium vimineum*, invades a diverse plant community in a North American riparian wetland. *Ecological Applications* 20: 609-619.
 - 23) DeMeester, J.E., D.deB. Richter. 2010. Restoring restoration; A study of invasion by the plant *Microstegium vimineum* in a North Carolina wetland. *Biological Invasions* 12: 781-793. doi: 10.1007/s10530-009-9481-9.
 - 24) Li, J.W., Richter, D.deB. 2010. Effects of land-use history on soil spatial heterogeneity of macro- and trace elements in the Southern Piedmont USA. *Geoderma* 156: 60-73.
 - 25) Billings, S.A., Buddemeier, R.W., Richter, D.deB., Van Oost, K., Bohling, G. 2010. A simple method for estimating the influence of eroding soil profiles on atmospheric CO₂. *Global Biogeochemical Cycles* [2009GB003560].
 - 26) Richter, D. deB. and Mobley, M.L. 2009. Monitoring Earth's Critical Zone. *Science* 326: 1067-1068 [science.1179117].
 - 27) Richter, D. deB. 2009. The accrual of land use history in Utah's carbon cycle. *Environmental History* 14: 527-542.

- 28) Richter, D.deB., D. Jenkins, J.T. Karakash, J. Knight, L.R. McCreery, and K.P. Nemestothy. 2009. Wood energy in America. *Science* 323: 1432-1433 [science.1166214] .
- 29) Strickland, M.S., Callaham, M.A., Davies, C.A., Lauber, C.L., Ramirez, K., Richter, D.deB., Fierer, N., Bradford, M.A. 2009. Rates of *in situ* carbon mineralization in relation to land-use, microbial community and edaphic characteristics. *Soil Biology and Biochemistry* [026].
- 30) Richter, D. deB. 2009. Rekindling wood energy in America. *RenewableEnergyWorld.COM*, an on-line journal. <http://www.renewableenergyworld.com/rea/news/article/2009/06/rekindling-wood-energy-in-america>
- 31) Galik, C.S., M.L. Mobley, and D.deB. Richter. 2009. A virtual field test of forest management carbon offsets: The influence of accounting. *Mitigation and Adaptation Strategies for Global Change* 14:677–690
- 32) Richter, D.deB. 2009. The accrual of land-use history in Utah’s forest carbon cycle. *Environmental History* 14: 527-542.
- 33) Foley, T. G. D. deB. Richter, and CS Galik. 2009. Extending rotation age for carbon sequestration: A cross-protocol comparison of North American forest offsets. *Forest Ecology and Management* 259: 201-209.
- 34) Richter, D.deB. and S.A. Billings. 2008. Strengthening the world’s long-term soil research base. *International Union of Soil Science Bulletin* 112: 10-12.
- 35) Li, J.W., D.deB. Richter, A. Mendoza, and P.R. Heine. 2008. Four-decade responses of soil trace elements to an aggrading old-field forest: B, Mn, Zn, Cu and Fe. *Ecology* 89:2911-2923.
- 36) Fimmen, R.L., D.deB. Richter, D. Vasudevan, M.A. Williams, and L.T. West. 2008. Rhizogenic Fe-C redox cycling: A hypothetical biogeochemical mechanism that drives crustal weathering in upland soils. *Biogeochemistry* 87: 127-141. DOI [10.1007/s10533-007-9172-5](https://doi.org/10.1007/s10533-007-9172-5).
- 37) Fimmen, R.L., D.deB. Richter, and D. Vasudevan. 2008. Determination of DON speciation in soil solution: peptide hydrolysis and fluorescent amine analysis. *Journal of Environmental Science* 20: 1273-1280.
- 38) Richter, D.deB. 2007. Humanity’s transformation of Earth’s soil: Pedology’s new frontier. *Soil Science* 127: 957-967.
- 39) Richter, D.deB., M. Hofmockel, M.A. Callaham, D.S. Powlson, and P. Smith. 2007. Long-term soil experiments: keys to managing Earth’s rapidly changing ecosystems. *Soil Science Society of America Journal* 71:266–279.
- 40) Richter, D.deB., N.H. Oh, R. Fimmen, and J. Jackson. 2007. The rhizosphere and soil formation. pp. 177-198. In Zoe Cardon & Julie Whitbeck, eds. *The Rhizosphere - An Ecological Perspective*. Academic Press, Boca Raton, FL.
- 41) Richter, D.deB. 2007. Book review of J. Hellin’s Better Land Husbandry – from Soil Conservation to Holistic Land Management. *Soil Science Society America Journal* 71:635.
- 42) Oh, N.H. and D.deB. Richter. 2007. Did elevated atmospheric CO₂ alter soil mineral weathering?: an analysis of 5-year soil water chemistry data at Duke FACE study. *Global Change Biology* 13: 2626–2641, DOI: 10.1111/j.1365-2486.2007.01452.

- 43) Amundson, R. D., deB. Richter, G.S. Humphreys, E.G. Jobbágy, J. Gaillardet. 2007. Coupling between biota and Earth materials in the Critical Zone. *Elements* 3: 327-332.
- 44) Calvo-Alvarado, J.C., D. Arias, D.D. Richter. 2007. Early growth performance of native and introduced fast growing tree species in wet to sub-humid climates of the Southern region of Costa Rica. *Forest Ecology and Management* 242:227-235.
- 45) Cabbage, F., J. Cox, S. Moore, Thresa Henderson, J. Edeburn, D. Richter, M. Chesnutt, and H. Rohr. Management Impacts and Costs of Forest Certification of State and University Lands in North Carolina. *Southern Journal of Applied Forestry* (in press).
- 46) Richter, D.deB., J.W. Li, D. Markewitz, J. Raikes, H.L. Allen. 2006. Bioavailability of slowly cycling soil phosphorus: Major restructuring of soil-P fractions over four decades in an aggrading forest. *Oecologia* DOI 10.1007/s00442-006-0510-4.
- 47) Billings, S.A. and D.D. Richter. 2006. Changes in stable isotopic signatures of soil nitrogen and carbon during 40 years of forest development. *Oecologia* DOI 10.1007/s00442-006-0366-7.
- 48) O'Neill, K.P., D.D. Richter, E.S. Kasischke. 2006. Succession-driven changes in components of soil respiration following fire in black spruce stands of Interior Alaska. *Biogeochemistry* 80: 1–20; DOI 10.1007/s10533-005-5964-7.
- 49) Callahan, M., D.D. Richter, Jr., D.C. Coleman, and M. Hofmockel. 2006. Long-term land-use effects on soil invertebrate communities in southern Appalachian Piedmont soils. *European Journal of Soil Biology* 42: S150–S156.
- 50) Richter, D.D. 2006. Understanding soil and ecosystem change at the Calhoun Experimental Forest. In K. Ireland (ed.) *Special Publication on Long-Term Forest Experiments*. Yale University School of Forestry and Environmental Studies New Haven, CT.
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