

# Pamela H. Templer, PhD

Associate Professor

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## EDUCATION

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Ph.D. in Ecology and Evolutionary Biology, Cornell University, Ithaca, NY 2001  
B.A. in Environmental Studies and Biology (double major), University of California Santa Cruz, CA 1995

## PROFESSIONAL APPOINTMENTS

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Professor, Boston University 2017-present  
Pardee Center Faculty Research Fellow, Boston University 2015-present  
Associate of the Arnold Arboretum, Harvard University 2015-present  
Director, Ph.D. Program in Biogeoscience, Boston University 2014-present  
Associate Chair, Department of Biology, Boston University 2014-present  
Charles Bullard Fellow and Sustainability Science Fellow, Harvard University 2013-2014  
Associate Professor, Boston University 2012-2017  
Assistant Professor, Boston University 2005-2012  
Co-Director, Stable Isotope Laboratory, Boston University 2007-present  
Postdoctoral Fellow, University California Berkeley 2001-2005  
Research Assistant, Institute of Ecosystem Studies (*currently* Cary Institute) 1996

## HONORS AND AWARDS

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Metcalf Award for Excellence in Teaching, Boston University 2015  
National Science Foundation CAREER Grant 2012-2017  
Elected member of Scientific Coordinating Committee, Hubbard Brook Experimental Forest 2010-2019  
Andrew W. Mellon Foundation's Junior Faculty Research Grant 2007-2011  
Teresa Heinz Environmental Scholars Award (Ph.D. Dissertation Research Fellowship) 1999  
President of Graduate Student Association. Department of Ecology and Evol Bio, Cornell Univ 1998  
Polgar Fellowship, Hudson River Foundation 1995  
Honors undergraduate senior thesis, University California Santa Cruz 1995  
National Science Foundation – Research Experience for Undergraduates (REU), Cary Institute 1994

## RESEARCH AND TEACHING IN THE NEWS

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HBO Vice News Tonight, <https://news.vice.com/story/forest-climate-change-simulation>  
Boston Globe, <http://www.bostonglobe.com/ideas/2014/11/07/the-city-ecosystem-pipes-and-all/HjLVemBs9nPiuE53PjPSLK/story.html>  
CBS Boston Evening News, <http://boston.cbslocal.com/2014/03/29/eye-on-weather-the-spring-forecast/>  
Car Talk, [www.cartalk.com/content/losing-winter-climate-change-will-hit-new-england-hard](http://www.cartalk.com/content/losing-winter-climate-change-will-hit-new-england-hard)  
Scientific American, <http://www.scientificamerican.com/article.cfm?id=wired-forest-may-reveal-how-new-england-forests-respond-climate-change>  
CBS Boston Evening News, <http://boston.cbslocal.com/2012/11/21/researchers-say-new-england-winters-getting-shorter/#respond>  
Op Ed in the Boston Globe Magazine, <http://www.bostonglobe.com/magazine/2012/10/13/climate-change-call-arms/Q9XM0EBZWd4FNdWH71blM/story.html>  
Boston Phoenix Magazine, <http://thephoenix.com/boston/life/147101-help-the-mountains-are-melting/>  
WBUR's Morning Edition: <http://www.bu.edu/av/news/wbur-02-27-treestudy.mp3>  
BU Today film, "Templer's Sense of Snow," <http://www.bu.edu/today/2012/sense-of-snow/>  
BU Today article, "Wiring the Woods," <http://www.bu.edu/today/2014/wiring-the-woods/>  
BU Today article, "Metcalf Winner Templer Brings Science to Life," <http://www.bu.edu/today/2015/templer-wins-metcalf-award/>

## TEACHING EXPERIENCE AT BOSTON UNIVERSITY

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### COURSES TAUGHT:

BI303	Ecology (2006)
BI306	Biology of Global Change (2006, 2008-2012, 2014-2016)
BI/GE 530	Forest Ecology (2007 and 2009-2013, 2015)
GRS BI/EE 719	Terrestrial Biogeosciences Colloquium (2012)
GRS BI/EE 720	Terrestrial Biogeosciences Practicum (2013)

### POSTDOCTORAL FELLOW AND VISITING SCIENTIST:

Joanna Carey, PhD (2014-2015), Thomas Dirnboeck, PhD (2015-2017)

### GRADUATE STUDENTS:

Anne Socci (Ph.D., 2006-2011, Impact of winter climate change on nutrient & water uptake in a northern forest ecosystem)

Andrew Reinmann (Ph.D., 2008-2014, Effects of winter climate change on carbon & nitrogen losses from temperate forest ecosystems)

Patrick Sorensen (Ph.D., 2011-2016, Effects of winter snowpack on microbial activity, community composition, and plant-microbe interactions in mixed-hardwood temperate forests)

Rebecca Sanders-DeMott (Ph.D., 2011-2016, Effects of climate change across seasons on forest ecosystems)

Stephen Decina (Ph.D., 2013-present, Controls on atmospheric nitrogen deposition and cycling in urban ecosystems)

Jamie Harrison (Ph.D., 2016-present, Effects of climate change across seasons on northern hardwood forests)

Visiting Ph.D. graduate students: Dries Huygens (University of Ghent, Belgium, 2005); Lilia L. Roa Fuentes (National University of Mexico, 2010); Christine Bollig (University of Bern, Switzerland, 2011); Robert Weigel (University of Greifswald, Germany, 2016)

### UNDERGRADUATE STUDENTS:

Mentor to more than 25 undergraduate research assistants and 16 students in Boston University's Undergraduate Research Opportunities Program (UROP), Summer Undergraduate Research Fellowship (SURF) and the National Science Foundation's Research Experience for Undergraduates (REU) program.

### PUBLICATIONS

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#### REFEREED ARTICLES (\*Graduate student; \*\*Undergraduate student)

Sanders-DeMott\* R, **PH Templer**. 2017. What about winter? Integrating the missing season into climate change experiments in seasonally snow covered ecosystems. Methods in Ecology & Evolution, *in press*.

Maguire\* T, **P Templer**, J Battles, R Fulweiler. 2017. Winter climate change decreases fine root biogenic silica in sugar maple trees (*Acer saccharum*): implications for silica export in the Anthropocene. Journal of Geophysical Research: Biogeosciences, *in press*.

**Templer PH**, Reinmann\* AB, R Sanders-DeMott\*, S Juice, F Bowles, L Sofen, J Harrison\*, I Halm, L Rustad, M Martin, N Grant. 2017. Climate change across seasons experiment (CCASE) at Hubbard Brook Experimental Forest: Combined effects of increased growing season temperatures and winter freeze-thaw cycles on the northern forest. PLOS ONE 12(2): e0171928.

Duran J, JL Morse, A Rodriguez, JL Campbell, LM Christenson, CT Driscoll, TJ Fahey, MC Fisk, MJ Mitchell, **PH Templer**, PM Groffman. 2017. Differential sensitivity to climate change of C and N cycling processes across soil horizons in a northern hardwood forest. Soil Biology & Biochemistry 107:77-84.

- Capps SL, CT Driscoll, H Fakhraei, **PH Templer**, KJ Craig, JB Milford and KF Lambert. 2016. Estimating potential productivity co-benefits for crops and trees from reduced ozone with U.S. coal power plant carbon standards. Journal of Geophysical Research: Atmospheres 121: 14,679-90.
- Meredith LK, R Commane, TF Keenan, ST Klosterman, JW Munger, **PH Templer**, J Tang, SC Wofsy, and RG Prinn. 2016. Ecosystem fluxes of hydrogen in a mid-latitude forest driven by soil microbes and plants. Global Change Biology 23:906-919.
- Fuss CB, CT Driscoll, PM Groffman, CL Campbell, LM Christenson, TJ Fahey, MC Fisk, MJ Mitchell, **PH Templer**, J I Duran, JL Morse. 2016. Nitrate and dissolved organic carbon mobilization in response to soil freezing variability. Biogeochemistry 131:35-47.
- Sorensen PO\*, **PH Templer**, L Christenson, J Duran, T Fahey, M Fisk, P Groffman, J Morse, A Finzi. 2016. Reduction in snow cover alters root-microbe interactions and decreases nitrification in a northern hardwood forest. Ecology 97: 3359-3368.
- Carey J, J Tang, **PH Templer**, K Kroeger, T Crowther, A Burton, J Dukes, B Emmett, S Frey, M Heskell, L Jiang, M Machmuller, J Mohan, A Panetta, P Reich, S Reinsch, X Wang, S Allison, C Bamminger, S Bridgman, S Collins, G de Dato, W Eddy, B Enquist, M Estiarte, J Harte, A Henderson, B Johnson, K Larsen, Y Luo, S Marhan, J Melillo, J Peñuelas, L Pfeifer-Meister, C Poll, E Rastetter, A Reinmann\*, L Reynolds, I Schmidt, G Shaver, A Strong, V Suseela, A Tietema. 2016. Temperature response of soil respiration largely unaltered with experimental warming. Proceedings of the National Academy of Sciences 113: 13797-13802.
- Crowther T, K Todd-Brown, C Rowe, W Wieder, J Carey, M Machmuller, L Snoek, S Fang, G Zhou, S Allison, J Blair, S Bridgman, A Burton, Y Carrillo, P Reich, J Clark, A Classen, F Dijkstra, B Elberling, B Emmett, M Estiarte, S Frey, J Guo, J Harte, L Jiang, B Johnson, G Kröel-Dulay, K Larsen, H Laudon, J Lavallee, Y Luo, M Lupascu, L Ma, S Marhan, A Michelsen, J Mohan, S Niu, E Pendall, J Peñuelas, L Pfeifer-Meister, C Poll, S Reinsch, L Reynolds, I Schmidt, S Sistla, N Sokol, **PH Templer**, K Treseder, J Welker, M Bradford. 2016. Quantifying global soil carbon losses in response to warming. Nature 540: 104-108.
- Niu S, AT Classen, J Dukes, P Kardol, L Liu, Y Luo, L Rustad, S Vicca, J Tang, **PH Templer**, RQ Thomas, D Tian, YP Wang, J Xia and S Zahle. 2016. Global patterns and fundamental mechanisms of the terrestrial nitrogen cycle. Ecology Letters 13:819-828.
- Sorensen PO\*, **PH Templer** and AC Finzi. 2016. Contrasting effects of winter snowpack and soil frost on growing season microbial biomass and enzyme activity in two mixed-hardwood forests. Biogeochemistry 128:141-154.
- Decina\* S, LR Hutyra, CK Gately, JM Getson, AB Reinmann\*, AG Short Gianotti, and **PH Templer**. 2016. Soil respiration contributes significantly to urban carbon fluxes. Environmental Pollution 212:433-439.
- Reinmann\* A and **PH Templer**. 2016. Reduced winter snowpack and greater soil frost reduce live root biomass and stimulate radial growth and stem respiration of red Maple (*Acer rubrum*) trees in a mixed-hardwood forest. Ecosystems 19:129-141.
- Duran J, JL Morse, PM Groffman, JL Campbell, LM Christenson, CT Driscoll, TJ Fahey, MC Fisk, GE Likens, JM Melillo, MJ Mitchell, **PH Templer**, and MA Vadeboncoeur. 2016. Climate change decreases nitrogen pools and mineralization rates in northern hardwood forests. Ecosphere 7(3):e01251.
- Sanders-DeMott\* R, Smith N, **PH Templer**, J Dukes. 2016. Toward an integrated understanding of terrestrial ecosystem feedbacks to climate change. New Phytologist 209:1363-1365.
- Juice SM, **PH Templer**, NG Phillips, AM Ellison, and SL Pelini. 2016. Ecosystem warming increases sap flow rates of northern red oak trees. Ecosphere 7(3):e01221.
- Templer PH**, KF Lambert, M Weiss, JS Baron, CT Driscoll and DR Foster. 2016. Using science-policy integration to improve ecosystem science and inform decision-making: lessons from U.S. LTERs. Bulletin of the Ecological Society of America 97: 123-128.

- Commane R, LK Meredith, IT Baker, JA Berry, JW Munger, SA Montzka, **PH Templer**, SM Juice, MS Zahniser, SC Wofsy. 2015. Seasonal fluxes of carbonyl sulfide in a mid-latitude forest. Proceedings of the National Academy of Sciences, 112: 14162-14167.
- Templer PH**, KC Weathers, HA Ewing, TE Dawson, S Mambelli, AM Lindsey, J Webb\*\*, VK Boukili, and MK Firestone. 2015. Fog as a source of nitrogen for redwood trees: evidence from fluxes and stable isotopes. Journal of Ecology: 103: 1397-1407. (Editor's Choice for this issue of journal: <https://jecologyblog.wordpress.com/2015/10/20/editors-choice-1036>)
- Roa-Fuentes LL, **PH Templer** and J Campo. 2015. Leaf traits in tropical forests: a comparison along a precipitation gradient in the Yucatan Peninsula. Oecologia 179: 585-597.
- Gill AL\*, AS Gallinat\*, R Sanders-DeMott\*, AJ Rigden\*, DJ Short Gianotti\*, JA Mantooth\*, and **PH Templer**. 2015. Change in autumn senescence in northern hemisphere deciduous trees: a meta-analysis of autumn phenology studies. Annals of Botany 116:875-888. (Publication from students enrolled in my course at Boston University, GRS BI/EE 720)
- Fahey TJ, **PH Templer**, BT Anderson, JJ Battles, JL Campbell, CT Driscoll, AR Fusco, MB Green, KK Kassam, NL Rodenhouse, L Rustad, PG Schaberg, MA Vadeboncoeur. 2015. The promise and peril of intensive-site based ecological research: insights from the Hubbard Brook Ecosystem Study. Ecology 96: 885-901.
- Templer PH**, JW Toll\*\*, LR Hutya, and SM Raciti. 2015. Nitrogen and carbon export from urban areas through removal and export of litterfall. Environmental Pollution 197: 256-261.
- Templer PH**, KC Weathers, A Lindsey, K Lenoir, and L Scott. 2015. Atmospheric inputs and nitrogen saturation status in and adjacent to Class I wilderness areas of the northeastern United States. Oecologia 177:5-15.
- Rodriguez A, GM Lovett, KC Weathers, MA Arthur, **PH Templer**, CL Goodale and LM Christenson. 2014. Lability of C in temperate forest soils: assessing the role of nitrogen addition and tree species composition. Soil Biology and Biochemistry 77:129-140.
- Frey SD, S Ollinger, K Nadelhoffer, R Bowden, E Brzostek, A Burton, BA Caldwell, S Crow, CL Goodale, AS Grandy, A Finzi, MG Kramer, K Lajtha, J LeMoine, M Martin, WH McDowell, R Minocha, JJ Sadowsky, **PH Templer**, and K Wickings. 2014. Chronic nitrogen additions suppress decomposition and sequester soil carbon in temperate forests. Biogeochemistry, 121:305-316.
- Duran J, JL Morse, PM Groffman, JL Campbell, LM Christenson, CT Driscoll, TJ Fahey, MC Fisk, MJ Mitchell, and **PH Templer**. 2014. Winter climate change affects growing-season soil microbial biomass and activity in northern hardwood forests. Global Change Biology 20:3568-3577.
- Campbell J, AM Soggi\* and **PH Templer**. 2014. Increased nitrogen leaching following soil freezing is due to decreased root uptake in a northern hardwood forest. Global Change Biology 20:2663-2673.
- Campbell J, A Reinmann\* and **PH Templer**. 2014. Soil freezing effects on sources of nitrogen and carbon leached during snowmelt. Soil Science Society of America Journal 78:297-308.
- Rao P\*, LR Hutya, SM Raciti, and **PH Templer**. 2014. Atmospheric nitrogen inputs and losses along an urbanization gradient from Boston to Harvard Forest, MA. Biogeochemistry 121:229-245.
- Thomas RG, S Zaehle, **PH Templer**, and CL Goodale. 2013. Global patterns of nitrogen limitation: confronting two global biogeochemical models with observations. Global Change Biology 19:2986-2998.
- Lovett GM, MA Arthur, KC Weathers, RD Fitzhugh, and **PH Templer**. 2013. Nitrogen addition increases carbon storage in soils, but not in trees, in an eastern U.S. deciduous forest. Ecosystems 16:980-1001.
- Templer PH**. 2013. Limits on carbon uptake by plants (Invited). Nature Climate Change 3:184-185.
- Comerford DP, PG Schaberg, **PH Templer**, AM Soggi\*, JL Campbell, and KF Wallin. 2013. Influence of experimental snow removal on root and canopy physiology of sugar maple trees in a northern hardwood forest. Oecologia 171:261-269.

- Groffman PM, LE Rustad, **PH Templer**, JL Campbell, LM Christenson, NK Lany, AM Soggi\*, MA Vadeboncoeur, PG Schaberg, GF Wilson, CT Driscoll, TJ Fahey, MC Fisk, CL Goodale, MB Green, SP Hamburg, CE Johnson, MJ Mitchell, JL Morse, LH Pardo, and NL Rodenhouse. 2012. Long-term integrated studies show complex and surprising effects of climate change in the northern hardwood forest. BioScience 62: 1056-1066.
- Templer PH**, RW Pinder, and CL Goodale. 2012. Effects of nitrogen deposition on greenhouse gas fluxes for forests and grasslands of North America (Invited). Frontiers in Ecology and the Environment 10: 547-553.
- Templer PH**, MC Mack, FS Chapin III, LM Christenson, JE Compton, HD Crook, WS Currie, C Curtis, B Dail, CM D'Antonio, BA Emmett, H Epstein, CL Goodale, P Gundersen, SE Hobbie, K Holland, DU Hooper, BA Hungate, S Lamontagne, KJ Nadelhoffer, CW Osenberg, SS Perakis, P Schleppei, J Schimel, IK Schmidt, M Sommerkorn, J Spoelstra, A Tietema, WW Wessel, and DR Zak. 2012. Sinks for nitrogen inputs in terrestrial ecosystems: a meta-analysis of enriched <sup>15</sup>N field tracer studies. Ecology 93: 1816-1829. *Selected by Faculty of 1000*.
- Templer PH**. 2012. Changes in winter climate: soil frost, root injury, and fungal communities (Invited). Plant and Soil 35: 15-17.
- Templer PH**, AF Schiller\*\*, NW Fuller, AM Soggi\*, JL Campbell, JE Drake, and TH Kunz. 2012. Impact of a reduced winter snowpack on litter arthropod abundance and diversity in a northern hardwood forest ecosystem. Biology and Fertility of Soils 48:413-424.
- Reinmann AB\*, **PH Templer** and JL Campbell. 2012. Severe soil frost reduces losses of carbon and nitrogen from the forest floor during simulated snowmelt: a laboratory experiment. Soil Biology & Biochemistry 44:65-74.
- Soggi AM\* and **PH Templer**. 2011. Temporal patterns of inorganic nitrogen uptake by mature trees in a northern forest using two common approaches. Plant Ecology & Diversity 4:141-152.
- Templer PH** and AB Reinmann\*. 2011 Multi-factor global change experiments: what have we learned about terrestrial carbon storage and exchange? New Phytologist 192:797-800.
- Brooks PD, P Grogan, **PH Templer**, P Groffman, M Oquist, and J Schimel. 2011. Carbon and nitrogen cycling in snow-covered environments. Geography Compass 5: 682-699.
- Templer PH** and KC Weathers. 2011. Use of mixed ion exchange resin and the denitrifier method to determine isotopic values of nitrate in atmospheric deposition and canopy throughfall. Atmospheric Environment 45: 2017-2020.
- Templer PH** and TM McCann\*\*. 2010. Effects of the hemlock woolly adelgid on nitrogen losses from urban and rural northern forest ecosystems. Ecosystems 13:1215-1226.
- Craine J, A Elmore, M Aidar, M Bustamante, T Dawson, E Hobbie, A Kahmen, M Mack, K McLauchlan, A Michelsen, G Nardoto, L Pardo, J Peñuelas, P Reich, E Schuur, W Stock, **PH Templer**, R Virginia, J Welker, and I Wright. 2009. Global patterns of foliar nitrogen isotopes and their relationships with climate, mycorrhizal fungi, foliar nutrient concentrations, and nitrogen availability. New Phytologist 183:980-992. (Co-authors in alphabetical order after Elmore)
- Miller-Rushing AJ\*, RB Primack, **PH Templer**, S Rathbone\*\* and S Mukunda\*\*. 2009. Long-term relationships among atmospheric CO<sub>2</sub>, stomata, and intrinsic water use efficiency in individual trees. American Journal of Botany 96:1779-1786. \*Graduate student with Prof. Richard Primack; \*\*Undergraduate student.
- Ewing HA, KC Weathers, **PH Templer**, TE Dawson, MK Firestone, AM Elliott and VKS Boukili. 2009. Fog water and ecosystem function: heterogeneity in a California redwood forest. Ecosystems 12:417-433.
- Huygens D\*, P Boeckx, **P Templer**, L Paulino, O Van Cleemput, C Oyarzun, C Müller and R Godoy. 2008. Mechanisms for retention of bioavailable nitrogen in volcanic rainforest soils. Nature Geoscience 1:543-548.
- Templer PH**, WL Silver, J Pett-Ridge, K DeAngelis and MK Firestone. 2008. Plant and microbial controls on nitrogen retention and loss in a humid tropical forest. Ecology 89: 3030-3040.
- Templer PH**, MA Arthur, GM Lovett and K Weathers. 2007. Plant and soil natural abundance δ<sup>15</sup>N: indicators of relative rates of nitrogen cycling in temperate forest ecosystems. Oecologia 153:399-406.

- Pardo L, **PH Templer**, C Goodale, S Duke, P Groffman, MB Adams, P Boeckx, J Boogs, J Campbell, B Colman, J Compton, B Emmett, P Gundersen, J Kjonaas, G Lovett, M Mack, A Magill, M Mbila, M Mitchell, G McGee, S McNulty, K Nadelhoffer, S Ollinger, D Ross, H Rueth, L Rustad, P Schaberg, S Schiff, P Schleppi, J Spoelstra and Wessel W. 2006. Regional assessment of N saturation using foliar and root  $\delta^{15}\text{N}$ . *Biogeochemistry* 80:143-171.
- Templer PH**, G Lovett, K Weathers, S Findlay and T Dawson. 2005. Influence of tree species on forest nitrogen retention in the Catskill Mountains, New York, USA. *Ecosystems* 8:1-16.
- Templer PH**, P Groffman, A Flecker and A Power. 2005. Land use change and soil nutrient transformations in the Los Haitises region of the Dominican Republic. *Soil Biology and Biochemistry* 37:215-225.
- Templer PH** and TE Dawson. 2004. Nitrogen uptake by four tree species of the Catskill Mountains, NY: implications for forest N dynamics. *Plant and Soil* 262:251-261.
- Templer PH**, S Findlay and G Lovett. 2003. Soil microbial biomass and nitrogen transformations among five tree species of the Catskill Mountains, NY, USA. *Soil Biology and Biochemistry* 35:607-613.
- Dawson TE, S Mambelli, AH Plamboeck, **PH Templer** and KP Tu. 2002. Stable isotopes in plant ecology. *Annual Review of Ecology and Systematics* 33:507-559. (Co-authors in alphabetical order)
- Silver WL and **PH Templer**. 2002. A walk through the Amazon from a biogeochemical perspective. Book review of: *Biogeochemistry of the Amazon Basin*. Eds. McClain, M., R.L. Victoria and J.E. Richey. Oxford University Press, New York, 365 pages. *Ecology* 83:3237-3238.
- Templer PH**, S Findlay and C Wigand. 1998. Sediment chemistry associated with native and non-native emergent macrophytes of a Hudson River marsh ecosystem. *Wetlands* 18:70-78.

#### REPORTS, BOOK CHAPTERS, AND POPULAR ARTICLES

- Templer PH**, L Hutryra, and S Decina. 2016. It's raining nitrogen. *Silva: Fall/Winter 2016-17*.
- Sleeper D and **PH Templer**. A climate change call to arms. Don't let snowy predictions fool you. Winter is going away. *Boston Globe Magazine Perspective*, October 14, 2012.
- Ewing HA, KC Weathers, AM Lindsey, **PH Templer**, TE Dawson, DC Bradbury, MK Firestone, and VKS Boukili. 2012. Fog and soil weathering as sources of nutrients in a California redwood forest. In RB Standiford, TJ Weller, DD Piirto, and JD Stuart (eds.), *Proceedings of coast redwood forests in a changing California: a symposium for scientists and managers: General Technical Report PSW-GTR-238*. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture, p. 265-272.
- Templer PH**. 2005. Tree species effects on nitrogen cycling and retention: a synthesis of studies using  $^{15}\text{N}$  Tracers. In *Tree Species Effects on Soils: Implications for Global Change*. D. Binkley, O. Menyailo, eds. NATO Science Series, Kluwer Academic Publishers, Dordrecht.
- Harris GP, SW Bigelow, JJ Cole, H Cyr, LL Janus, AP Kinzig, JF Kitchell, GE Likens, K.H. Reckhow, D Scavia, D Soto, L.M. Talbot, and **PH Templer**. 2003. The Role of Models in Ecosystem Management. In C.D. Canham, JJ. Cole, W.K. Lauenroth (eds.), *Role of Models in Ecosystem Science*. Princeton University Press. (Co-authors in alphabetical order)

#### RESEARCH GRANT SUPPORT

##### Active Grants

- National Science Foundation. "CAREER: Role of plant nutrient uptake in forest nutrient retention and carbon sequestration: an integrated research, teaching and outreach program." \$755,640, total funds for entire award (03/01/12-02/28/17). **PH Templer**, PI.
- National Science Foundation. "Long-Term Ecological Research at the Hubbard Brook Experimental Forest." T Fahey, Cornell University, PI with 20 Co-PIs; \$225,000 total funds to **PH Templer**, Co-PI (02/01/17-01/31/23).
- National Science Foundation. "Long-Term Ecological Research at the Hubbard Brook Experimental Forest." T Fahey, Cornell University, PI with 20 Co-PIs; \$101,000 total funds to **PH Templer**, Co-PI (02/01/11-01/31/17).

National Science Foundation. “Collaborative Research: IDBR: TYPE A: The NANAPHID: A novel aphid-like nanosensor network for real-time measurements of carbohydrates in live plant tissue.” A Lapenis, State University New York Albany, PI; \$33,810 total funds to **PH Templer**, Co-PI (02/01/15-01/31/17).

United States Department of Agriculture, Northeastern States Research Cooperative. “Understanding impacts of precipitation change and drought on the northern forest.” Asbjornsen H, L Rustad and **PH Templer**. \$111,926 total funds to H Asbjornsen. (04/01/14-09/30/16).

National Oceanic and Atmospheric Administration. “Quantifying carbon signatures across urban-to-rural gradients: advancing the capacity for monitoring, reporting, and verification through observations, models and remote sensing.” Lucy Hutyra, PI. M Friedl, T Nehrkorn, S Raciti, **PH Templer**, S Wofsy, and C Woodcock, Co-PI’s. \$795,495 total. \$78,078 total funds to **PH Templer**. (08/01/14-07/31/17).

#### *Completed Grants*

John Wesley Powell Center for Synthesis and Analysis. U.S. Geological Survey. “Advancing understanding of ecosystem responses to climate change with warming experiments: what have we learned and what is unknown?” \$149,460 to fund postdoc (Joanna Carey) and travel for participants to attend two synthesis workshops at Powell Center in Fort Collins, CO. K Kroeger, PI. J Tang and **PH Templer**, Co-PI (09/01/13-08/31/15).

Charles Bullard Fellowship in Forest Research, Harvard University. “Winter climate change and regional estimates of primary productivity of northeastern U.S. forests: using long-term data, remote sensing and future scenarios.” \$40,000 total funds for entire award to **PH Templer**, PI. (09/01/13-06/01/14).

National Science Foundation. “Collaborative Research: Winter climate change in a northern hardwood forest.” P Groffman, Cary Institute, PI; \$114,828 total funds to **PH Templer**, Boston University, PI (09/01/10-08/31/13).

National Science Foundation. “STATS4STEM.ORG: Enriching STEM education through real-world data sets, computing and statistical analysis.” E Simoneau, Boston Latin School (high school), PI; \$14,936 total funds to **PH Templer**, Co-PI (10/01/09-09/30/12).

United States Department of Agriculture, Northeastern States Research Cooperative. “Assessing the role of tree species and nitrogen deposition in mediating carbon storage in northern hardwood forests.” GM Lovett, Cary Institute, PI; \$5760 total funds to **PH Templer** (10/01/09-09/30/12).

United States Department of Agriculture, Northeastern States Research Cooperative. “Effects of winter climate change on growing season sap flow and carbon exchange in the northern hardwood forest,” \$131,391, total funds for entire award (09/01/09-08/31/12). **PH Templer**, PI with M Friedl and N Phillips, Co-PI’s. All funds allocated to **PH Templer** at Boston University.

Andrew W. Mellon Foundation. “Impacts of winter dynamics on growing season plant nutrient uptake and forest productivity in a northeastern hardwood forest,” \$300,000, total funds for entire award (05/01/07-12/31/11). **PH Templer**, PI.

United States Department of Agriculture, Northeastern States Research Cooperative. “Determination of atmospheric deposition and nitrogen saturation status in Class I wilderness areas of the northeastern United States,” \$63,730, total funds for entire award (06/01/06-05/31/11) **PH Templer, PI**, with K Weathers, Cary Institute, Co-PI. All funds allocated to PH Templer at Boston University.

Harvard University, Arnold Arboretum. “Impacts of the hemlock woolly adelgid and atmospheric nitrogen deposition on forest nitrogen saturation status,” \$5,000, total funds for entire award (05/22/06-05/21/07). **PH Templer**, PI.

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#### COMPETITIVE FUNDING AND AWARDS TO GRADUATE STUDENTS IN MY LAB

National Science Foundation Graduate Research Fellowship awarded to **S Decina**. “Assessing the effects of soil freezing on populations of arbuscular mycorrhizal fungi associated with *Acer saccharum* in a northern hardwood forest,” \$138,000 for graduate tuition and stipend (06/01/14-05/31/17).

Boston Area Research Initiative Research seed grant awarded to **S Decina**. “Assessing total atmospheric deposition of nitrogen and phosphorus throughout the Greater Boston Area,” \$5,000 for graduate research (08/01/16-12/31/16).

National Science Foundation Doctoral Dissertation Improvement Grant (DDIG) to **P Sorensen**. “Direct and indirect effects of winter climate change on microbes: implications for nitrogen retention in temperate hardwood forests.” \$21,254 (06/01/14-05/31/16).

Arnold Arboretum of Harvard University, Deland Award for Student Research to **S Decina**. “Comparing methods of measurement for atmospheric nitrogen deposition and assessing urban dry nitrogen deposition fluxes.” \$10,000 (05/01/15-05/01/16).

Environmental Protection Agency, Science to Achieve Results (STAR) Program awarded to **A Reinmann**. “Impact of winter climate change on soil, canopy, and ecosystem carbon exchange in a northern deciduous forest,” \$126,000 (09/01/11-08/31/14).

Boston University, Research in Biogeoscience Award to **R Sanders-Demott**. \$500 (05/31/13-04/30/14).

Boston University, Research in Biogeoscience Award to **P Sorensen**. \$500 (05/31/12-04/30/13).

Boston University, competitive Dean’s Fellowship awarded to **R Sanders-Demott**, \$19,800 (09/01/11-05/30/12).

Boston University, Research in Biogeoscience Award to **A Reinmann**. “Coupled response of above- and belowground carbon fluxes in a temperate deciduous forest to reduced winter snow pack,” \$500 (05/31/11-04/30/12).

National Science Foundation Graduate Research Fellowship awarded to **A Socci**. “Potential effects of climate change-induced soil freezing on plant nutrient uptake and productivity,” \$118,326 for graduate tuition and stipend (06/01/07-05/31/11).

United States Department of Agriculture, Northeastern States Research Cooperative, Northern Forest Scholars Graduate Fellowship awarded to **A Socci**. “Assessing the impacts of climate change-induced soil freezing on plant nutrient uptake and productivity in a northern hardwood forest,” \$40,000 (09/01/07-12/31/09).

Boston University, competitive Dean’s Fellowship awarded to **A Socci**, \$16,500 (09/01/06-05/30/07).

PROFESSIONAL SERVICE AND ACTIVITIES

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DEPARTMENTAL SERVICE AT BOSTON UNIVERSITY:

Associate Chair, Department of Biology (Ecology, Behavior & Evolution)	2014-present
Chair, Graduate Committee	2012-2013
Member of Microbial Ecologist Faculty Search Committee (Biology)	2012-2013
Member of Belamarich Award Committee to select Outstanding Doctoral Dissertation	2011 & 2012
Member of Department of Biology Graduate Student Committee	2009-2013
Member of Marine Biology Faculty Search Committee (Biology)	2008-2009
Member, Chairman’s Advisory Committee	Fall 2006-2010
Member, Graduate Admissions Committee, Department of Biology	Fall 2005-2007
Coordinator of Spring 2006 Ecology, Behavior & Evolution Seminar Series	Spring 2006

UNIVERSITY SERVICE AT BOSTON UNIVERSITY:

Member, BU Climate Action Plan Task Force	2016-2017
Member, BU Hub Learning Outcomes Committee, Satellite Committee on Scientific & Social Inquiry	2016
Member, University Council Committee on Research & Scholarly Activity	2016-2017
Member, Provost’s Faculty Teaching Awards Committee	2015-2016
Director, Ph.D. Program in Biogeoscience	2014- present



Co-Chair, BU Child Care Advisory Committee	2014-2015
Trustee Scholars Selection Committee (BU's top merit-based scholarship)	2011-2013
Member, Biogeoscience Research and Travel Award Committee for PhD students	2011 & 2012
Member, Advisory Committee for Global Ecology Education Masters Program	2011-present
BioBugs (Biology Inquire and Outreach to High School Students)	2010 & 2011
Member, Marine Biogeochemistry Faculty Search Committee (Earth Sciences)	2008
Member, MMEDIC BA/MD Program Admissions Committee	2008
Co-Director, Boston University Stable Isotope Laboratory	2007-present
Member, Seven-Year BU BA/MD Program Admissions Committee	2007-2008
Faculty participant, "Freshman Fridays" orientation events for prospective students	2006-2015
Facilitator, Responsible Conduct of Research Program at Boston University	2005-2006

#### SERVICE OUTSIDE OF BOSTON UNIVERSITY:

Ecological Society of America, Mercer Award Subcommittee	2016-present
Subject Matter Editor for the journals <i>Ecology</i> & <i>Ecological Monographs</i>	2013-present
Invited member, Governing Council of the Science Policy Exchange	2013-present
Board of Trustees, Hubbard Brook Research Foundation	2012-present
Co-Chair, Natl Atmos Deposition Program Sub-committee on Urban Atmos Monitoring	2012-present
Editorial Review Board, Associate Editor for the journal <i>Biogeochemistry</i>	2011-2013
Elected member of Scientific Coordinating Committee, Hubbard Brook Exper Forest	2010-2013, 2013-2016
Served on National Science Foundation Ecosystem Science Grant Panels	2009, 2010, 2012, 2014

#### REVIEWER FOR THE FOLLOWING PEER REVIEWED JOURNALS AND PROPOSAL PANELS:

American Association for the Advancement of Science Program on Europe & Central Asia Proposal Review, Analytical Chemistry, Applied Soil Ecology, Atmospheric Environment, Biogeochemistry, Biological Invasions, Biology & Fertility of Soils, Canadian Journal of Forest Research, Ecological Applications, Ecological Monographs, Ecology, Ecosystems, European Journal of Soil Biology, Forest Ecology & Management, Functional Ecology, Global Biogeochemical Cycles, Global Change Biology, Journal of Arid Environments, Journal of Plant Nutrition & Soil Science, Journal of Plant Nutrition and Soil Science, Journal of Trop Ecology, Kearney Foundation Proposal Review, Natl Science Foundation Ecosystem Studies & Globe Prop Reviews, Nature, Nature Climate Change, Nature Geoscience, New Phytologist, Oecologia, Plant and Soil, Plant Biology, Plant Ecology & Diversity, Proceedings of the National Academy of Sciences, Rapid Comm in Mass Spectrometry, Soil Bio and Biochemistry, Soil Science Society of America, Tree Physiology.

#### INVITED LECTURES

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Carleton College, Department of Biology, Northfield, MN	April 2017
University of Minnesota, Dept of Ecology, Evol & Behavior, Minneapolis and St. Paul, MN	April 2017
Brookline Public Library	March 2017
Pierce Public School, Brook, MA	March 2017
University of Vermont, Rubenstein School of Envir & Natural Resources, Burlington, VT	December 2016
Squam Lakes Natural Science Center, Holderness, NH	July 2016
Tufts University, Department of Biology, Medford, MA	March 2016
University of Western Ontario, Department of Biology, Ontario, Canada	March 2016
University Massachusetts Lowell, Department of Biological Sciences, Lowell, MA	February 2016
Edward Devotion Public School, Brookline, MA	February 2016
University of Granada, Dept de Ecologia Facultad de Ciencias, Granada, Spain	April 2015
University of Connecticut, Nat Resources and the Environment, Storrs, CT	September 2014
Harvard University, Environmental Science and Engineering, Cambridge, MA	April 2014
Boston University Academy, Boston, MA	February 2014

Newton Free Library, Newton, MA	January 2014
Brookline High School, AP Environmental Science Class, Brookline, MA	April and November 2013
Harvard Forest, Harvard University, Petersham, MA	October 2013
Columbia University, Department of Ecology, Evolution & Envir Biology, New York, NY	October 2012
Brown University, Department of Ecology & Evolutionary Biology, Providence, RI	February 2012
Harvard University, Arnold Arboretum, Boston, MA	February 2012
Brookline High School, AP Environmental Science Class, Brookline, MA	December 2011
Cornell University, Program in Biogeochemistry, Ithaca, NY	November 2010
Wellesley College, Department of Biological Sciences, Wellesley, MA	March 2010
Plymouth State University, Department of Biology, Plymouth, NH	February 2010
Hubbard Brook Experimental Forest, Winter Ecology Course, North Woodstock, NH	January 2010
Massachusetts Institute of Technology (MIT), Cambridge, MA	November 2009
Boston College, Department of Biology, Chestnut Hill, MA	November 2009
Boston University, Program in Terrestrial Biogeosciences, Boston, MA	October 2009
Marine Biological Laboratory, Woods Hole, MA	March 2009
Hubbard Brook Experimental Forest, REU Program, North Woodstock, NH	July 2008
University of New Hampshire ( <i>Declined</i> , on maternity leave)	Fall 2007
Harvard Forest, Harvard University, Petersham, MA	May 2007
University of Connecticut, Storrs, Department of Ecology & Evolutionary Biology	March 2007
Boston University, Department of Biology, Women in Biology Series	October 2006
University of New Hampshire, Department of Plant Biology	April 2006
Marine Biological Lab, Woods Hole, MA	March 2006
Harvard University, Cambridge, MA	February 2006
Boston University, Department of Geography, Boston, MA	October 2005
United States Department of Agriculture, Davis, CA	April 2004
University of Pennsylvania, Department of Biology, Philadelphia, PA	April 2004
California State University, Department of Biology, Northridge, CA	February 2004
University of Granada, Department of Animal Biology and Ecology, Granada, Spain	November 2003
University of Calif, Dept of Ecology, Evolution, & Marine Biology, Santa Barbara, CA	February 2003

#### INVITED CONFERENCE LECTURES

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ILTER-Nitrogen Initiative International Training course titled “Long-term Trends in Nitrogen Cycles in Ecosystems, Field Monitoring and Global Comparisons” at Hokkaido University in Sapporo, Japan.	June 2016
Sustainability Science Symposium, John F. Kennedy School of Government, Harvard University. Cambridge, MA.	May 2016
Environmental History Working Group Panel on “Approaching the Anthropocene: Perspectives from the Humanities and the Sciences”, Harvard University, Cambridge, MA.	May 2016
Ecological Society of America, Annual Meeting in Baltimore, MD. Session titled “Using science-policy integration to improve ecosystem science to inform decision-making”	August 2015
Conference of the Northeastern Ecosystem Research Cooperative. Saratoga Springs, NY.	March 2015
University Massachusetts Boston, “Dimensions of Sustainability Winter Symposium”	December 2014
National Autonomous University of Mexico (UNAM), Institute of Ecology, “Frontiers in Ecology and Evolution” Symposium in Mexico City, Mexico.	October 2014
INTERFACE workshop on "Using results from global change experiments to inform land model development and calibration" in Beijing, China.	May 2014
Environmental Monitoring, Evaluation & Protection in New York: Linking Science and Policy Albany, NY	November 2013

New Hampshire Association of Natural Resource Scientists, Watershed Ecology Workshop	May 2013
Darwin Festival, Salem State University in Salem, MA.	February 2013
Eastern CANUSA Forest Science Conference in Durham, NH. Keynote address.	November 2012
National Atmospheric Deposition Program, Annual Meeting in Portland, ME.	October 2012
EUROSOIL 2012 in Bari, Italy. "Influence of tree species on forest soils."	July 2012
American Geophysical Union, Annual Meeting in San Francisco, CA. "Controls on nitrogen losses from managed landscapes."	December 2011
National Atmospheric Deposition Program, Annual Meeting in Providence, RI.	October 2011
CLIMMANI/INTERFACE joint workshop. "Nutrient constraints on the net carbon Balance" in Keflavik, Iceland.	June 2011
Symposium at the University of California Davis, "From Sources to Scapes: Contributions of Light Stable Isotopes to Environmental Sciences" in Davis, CA.	December 2010
Soil Science Society of America Meeting in Pittsburg, PA.	November 2009
Annual Meeting of the Ecological Society of Germany, Austria and Switzerland in Bayreuth, Germany.	September 2009

#### CONFERENCE ORGANIZING ACTIVITIES

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Invited member of Scientific Organizing Committee for "Acid Rain Conference" in Rochester, NY. October 2015.

Principal organizer of Organized Oral Session at the 100<sup>th</sup> Annual Meeting of the Ecological Society of America. Session titled "Effects of climate warming on aboveground-belowground feedbacks in terrestrial ecosystems." Baltimore Convention Center, USA. August 12, 2015.

Invited Session Chair, INTERFACE workshop on "Using results from global change experiments to inform land model development and calibration" in Beijing, China. May 2014.

Co-Principal organizer of working group titled "Advancing Understanding of Ecosystem Responses to Climate Change with Warming Experiments: What Have We Learned and What is Unknown?" John Wesley Powell Center for Synthesis and Analysis. Fort Collins, CO. May 2014 and 2015.

Invited Session Chair, National Atmospheric Deposition Program, Annual Meeting. Session titled "Cross-system interactions: linking the atmosphere to the biosphere." Renaissance Providence Hotel. Providence, RI. October 25-28, 2011.

Principal organizer of Organized Oral Session at the 96<sup>th</sup> Annual Meeting of the Ecological Society of America. Session titled "Multi-factor global change experiments: what have we learned about terrestrial carbon storage and exchange?" Austin Convention Center. Austin, TX. August 9, 2011.

Principal organizer of Organized Oral Session at the 94<sup>th</sup> Annual Meeting of the Ecological Society of America. Session titled "Effects of winter climate change and soil frost on carbon and nitrogen dynamics in terrestrial ecosystems." Albuquerque Convention Center, Albuquerque, NM, USA. August 7, 2009.

Invited member of National Science Foundation, Long Term Ecological Research – All Scientists Meeting Planning Committee. Meeting held in Estes Park, CO. September 14-16, 2009.

Principal organizer of Organized Oral Session at the 90<sup>th</sup> Annual Meeting of the Ecological Society of America. Session titled "Nitrogen cycling in terrestrial ecosystems: new insights from isotopes and experiments." Palais des congrès de Montréal, Montreal, Canada. August 5, 2005.

Principal organizer of National Center for Ecological Analysis and Synthesis Working group on "The fate of nitrogen inputs to terrestrial ecosystems." Working group met in 2005 in Santa Barbara, CA, USA and had 25 participants from 7 countries.

## CONFERENCE PRESENTATIONS SINCE ARRIVING AT BOSTON UNIVERSITY

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### CONTRIBUTED CONFERENCE LECTURES:

(\*graduate students; \*\*undergraduate students in Templer lab)

- Garcia MO, JM Talbot, PH Templer, P Sorensen\*, A Finzi, PM Groffman, L Rustad, and J Campbell. High throughput sequencing captures mycorrhizal responses to environmental change at Hubbard Brook Experimental Forest. Annual Meeting of the Ecological Society of America in Fort Lauderdale, FL. August 7-12 2016.
- Hutyra L, C Gately, S Decina\*, A Reinmann\*, PH Templer, T Nehrkorn, and S Wofsy. Attribution of urban greenhouse gas fluxes: Does the biosphere in cities matter? American Geophysical Union Fall Meeting. San Francisco, CA. December 14-18, 2015.
- Rustad L, H Asbjornsen, P Templer, K Jennings, A Reinmann\*, M Martin, and M Smith. Northern Forest Droughtnet: a new framework to understand impacts of precipitation change on the northern forest ecosystem. Soil Science Society of America Annual Meeting. November 15-18, 2015. Minneapolis, MN.
- Templer PH, G Lovett, KC Weathers, M Arthur, A Rodriguez, L Christenson, and CL Goodale. Effects of atmospheric deposition on nitrogen retention and carbon sequestration in temperate forest ecosystems. 9<sup>th</sup> International Acid Rain Conference, October 19-23, 2015. Rochester, NY.
- Templer PH, AR Reinmann\*, R Sanders-DeMott\*, and PO Sorensen\*. Effects of warmer temperatures and a reduced winter snowpack on water and carbon uptake in a northern hardwood forest. 100<sup>th</sup> Annual Meeting of the Ecological Society of America in Baltimore, MD. August 9-14, 2015.
- Sanders DeMott\* R and PH Templer. Effects of warmer temperatures and a smaller winter snowpack on nitrogen retention in a northern hardwood forest. 100<sup>th</sup> Annual Meeting of the Ecological Society of America in Baltimore, MD. August 9-14, 2015.
- Sorensen\* PO, PH Templer and AC Finzi. Increased freeze-thaw cycles in winter partially offsets stimulatory effects of growing season soil warming on microbial activity in northern hardwood forests. 100<sup>th</sup> Annual Meeting of the Ecological Society of America in Baltimore, MD. August 9-14, 2015.
- Asbjornsen H, L Rustad, PH Templer and K Jennings. Drought experiments in forest ecosystems: challenges and opportunities for standardization, cross-site comparison, and advancing climate change science. 100<sup>th</sup> Annual Meeting of the Ecological Society of America in Baltimore, MD. August 9-14, 2015.
- Templer, PH, AR Reinmann\*, R Sanders-DeMott\*, L Sofen and PO Sorensen\*. Effects of warmer growing season temperatures and a reduced winter snowpack on sap flow and carbon exchange in a northern hardwood forest. Hubbard Brook Annual Cooperators Meeting. North Woodstock, NH. July 8-9, 2015.
- Sanders-DeMott\* R and PH Templer. Effects of warmer temperatures and a smaller winter snowpack on nitrogen uptake and retention in a northern hardwood forest. Hubbard Brook Annual Cooperators Meeting. North Woodstock, NH. July 8-9, 2015.
- Sorensen\* P, PH Templer and A Finzi. Tree roots affect nitrification response to declining winter snowpack. Hubbard Brook Annual Cooperators Meeting. North Woodstock, NH. July 8-9, 2015.
- Templer PH, T Whitlow, R Pouyat, L Hutyra, S Decina\* and Y Harada. Creating a sub-network of National Atmospheric Deposition Program (NADP) monitoring stations in urban centers: test cases in New York City and Boston. April 13-16, 2016. NADP 2015 Spring Meeting. Pacific Grove, CA.
- Decina S\*, PH Templer and L Hutyra. Controls on the variability of nitrogen deposition and cycling within urban ecosystems. National Atmospheric Deposition Program in Indianapolis, IN. October 21-22, 2014.
- Sanders-Demott\*, R and PH Templer. Effects of climate change across seasons on ecosystem nitrogen retention and carbon uptake by maple saplings. 99<sup>th</sup> Annual Meeting of the Ecological Society of America in Sacramento, CA. August 10-15, 2014.

- Klimes P, P Templer and M Janda. Trophic ecology of canopy ant communities in a primary and secondary rainforest. 51<sup>st</sup> Annual Meeting of the Association for Tropical Biology and Conservation in Cairns, Australia. July 20-24, 2014.
- Templer, PH, P Rao, S Raciti, and L Hutyrá. Atmospheric nitrogen inputs and losses along an urbanization gradient from Boston to Harvard Forest, MA. American Geophysical Union in San Francisco, CA. December 9-13, 2013.
- Driscoll C, P Groffman, J Campbell, A Pourmokhtarian, PH Templer, T Fahey. Effects of changing climate on the structure and function of the Northern Forest: long-term measurements, experiments and future model projections from the Hubbard Brook Experimental Forest, New Hampshire, USA. International Symposium on Forest Soils, September 16-20, 2013 in Shenyang, China.
- Lovett, GM, MA Arthur, KC Weathers, RD Fitzhugh, and PH Templer. Nitrogen addition increases carbon storage in soils, but not in trees, in an eastern U.S. deciduous forest. 98<sup>th</sup> Annual Meeting of the Ecological Society of America in Minneapolis, MN. August 4-9, 2013.
- Reinmann AB\* and PH Templer. Effects of winter climate on growing season fluxes of CO<sub>2</sub> from tree stems in a mixed hardwood forest: implications for carbon storage. 98<sup>th</sup> Annual Meeting of the Ecological Society of America in Minneapolis, MN. August 4-9, 2013.
- Castillo A\*\*, R Sanders-Demott\*, and PH Templer. Nutrient dynamics in a world with less snow: nitrogen uptake by trees. 98<sup>th</sup> Annual Meeting of the Ecological Society of America in Minneapolis, MN. August 4-9, 2013.
- Rodriguez A, GM Lovett, KC Weathers, MA Arthur, PH Templer, CL Goodale and LM Christenson. Papel de las especies y de la deposición de nitrógeno en la estabilización de carbono en suelos de bosques frondosos del norte de Estados Unidos. XI Congreso Nacional de la Asociación Española de Ecología Terrestre in Pamplona-Iruña, Spain. May 6-10, 2013.
- Templer, PH, P Rao, S Raciti, and L Hutyrá. Atmospheric nitrogen inputs and losses along an urbanization gradient from Boston to Harvard Forest, MA. Northeastern Ecosystem Research Cooperative Meeting in Saratoga Springs, NY. March 19-20, 2013.
- Reinmann AB\* and PH Templer. Effects of winter climate change on stem and belowground carbon dioxide efflux in a mixed-hardwood forest". Northeastern Ecosystem Research Cooperative Meeting in Saratoga Springs, NY. March 19-20, 2013 (talk).
- Reinmann AB\* and PH Templer. Effects of changes in winter snowpack on above- and belowground carbon fluxes in a mixed-hardwood forest. 97<sup>th</sup> Annual Meeting of the Ecological Society of America in Portland, OR. August 5-10, 2012.
- Rodriguez A, G Lovett, K Weathers, M Arthur, P Templer, C Goodale, and L Christenson. Heterotrophic respiration in northern hardwood forest soils after 14 years of N addition. 97<sup>th</sup> Annual Meeting of the Ecological Society of America in Portland, OR. August 5-10, 2012.
- Lovett GM, MA Arthur, KC Weathers, RD Fitzhugh and PH Templer. Nitrogen addition increases carbon storage in soils, but not in trees, in forests of the Catskill Mountains, New York, USA. BIOGEMON 2012: the 7<sup>th</sup> International Symposium on Ecosystem Behavior in Northport, Maine. July 15-20, 2012.
- Templer PH. Interactive effects of climate change across seasons: A new warming experiment at Hubbard Brook. Hubbard Brook Annual Cooperators Meeting. North Woodstock, NH. July 11-12, 2012.
- Wallin KF, JL Campbell, DP Comerford, LS Maroja, PG Schaberg, AM Soggi\*, PH Templer and HD Yurchenco. 2012. Influence of a smaller winter snowpack and understory vegetation removal on the biodiversity ground dwelling insect and snail populations in a northern hardwood forest. Hubbard Brook Annual Cooperators Meeting. North Woodstock, NH. July 11-12, 2012.

- Schaberg P, DP Comerford, PH Templer, AM Socci\*, JL Campbell, and KF Wallin. Experimental snow removal alters root and canopy physiology of sugar maple trees at the Hubbard Brook Experimental Forest. Hubbard Brook Annual Cooperators Meeting. North Woodstock, NH. July 11-12, 2012.
- Templer PH, NG Phillips, M Friedl, and AB Reinmann\*. Effects of changes in the winter snowpack on water and carbon fluxes in a temperate hardwood forest. 30<sup>th</sup> Conference on Agricultural and Forest Meteorology/First Conference on Atmospheric Biogeosciences in Boston, MA. May 29-June 1, 2012. (Talk)
- Thomas RQ, S Zaehle, PH Templer, and CL Goodale. An inter-comparison of nitrogen limitation in global land surface models with carbon and nitrogen cycles (CLM-CN and O-CN). American Geophysical Union Annual Meeting. San Francisco, CA. December 5-9, 2011.
- Templer PH, N Phillips, and M Friedl. Effects of winter climate change on water and carbon dynamics in a northern hardwood forest. 96<sup>th</sup> Annual Meeting of the Ecological Society of America in Austin, TX. August 7-12, 2011.
- Reinmann AB\* and PH Templer. Impacts of a reduced winter snowpack on soil respiration in a mixed-deciduous northern forest. 96<sup>th</sup> Annual Meeting of the Ecological Society of America in Austin, TX. August 7-12, 2011.
- Ewing HA, KC Weathers, PH Templer, TE Dawson, MK Firestone, AE Lindsay, and VKS Boukili. Fog gradients: inputs and edge effects from canopy to soil in a California redwood forest. Coast Redwood Forests in a Changing California in Santa Cruz, CA. June 21-June 23, 2011.
- Socci AM\* and PH Templer. Impact of soil frost on above- and belowground nitrogen dynamics in sugar maple (*Acer saccharum* Marsh.) trees. Northeastern Ecosystem Research Cooperative Annual Meeting. Saratoga Springs, NY. November 8-10, 2010.
- Templer PH and AM Socci\*. Winter climate change and the effect of soil frost on nitrogen uptake by mature trees in a northern hardwood forest of the United States. Ecological Society of America 95<sup>th</sup> Annual Meeting in Pittsburgh, PA, USA. August 1-6, 2010.
- Reinmann\* AB, JL Campbell and PH Templer. Winter Climate Change and the Legacy Effect of Soil Frost on Carbon and Nitrogen Fluxes from Northern Forest Soils: A Microcosm Study. Ecological Society of America 95<sup>th</sup> Annual Meeting in Pittsburgh, PA, USA. August 1-6, 2010.
- Schiller A\*\*, T Kunz, N Fuller and PH Templer. Impact of winter climate change on soil arthropod populations in northern hardwood forests. Hubbard Brook Experimental Forest Annual Cooperators Meeting. North Woodstock, NH. July 7-8, 2010.
- Socci AM\* and PH Templer. Fine root nitrogen uptake by sugar maple following two years of induced soil frost. Hubbard Brook Experimental Forest Annual Cooperators Meeting. North Woodstock, NH. July 7-8, 2010.
- Campbell JL, PH Templer and AB Reinmann\*. Evaluation of soil freezing on the quantity and source of carbon and nitrogen in leachate during snowmelt. 67<sup>th</sup> Eastern Snow Conference in Jiminy Peak Mountain Resort, Hancock, MA, June 8-10, 2010.
- Templer PH, J Campbell, AB Reinmann\* and AM Socci\*. Effects of winter climate change and soil frost on forest nutrient retention and productivity in northeastern U.S. forest ecosystems. Ecological Society of America Annual Meeting, Albuquerque Convention Center, Albuquerque, NM, USA. August 2-7, 2009.
- Reinmann A\*, PH Templer and J Campbell. Effects of soil freezing on fluxes of carbon and nitrogen from northern forests during snowmelt: a microcosm study. Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 7-8, 2009.
- Templer PH. Impacts of winter climate change on plant dynamics. Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 7-8, 2009.

- Templer PH and M Mack. The fate of nitrogen inputs to terrestrial ecosystems: a cross-site analysis of enriched isotope studies. Northeastern Ecosystem Research Cooperative meeting. New England Center. Durham, NH, USA. November 12-13, 2008.
- PH Templer, LH Pardo, S Wheatley\*\*, M Rolph\*\*, C McLaurin\*\*, T Siccama, and T Fahey.  $\delta^{15}\text{N}$  Nitrogen in tree rings of temperate forest trees: Indicators of past disturbance. Ecological Society of America, Annual Meeting. Midwest Airlines Center, Milwaukee, WI, USA. August 3-8, 2008.
- Templer PH. Potential impacts of winter climate change on forest nutrient retention, phenology and productivity in northern forest ecosystems. Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 8-9, 2008.
- Socci AM\* and PH Templer. Comparing measures of nutrient uptake by fine roots of mature trees: Applications for climate change research. Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 8-9, 2008.
- Boukili VKS, KC Weathers, HA Ewing, PH Templer, MK Firestone, TE Dawson. Variations in coastal redwood forest decomposition and productivity along an environmental gradient. Ecological Society of America Meeting, San Jose McEnery Convention Center, San Jose, CA, August 5-10, 2007.
- Pett-Ridge J, PH Templer, E Dubinsky, WL Silver, and MK Firestone. Microbes on the redox ladder: Community and trace gas dynamics ( $\text{H}_2$ ,  $\text{O}_2$ ,  $\text{CO}_2$ ,  $\text{N}_2\text{O}$ ,  $\text{CH}_4$ ,  $\text{CO}$ ) in a highly variable wet tropical soil. Ecological Society of America Meeting, San Jose McEnery Convention Center, San Jose, CA, August 5-10, 2007.
- Templer PH. Potential impacts of winter climate change on growing season plant nutrient uptake and productivity in northern forest ecosystems. Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 10-11, 2007.
- Campbell J, S Ollinger, H Wicklein, A Bailey and PH Templer. Predicting soil frost responses to climate change and variability. Hubbard Brook Experimental Forest Annual Cooperators Meeting, Woodstock, NH, USA. July 10-11, 2007.
- Rolph\*\* M, PH Templer and L Pardo. 2007. Tree ring  $\delta^{15}\text{N}$ : potential indicators of air pollution impacts on hardwood species of the northeastern United States. Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 10-11, 2007.
- Huygens D\*, P Boeckx, R Godoy, PH Templer, L Paulino, C Oyarzún and O Van Cleemput. A  $^{15}\text{N}$  Pulse Chase Study in a Remote South Chilean Pristine Forest Soil.  $^{15}\text{N}$  Nitrogen Workshop. Towards a better efficiency in N use. Lleida, Spain. May 28-30, 2007.
- Pardo LH, PH Templer and T Fahey. Species differences in root and foliar  $\delta^{15}\text{N}$ : causes and implications. Ecological Society of America Annual Meeting, Cook Convention Center, Memphis, TN, USA. August 6-11, 2006.
- Templer PH and LH Pardo. Uptake of nitrogen by sugar maple and beech trees: does calcium availability matter? Hubbard Brook Experimental Forest Annual Cooperators Meeting. Woodstock, NH, USA. July 11, 2006.
- Pardo LH, PH Templer and T Fahey. Species differences in root and foliar  $\delta^{15}\text{N}$ : causes and implications. Biogeomon. University of California Santa Cruz, Santa Cruz, CA, USA. June 25-30, 2006.
- Templer PH, G Lovett, K Weathers, S Findlay, T Dawson and M Arthur. Effect of tree species and nitrogen fertilization on nitrogen retention in the Catskill Mountains, New York. Ecological Society of America Annual Meeting, Palais des congrès de Montréal, Montreal, Canada. August 7-12, 2005.