

Eric A. Davidson

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EMPLOYMENT

Appalachian Laboratory, University of Maryland Center for Environmental Science, Director and Professor, January 2015 to present.
The Woods Hole Research Center: President and Executive Director (2011-2013); Senior Scientist (1999-2014); Associate Scientist (1994-1998); Assistant Scientist (1991-1993).
National Research Council Associate: Ecosystem Science and Technology Branch of the NASA Ames Research Center (1989-1991).
Post-Doctorate Research Associate and Lecturer in Soil Microbiology: Dept. of Plant and Soil Biology, University of California, Berkeley (1986-1989).
Peace Corps Volunteer: Public health project in Zaire (1979-1981).

EDUCATION

Ph.D. 1986. Department of Forestry, North Carolina State University.
Graduate Honors: National Science Foundation Graduate Fellowship; National Science Foundation Dissertation Improvement Grant; Outstanding Teaching Assistant Award.
A.B. 1978. Oberlin College. Biology major.
Undergraduate Honors: Graduation with Highest Honors in Biology; Phi Beta Kappa.

HONORS

Fellow, American Association for the Advancement of Science, 2010.
ISI Highly Cited Researcher, 2007, 2015.

PROFESSIONAL ACTIVITIES

President-Elect, American Geophysical Union, 2015-2016.
President & President-Elect, Biogeosciences section of the American Geophysical Union – 2011-2014.
North American Center Director, International Nitrogen Initiative, 2010 to present.
Senior Editor, *Global Biogeochemical Cycles*, 2014.
Senior Subject Editor, *Global Change Biology*, June 2001-2011.
Science Steering Committee Member, Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA), 1996-2011. Project Scientist, NASA-LBA-ECO project, 2008-2011.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Geophysical Union	American Association for the Advancement of Science
Ecological Society of America	Soil Science Society of America

CITATION STATISTICS

Web of Science (<http://www.researcherid.com/rid/K-4984-2013>)
Total Citations: 17804; H-Index: 68; Total Articles in Publication List: 184; updated May 2016

Google Scholar (http://scholar.google.com/citations?hl=en&user=pTc_Lh8AAAAAJ)
 Total Citations: 31294; H-Index: 85; updated May 2016

LIST OF PUBLICATIONS

BOOKS and BOOKLETS:

- Davidson, E.A., D. Kanter, E.C. Suddick and P. Syntharalingham (2013). Chapter 3: N₂O: Sources, Inventories, Projections. *In* J. Alcamo, S.A. Leonard, A.R. Ravishankara, and M. A. Sutton (eds.). *Drawing Down N₂O to Protect Climate and the Ozone Layer*. A UNEP Synthesis Report. United Nations Environment. Programme (UNEP), Nairobi, Kenya, ISBN: 978-92-807-3358-7 DEW/1748/NA
- Sutton M.A., Bleeker A., Howard C.M., Bekunda M., Grizzetti B., de Vries W., van Grinsven H.J.M., Abrol Y.P., Adhya T.K., Billen G., Davidson E.A, Datta A., Diaz R., Erisman J.W., Liu X.J., Oenema O., Palm C., Raghuram N., Reis S., Scholz R.W., Sims T., Westhoek H. & Zhang F.S. 2013. *Our Nutrient World: The challenge to produce more food and energy with less pollution*. Centre for Ecology and Hydrology, Edinburgh. www.unep.org
- Suddick, E.C., and E.A. Davidson. 2012. The Role of Nitrogen in Climate Change and the Impacts of Nitrogen-Climate Interactions on Terrestrial and Aquatic Ecosystems, Agriculture, and Human Health in the United States: A Technical Report Submitted to the US National Climate Assessment. North American Nitrogen Center of the International Nitrogen Initiative (NANC-INI). Woods Hole Research Center, Falmouth, MA.
- WHRC and UNEP. 2007. Reactive Nitrogen in the Environment: Too Much or Too Little of a Good Thing. Eric A. Davidson, Charles Arden-Clarke, and Elizabeth Braun (eds.). The United Nations Environment Programme. Paris, France.
- Davidson, E.A. 2000. *You Can't Eat GNP*. Perseus Publishing, Cambridge, MA, 247pp.
- Adams, M.B., E.A. Davidson, and K. Ramakrishna (eds.) 1998. The Contribution of Soil Science to the Development and Implementation of Criteria and Indicators of Sustainable Forest Management. Soil Science Society of America Special Publication No. 53, Madison, WI, 156pp.

JOURNALS AND BOOK CHAPTERS:

- Wehr, R., J.W. Munger, J.B. McManus, D.D. Nelson, M.S. Zahniser, E.A. Davidson, S.C. Wofsy, and S.R. Saleska. 2016. Seasonality of temperate forest photosynthesis and daytime respiration. *Nature*, 534:680-683.
- Davidson, E.A., R.L. Nifong, R.B. Ferguson, C. Palm, D.L. Osmond, and JS. Baron. 2016. Nutrients in the nexus. *Journal of Environmental Studies Science*, DOI 10.1007/s13412-016-0364-y.
- Luo, Y., et al. (40 coauthors) 2016. Toward more realistic projections of soil carbon dynamics by Earth system models. *Global Biogeochem. Cycles*, 30: 40–56.
- Zhang, X, E.A. Davidson, D.L. Mauzerall, T.D. Searchinger, P. Dumas, and Y. Shen. 2015. Managing nitrogen for sustainable development. *Nature*, 528:51-59.
- Wieder, W.R., S.D. Allison, E.A. Davidson, K. Georgiou, O. Hararuk, Y. He, F. Hopkins, Y. Luo, M.J. Smith, B. Sulman, K. Todd-Brown, Y-P. Wang, J. Xia, and X. Xu. 2015. Explicitly representing soil microbial processes in Earth system models. *Global Biogeochem. Cycles*, 29, 1782–1800.
- Balch, J.K., P.M. Brando, D.C. Neptad, M.T. Coe, D. Silverio, T.J. Massad, E.A. Davidson, P. Lefebvre, C. Oliveira-Santos, W. Rocha, R.T.S. Cury, A. Parsons, and K.S. Carvalho. 2015. The susceptibility of southeastern Amazon forests to fire: insights from a large-scale burn experiment. *BioScience* 65: 893-905.
- Davidson, E.A., E.C. Suddick, C.W. Rice, and L.S. Prokopy. 2015. More food, low pollution (Mo Fo Lo Po): A grand challenge for the 21st century. *Journal of Environmental Quality* 44:305–311.
- Zhang, X, D Mauzerall, EA Davidson, D Kanter, and R Cai. 2015. The economic and environmental consequences of implementing nitrogen-efficient technologies and management practices in agriculture. *Journal of Environmental Quality* 44: 312–324.
- Sierra, C. A., S. E. Trumbore, E. A. Davidson, S. Vicca, and I. Janssens. 2015. Sensitivity of decomposition rates of soil organic matter with respect to simultaneous changes in temperature and moisture, *J. Adv. Model. Earth Syst.*, 7:335–356, doi:10.1002/2014MS000358.

- Angert, A., D. Yakir, M. Rodeghiero, Y. Preisler, E.A. Davidson, and T. Weiner. 2015. Using O₂ to study the relationships between soil CO₂ efflux and soil respiration. *Biogeosciences*, 12, 2089–2099.
- Davidson, E.A. 2015. Soil carbon in a beer can. *Nature Geoscience* 8:748–749.
- Davidson E.A. and D Kanter. 2014. Inventories and scenarios of nitrous oxide emissions. *Environmental Research Letters* 9, doi:10.1088/1748-9326/9/10/105012.
- Davidson E.A., Savage S.E., Finzi A.C. 2014. A big-microsite framework for soil carbon modeling. *Global Change Biology*, 20, 3610–3620.
- Davidson, E.A. J.N. Galloway; N. Millar, A.M. Leach. 2014. N-related greenhouse gases in North America: Innovations for a sustainable future. *Current Opinion in Environmental Sustainability*, 9–10:1–8.
- Snyder, C.S., E.A. Davidson, P. Smith, R.T. Venterea. 2014. Agriculture: sustainable crop and animal production to help mitigate nitrous oxide emissions. *Current Opinion in Environmental Sustainability*, 9–10:46–54.
- Macedo, M.N. and E.A. Davidson. 2014. Forgive us our carbon debts. *Nature Climate Change* 4:538–539.
- Savage, K.E., R. Phillips, and E.A. Davidson. 2014. High temporal frequency measurements of greenhouse gas emissions from soils. *Biogeosciences*, 11, 2709–2720.
- Brando, P.M., J. K. Balch, D.C. Nepstad, D.C. Morton, F.E. Putz, M.T. Coe, D. Silvério, M.N. Macedo, E.A. Davidson, C. Nóbrega, A. Alencar, B. Soares. 2014. Abrupt increases in Amazonian tree mortality due to drought-fire interactions. *PNAS*, 111:6347–6352, doi: 10.1073/pnas.1305499111.
- Senna, MCA, MH Costa, EA Davidson, and CA Nobre (2014) Modeling the impact of net primary production dynamics on post-disturbance Amazon savannization. *Anais da Academia Brasileira de Ciências* (2014) 86: 621–632.
- Giasson, M.-A., A. M. Ellison, R. D. Bowden, P. M. Crill, E. A. Davidson, J. E. Drake, S. D. Frey, J. L. Hadley, M. Lavine, J. M. Melillo, J. W. Munger, K. J. Nadelhoffer, L. Nicoll, S. V. Ollinger, K. E. Savage, P. A. Steudler, J. Tang, R. K. Varner, S. C. Wofsy, D. R. Foster, and A. C. Finzi. 2013. Soil respiration in a northeastern US temperate forest: a 22-year synthesis. *Ecosphere* 4:140. <http://dx.doi.org/10.1890/ES13.00183.1>
- Hayashi, S.N., I.C.G. Vieira, C.J.R. Carvalho, E.A. Davidson. 2013. Linking nitrogen and phosphorus dynamics in litter production and decomposition during secondary forest succession in the eastern Amazon. *Boletim do Museu Paraense Emílio Goeldi. Ciências Naturais* 7(3): 283–295.
- Neill, C., M.T. Coe, S.H. Riskin, A.V. Krusche, H. Elsenbeer, M.N. Macedo, R. McHorney, P. Lefebvre, E.A. Davidson, R. Scheffler, A.M. e Silva Figueira, S. Porder, and L.A. Deegan. 2013. Watershed responses to Amazon soya bean cropland expansion and intensification. *Philosophical Transactions of the Royal Society B* 368:20120425.
- Figueiredo, R. O., Börner, J., Davidson, E. A. 2013. Watershed services payments to smallholders in the Brazilian Amazon: challenges and perspectives *Ambi-Agua*, Taubaté, 8(2):6–17. <http://dx.doi.org/10.4136/ambi-agua.1056>.
- Savage, K.E., W.J. Parton, E.A. Davidson, S.E. Trumbore, and S.D. Frey. 2013. Long-term changes in forest carbon under temperature and nitrogen amendments in a temperate northern hardwood forest. *Global Change Biology*. doi:10.1111/gcb.12224
- Savage, K.E., E.A. Davidson, and J. Tang. 2013. Diel patterns of autotrophic and heterotrophic respiration among phenological stages. *Global Change Biology*, 19: 1151–1159. doi: 10.1111/gcb.12108.
- Kennan, T.F. E.A. Davidson, J.W. Munger, and A.D. Richardson. 2013. Rate my data: quantifying the value of ecological data for the development of models of the terrestrial carbon cycle. *Ecological Applications*, 23:273–286.
- Orwig, D.A. A.A. Barker-Plotkin, E.A. Davidson, H. Lux, K.E. Savage, and A.M. Ellison. 2013. Foundation species loss affects vegetation structure more than ecosystem function in a northeastern USA forest. *PeerJ* 1:e41 <http://dx.doi.org/10.7717/peerj.41>
- Bettez, N.D., R. Marino, R.W. Howarth, and E.A. Davidson. 2013. Roads as nitrogen deposition hot spots. *Biogeochemistry* 114:149–163.
- Davidson, E.A., A.C. de Araújo, P. Artaxo, J.K. Balch, I.F. Brown, M.M.C. Bustamante, M.T. Coe, R.S. DeFries, M. Keller, M. Longo, J.W. Munger, W. Schroeder, B.S. Soares-Filho, C.M. Souza Jr, and S.C. Wofsy. 2012. The Amazon basin in transition. *Nature*, 481:321–328.
- Massad, T.J., J.K. Balch, E.A. Davidson, P.M. Brando, C.L. Mews, P. Porto, R.M. Quintino, S.A. Vieira, B.H. Marimon Jr., and S.E. Trumbore. 2013. Interactions between repeated fire, nutrients, and insect herbivores affect the recovery of diversity in the southern Amazon. *Oecologia*. 172:219–229.
- Reed, S.C., A.R. Townsend, E.A. Davidson, and C.C. Cleveland. 2012. Stoichiometric patterns in foliar nutrient resorption across multiple scales. *New Phytologist* 196: 173–180.

- Davidson, E.A. 2012. Representative concentration pathways and mitigation scenarios for nitrous oxide. *Environmental Research Letters* 7, 024005. doi:10.1088/1748-9326/7/2/024005.
- Davidson, E.A., M. B. David, J. N. Galloway, C. L. Goodale, R. Haeuber, J. A. Harrison, R. W. Howarth, D. B. Jaynes, R. R. Lowrance, B. T. Nolan, J. L. Peel, R. W. Pinder, E. Porter, C. S. Snyder, A. R. Townsend, and M. H. Ward. 2012. Excess nitrogen in the U.S. environment: trends, risks, and solutions. *Issues in Ecology*, Report Number 15, Ecological Society of America.
- Davidson, E.A., S. Samanta, S. S. Caramori, and K.E. Savage. 2012. The Dual Arrhenius and Michaelis-Menten (DAMM) kinetics model for decomposition of soil organic matter at hourly to seasonal time scales. *Global Change Biology*, 18, 371–384.
- Suddick, E.C., P. Whitney, A.R. Townsend and E.A. Davidson. 2012. The role of nitrogen in climate change and the impacts of nitrogen–climate interactions in the United States: foreword to thematic issue. *Biogeochemistry*, DOI 10.1007/s10533-012-9795-z.
- Pinder, R.W., N.D. Bettez, G.B. Bonan, T.L. Greaver, W.R. Wieder, W.H. Schlesinger, and E.A. Davidson. Impacts of human alteration of the nitrogen cycle in the US on radiative forcing. *Biogeochemistry*, doi: 10.1007/s10533-012-9787-z.
- Pinder, R.W., E.A. Davidson, C.L. Goodale, T.L. Greaver, J.D. Herrick, and L. Liu. 2012. Climate change impacts of US reactive nitrogen. *Proceedings of the National Academy of Sciences* 109:7671–7675.
- Reay, D.S., E.A. Davidson, K.A. Smith, P. Smith, J.M. Melillo, F. Dentener, and P.J. Crutzen. 2012. Global agriculture and nitrous oxide emissions. *Nature Climate Change* 2:410–416. doi: 10.1038/NCLIMATE1458
- Sierra, C.A., S. E. Trumbore, E. A. Davidson, S. D. Frey, K. E. Savage, and F. M. Hopkins. 2012. Predicting decadal trends and transient responses of radiocarbon storage and fluxes in a temperate forest soil. *Biogeosciences*, 9, 3013–3028.
- Keenan, T.F., E. Davidson, A.M. Moffat, W. Munger, and A.D. Richardson. 2012. Using model-data fusion to interpret past trends, and quantify uncertainties in future projections, of terrestrial ecosystem carbon cycling. *Global Change Biology*. 18:1971–1987. doi: 10.1111/j.1365-2486.2012.02684.x.
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- Markewitz, D., R.O. Figueiredo, C.J.R. de Carvalho, and E.A. Davidson. 2012. Soil and tree response to P fertilization in a secondary tropical forest supported by an Oxisol. *Biol. Fertil. Soils* DOI 10.1007/s00374-011-0659-9.
- Richey, J.E., M.V. Ballester, E.A. Davidson, M.S. Johnson, and A.V. Krusche. 2011. Land-water interactions in the Amazon. *Biogeochemistry*, 105:1–5.
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- Davidson EA, Lefebvre PA, Brando PM, Ray D, Trumbore SE, Solórzano LA, Ferreira JN, Bustamante MMdaC, and Nepstad DC. 2011. Carbon inputs and water uptake in deep soils of an eastern Amazon forest. *Forest Science*, 57:51-58.
- Ferreira, L.G. G.P. Asner, D.E. Knapp, E.A. Davidson, M.T. Coe, M.M.C. Bustamante, and E.L. de Oliveira. 2011. Equivalent water thickness in savanna ecosystems: MODIS estimates based on ground and EO-1 Hyperion data. *International Journal of Remote Sensing*, 32:7423-7440, doi 10.1080/01431161.2010.523731.
- Luo, Y., J. Melillo, S. Niu, C. Beier, J.S. Clark, A.E.T. Classen, E.A. Davidson, J.S. Dukes, R.D. Evans, C.B. Field, C.I. Czimczik, M. Keller, B.A. Kimball, L.M. Kueppers, R.J. Norby, S.L. Pelini, E. Pendall, E. Rastetter, J. Six, M. Smith, M.G. Tjoelker, and M.S. Torn. 2011. Coordinated approaches to quantify long-term ecosystem dynamics in response to global change. *Global Change Biology* 17, 843–854
- Woodwell, G.M., R.A. Houghton, E.A. Davidson and D.C. Nepstad. 2011. The first principles for climatic stabilization. *Carbon Management* 2:605-606.
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- Figueiredo, R.O., D. Markewitz, E.A. Davidson, A.E. Schuler, O.S. Watrin, and P. de Souza Silva. 2010. Land-use effects on the chemical attributes of low-order streams in the eastern Amazon. *JGR Biogeosciences*, 115, G04004, doi:10.1029/2009JG001200.

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- Markewitz, D. S. Devine, E.A. Davidson, P. Brando, and D.C. Nepstad. 2010. Soil moisture depletion under simulated drought in the Amazon: impacts on deep root uptake. *New Phytologist*, 187: 592–607
- Siddique, I., I.C.G. Vieira, S. Schmidt, D. Lamb, C.J.R. Carvalho, R.O. Figueirido, S. Bloomberg, and E.A. Davidson. 2010. Nitrogen and phosphorus additions negatively affect tree species diversity in tropical forest regrowth trajectories. *Ecology*, 91: 2121–2131.
- Davidson, E.A., K.E. Savage, N.D. Bettez, R. Marino, and R.W. Howarth. 2010. Nitrogen in runoff from residential roads in a coastal area. *Water, Air, & Soil Pollution*, 210: 3-13.
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- Davidson, E.A. 2009. Contribution of manure and fertilizer nitrogen to increasing atmospheric nitrous oxide since 1860. *Nature Geoscience*, 2:659-662.
- Davidson, E.A., and L.A. Martinelli. 2009. Nutrient limitations to secondary forest regrowth. pp. 299-310 In: M. Keller, M. Bustamante, J. Gash, and P. Silva Dias (Eds.), *Amazonia and Global Change*, American Geophysical Union, Washington, DC.
- Meir, P., P.M. Brando, D. Nepstad, S. Vansconcelos, A.C.OL. Costa, E. Davidson, S. Almeida, R.a. Fisher, E.D. Sotta, D. Zarin, and G. Cardinot (2009), The effects of drought on Amazonian rain forests. pp. 429-449. M. Keller, M. Bustamante, J. Gash, and P. Silva Dias (Eds.), *Amazonia and Global Change*, American Geophysical Union, Washington, DC.
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- Savage, K.E., Davidson, E.A., Richardson, A. and Hollinger, D. Y. 2009. Three scales of temporal resolution from automated soil respiration. *Agr. Forest Meterol.* 149: 2012-2021.
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- Davidson EA, Dail BD, Chorover J. 2008. Iron interference in the quantification of nitrate in soil extracts and its effect on hypothesized abiotic immobilization of nitrate. *Biogeochemistry*, 90:65–73.
- Davidson, E.A., Nepstad, D.C., Ishida, F.Y., and Bando. P.M. 2008. Effects of an experimental drought and recovery on soil emissions of carbon dioxide, methane, nitrous oxide, and nitric oxide in a moist tropical forest.

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