

Eric A. Davidson

Appalachian Laboratory, University of Maryland Center for Environmental Science
301 Braddock Road, Frostburg, MD 21532 USA
301-689-7204; edavidson@al.umces.edu

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/Clarivate Analytics Highly Cited Researcher, 2007, 2015-2017.

PROFESSIONAL ACTIVITIES

President (2017-2018) & President-Elect (2015-2016), American Geophysical Union.
President & President-Elect, Biogeosciences section of the American Geophysical Union – 2011-2014.
North American Center Director, International Nitrogen Initiative, 2010 - 2014.
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: 21692; H-Index: 74; Total Articles in Publication List: 191; updated Jan. 2018

Google Scholar (http://scholar.google.com/citations?hl=en&user=pTc_Lh8AAAAJ)
Total Citations: 38940; H-Index: 94; updated Jan. 2018

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., Erismann 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:

- Sihi, D., E.A. Davidson, M. Chen, K.E. Savage, A.D. Richardson, T.F. Keenan, and D.Y. Hollinger. 2018. Merging a mechanistic enzymatic model of soil heterotrophic respiration into an ecosystem model in two AmeriFlux sites of northeastern USA. *Agricultural and Forest Meteorology*, in press.
- Nagy, R. C., S. Porder, P. Brando, E.A. Davidson, A.M.S. Figueira, C. Neill, S. Riskin, S. Trumbore. 2018. Soil carbon dynamics in soybean cropland and forests in Mato Grosso, Brazil. *Journal of Geophysical Research: Biogeosciences*, 123. <https://doi.org/10.1002/2017JG004269>.
- Abramoff, R., X. Xu, M. Hartman, S. O'Brien, W. Feng, E. Davidson, A. Finzi, D. Moorhead, J. Schimel, M. Torn, M. A. Mayes. 2017. The Millennial model: in search of measurable pools and transformations for modeling soil carbon in the new century. *Biogeochemistry* <https://doi.org/10.1007/s10533-017-0409-7>.
- Davidson, E., and M. K. McNutt. 2017. Red/blue and peer review, *Eos*, 98, <https://doi.org/10.1029/2017EO078943>. Published on 02 August 2017
- Abramoff, R. Z., E.A. Davidson, and A.C. Finzi. 2017. A parsimonious modular approach to building a mechanistic belowground carbon and nitrogen model. *Journal of Geophysical Research, Biogeosciences*, 122, 2418–2434.
- Clark, C.M., M. Bell, J.W. Boyd, J. Compton, E. Davidson, C. Davis, M. Fenn, L. Geiser, L. Jones, T. Blett. 2017. Nitrogen-induced terrestrial eutrophication: Cascading effects and impacts on ecosystem services. *Ecosphere*, 8(7):e01877. [10.1002/ecs2.1877](https://doi.org/10.1002/ecs2.1877).
- Davidson, E.A. 2016. Projections of the soil-carbon deficit. *Nature* 540:47-48.

- Figueira, A.M.e.S., E.A. Davidson, R. Nagy, S.H. Riskin, and L.A. Martinelli. 2016. Isotopically constrained soil carbon and nitrogen budgets in a soybean field chronosequence in the Brazilian Amazon region. *Journal of Geophysical Research: Biogeosciences*, 121, doi:10.1002/2016JG003470.
- Greaver, T.L., C.M. Clark, J.E. Compton, D. Vallano, A.F. Talhelm, C.P. Weaver, L. E. Band, J. S. Baron, E. A. Davidson, C. L. Tague, E. Felker-Quinn, J. A. Lynch, J. D. Herrick, L. Liu, C. L. Goodale, K. J. Novak and R. A. Haeuber. 2016. Key ecological responses to nitrogen are altered by climate change. *Nature Climate Change*, 6:836-843.
- Carbone, M.S., A.D. Richardson, M. Chen, E.A. Davidson, H. Hughes, K. E. Savage, and D. Y. Hollinger. 2016. Constrained partitioning of autotrophic and heterotrophic respiration reduces model uncertainties of forest ecosystem carbon fluxes but not stocks. *Journal of Geophysical Research: Biogeosciences*, 121, doi:10.1002/2016JG003386.
- 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 and Science*, 6:25-38.
- 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, EA. 2015. Soil carbon in a beer can. *Nature Geoscience* 8:748-749.
- Davidson EA and D Kanter. 2014. Inventories and scenarios of nitrous oxide emissions. *Environmental Research Letters* 9, doi:10.1088/1748-9326/9/10/105012.
- Davidson EA, Savage SE, Finzi AC. 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.
- Resco de Dios, V., M.L. Goulden, K. Ogles, A.D. Richardson, D.Y. Hollinger, E.A. Davidson, J.G. Alday, G.A. Barron-Gafford, A. Carrara, A.S. Kowalski, W.C. Oechel, B.R. Reverter, R.L. Scott, R.K. Verner, R.N. Díaz-Sierra, and J.M. Moreno. 2012. Endogenous circadian regulation of carbon dioxide exchange in terrestrial ecosystems. *Global Change Biology* 18:1956–1970. doi: 10.1111/j.1365-2486.2012.02664.x.
- 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.
- Conant, R. T., M. G. Ryan, G. I. Ågren, H. E. Birge, E. A. Davidson, P. E. Eliasson, S. E. Evans, S. D. Frey, C. P. Giardina, F. Hopkins, R. Hyvönen, M. U. F. Kirschbaum, J. M. Lavallee, J. Leifeld, W. J. Parton, M. Steinweg, M. D. Wallenstein, J. A. M. Wetterstedt, and M. A. Bradford. 2011. Temperature and soil organic matter decomposition – synthesis of current knowledge and a way forward. *Global Change Biology* 17:3392-3404.
- 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.
- Davidson, E.A., R.O. Figueiredo, D. Markewitz, and A. Aufdenkampe. 2010. Dissolved CO₂ in small catchment streams of eastern Amazonia: A minor pathway of terrestrial carbon loss. *JGR Biogeosciences*, 115, G04005, doi:10.1029/2009JG001202

- 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.
- Schipper, L.A., A.J. Gold, and E.A. Davidson. 2010. Managing denitrification in human-dominated landscapes. *Ecological Engineering*, 36: 1503–1506.
- 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. Figueirdo, 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.
- Bahn, M., M. Reichstein, E.A. Davidson, J. Grünzweig, M. Jung, M.S. Carbone, D. Epron, L. Misson, Y. Nouvellon, O. Roupsard, K. Savage, S.E. Trumbore, C. Gimeno, J. Curiel Yuste, J. Tang, R. Vargas, and I. A. Janssens. 2010. Soil respiration at mean annual temperature predicts annual total across vegetation types and biomes. *Biogeosciences*, 7, 2147–2157.
- Richardson. AD, Williams M, Hollinger DY, Moore DJP, Dail DB, Davidson EA, Scott NA, Evans, RS, Hughes H, Lee JT, Rodrigues C, and Savage K. 2010. Estimating parameters of a forest ecosystem C model with measurements of stocks and fluxes as joint constraints. *Oecologia*, DOI 10.1007/s00442-010-1628-y.
- Bobbink, R. Hicks, K., Galloway, J., Spranger, T., Alkemade, R., Ashmore, M., Bustamante, M., Cinderby, S., Davidson, E., Dentener, F., Emmett, B., Erisman, J.W., Fenn, M., Gilliam, F., Nordin, A., Pardo, L., and De Vries, W. 2010. Global assessment of nitrogen deposition effects on terrestrial plant diversity: a synthesis. *Ecological Applications*, 20:30–59.
- Almeida, A.S. de, Stone, T.A., Vieira, I.C.G., and Davidson, E.A., 2010. Non-frontier deforestation in the eastern Amazon. *Earth Interactions*, 14:1. DOI: 10.1175/2009EI290.1
- Resende, J.C.F, D. Markewitz, C.A. Klink, M.M. da C. Bustamante, E.A. Davidson. 2010. Phosphorus cycling in a small watershed in the Brazilian Cerrado: impacts of frequent burning. *Biogeochemistry* DOI 10.1007/s10533-010-9531-5.
- Dail, B., D. Hollinger, E. Davidson, I. Fernandez, H.C. Sievering, N. Scott. 2009. Distribution of 15N tracers applied to the canopy of a mature spruce-hemlock stand, Howland, Maine, USA. *Oecologia* 160:589-599.
- 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.
- Malhi, Y. and E.A. Davidson. 2009. Biogeochemistry and ecology of terrestrial ecosystems of Amazonia. pp. 293-298 In: M. Keller, M. Bustamante, J. Gash, and P. Silva Dias (Eds.), *Amazonia and Global Change*, American Geophysical Union, Washington, DC.
- Stickler CM, Nepstad DC, Coe MT, McGrath DG, Rodrigues HO, Walker WS, Soares-Filho BS, Davidson EA (2009) The potential ecological costs and cobenefits of REDD: a critical review and case study from the Amazon region. *Global Change Biology*, 15:2803-2824.
- Ferreira, J., M.de C. Bustamante, and E.A. Davidson. 2009. Linking woody species diversity with plant available water at a landscape scale in a Brazilian savana. *Journal of Vegetation Science* 20: 826–835

- Savage, K.E., Davidson, E.A., Richardson, A. and Hollinger, D. Y. 2009. Three scales of temporal resolution from automated soil respiration. *Agr. Forest Meteorol.* 149: 2012-2021.
- Davidson, E.A. and Holbrook, N.M. 2009. Is temporal variation of soil respiration linked to the phenology of photosynthesis? pp. 187-199 In: A. Noormets (Ed.) *Phenology of ecosystem processes*. Springer, New York.
- Salimon, C.I., and E.A. Davidson. 2008. Heterotrophic components of soil respiration in forests and pastures of southwestern Amazonia, Acre, Brazil. *Revista Ambiente e Água* 3:20-27.
- Torres-Cañabate, P., E.A. Davidson, E. Bulygina, R. García-Ruiz, J.A. Carreira. 2008 Abiotic immobilization of nitrate in two soils of relic *Abies pinsapo* -fir forests under Mediterranean climate. *Biogeochemistry*, 91:1-11.
- 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. *Global Change Biology*, 14, 2582–2590.
- Davidson, E. A., G. P. Asner, T. A. Stone, C. Neill, and R. O. Figueiredo. 2008. Objective indicators of pasture degradation from spectral mixture analysis of Landsat imagery, *J. Geophys. Res.*, 113, G00B03, doi:10.1029/2007JG000622.
- Savage, K., E.A. Davidson, and A.D. Richardson. 2008. A conceptual and practical approach to data quality and analysis procedures for high frequency soil respiration measurements. *Functional Ecology* 22: 1000-1007.
- Brando, P.M., D.C. Nepstad, E.A. Davidson, S.E. Trumbore, D. Ray, P. Camargo. 2008. Drought effects on litterfall, wood production, and belowground carbon cycling in an Amazon forest: results of a throughfall reduction experiment. *Phil. Trans. R. Soc. B* 363:1839–1848.
- Davidson, E.A., T.D. de A. Sá, C. J.R. Carvalho, R.O. Figueiredo, M.S.A. Kato, O.R. Kato, F.Y. Ishida. 2008. An integrated greenhouse gas assessment of an alternative to slash-and-burn agriculture in eastern Amazonia. *Global Change Biology* 14:998–1007.
- Garcia-Montiel, D.C., M.T. Coe, M.P. Cruz, J.N. Ferreira, E.M. da Silva, and E.A. Davidson. 2008. Estimating seasonal changes in volumetric soil water content at landscape scales in a savanna ecosystem using two-dimensional resistivity profiling. *Earth Interactions* 12:2, DOI: 10.1175/2007EI238.1.
- Davidson, E.A. and R.W. Howarth. 2007. Nutrients in synergy. *Nature* 449:1000-1001.
- Davidson, E.A., C.J.R. de Carvalho, A.M. Figueira, F.Y. Ishida, J.P.B. Ometto, G.B. Nardoto, R.T. Sabá, S.N. Hayashi, E.C. Leal, I.C.G. Vieira, and L.A. Martinelli. 2007. Recuperation of nitrogen cycling in Amazonian forests following agricultural abandonment. *Nature* 447:995-998.
- Davidson, E.A. 2007. Dirt cheap soil. *Nature* 447:777-778.
- Ferreira JN, Bustamante M, Garcia-Montiel DC, Caylor K, Davidson EA. 2007. Spatial variation in vegetation structure coupled to plant available water determined by two-dimensional soil resistivity profiling in a Brazilian savanna. *Oecologia* 153:417–430.
- Belk, E.L., D. Markewitz, T.C.Rasmussen, E.J.M. Carvalho, D.C. Nepstad, and E.A. Davidson. 2007. Modeling the effects of throughfall reduction on soil water content in a Brazilian Oxisol under a moist tropical forest, *Water Resour. Res.*, 43, W08432, doi:10.1029/2006WR005493.
- Gaige, E., D.B. Dail, D.Y. Hollinger, E.A. Davidson, I.J. Fernandez, H. Sievering, A. White, and W. Halteman. 2007. Changes in canopy processes following whole-forest canopy nitrogen fertilization of a mature spruce-hemlock forest. *Ecosystems* 10:1133-1147.
- Markewitz, D., J.C.F. Resende, L. Parron, M. Bustamante, C.A Klink, R.de O. Figueirdo, and E.A. Davidson. 2006. Dissolved rainfall inputs and streamwater outputs in an undisturbed watershed on highly weathered soils in the Brazilian Cerrado. *Hydrol Process.* 20, 2615-2639, doi:10.1002/hyp.6219.
- Davidson, E.A. and I. Janssens. 2006. Temperature sensitivity of soil carbon decomposition and feedbacks to climate change. *Nature* 440:165-173.
- Davidson, E.A. and S. Seitzinger. 2006. The enigma of progress in denitrification research. *Ecol. Appl.* 16:2057-2063.

- Townsend, A.R. and E.A. Davidson. 2006. Denitrification across landscapes and waterscapes. *Ecol. Appl.* 16:2055-2056.
- Davidson, E.A., K. Savage, S.E. Trumbore, and W. Borren. 2006. Vertical partitioning of CO₂ production within a temperate forest soil. *Global Change Biology*, 12:944-956.
- Davidson, E.A., I. Janssens, and Y. Luo. 2006. On the variability of respiration in terrestrial ecosystems: moving beyond Q10. *Global Change Biology* 12:154-164.
- Davidson E. A., A. D. Richardson, K. E. Savage, and D. Y. Hollinger. 2006. A distinct seasonal pattern of the ratio of soil respiration to total ecosystem respiration in a spruce-dominated forest. *Global Change Biology* 12: 230-239.
- Davidson, E.A. 2006. The ground we walk on: It's part of global warming. *The Christian Science Monitor* 21 April.
- Borren, W., K. Savage, E.A. Davidson, and S.E. Trumbore. 2006. Effects of experimental drought on soil respiration and radiocarbon efflux from a temperate forest soil. *Global Change Biology* 12: 177-193.
- Borren, W., E.A. Davidson, K.E. Savage, E.T. Sundquist, and P. Steudler. 2006. Effect of summer throughfall exclusion, summer drought, and winter snow cover on methane fluxes in a temperate forest soil. *Soil Biology and Biochemistry* 38:1388-1395.
- Markewitz, D, R. de O. Figueiredo, E.A. Davidson. 2006. CO₂-driven cation leaching after tropical forest clearing. *Journal of Geochemical Exploration* 88:214-219.
- Richardson, A.D., B.H. Braswell, D.Y. Hollinger, P. Burman, E.A. Davidson, R.S. Evans, L.B. Flanagan, J.W. Munger, K. Savage, S.P. Urbanski, and S.C. Wofsy. 2006. Comparing simple respiration models for eddy flux and dynamic chamber data. *Agricultural and Forest Meteorology*, 141: 219-234.
- Zarin, D.A., E.A. Davidson, et al. 2005. Legacy of fire slows carbon accumulation in Amazonian forest regrowth. *Frontiers in Ecology and the Environment* 3:365-369.
- Oliveira, R. S., L. Bezerra, E. A. Davidson, F. Pinto, C. A. Klink, D. C. Nepstad, and A. Moreira. 2005: Deep root dynamics in Cerrado savannas of central Brazil. *Funct. Ecol.* 19, 574–581.
- Davidson, E.A., F.Y. Ishida, D.C. Nepstad. 2004. Effects of an experimental drought on soil emissions of carbon dioxide, methane, nitrous oxide, and nitric oxide in a moist tropical forest. *Global Change Biology* 10:718-730.
- Davidson, E.A. and P. Artaxo. 2004. Globally significant changes in biological processes of the Amazon Basin: Results of the Large-scale Biosphere-Atmosphere Experiment. *Global Change Biology* 10:519-529.
- Davidson, E.A., Neill, C., Krusch, A.V., Ballester, V.V.R., Markewitz, D. and Figueiredo, R.de O. 2004. Loss of nutrients from terrestrial ecosystems to streams and the atmosphere following land use change in Amazonia. pp. 147- 158 In: DeFries, R., Asner, G., and Houghton R. (eds.), *Ecosystems and Land Use Change*. Geophysical Monograph Series 153, American Geophysical Union, Washington, D.C.
- Salimon, C.I., E.A. Davidson, R.L. Victoria, and A.W.F. Melo. 2004. CO₂ flux from soil in pastures and forests in southwestern Amazonia. *Global Change Biology* 10:833-843.
- Davidson, E.A., C.J.R. de Carvalho, I.C.G. Vieira, R.O. Figueiredo, P. Moutinho, F.Y. Ishida, M.T.P. dos Santos, J.B. Guerrero, K. Kalif, and R.T. Sabá. 2004. Nutrient limitation of biomass growth in a tropical secondary forest: early results of a nitrogen and phosphorus amendment experiment. *Ecological Applications* 14:S150-S163.
- Markewitz, D. E.A. Davidson, P. Moutinho, and D.C. Nepstad. 2004. Nutrient loss and redistribution after forest clearing on a highly weathered soil in Amazonia. *Ecological Applications* 14:S177-S199.
- Keller M, Alencar A, Asner GP, Braswell B, Bustamante M, Davidson E, Feldpausch T, Fernandes E, Goulden M, Kabat P, Kruijt B, Luizao F, Miller S, Markewitz D, Nobre AD, Nobre CA, Priante N, da Rocha H, Dias PS, von Randow C, Vourlitis GL. 2004. Ecological research in the large-scale biosphere-atmosphere experiment in Amazonia: Early results. *Ecological Applications*, 14:S3-S16.
- Hollinger DY, Aber J, Dail B, Davidson EA, Goltz SM, Hughes H, Leclerc M, Lee JT, Richardson AD, Rodrigues C, Scott NA, Varier D, Walsh J. 2004. Spatial and temporal variability in forest-atmosphere CO₂ exchange. *Global Change Biology* 10:1689-1706.

- Bowden, R.D., E.A. Davidson, K.E. Savage, C. Arabia, and P. Steudler. 2004. Chronic nitrogen additions reduce total soil respiration and microbial respiration in temperate forest soils at the Harvard Forest. *Ecosystems* 196:43-56.
- Vasconcelos, S.S. + 13 coauthors. 2004. Moisture and substrate availability constrain soil trace gas fluxes in an eastern Amazonian regrowth forest. *Global Biogeochemical Cycles* 18, GB2009, doi:10.1029/2003GB002210.
- Scott, N.A., C.A. Rodrigues, H. Hughes, J.T. Lee, E.A. Davidson, D.B. Dail, P. Malerba, D.Y. Hollinger. 2004. Changes in carbon storage and net carbon exchange one year after an initial shelterwood harvest at Howland Forest, ME. *Environmental Management* 33: S9-S22.
- Davidson, E.A., and A.R. Mosier. 2004. Controlling losses to air. pp. 251-259 In: *Controlling nitrogen flows and losses*. D.J. Hatch, D.R. Chadwick, S.C. Jarvis, and J.A. Roker, (eds). Wageningen Academic Publishers, The Netherlands.
- Borken, W. E.A. Davidson, K. Savage, J. Gaudinski, and S.E. Trumbore. 2003. Drying and wetting effects on carbon dioxide release from organic horizons. *Soil Science Society of America Journal* 67:1888-1896.
- Verchot, L.V., P.R. Moutinho, and E.A. Davidson. 2003. Leaf-cutting and (*Atta Sexdens*) and nutrient cycling: deep soil inorganic nitrogen stocks, mineralization, and nitrification in Eastern Amazonia. *Soil Biology and Biochemistry* 35:1219-1222.
- Davidson, E.A., J. Chorover, and D.B. Dail. 2003. A mechanism of abiotic immobilization of nitrate in forest ecosystems: The ferrous wheel hypothesis. *Global Change Biology* 9:228-236.
- Savage, K.E., and E.A. Davidson. 2003. A comparison of manual and automated systems for soil CO₂ flux measurements: tradeoffs between spatial and temporal resolution. *J. Exp. Botany* 54:891-899.
- Moutinho, P., D.C. Nepstad, and E.A. Davidson. 2003. Influence of nests of the leaf-cutting ant, *Atta sexdens*, on soil, root distribution, and tree growth in a secondary forest of eastern Amazonia. *Ecology* 84:1265-1276.
- Vieira, I.C.G., Almeida, A.S. de, Davidson, E.A., Stone, T.A., Carvalho, C.J.R. de, Guerrero, J.B. 2003. Classifying successional forests using Landsat spectral properties and ecological characteristics in eastern Amazonia. *Remote Sensing of the Environment* 87:470-481.
- Angert, A., E. Barkan, B. Barnett, E. Brugnoli, E.A. Davidson, J. Fessenden, S. Maneepong, N. Panapitukkul, J.T. Randerson, K. Savage, D. Yakir, B. Luz. 2003. Contribution of soil respiration in tropical, temperate, and boreal forests to the ¹⁸O enrichment of atmospheric O₂. *Global Biogeochemical Cycles* 17, No.3, 1089, doi:10.1029/2003GB002056.
- Ollinger, S., O. Sala, G.I. Agren, B. Berg, E. Davidson, C.B. Field, M.T. Lerdau, J. Neff, M. Scholes, and R. Sterner. 2003. New frontiers in the study of element interactions. pp. 63-92 In: Melillo, J.M., C.B. Field, and B. Moldan (eds.), *Interactions of the Major Biogeochemical Cycles*, Island Press, Washington.
- Goodale, C.L., and E.A. Davidson. 2002. Uncertain sinks in the shrubs. *Nature* 418:593-594.
- Nepstad D C, Moutinho P, Dias-Filho M B, Davidson E A, Cardinot G, Markewitz D, Figueiredo R, Vianna N, Chambers J, Ray D, Guerreiros J B, Lefebvre P, Sternberg L, Moreira M, Barros L, Ishida F Y, Tohlver I, Belk E, Kalif K and Schwalbe K. 2002. The effects of partial throughfall exclusion on canopy processes, aboveground production, and biogeochemistry of an Amazon forest. *J. Geophys. Res.* 107, D20, 8085, doi:10.1029/2001JD000360.
- Davidson, E.A., K. Savage, P. Bolstad, D.A. Clark, P.S. Curtis, D.S. Ellsworth, P.J. Hanson, B.E. Law, Y. Luo, K.S. Pregitzer, J.C. Randolph, D. Zak. 2002. Belowground carbon allocation in forests estimated from litterfall and IRGA-based soil respiration measurements. *Agriculture and Forest Meteorology* 113:39-51.
- Davidson, E.A., K. Savage, L.V. Verchot, and R. I. Navarro. 2002. Minimizing artifacts and biases in chamber-based measurements of soil respiration. *Agriculture and Forest Meteorology* 113:21-37.
- Erickson, H., E.A. Davidson, and M. Keller. 2002. Former land-use and tree species affect nitrogen oxide emissions from a tropical dry forest. *Oecologia* 130:297-308.
- Cattânio, J.H., E.A. Davidson, D.C. Nepstad, L.V. Verchot, and I.L. Ackerman. 2002. Unexpected results of a pilot throughfall exclusion experiment on soil emissions of CO₂, CH₄, N₂O, and NO in eastern Amazonia. *Biology and Fertility of Soils* 36:102-108.

- Borken, W., Y-J Xu, E.A. Davidson, and F. Beese. 2002. Site and temporal variation of soil respiration in European beech, Norway spruce, and Scots pine forests. *Global Change Biology* 8:1205-1216.
- Davidson, E.A. and A.I. Hirsch. 2001. Fertile forest experiments. *Nature* 411:431-433.
- Markewitz, D., E.A. Davidson, R.O. Figueiredo, R.L. Victoria, and A.V. Krusche. 2001. Stream water cation inputs controlled by surface soil processes in an Amazonian watershed. *Nature* 410:802-805.
- Savage, K.E., and E.A. Davidson. 2001. Interannual variation of soil respiration in two New England forests. *Global Biogeochemical Cycles* 15:337-350.
- Dail, D.B., E.A. Davidson, and J. Chorover. 2001. Rapid abiotic transformation of nitrate in an acid forest soil. *Biogeochemistry* 54:131-146.
- Davidson, E.A., Bustamante, M.M.C. Pinto, A.de S. 2001. Emissions of nitrous oxide and nitric oxide from soils of native and exotic ecosystems of the Amazon and Cerrado regions of Brazil. *In* Optimizing nitrogen management in food and energy production and environmental protection: Proceedings of the 2nd International Nitrogen Conference on Science and Policy (eds Galloway J, Cowling E, Erisman J, Wisniewski, J, Jordan C), pp. 312-319. A.A. Balkema Publishers, Lisse
- Gaudinski, J.B., S.E. Trumbore, E.A. Davidson, A.C. Cook, D. Markewitz, and D.D. Richter. 2001. The age of fine-root carbon in three forests of the eastern United States measured by radiocarbon. *Oecologia* 129:420-429.
- Erickson, H. M. Keller, and E. Davidson. 2001. Nitrogen oxide fluxes and nitrogen cycling during post-agricultural succession and forest fertilization in the humid tropics. *Ecosystems* 4:67-84.
- Dias-Filho, M. B., E.A. Davidson, and C.J.R. Carvalho. 2001. Linking biogeochemical cycles to cattle pasture management and sustainability in the Amazon Basin. pp. 84-105 *In*: M.E. McClain, R.L. Victoria, and J.E. Richey (eds.), *The Biogeochemistry of the Amazon Basin*, Oxford University Press, New York.
- Potter, C., E.A. Davidson, D.C. Nepstad, C.R. de Carvalho. 2001. Ecosystem modeling and dynamic effects of deforestation on trace gas fluxes in Amazon tropical forests. *Forest Ecology and Management* 152:97-117.
- Davidson, E.A., S.E. Trumbore, and R. Amundson. 2000. Soil warming and organic carbon content. *Nature* 408:789-790.
- Davidson, E.A., M. Keller, H.E. Erickson, L.V. Verchot, and E. Veldkamp. 2000. Testing a conceptual model of soil emissions of nitrous and nitric oxides. *BioScience* 50: 667-680.
- Davidson, E.A. and L.V. Verchot. 2000. Testing the hole-in-the-pipe model of nitric and nitrous oxide emissions from soils using the TRAGNET database. *Global Biogeochemical Cycles* 14:1035-1043.
- Davidson, E.A., L.V. Verchot, J.H. Cattânio, I.L. Ackerman, and J.E.M. Carvalho. 2000. Effects of soil water content on soil respiration in forests and cattle pastures of eastern Amazonia. *Biogeochemistry* 48:53-69.
- Verchot, L.V., E.A. Davidson, J.H. Cattânio, and I.L. Ackerman. 2000. Land-use change and biogeochemical controls of methane fluxes in soils of eastern Amazonia. *Ecosystems* 3:41-56.
- Gaudinski, J.B., S.E. Trumbore, E.A. Davidson, and S. Zheng. 2000. Soil carbon cycling in a temperate forest: radiocarbon-based estimates of residence times, sequestration rates and partitioning of fluxes. *Biogeochemistry* 51:33-69.
- Perez, T., S.E. Trumbore, S.C. Tyler, E.A. Davidson, M. Keller, and P.B. de Camargo. 2000. Isotopic variability of N₂O emissions from tropical forest soils. *Global Biogeochemical Cycles* 14:525-535.
- Neill C., and E.A. Davidson. 2000. Soil carbon accumulation or loss following deforestation for pasture in the Brazilian Amazon. pp. 197-211 *in* Lal, R. J.M. Kimble, and B.A. Stewart (eds.) *Global climate change and tropical ecosystems*, CRC Press, Boca Raton.
- Camargo, P.B. de, S.E. Trumbore, L.A. Martinelli, E.A. Davidson, D.C. Nepstad, and R.L. Victoria. 1999. Soil carbon dynamics in regrowing forest of eastern Amazonia. *Global Change Biology* 5:693-702.
- Hollinger, D.Y., S.M. Goltz, E.A. Davidson, J.T. Lee, K. Tu, and H.T. Valentine. 1999. Seasonal patterns and environmental control of carbon dioxide and water vapor exchange in an ecotonal boreal forest. *Global Change Biology* 5:891-902.
- Verchot, L.V., E.A. Davidson, J.H. Cattânio, I.L. Ackerman, H.E. Erickson, and M. Keller. 1999. Land use change and biogeochemical controls of nitrogen oxide emissions from soils in eastern Amazonia. *Global*

- Biogeochemical Cycles 13:31-46.
- Veldkamp, E., E. Davidson, H. Erickson, M. Keller, and A. Weitz. 1999. Soil nitrogen cycling and nitrogen oxide emissions along a pasture chronosequence in the humid tropics of Costa Rica. *Soil Biology and Biochemistry* 31:387-394.
- Cochrane, M.A., A. Alencar, M.D. Schulze, C.M. Souza Jr., D.C. Nepstad, P. Lefebvre, and E.A. Davidson. 1999. Positive feedbacks in the fire dynamic of closed canopy tropical forests. *Science* 284:1832-1835.
- Ramakrishna, K. and E.A. Davidson. 1998. Intergovernmental negotiations on criteria and indicators for the management, conservation, and sustainable development of forests: What role for soil scientists? pp. 1-15 In M.B. Adams, E.A. Davidson, and K. Ramakrishna (eds) *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.
- Davidson, E.A., C.S. Potter, P. Schlesinger, and S.A. Klooster. 1998. Model estimates of regional nitric oxide emissions from soils of the southeastern United States. *Ecological Applications* 8:748-759.
- Davidson, E.A., E. Belk, and R.D. Boone. 1998. Soil water content and temperature as independent or confounded factors controlling soil respiration in a temperate mixed hardwood forest. *Global Change Biology* 4:217-227.
- Houghton, R.A., E.A. Davidson, and G.M. Woodwell. 1998. Missing sinks, feedbacks, and understanding the role of terrestrial ecosystems in the global carbon balance. *Global Biogeochemical Cycles* 12:25-34.
- Potter, C.S., E.A. Davidson, S.A. Klooster, D.C. Nepstad, G.H. de Negreiros, and V. Brooks. 1998. Regional application of an ecosystem production model for studies of biogeochemistry in Brazilian Amazonia. *Global Change Biology* 4:315-333.
- Rapalee, G., S. E. Trumbore, E. A. Davidson, J. W. Harden, and H. Veldhuis. 1998. Soil carbon stocks and their rates of accumulation and loss in a boreal forest landscape. *Global Biogeochemical Cycles* 12: 687-701.
- Woodwell, G.M., F.T. Mackenzie, R.A. Houghton, M. Apps, E. Gorham, and E. Davidson. 1998. Biotic feedbacks in the warming of the earth. *Climatic Change* 40:495-518.
- Davidson, E.A. and W. Kinglerlee. 1997. A global inventory of nitric oxide emissions from soils. *Nutrient Cycling in Agroecosystems* 48:37-50.
- Davidson, E.A., P.A. Matson, and P.D. Brooks. 1996. Nitrous oxide emission controls and inorganic nitrogen dynamics in fertilized tropical agricultural soils. *Soil Sci. Soc. Am. J.* 60:1145-1152.
- Potter, C.S., E.A. Davidson, and L.V. Verchot. 1996. Estimation of global biogeochemical controls and seasonality in soil methane consumption. *Chemosphere* 32:2219-2246.
- Potter, C.S., P.A. Matson, P.M. Vitousek, and E.A. Davidson. 1996. Process modeling of controls on nitrogen trace gas emissions from soils world-wide. *J. Geophys. Res.* 101:1361-1377.
- Davidson, E.A., and S.E. Trumbore. 1995. Gas diffusivity and production of CO₂ in deep soils of the eastern Amazon. *Tellus* 47B:550-565.
- Trumbore, S.E., E.A. Davidson, P. B. de Camargo, D.C. Nepstad, and L.A. Martinelli. 1995. Below ground cycling of carbon in forests and pastures of eastern Amazonia. *Global Biogeochemical Cycles* 9:515-528.
- Davidson, E.A. 1995. Spatial covariation of soil organic carbon, clay content, and drainage class at a regional scale. *Landscape Ecology* 10:349-362.
- Davidson, E.A., D.C. Nepstad, C.A. Klink, and S.E. Trumbore. 1995. Pasture soils as carbon sink. *Nature* 376:472-473.
- Davidson, E., G. Ågren, O. Daniel, K.-C. Emeis, C. Largeau, C. Lee, K. Mopper, J. Oades, B. Reeburgh, D. Schimel, and R. Zepp. 1995. What are the physical, chemical, and biological processes that control the formation and degradation of nonliving organic matter? pp. 305-324 In R.G. Zepp and Ch. Sonntag (eds) *Role of Nonliving Organic Matter in the Earth's Carbon Cycle*. Dahlem Workshop. John Wiley & Sons, New York.
- Davidson, E.A. 1995. Linkages between carbon and nitrogen cycling and their implications for storage of carbon in terrestrial ecosystems. pp. 219-230 In G.M. Woodwell and R.T. Mackenzie (eds.) *Biotic Feedbacks in the Global Climatic System*. Oxford University Press, New York.
- Davidson, E.A. and J.P. Schimel. 1995. Microbial processes of production and consumption of nitric oxide, nitrous

- oxide and methane. pp. 327-357 In P.A. Matson and R.C. Harriss (eds.) *Biogenic Trace Gases: Measuring Emissions from Soil and Water*. Blackwell Science, Oxford.
- Davidson, E.A. 1994. Climate change and soil microbial processes: secondary effects are hypothesised from better known interacting primary effects. pp. 155-166 In M.D.A. Rounsevell and P.J. Loveland (eds.) *Soil Responses to Climate Change*, NATO ASI Series, Vol. I23, Springer-Verlag, Berlin.
- Nepstad, D.C., C.R. de Carvalho, E.A. Davidson, P.H. Jipp, P.A. Lefebvre, G.H. Negrieros, E.D. da Silva, T.A. Stone, S.E. Trumbore, and S. Vieira. 1994. The role of deep roots in the hydrological and carbon cycles of Amazonian forests and pastures. *Nature* 372:666-669.
- Davidson, E.A., and J.L. Hackler. 1994. Soil heterogeneity can mask the effects of ammonium availability on nitrification. *Soil Biol. Biochem.* 26:1449-1453.
- Hart, S.C., J.M. Stark, E.A. Davidson, and M.K. Firestone. 1994. Nitrogen mineralization, immobilization, and nitrification. pp. 985-1018 In *Methods of soil analysis, Part 2. Microbiological and biochemical properties*. Soil Science Society of America Book series no. 5, Madison, WI.
- Davidson, E.A., and P.A. Lefebvre. 1993. Estimating regional carbon stocks and spatially covarying edaphic factors using soil maps at three scales. *Biogeochemistry* 22:107-131.
- Davidson, E.A. 1993. Soil water content and the ratio of nitrous oxide to nitric oxide emitted from soil. pp. 369-386 In R.S. Oremland (ed.) *The biogeochemistry of global change: radiative trace gases*, Chapman and Hall, New York.
- Davidson, E.A., and I.L. Ackerman. 1993. Changes in soil carbon inventories following cultivation of previously untilled soils. *Biogeochemistry* 20:161-193.
- Davidson, E.A., D.J. Herman, A. Schuster, and M.K. Firestone. 1993. Cattle grazing and oak trees as factors affecting soil emissions of nitric oxide from an annual grassland. pp. 109-119 In L.A. Harper et al. (eds.) *Agricultural ecosystem effects on trace gases and global climate change*. ASA Spec. Publ. No. 55, Agronomy Society of America, Madison, Wisc.
- Davidson, E.A., P.A. Matson, P.M. Vitousek, R. Riley, K. Dunkin, G. Garcia-Mendez, and J.M. Maass. 1993. Processes regulating soil emissions of NO and N₂O in a seasonally dry tropical forest. *Ecology* 74:130-139.
- Hutchinson, G.L., and E.A. Davidson. 1993. Processes for production and consumption of gaseous nitrogen oxides in soil. pp. 79-93 In L.A. Harper et al. (ed.) *Agricultural ecosystem effects on trace gases and global climate change*. ASA Spec. Publ. No. 55, Agronomy Society of America, Madison, Wisc.
- Williams, E.J., and E.A. Davidson. 1993. An intercomparison of two chamber methods for the determination of emission of nitric oxide from soil. *Atmospheric Environment* 27A:2107-2113.
- Davidson, E.A. 1992. Pulses of nitric oxide and nitrous oxide flux following wetting of dry soil: An assessment of probable sources and importance relative to annual fluxes. *Ecological Bulletins* 42:149-155.
- Davidson, E.A. 1992. Sources of nitric oxide and nitrous oxide following wetting of dry soil. *Soil Sci. Soc. Am. J.* 56:95-102.
- Davidson, E.A., S.C. Hart, M.K. Firestone. 1992. Internal cycling of nitrate in soils of a mature coniferous forest. *Ecology* 73:1148-1156.
- Davidson, E.A. 1991. Fluxes of nitrous oxide and nitric oxide from terrestrial ecosystems. pp. 219-235 in J.E. Rogers and W.B. Whitman (eds), *Microbial Production and Consumption of Greenhouse Gases: Methane, Nitrogen Oxides, and Halomethanes*, American Society for Microbiology, Washington.
- Davidson, E.A., S.C. Hart, C.A. Shanks, and M.K. Firestone. 1991. Measuring gross nitrogen mineralization, immobilization, and nitrification by ¹⁵N isotopic pool dilution in intact soil cores. *J. Soil Sci.* 42:335-349.
- Davidson, E.A., P.M. Vitousek, P.A. Matson, R. Riley, G. Garcia-Mendez, and J.M. Maass. 1991. Soil emissions of nitric oxide in a seasonally dry tropical forest of Mexico. *J. Geophys. Res.* 96:15439-15445.
- Rudaz, A.O., E.A. Davidson, and M.K. Firestone. 1991. Sources of nitrous oxide production following wetting of dry soil. *FEMS Microb. Ecol.* 85:117-124.
- Davidson, E.A., J.M. Stark, and M.K. Firestone. 1990. Microbial production and consumption of nitrate in an annual grassland. *Ecology* 71:1968-1975.

- Davidson, E.A., D.D. Myrold, and P.M. Groffman. 1990. Denitrification in forest ecosystems. pp. 196-220 In S.P. Gessel, D.S. Lacate, G.F. Weetman, and R.F. Powers (eds) Sustained productivity of forest soils. Proceedings of the 7th North American Forest Soils Conference. University of British Columbia Faculty of Forestry Publication, Vancouver, B.C.
- Davidson, E.A. and W.T. Swank. 1990. Nitrous oxide dissolved in soil solution: An insignificant pathway of N loss from a southeastern hardwood forest. *Water Resources Res.* 26:1687-1690.
- Amundson, R.G. and E.A. Davidson. 1990. Carbon dioxide and nitrogenous gases in the soil atmosphere. 1990. *J. Geochem. Exploration* 38:13-41.
- Firestone, M.K. and E.A. Davidson. 1989. Microbiological basis of NO and N₂O production and consumption in soil. pp. 7-21 In M.O. Andreae and D.S. Schimel (eds) Exchange of trace gases between terrestrial ecosystems and the atmosphere. John Wiley & Sons, New York.
- Davidson, E.A., R.W. Eckert, S.C. Hart, and M.K. Firestone. 1989. Direct extraction of microbial biomass nitrogen from forest and grassland soils of California. *Soil Biol. Biochem.* 21:773-778.
- Davidson, E.A. and M.K. Firestone. 1988. Measurement of nitrous oxide in soil solution. *Soil Sci. Soc. Am. J.* 52:1201-1203.
- Davidson, E.A. and W.T. Swank. 1987. Denitrification in two forested watersheds: an experimental investigation of limiting factors. *Forest Science.* 33:135-144.
- Davidson, E.A., L.F. Galloway, and M.K. Strand. 1987. Comparison of techniques for assessing available carbon in soil. *Commun. Soil Sci. Plant Anal.* 18:45-64.
- Wentworth, T.R. and E.A. Davidson. 1987. Foliar mineral elements in native plants on contrasting rock types: Multivariate patterns and nutrient balance regulation. *Soil Science.* 144:190-202.
- Davidson, E.A., W.T. Swank, and T.O. Perry. 1986. Distinguishing between nitrification and denitrification as sources of gaseous-N production in soil. *Appl. Environ. Microbiol.* 52:1280-1292.
- Davidson, E.A. and W.T. Swank. 1986. Environmental parameters regulating gaseous-N losses from two forested ecosystems via nitrification and denitrification. *Appl. Environ. Microbiol.* 52:1287-1292.
- Davidson, E.A., M.K. Strand, and L.F. Galloway. 1985. Evaluation of the most probable number method for enumerating denitrifying bacteria. *Soil Sci. Soc. Am. J.* 49:642-645.
- Benzing, D.H. and E.A. Davidson. 1979. Oligotrophic *Tillandsia circinnata* Schlecht (Bromeliaceae): an assessment of its patterns of mineral allocation and reproduction. *Amer. J. Bot* 66:386-397.