

## Eric A. Davidson

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### EMPLOYMENT

**Appalachian Laboratory, University of Maryland Center for Environmental Science**, Director (2015-2021), Professor (2015-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

Jefferson Science Fellow, National Academy of Sciences, August 2021 - present.  
Fellow, American Geophysical Union, 2019.  
Fellow, American Association for the Advancement of Science, 2010.  
ISI/Clarivate/Publons Highly Cited Researcher, 2007, 2015-2020.

### PROFESSIONAL ACTIVITIES

President (2017-2018) & President-Elect (2015-2016), American Geophysical Union.  
President & President-Elect, Biogeosciences section of the American Geophysical Union, 2011-2014.  
AGU Ethics Chair, 2021 - present.  
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*, 2001 - 2011.  
Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA), Science Steering Committee Member (1996 - 2011), NASA Project Scientist (2008 - 2011).

### CITATION STATISTICS

Web of Science: <https://publons.com/researcher/2604470/eric-a-davidson/>  
Total Citations: 32,300; H-Index: 88; updated August 21, 2021  
Google Scholar: <https://scholar.google.com/citations?user=Fr0qscAAAAJ&hl=en&oi=ao>  
Total Citations: 56,217; H-Index: 108; updated August 21, 2021

## 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: N<sub>2</sub>O: Sources, Inventories, Projections. In J. Alcamo, S.A. Leonard, A.R. Ravishankara, and M. A. Sutton (eds.). *Drawing Down N<sub>2</sub>O 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](http://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:

- Zhang, X. et al. (18 coauthors). 2021. Quantitative assessment of agricultural sustainability reveals divergent priorities among nations. *One Earth*, in press.
- Yao, G., X. Zhang, E.A. Davidson, and F. Taheripour. 2021. The increasing global environmental consequences of a weakening US-China crop trade relationship. *Nature Food*, <https://doi.org/10.1038/s43016-021-00338-1>.
- Zhang, X. et al. (26 coauthors). 2021. Quantification of global and national nitrogen budgets for crop production. *Nature Food*, 2:529-540, <https://doi.org/10.1038/s43016-021-00318-5>.
- Hollinger, D.Y., E. A. Davidson, S. Fraver, H. Hughes J. T. Lee, A. D. Richardson, K. Savage, D. Sihi, and A. Teets, 2021. Multi-decadal carbon cycle measurements indicate resistance to external drivers of change at the Howland forest AmeriFlux site. *Journal of Geophysical Research:Biogeosciences*, 126, e2021JG006276. <https://doi.org/10.1029/2021JG006276>.
- Harris, L.A., et al., (18 coauthors). 2021. Equitable exchange: A framework for diversity and inclusion in the geosciences. *AGU Advances* 2, e2020AV000359. <https://doi.org/10.1029/2020AV000359>.
- Zeitler, P., et al., (18 coauthors). 2021. Confronting racism to advance our science. *AGU Advances* 2, e2020AV000296. <https://doi.org/10.1029/2020AV000296>.

- Quan, Z., X. Zhang, Y. Fang, and E.A. Davidson. 2021. Different quantification approaches for nitrogen use efficiency lead to divergent estimates with varying advantages. *Nature Food*, <https://doi.org/10.1038/s43016-021-00263-3>.
- Quan, Z. et al., (10 coauthors). 2021. Fates and use efficiency of nitrogen fertilizer in maize cropping systems and their responses to technologies and management practices: a global analysis on field 15N tracer studies. *Earth's Future* DOI: 10.1029/2020EF001514.
- Renchon, A.A., (9 coauthors), 2021. Concurrent measurements of soil and ecosystem respiration in a mature Eucalypt woodland: advantages lessons, and questions, *JGR Biogeosciences*, 126, e2020JG006221. <https://doi.org/10.1029/2020JG006221>.
- 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>.
- Davidson, E. A. 2020. Carbon loss from tropical soils increases on warming. *Nature*, 584:198-199.
- 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. Linnquist, 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 N<sub>2</sub>O 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 CO<sub>2</sub> and H<sub>2</sub>O 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>.
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- 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>.
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- 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.
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- 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.
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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.
- 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.

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- 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 O<sub>2</sub> to study the relationships between soil CO<sub>2</sub> 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.
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- 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.
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- 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.
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- 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>.
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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.
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