

Nathan G. Phillips

Associate Professor, Boston University, Department of Geography and Environment
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- EDUCATION** PhD, Duke University, School of the Environment 1997
BS, Physics, California State University, Sacramento 1989
- APPOINTMENTS** Associate Professor, Boston University, Dept. of Geography/Envt, Fall 2006- present
Director, Center for Energy and Environmental Studies, Boston University, 2009-present
Associate Chair, Boston University, Dept. of Geography/Envt, Fall 2005 – 2009
Assistant Professor, Boston University, Dept. of Geography/Envt, Fall 2000 – Fall 2006
Director of Undergraduate Studies, Geography Department and Center for Energy and Environmental Studies, Boston University 2002-2004.
Postdoc, Oregon State University, Forest Science Department, 1998-2000
- RESEARCH KEYWORDS** Plant physiological ecology, global change biology, ecohydrology, tree physiology, canopy science, urban metabolism, sustainability science.
- TEACHING** *Instruction:* Responsible for three standard courses per academic year. Courses include Plant Physiological Ecology (graduate), Physical Principles of the Environment (senior undergraduate-to-masters); Biogeography (upper division undergraduate); Biodiversity (Freshman Core Curriculum). Developed three new courses (Plant Physiological Ecology, Biodiversity, and Advanced Environmental Field Methods)
- Graduate Advising:* Michael Daley, Ph.D. (1st reader, 2006), BU, Cory Pettijohn, Ph.D. (co-1st reader, 2007), BU, Heidi Renninger, Ph.D. (1st reader, current), BU, and participation in eleven additional completed and/or continuing graduate committees.
- Undergraduate Advising:* Director of Undergraduate Studies (2002-2004), responsible for oversight of four undergraduate majors (Physical Geography, Human Geography, Environmental Science, Environmental Analysis and Policy), comprising approximately 100 students.
- GRANTS AND ASSOCIATIONS** *Principal investigator*, Metabolism of Boston, Urban Long Term Research Area Exploratory Award (ULTRA-ex), NSF, 2009-12 \$300k
Principal investigator, Environmental Data Acquisition and Communications Improvements at Sargent Center, New Hampshire. National Science Foundation (NSF), 2002-06; \$116k
Principal investigator, Vegetation control of Ecohydrologic Processes. NSF, 2003-07 \$338k
Principal investigator, Palms: a model system for investigating hydraulic costs of tree height. NSF, 2005-2009 \$291k
Co-Principal investigator, NeTS - NOSS: Semantic Internetworking of Sensor Systems for Efficient In-Network Information Processing, NSF, 2005-06 \$250k
Co-Principal investigator, Productivity of Eucalyptus in past and future climates – a novel approach to understanding environmental impacts on tree growth, Australian Research Council, 2008-2010 AUD\$300k
Co-Principal investigator, NSFGK-12 Graduate STEM Fellows in K-12 Education GLACIER-Global Change_cr_Initiative-Education & Research, NSF, 2010-2015, \$3.0M
- Past Member*, Ecological Society of America, American Geophysical Union
Chair (since 2007) International Union of Forest Research Organizations, Canopy Processes Working Group.
Editorial Review Board: *Tree Physiology*.

PEER-REVIEWED PUBLICATIONS

Ghannoum O, Phillips N, Conroy J, Smith R, Attard R, Woodfield R, Logan B, Lewis J, Tissue D (2010) Exposure to pre-industrial, current and future atmospheric [CO₂] and temperature differentially affects growth and photosynthesis in Eucalyptus. *Global Change Biology* (in press)

Phillips N, Lewis J, Logan B, Tissue D (2010) Inter- and Intra-specific variation in nocturnal water transport in *Eucalyptus*. *Tree Physiology* (in press)

Renninger, H.J., Phillips, N., and G.D. Salvucci. 2010. Wet versus Dry-season Transpiration in an Amazonian Rainforest Palm, *Iriartea deltoidea*. *Biotropica*. (In press).

Renninger HJ, Phillips N, Hodel DR (2009) Comparative hydraulic and anatomic properties in palm trees (*Washingtonia robusta*) of varying heights: Implications for hydraulic limitation to increased height growth *Trees: Structure and Function* 23:911-921.

Pettijohn JC, Salvucci GD, Phillips NG, Daley M. (2009) Mechanisms of moisture stress in a mid-latitude temperature forest: implications for feedforward and feedback controls from an irrigation experiment, *Ecological Modelling* (in press).

Chu CR, Hsieh CI, Wu S-Y, Phillips NG (2008) Transient response of sap flow to wind speed. *Journal of Experimental Botany* 60:249–255.

Phillips N, Buckley TN, Tissue DT (2008) Capacity of old trees to respond to environmental change. *Journal of Integrative Plant Biology* 50:1355–1364.

Phillips N, Scholz FG, Bucci SJ, Goldstein G, Meinzer FC (2008) Using branch and basal trunk sap flow measurements to estimate whole-plant water capacitance: comment on Burgess and Dawson (2008). *Plant and Soil* 315:315-324.

Daley MJ, Phillips N, Pettijohn JC, Hadley J (2008) Hydraulic responses to environmental perturbations in *Tsuga canadensis* and *Betula lenta*. *Tree Physiology* 28: 1341-1348.

Hadley JL, Kuzeja PS, Daley MJ, Phillips N, Mulcahy T, Singh S (2008) Water use and carbon exchange of eastern hemlock (*Tsuga canadensis* L.) and deciduous forests in the northeastern US: Implications for ecosystem-level effects of the hemlock woolly adelgid. *Tree Physiology* 28:615-627.

Sevanto S, Nikinmaa E, Riikonen A, Daley MJ, Pettijohn C, Mikkelsen TN, Phillips N, Holbrook NM (2008) Linking xylem diameter variations with sap flow measurements" *Plant and Soil* 305:77-90.

Daley MJ, Phillips N, Pettijohn JC, Hadley J (2007) Ecohydrological impacts of the invasive pest, hemlock woolly adelgid. *Canadian Journal of Forest Research* 37: 2031-2040.

Ford CR, Vose JM, Daley MJ, Phillips N (2007) Eastern hemlock water use: implications for systemic insecticide application. *Arboriculture and Urban Forestry* 33:421-427.

Cermak J, Kucera J, Bauerle W, Phillips N, Hinckley T (2007) Tree water storage and its diurnal dynamics related to sap flow and changes in stem volume in old-growth Douglas-fir trees. *Tree Physiology* 27:181–198.

Wang Y, Anderson BT, Phillips N, Kaufmann RK, Myneni RB (2006) Feedbacks of Vegetation on Summertime Climate Variability over the North American Grasslands. Part I: Statistical Analysis. *Earth Interactions*. *Earth Interactions* 10: Art. No. 17

Daley M, Phillips N (2006) Interspecific variation in nighttime transpiration and stomatal conductance in a mixed New England deciduous forest. *Tree Physiology* 26:411–419

- Ryan M, Phillips N, Bond B** (2006) The hydraulic limitation hypothesis revisited. *Plant, Cell, Env* 29:367-381
- Chuang Y, Oren R, Bertozzi AL, Phillips N, Katul GG** (2006). The porous media model for the hydraulic system of a tree: from sap flux data to transpiration rate. *Ecological Modeling* 191:447-468.
- Phillips N, Salvucci GD, Pettijohn JC** (2005) Comments on "On the Construction and Calibration of Dual-Probe Heat Capacity Sensors". *Soil Science Society of America Journal* 69:1666.
- Phillips N, Oren R, Licata J, Linder S** (2004) Time series diagnosis of tree hydraulic characteristics. *Tree Physiology* 24:879–890.
- Unsworth M, Phillips N, Link T, Bond B, Paw U, KT, Harmon M.** (2004) Components and controls on water flux in an old growth Douglas-fir forest. *Ecosystems* 7:468-481.
- Winner WE, Berry J, Bond BJ, Cooper C, Hinckley TM, Ehleringer J, Fessenden J, Lamb B, McCarthy S, McDowell N, Phillips N, Thomas SC, Williams M.** (2004) Canopy carbon gain and water use: Analysis of old growth conifers in the Pacific Northwest. *Ecosystems*. 7:482–497.
- Moore GW, Bond BJ, Jones JA, Phillips N, Meinzer FC.** (2004) Structural and compositional controls on transpiration between 40- and 450- year-old riparian forests in Western Oregon, USA. *Tree Physiology* 24:481-491.
- Phillips N, McDowell N, Bond B, Ryan M.** (2003) Hydraulic constraints to carbon gain in Oregon White oak trees. *Functional Ecology* 17:832-840.
- Phillips N, Ryan M, Bond B, McDowell N, Hinckley T, Cermak J.** (2003) Reliance on stored water increases with tree size in three species in the Pacific Northwest. *Tree Physiology* 23:237-245.
- Graham EA, Mulkey SS, Kitajima K, Phillips N, Wright SJ** (2003) Cloud cover limits net CO₂ uptake and growth of a rainforest tree during tropical rainy seasons. *Proceedings of the National Academy of Sciences* 100:572-576.
- Brooks JR, Schulte PJ, Bond BJ, Coulombe R, Domec J-C, Hinckley TM, McDowell N, Phillips N** (2003) Does foliage on the same branch compete for the same water? Experiments on Douglas-fir trees. *Trees* 17: 101-108.
- McDowell N, Phillips N, Lunch C, Bond BJ, Ryan MG.** (2002) Hydraulic limitation and compensation in large, old Douglas-fir. *Tree Physiology* 22:763-774.
- Bond, BJ, Jones J, Moore G, Phillips N, Post D, McDonnel J.** (2002). The zone of vegetation influence on baseflow revealed by diel patterns of streamflow and vegetation water use in a headwater basin. *Hydrological Processes* 16:1671-1677.
- McDowell N, Barnard H, Bond BJ, Hinckley TM, Hubbard R, Ishii H, Kostner B, Meinzer FC, Marshall JD, Magnani F, Phillips N, Ryan MG, Whitehead D.** (2002) The relationship between tree height and leaf area: sapwood area ratio. *Oecologia* 132:12-20.
- Phillips N, Bond B, Ryan M, McDowell N.** (2002) Canopy and hydraulic conductance in young, mature, and old-growth Douglas-fir *Tree Physiology* 22:205-211.
- Chen J, Falk M, Euskirchen E, Kyaw Tha Paw U, Suchanek T, Ustin S, Bond BJ, Phillips N, Brosofske KD.** (2002) Biophysical Controls of Carbon Flows in Three Successional Douglas-fir Stands Based upon Eddy-Covariance Measurements *Tree Physiology* 22:169-177.

Oren R, Ellsworth DS, Johnsen KH, Phillips N, Ewers BE, Maier C, Schafer KVR, McCarthy H, Hendrey G, McNulty SG, Katul GG. (2001) Soil fertility limits carbon sequestration by forest ecosystems in a CO₂-enriched atmosphere. *Nature* 411:469-472.

Phillips N, Bond BJ, Ryan MG (2001) Interaction of hydraulic properties and gas exchange in tree crowns in a Panamanian moist forest. *Trees: Structure and Function*, 15(2):123-130.

Phillips N, Bergh J, Oren R, Linder S. (2001) Effects of Nutrition and Soil Water Availability on Water Use in a Norway Spruce Forest. *Tree Physiology* 21: 851-860.

Phillips N, Oren R (2001) Intra- and inter-annual variation in transpiration of a pine forest in relation to environmental variability and canopy development. *Ecological Applications* 11(2):385-396.

Ewers B, Oren R, Phillips N, Stromgren M, Linder S. (2001) Effects of water and nutrient availability on mean canopy stomatal conductance response to environmental variation in *Picea abies* and *Pinus taeda* *Tree Physiology* 21:841-850.

Oren R, Sperry JS, Ewers BE, Pataki DE, Phillips N, Megonigal JP (2001) Sensitivity of mean stomatal conductance to vapor pressure deficit in a flooded *Taxodium distichum* L. forest: hydraulic and non-hydraulic effects. *Oecologia* 126:21-29.

Oren R., Sperry J.S., Katul G.G., Pataki D.E., Ewers B.E., Phillips N., & Schäfer K.V.R. (1999) Survey and synthesis of intra- and interspecific variation in stomatal sensitivity to vapour pressure deficit. *Plant, Cell and Environment* 22:1515-1526.

Phillips N, Oren R, Zimmermann R, Wright SJ (1999) Temporal patterns of water flux in trees and lianas in a Panamanian moist forest. *Trees: Structure and Function* 14:116-123.

Oren R, Phillips N, Ewers B, Pataki D, Megonigal J (1999) Sap flux-scaled transpiration responses to light, vapor pressure deficit, and leaf area reduction in a flooded *Taxodium distichum* forest. *Tree Physiology* 19:337-347.

Phillips N, Bond BJ (1999) A micro-power precision amplifier for converting the output of light sensors to a voltage readable by miniature data loggers. *Tree Physiology* 19:547-549.

Oren R, Phillips N, Katul G, Ewers B, Pataki D (1998) Scaling xylem sap flux and soil water balance, and calculating variance: a method for partitioning water flux in forests. *Annales des Sciences Forestières* 55: 191-216.

Phillips N, Oren R (1998) A comparison of daily representations of canopy conductance based on two conditional time averaging methods. *Annales des Sciences Forestières* 55:217-235.

Oren R, Ewers B, Phillips N, Todd P, Katul G (1998) Water balance delineates the soil layer in which moisture affects canopy conductance. *Ecological Applications* 8:990-1002.

Pataki D, Oren R, Phillips N (1998) Responses of sap flux and stomatal conductance of *Pinus taeda* L. trees to stepwise reductions in leaf area. *Journal of Experimental Botany* 49: 871-878.

Katul G, Oren R, Ellsworth D, Hsieh C, Phillips N (1997) A Lagrangian dispersion model for predicting CO₂ sources, sinks and fluxes in a uniform loblolly pine stand. *Journal of Geophysical Research* 102(D8):9309-9321.

Phillips N, Nagchaudhuri A, Oren R, Katul G (1997) Time constant for water transport in loblolly pine trees estimated from time series of evaporative demand and stem sapflow. *Trees: Structure and Function* 11(7): 412-419.

Phillips N, Oren R, Zimmermann R (1996) Radial trends in xylem sap flow in non-, diffuse- and ring-porous species. *Plant, Cell and Environment* 19:983-990.

Katul G, Hsieh C-I, Oren R, Ellsworth D, Phillips N (1996) Latent and Sensible Heat Flux Predictions from Uniform Forests using Surface Renewal and Flux Variance Methods. *Boundary Layer Meteorology* 80:249-282.

Ellsworth D, Oren R, Huang C, Phillips N, Hendry G (1995) Leaf and canopy responses to elevated CO₂ in a pine forest using a free-air CO₂ enrichment technique. *Oecologia* 104:139-146.

GUEST EDITOR FOR SPECIAL JOURNAL ISSUES

Whitehead D, Phillips N, Lewis JD, Hollinger D, Ryan M, eds (2008) Regional Forest Responses to Environmental Change. *Tree Physiology*, Vol. 28 (April, 2008). (Based on an IUFRO Canopy Processes Traveling Workshop organized by Phillips)

Phillips N, Barbour M, Dawson T, eds (2007) Casting light on Nocturnal Stomatal Conductance. *Tree Physiology*, Vol. 27. (April, 2007).

Meinzer FC, Goldstein G, Phillips N, eds. (2004) Water Uptake and Transport in Trees. *Tree Physiology*, Vol. 24.

OTHER PUBLICATIONS:

Billings S, Phillips N (2010) Forest Biogeochemistry and Drought. (Springer book chapter, in review).

Phillips N, Renninger H, Tissue D, Friedl M (2009) Forest tree development, phenology, and climate change: an under-explored research intersection. *AsiaFlux Newsletter*. 28:18-22

Phillips N (2006). Regional Forest Responses to Environmental Change. Scientific Program and Abstracts for 2006 International Union of Forest Research Organizations, Canopy Processes Working Group. October 6-13, 2006. On-line at: <http://people.bu.edu/nathan/schedulea.pdf>

Phillips N Earth's Entropy (2004) *Science* (Letter to Editor) 306:1681-1683.

Pence DV, Reyes JN, Jr., Phillips N, Wu Q, Groome JT (2004). Multiscale transport apparatus and methods. United States Patent No. US 6,688,381 B2. (Awarded Feb. 10, 2004).

PUBLISHED ABSTRACTS PRESENTED AT PROFESSIONAL MEETINGS

Phillips N (2009) "The Role of Canopy Ecophysiology in Sustainability Science" at the 5th International Canopy Conference, Bangalore, India, Oct 25-31, 2009. (personally recruited 7 speakers, raised support funds, and organized session)

Phillips N, Newell J, Friedl M, Hutya L, Gopal S (2009) Satellite-Based Estimation of Urban Vegetation Carbon Exchange. Published Abstract from the 5th International Canopy Conference, Bangalore, Oct 25-31, 2009.

Phillips N, Barbour M, Tissue D, Tyerman S, Payton P, Buckley T (April 4, 2008) Do Aquaporins Fractionate Water Isotopes?. Talk presented "Stable Isotopes as tools to explore CO₂ and water exchange of plants, soils and ecosystems" Symposium, Sydney University

Phillips N, Linder S, Oren R (October 2006) Nocturnal Transpiration in Norway Spruce Trees is Consistent with the Nutrient Supply Hypothesis. (Poster presentation at the International Union of Forest Research Organizations Canopy Processes Workshop, Oct. 6-13, 2006).

Phillips N, Barbour M (August 2005). Casting light on nocturnal stomatal and canopy conductance. Ecological Society of America 2005 meeting, Montreal, Canada. (Organized oral session organized by Phillips and Barbour).

Phillips N, Daley M (May 2005). Defining an eco-hydrograph. Invited talk at American Geophysical Union meeting, organized session entitled "Measurement and Monitoring Methods in Ecohydrology", New Orleans, LA.

Phillips N, Daley M (February 2005) Dynamic coupling of stomata and tree hydraulics. 16th Annual Long Term Ecological Research Symposium and National Institutes for Global Environmental Change Meeting at Harvard Forest, Petersham, Massachusetts.

Phillips N, Daley M, Friedl M, Salvucci GD (August, 2004). Coupling stomatal and hydraulic dynamics to predict whole tree water flux. Ecological Society of America 2004 meeting, Portland, Oregon.

Phillips N, Daley M (February 2004) Vegetation control of Ecohydrologic Processes. Long Term Ecological Research Symposium and National Institutes for Global Environmental Change Meeting at Harvard Forest, Petersham, Massachusetts.

Phillips N (June 2002) Assessment of techniques for characterizing whole-tree water use using sap flux sensors. 3rd International Canopy Conference, co-sponsored by the Smithsonian Institution and the Queensland Government, Cairns, Australia (abstract published on-line).

Phillips N, Bond B, McDowell N, Ryan MG, Schauer A (July 2001) Testing for hydraulic limitation in drought tolerant Oregon white oak. International Union of Forestry Research Organizations, "Linking the Complexity of Forest Canopies to Ecosystem and Landscape Function", traveling workshop.

Phillips N, Bond B, Ryan M, McDowell N, Schauer A (August 2000) Hydraulic resistance and capacitance as a function of tree size. Ecological Society of America, Annual Meeting, Snow Bird, Utah

Phillips N, Bond B, McDowell N, Schauer A, Ryan M. (Invited talk, May 2000) Can storage in tall trees overcome hydraulic limitations to forest transpiration? American Geophysical Union, Spring Meeting, Washington, DC.

Phillips, N, Bond B, Ryan M, McDowell N, Paw U, KT, Chen J (1999) Scaling water use of 20, 40 and 500 year old Douglas-fir trees to the forest level and comparison with eddy covariance estimates. American Geophysical Union, Fall Meeting, San Francisco, CA.

Phillips N, Bond B, Ryan M, McDowell N, Watrud E (1999) Do hydraulic constraints in tall trees affect crown gas exchange? Ecological Society of America, Annual Meeting, Spokane, WA.

Phillips N, Oren R (1997) A comparison of daily representations of canopy conductance based on two conditional time-averaging methods. American Geophysical Union Bulletin, Spring 1997, Baltimore, MD.

Phillips N, Oren R (1997) A comparison of daily representations of canopy conductance based on two conditional time-averaging methods, and the dependence of daily conductance on environmental factors. Ecological Society of America, Annual Meeting, Albuquerque, NM.

Phillips N, Oren R, Pataki D (1996). Effects of elevated CO₂ on transpiration and growth in a pine forest. Ecological Society of America Bulletin, Summer 1996.

Phillips N, Oren R (1995). Scaling radial sap flow measurements in loblolly pine to the stand level. American Geophysical Union Bulletin, Spring 1995, Baltimore, MD. p S126.

Phillips N, Oren R (1995). Radial trends in xylem sap flux density in loblolly pine, sweetgum and white oak. Ecological Society of America Bulletin, Summer 1995.

INVITED SEMINARS

Taiwan National University (October 8, 2009). "Urban Metabolism of Boston: Integrating carbon exchanges of human and natural systems"

University of Antwerp (August 24, 2009). Nocturnal water transport in trees.

International Institute for Geo-Information Science and Earth Observation (August 17, 2009) Urban Metabolism of Boston. Enschede, Netherlands.

Boston University (September 30, 2008). Off the grid, and feeding the grid, at BU. Special Seminar for the BU Energy Club.

University of New South Wales (March 20, 2008) Do trees sleep at night? School of Biological, Earth and Environmental Sciences.

Sydney University (May 16, 2008). Nocturnal transpiration in Eucalyptus trees. School of Biological Sciences

University of Western Sydney (February 13, 2008) Nocturnal transpiration in Eucalyptus trees. UWS Staff Research Futures Forum.

Arnold Arboretum, Boston, MA (June 4, 2007). "How Tall? Trees and Their Limits."

Wind River Canopy Crane Research Facility (June 2007) "Tree to Forest Water Flux: From Observation to Manipulation".

Fordham University, Department of Biological Sciences (April 2006). "Vegetation Control of Ecohydrologic Processes"

Los Alamos National Laboratory, Environmental Earth Sciences Division (February 2006). "New Directions in Eco-Hydrology: Nano-scale Biological Control of Ecosystem Scale Water Fluxes"

Harvard University, Herbarium Seminar Series (April 2005). "Vegetation Hydrodynamics: from trees to watersheds".

Montclair State University, College of Science Seminar Series (April 2005) "Problems of and solutions to transporting water in tall trees"

Ohio University, Athens, Ohio, Biology Department Seminar Series (February 2005). "Problems of and solutions to transporting water in tall trees: new developments"

California State University, Sacramento, Physics Department Alumni Honors Seminar (November 2004). "What determines the maximum height of trees? Physical and Biological Factors"

University of Georgia, Athens (May, 2004). "Hydraulic consequences of tree size: recent findings and potential impacts of a changing climate".

LandCare Research, Lincoln New Zealand (March, 2004) "From hydraulic to hydrologic control of water flux in trees and forests: a review". Special Seminar supported by US-New Zealand Bi-lateral International Science and Technology (ISAT) funds.

Texas Tech University, Lubbock (February 2003) "Tradeoffs of water for carbon in tall trees"

Harvard University, Harvard Forest (October 2002) "Status of the Hydraulic Limitation Hypothesis after Five Years.

Third International Canopy Conference, Cairns, Australia (June, 2002; co-sponsored by the Smithsonian Institute and the Queensland Government). Methods, pitfalls and mathematical modeling of tree water transport.

Wood's Hole Marine Biological Laboratory (January 2001) "How water controls tree size and form"

Harvard University, Harvard Forest (May 2001) "Can we predict the maximum height of trees?"

University of Massachusetts, Amherst (November 2000) "The carbon-water tradeoff in tall statured vegetation"

Boston University, Geography Dept. (February 2000) "Biophysical controls on land-atmosphere exchanges: from stomate to landscape"

Furman University, Biology Dept. (January 2000) "Investigating tradeoffs in resource use by plants, forests and the biosphere"

UNIVERSITY AND COMMUNITY SERVICE

Panel Discussion Member, Slow Food Boston, 3rd Annual Film Festival (Jan. 17, 2010), Boston, MA

Principal organizer and coordinator: International Union of Forest Research Organizations, Canopy Processes Workshop, Oct. 6-13, 2006, Northeastern USA (http://people.bu.edu/nathan/iufro_info.htm)

Upward Bound and Boston Public Schools Collaborative. Mentored four high school students who will be first in their families to attend college. 2003-2004

Boston University Academy. Mentored two high school students on senior honor's theses. 2004-2005

Boston University's Learning Resource Network (LERNet), GK12 Project STAMP (National Science Foundation Funding). Designed environmental education activities for middle-school students at Sargent Center for Outdoor Education (to be implemented Summer 2005), and Global Positioning System workshop for middle school teachers at Harvard University's Arnold Arboretum (completed spring, 2004).

Directed Study and Work for Distinction advising for Boston University undergraduate students. 2001-2004

Principal Faculty Advisor, Boston University Pugwash. This is an outstanding student chapter of Pugwash International, a group dedicated to the socially responsible use of technology and science. 2003-2004.

Member of Boston University, Biology Department Environmental Ecologist Faculty Search Committee, 2004.

Founder, BostonCarbon.org (public platform for Boston carbon footprint analysis)

Committee Member, Green Decade/Newton Transportation Committee

Committee Member, Boston University Energy Sustainability Committee

Co-Director, BikeNewton.org, Newton, MA bike safety advocacy group

Editorial Board, Tree Physiology (International, peer-reviewed journal)

Sustainable Transportation Blogger, <http://newtonstreets.blogspot.com/>

Member, Livable Streets Alliance, MassBike

HONORS, AWARDS, AND SPECIAL RECOGNITION

Honored Inventor, Office of Technology Transfer, Oregon State University (Award Ceremony Scheduled for June 2005). For: Multiscale transport apparatus and methods. United States Patent No. US 6,688,381 B2. (Awarded Feb. 10, 2004).

Outstanding Alumni Award, California State University, Sacramento, Physics Department 2004-2005.

Zero Carbon Office at Boston University: Appeared in the Boston Globe, Fox25 News (Boston Fox Affiliate), "Living on Earth" National Public Radio radio show, Boston Chronicle (Channel 5), CFRB (1010AM) Toronto news radio; and Boston University's Daily Free Press, for my zero carbon office (solar and bicycle powered).