

JERRY MICHAEL MELILLO

The Ecosystems Center
Marine Biological Laboratory
Woods Hole, Massachusetts 02543
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Education: Ph.D., Yale University, New Haven, Connecticut, 1972-1977
M.F.S., Yale University, New Haven, Connecticut, 1970-1972
M.A.T., Wesleyan University, Middletown, Connecticut, 1967-1968
B.A., Wesleyan University, Middletown, Connecticut, 1961-1965

Experience:

The Ecosystems Center, Marine Biological Laboratory, Woods Hole, 1976-Present
Distinguished Scientist, 2010-present; Director Emeritus, The Ecosystems Center 2010-present
Co-Director, 1989-2009; Acting Director, 1988-1989
Senior Scientist, 1987-2009; Associate Scientist, 1982-1987; Assistant Scientist, 1976-1982
Professor of Biology, Brown University, 2003-2016
Associate Director for Environment, Office of Science and Technology Policy, Office of the President,
Washington, DC, 1996-1997
Director, Ecosystems Studies Program, National Science Foundation, Washington, DC, 1986-1988
Associate in Research, Hubbard Brook Ecosystem Study, Yale University, New Haven, CT, 1975-1976
Teaching Assistant, January Ecology Course, Marine Biological Laboratory, Woods Hole, MA, January
1975
Teaching Assistant in Soils, Yale University, New Haven, CT, 1973-1975
Biology Instructor, Foote School, New Haven, CT, 1972-1973
Biology Instructor, Weston High School, Weston, CT, 1968-1973
Biology Instructor, Kakamega Secondary School, Kakamega, Kenya (East Africa), 1966-1967

Honors, Offices, Boards:

Honors -

Distinguished Alumni Award, Yale School of Forestry and Environmental Studies – 2017
Member, National Academy of Sciences – 2014
Fellow, ESA – 2012
Co-recipient (IPCC), Nobel Peace Prize – 2009
Fellow, American Academy of Arts and Sciences – 2007
Fellow, AAAS – 2007
Fellow, American Philosophical Society – 2005
Honorary Professor, Institute of Geophysical Sciences and Natural Resources Research, Chinese
Academy of Sciences – 2000
Member, Cosmos Club – 1998
Award of Excellence in Ecosystem Science, Natural Resources Ecology Laboratory, Colorado State
University – 1997
Distinguished Alumni Award, Wesleyan University – 1995
Member, Sigma Xi – 1977

Offices -

President, Ecological Society of America, 2004-2005
President, Scientific Committee on Problems of the Environment, 1998-2004

Vice Chair, International Geosphere-Biosphere Programme, 1994-1999

Boards – (selected)

Trustee, Cary Institute of Ecosystem Studies, 2009-2018

Trustee, University Corporation for Atmospheric Research, 2009-2016

Trustee, National Ecological Observation Network (NEON), 2007-2009

Trustee, The H. John Heinz III Center for Science, Economics and the Environment, 2004-2010

Trustee, Marine Biological Laboratory, 1990-1992

Advisory Committees (current)

NAS – Gulf Research Program (chair)

NAS – US Global Change Research Program (chair)

NAS – US National Member Organization for IIASA

DOE - Biological and Environmental Research Advisory Committee

Professional Society Memberships (current):

American Geophysical Union

Ecological Society of America

National Association for the Advancement of Science

Soil Science Society of America

Publications:

Submitted or in revision

Finzi, A.C., M. Giasson, A.A. Barker Plotkin, J.D. Aber, E.R. Boose, E.A. Davidson, M.C. Dietze, A.E. Ellison, S.D. Frey, E. Goldman, T.F. Keenan, J.M. Melillo, J.W. Munger, K.J. Nadelhoffer, D.A. Orwig, S.V. Ollinger, N. Pederson, A.D. Richardson, K. Savage, J. Tang, J.R. Thompson, C.A. Williams, S.C. Wofsy, Z. Zhou, D.R. Foster. 2020. The carbon budget of the Harvard Forest Long-term ecological research site: patterns, process and responses to global change. *Ecological Monographs* (in revision).

Pec, G.J. P., L.T.A. van Diepen, M. Knorr, A. S. Grandy, J.M. Melillo, K.M. DeAngelis⁴, Jeffrey L. Blanchard⁵, and Serita D. Frey¹. Long-term soil warming selects for unique fungal community with potential implications for soil carbon dynamics. *Ecosphere* (submitted).

Xiao-Jun Allen Liu, G. Pold, L.A. Domeignoz-Horta, H. Caris, H. Nicolson, K.M. Kemner, S.D. Frey, J.M. Melillo, K.M. DeAngelis. 2020. *Nature Climate Change* (in revision).

2020 Werner, W., J.J. Sanderman, and J.M. Melillo. 2020. Reduced soil organic matter in a long-term soil warming experiment lowers soil water holding capacity, affecting soil thermal and hydrologic buffering. *JGR Biogeosciences* 125:4 e2019JG005158

Domeignoz-Horta, L.A., G. Pold, X.A. Liu¹, S.D. Frey, J.M. Melillo, K.M. DeAngelis. Microbial diversity drives carbon use efficiency in a model soil. *Nature Communications*. (in press).

2019 Kicklighter, D.W., J.M. Melillo, E. Monier, A. P. Sokolov and Q. Zhuang. 2019. Future nitrogen availability and its effect on carbon sequestration in Northern Eurasia. *Nature Communications*. doi: 10.1038/s41467-019-10944-0.

Mohan, J.E., S.M. Wadgyamar, D.E. Winkler, J.Anderson, P.T. Frankson, R. Hanifin, K. Benavides, L.M. Kueppers and J.M. Melillo. 2019. Plant Reproductive Fitness and Phenology Responses to

- Climate Warming: Results from Native Populations, Communities and Ecosystems. Pp. 61-156. In: *Ecosystem Consequences of Soil Warming*. J.E.Mohan (ed.)U.K. Elsevier,
- Morrison, E., A. Pringle, L.T. van Diepen, A.S Grandy, J. M. Melillo, S.D. Frey. 2019. Warming alters fungal communities and litter chemistry with implications for soil carbon stocks. *Soil Biology and Biochemistry*. 132:120-130.
- Moss, R.H., S. Avery, K Baja, K. Jacobs, A. Jones, J. Melillo, L. Scarlett, M. Stults, D. Zarrilli. 2019. A Civil Society Consortium for Conducting Applied Climate Assessments: Collaborations and Knowledge for Confronting Climate Risk. *Weather, Climate and Society*. [tps://doi.org/10.1175/WCAS-D-18-0134.1](https://doi.org/10.1175/WCAS-D-18-0134.1).
- 2018** Li J., G. Wang, M.A. Mayes, S. D. Allison, S.D. Frey, Z. Shi, X-M. Hu, Y. Luo, J. M. Melillo.2018. Reduced carbon use efficiency and increased microbial turnover with soil warming. *Global Change Biology*. DOI: 10.1111/gcb.14517
- Svensson, B.M., B.Å. Carlsson, J.M. Melillo. 2017. Changes in vegetation cover after seven years of elevated atmospheric CO₂ and warming in a subarctic birch forest understory, as modified by rodent and moth outbreaks. *PeerJ* <https://peerj.com/articles/4843>.
- Tian, H., Q. Yu, F Jin, J. Yang, S. Pan, Y. Lu, C. Lu, B. Fu, J. Reilly, C. Palm, R. Miao, J. Melillo, W. Ren, Z. Ouyang. Optimizing resource use efficiencies in the Food-Energy-Water nexus for sustainable agriculture: From conceptual model to decision support system. *Current Opinion in Environmental Sustainability* (COSUST) 3:104-113. DOI: [10.1016/j.cosust.2018.04.003](https://doi.org/10.1016/j.cosust.2018.04.003)
- 2017** Meillo, J.M., S.D. Frey, K.M. DeAngelis, W. Werner, M.J. Bernard, F.P. Bowles, G. Pold, M.A. Knorr, A.S. Grandy 2017. Long-term Pattern and Magnitude of Soil Carbon Feedback to the Climate System in a Warming World. *Science*. 358:101-105. DOI: 10.1126/science.aan2874
- Mayes, J. Mustard, John; J. Melillo, C. Neill; G. Nyadzi. 2017. Going beyond the green: senesced vegetation material predicts basal area and biomass in remote sensing of tree cover conditions in an African tropical dry forest (Miombo Woodland) landscape. *Environmental Research Letters*. doi.org/10.1088/1748-9326/aa7242
- Pold, G., A.S. Grandy, J.M. Melillo, K.M. DeAngelis. 2017. Changes in substrate availability drive carbon cycle response to chronic warming. *Soil Biol. Biochem.* doi:10.1016/j.soilbio.2017.03.002.
- 2016** Melillo, J.M., X. Lu, D.W. Kicklighter. J. Reilly.,Y. Cai, A.P. Sokolov. 2016. Protected Areas' Role in Climate-Change Mitigation. *AMBIO*. 45(2), 133-145. DOI 10.1007/s13280-015-0693-1.
- Carey, J.C., J. Tang, P.H. Templer, K.D. Kroeger, T.W. Crowther, A. Burton, J.S. Dukes, B. Emmett, S. Frey, M. Heskell, L. Jiang, M. Machmuller, J.E. Mohan, A.M. Panetta, P.B. Reich, S. Reinsch, X. Wang, S. D. Allison, C. Bamminger, S.D. Bridgham^{f,s}, S. L. Collins, G. de Dato, W.C. Eddy, B.J. Enquist, M. Estiarte, J. Harte, A. Henderson, B.R. Johnson, K.S. Larsen, Y. Luo, S. Marhan^g, J. Melillo, J. Peñuelas^{x,y}, L. Pfeifer-Meister, C. Poll, E.B. Rastetter^a, A. Reinmann, L.L. Reynolds, I. K. Schmidt, G.R. Shaver, A.L. Strong, V. Suseela, A.Tietema. 2016. Temperature response of soil respiration largely unaltered with experimental warming. *PNAS* doi:10.1073/pnas.1605365113.
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- Jiang, Y., Q. Zhuang, S. Sitch, J.A. O'Donnell, D. Kicklighter, A. Sokolov, J. Melillo. 2016. Importance of soil thermal regime in terrestrial ecosystem carbon dynamics in the circumpolar north. *Global and Planetary Change*. 142:28–40. DOI: 10.1016/j.gloplacha.2016.04.011
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larger lessons from the third US national climate assessment. *Climatic Change*. 135:187–201
DOI 10.1007/s10584-015-1530.

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- Tian, H., C. Lu, P. Ciais, A.M. Michalak, J.G. Canadell, E. Saikawa, D.N. Huntzinger, K.R. Gurney, S. Sitch, B. Zhang, J. Yang, P. Bousquet, L. Bruhwiler, G. Chen, E. Dlugokencky, P. Friedlingstein, J. Melillo, S. Pan, B. Poulter, R. Prinn, M. Saunois, C.R. Schwalm, S.C. Wofsy. 2016. The terrestrial biosphere as a net source of greenhouse gases to the atmosphere. *Nature* (in press) DOI 10.1038/nature16946
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- 2015** Melillo, J.M. 2015. Climate Change, *Risky Business*, and a Call to Action for Ecologists. *Ecosystem Health and Sustainability*. 1:art3. <http://dx.doi.org/10.1890/EHS14-0016.1>
- DeAngelis, K.M. G. Pold, B. D Topcuoglu, L. T. A. van Diepen, R. M. Varney, J. Blanchard, J. Melillo, S. Frey. 2015. Long-term forest soil warming alters microbial communities in temperate forest soils. *Frontiers in Microbiology* 6:104, doi: 10.3389/fmicb.2015.00104.
- Mayes, M., J. Mustard, J. Melillo. 2015. Land cover dynamics of an African dry tropical forest: assessments of forest cover change and variability with linear spectral mixture analysis in a developing Miombo Woodland. *Remote Sensing of Environment* 165:203-212. doi:10.1016/j.rse.2015.05.006
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- uncertainties on terrestrial ecosystem model estimates" *Journal of Geophysical Research – Atmospheres*. 120, doi:10.1002/2014JD022531.
- Lu, X., D.W. Kicklighter, J.M. Melillo, J.M. Reilly. 2015. Land Carbon Sequestration within the Conterminous United States: Regional- and State-level Analyses. *Journal of Geophysical Research – Biogeosciences*. 120 (2), 379-398. DOI: 10.1002/2014JG002818
- Pold, G., K.M. DeAngelis, J.M. Melillo. 2015. Two decades of warming increases diversity of a potentially lignolytic bacterial community. *Frontiers in Microbiology*.
<http://dx.doi.org/10.3389/fmicb.2015.00480>
- 2014** Melillo, J.M., T.C. Richmond and G.W. Yohe, eds. 2014. *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program, 841 pp., doi: 10.7930/J0Z31WJ2.
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- Hayes, D.J., D.W. Kicklighter, A.D. McGuire, M. Chen, Q. Zhuang, F. Yuan, J.M. Melillo and S.D. Wullschlegler. 2014. The impacts of recent permafrost thaw on land-atmosphere greenhouse gas exchange. *Environmental Research Letters* 9:045005, doi:10.1088/1748-9326/9/4/045005.
- Kicklighter, D.W., Y. Cai, Q. Zhuang, E.I. Parfenova, S. Paltsev, A.P. Sokolov, J.M. Melillo, J.M. Reilly, N.M. Tchebakova and X. Lu. 2014. Potential influence of climate-induced vegetation shifts on future land use and associated land carbon fluxes in Northern Eurasia. *Environmental Research Letters* 9:035004, doi: 10.1088/1748-9326/9/3/035004.
- Nziguheba, G., R. Vargas, A. Bationo, H. Black, D. Buschiazzo, D. de Brogniez, H. Joosten, J. Melillo, D. Richter and M. Termansen. 2014. Soil Carbon: a Critical Natural Resource – Wide-scale Goals, Urgent Actions. In: *Soil Carbon: Science, Management and Policy for Multiple Benefits*, SCOPE Volume 71 .Eds. S. A. Banwart, E. Noellemeyer, E. Milne. CABI. Wallingford, Oxfordshire, UK. 400pp.
- 2013** Frey, S.D., J. Lee, J.M. Melillo and J. Six. 2013. Soil carbon cycling: The temperature response of microbial efficiency and its feedback to climate. *Nature Climate Change* 3:395-398, doi: 10.1038/nclimate1796.
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- Hallgren, W., C.A. Schlosser, E. Monier, D. Kicklighter, A. Sokolov and J.M. Melillo. 2013. Global climate impact of a large-scale biofuels expansion. *Geophysical Research Letters* 40:1624-1630, doi: 10.1002/grl.50352.
- Kicklighter, D.W., D.J. Hayes, J.W. McClelland, B.J. Peterson, A.D. McGuire and J.M. Melillo. 2013. Insights and issues with simulating terrestrial DOC loading of arctic river networks. *Ecological Applications* 23:1817-183, doi: 10.1890/11-1050.1.
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- Lu, X., D. Kicklighter, J.M. Melillo, P. Yang, B. Rosenzweig, C.J. Vörösmarty, B. Gross and R.J. Stewart. 2013. A contemporary carbon balance for the Northeast region of the United States. *Environmental Science and Technology* 47:13230-13238, doi: 10.1021/es4033097z.
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- 2012** Berbeco, M., J.M. Melillo and C. Orians. 2012. Soil warming differentially accelerates decomposition of woody debris. *Plant and Soil* 356:405-417, doi: 10.1007/s11104-012-1130-x.
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- Butler, S.M., J.M. Melillo, J.E. Johnson, J. Mohan, P.A. Steudler, H. Lux, E. Burrows, C.L. Vario, T.D. Hill, N. Aponte and F. Bowles. 2012. Soil warming changes the nitrogen cycle: nitrogen-driven changes in species composition. *Oecologia* 168:819-828, doi 10.1007/s00442-011-2133.
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- Jiang, Y., Q. Zhuang, S. Schaphoff, S. Sitch, A. Sokolov, D. Kicklighter and J. Melillo. 2012. Uncertainty analysis of vegetation distribution in the northern high latitudes during the 21st century with a dynamic vegetation and model. *Ecology and Evolution* 2(3):503-614. doi: 10.1002/ece3.85.
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- 2011** Melillo, J.M., S.M. Butler, J.E. Johnson, J. Mohan, P.A. Steudler, H. Lux, E. Burrows, F. Bowles, R. Smith, L. Scott, C.L. Vario, T.D. Hill, A.J. Burton, Y. Zhou and J. Tang. 2011. Soil warming, carbon-nitrogen interactions, and forest carbon budgets. *PNAS* 108(23):9508-9512, doi: 10.1073/pnas.1018189108.
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