

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 Geophysical Union, 2019
Fellow, American Association for the Advancement of Science, 2010.
ISI/Clarivate/Publons Highly Cited Researcher, 2007, 2015-2019.

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, *AGU Advances*, 2019-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.

CITATION STATISTICS

Web of Science (<https://publons.com/researcher/2604470/eric-a-davidson/>)
Total Citations: 29,614; H-Index: 86; Total Articles in Web of Science 213; updated Nov. 2020

Google Scholar (<https://scholar.google.com/citations?user=Frt0qscAAAAJ&hl=en&oi=ao>)
Total Citations: 52,170; H-Index: 106; updated Nov. 2020

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Geophysical Union
Ecological Society of America

American Association for the Advancement of Science
Soil Science Society of America

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:

- Tian, H. et al. (49 coauthors). 2020. A comprehensive quantification of global nitrous oxide sources and sinks. *Nature*, 586:248-256. <https://doi.org/10.1038/s41586-020-2780-0>.
- Finzi, A. et al. (25 coauthors). 2020. The carbon budget of the Harvard Forest long-term ecological research sites: Patterns, processes, and responses to global change. *Ecological Monographs*, 90(4), e01423.
- Eagle, A.J., E.L. McLellan, E.M. Brawner, M.H. Chantigny, E.A. Davidson, J.B. Dickey, B.A. Linquist, T.M. Maaz, D.E. Pelster, C.M. Pittelkow, C. van Kessel, T.J. Vyn, and K.G. Cassman. Quantifying on-farm nitrous oxide emission reductions in food-supply chains. *Earth's Future*, <https://doi.org/10.1029/2020EF001504>.
- Zhang, X, E.A. Davidson, T. Zou, L. Lassaletta, Z. Quan, T. Li, and W. Zhang. 2020. Centennial Challenges: Quantifying nutrient budgets to inform sustainable nutrient management. *Global Biogeochemical Cycles*, 34, e2018GB006060. <https://doi.org/10.1029/2018GB006060>.
- Sihi, D., E.A. Davidson, K.E. Savage, D. Liang. 2020. Simultaneous numerical representation of soil microsite production and consumption of carbon dioxide, methane, and nitrous oxide using probability distribution functions. *Glob Change Biol.*, 26:200–218, <https://doi.org/10.1111/gcb.14855>.

- Thompson, R.L., L. Lassaletta, P.K. Patra, C. Wilson, K.C. Wells, A. Gressent, E.N. Koffi, M.P. Chipperfield, W. Winiwarter, E.A. Davidson, H. Tian, and J.G. Canadell. 2019. Acceleration of global N₂O emissions seen from two decades of atmospheric inversion. *Nature Climate Change*, <https://doi.org/10.1038/s41558-019-0613-7>.
- Houlton, B.Z., M. Almaraz, V. Aneja, A. A. Austin, E. Bai, K. G. Cassman, J. Compton, E. A. Davidson, J. W. Erisman, J. N. Galloway, B. Gu, L. A. Martinelli, K. Scow, W. H. Schlesinger, T. P. Tomich, C. Wang. 2019. A world of co-benefits: Solving the global nitrogen challenge. *Earth's Future*, 7. <https://doi.org/10.1029/2019EF001222>
- Brando PM, Silvério D, Maracahipes-Santos L, Oliveira-Santos C, Levick SR, Coe MT., Migliavacca M, Balch JK, Macedo MN, Nepstad DC, Maracahipes L, Davidson E, Asner G, Kolle O, Trumbore S. 2019. Prolonged tropical forest degradation due to compounding disturbances: Implications for CO₂ and H₂O fluxes. *Glob Change Biol*. 25:2855–2868. <https://doi.org/10.1111/gcb.14659>
- Davidson, E. 2019. Lessons from President George H. W. Bush for the present political environment, *Eos*, 100, <https://doi.org/10.1029/2019EO115193>.
- Sullivan, B.W., R. L. Nifong, M. K. Nasto, S. Alvarez-Clark, C. Dencker, F. M. Soper, K. T. Shoemaker, F. Y. Ishida, J. Zaragoza-Castells, E. A. Davidson, and C. C. Cleveland. 2019. Biogeochemical recuperation of lowland tropical forest during succession. *Ecology*, 100(4):e02641. [10.1002/ecy.2641](https://doi.org/10.1002/ecy.2641).
- Tian, H., J. Yang, R. Xu, C. Lu, J.G. Canadell, E.A. Davidson, R.B. Jackson, A. Arneeth, J. Chang, P. Ciais, S. Gerber, A. Ito, F. Joos, S. Lienert, P. Messina, S. Olin, S. Pan, C. Peng, E. Saikawa, R.L. Thompson, N. Vuichard, W. Winiwarter, S. Zaehle, B. Zhang. 2019. Global soil nitrous oxide emissions since the preindustrial era estimated by an ensemble of terrestrial biosphere models: Magnitude, attribution, and uncertainty, *Glob Change Biol*. 25:640–659. <https://doi.org/10.1111/gcb.14514>
- Richardson, A.D., D.Y. Hollinger, J.K. Shoemaker, H. Hughes, K. Savage, and E.A. Davidson. 2019. Six years of ecosystem-atmosphere greenhouse gas fluxes measured in a sub-boreal forest. *Scientific Data* 6:117, <https://doi.org/10.1038/s41597-019-0119-1>.
- Davidson, E.A., D. Markewitz, R d O. Figueiredo, and P.B. d Camargo. 2018 Nitrogen fixation inputs in pasture and early successional forest in the Brazilian Amazon region: evidence from a claybox mesocosm study. *Journal of Geophysical Research: Biogeosciences*, 123, 712-721. <https://doi.org/10.1002/2017JG004103>.
- Jankowski, K., C. Neill, E.A. Davidson, M.N. Macedo, C. Costa Jr., G.L. Galford, L.M. Santos, P. Lefebvre, D. Nunes, C.E.P. Cerri, R. McHorney, C. O'Connell, and M.T. Coe. 2018. Deep soils modify environmental consequences of increased nitrogen fertilizer use in intensifying Amazon agriculture. *Scientific Reports*, 8:13478 | DOI:10.1038/s41598-018-31175-1.
- Savage, K.E, E.A. Davidson, R.Z. Abramoff, A.C. Finzi, and M.-A. Giasson. 2018. Partitioning soil respiration: quantifying the artifacts of the trenching method. *Biogeochemistry*, 140: 53-63.
- 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*, 252, 155–166.
- 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, 18–31. <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. 2018. The Millennial model: in search of measurable pools and transformations for modeling soil carbon in the new century. *Biogeochemistry*, 137:51-71. DOI: 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.
- Davidson, E.A. 2016. Projections of the soil-carbon deficit. *Nature* 540:47-48.
- Figueira, A. M. e. S., E. A. Davidson, R. C. 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, J. *Geophys. Res. Biogeosci.*, 121, 2520–2529, 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.
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- 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.
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- Balch, J.K., P.M. Brando, D.C. Nepstad, 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.
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- 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.

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- 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.
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- 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.
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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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