

Karina Vera Rosa Schäfer

Title and Address:

Associate Professor

Department of Biological Sciences

Faculty of Arts & Sciences – Newark

195 University Avenue, Rm 410

Newark, NJ 07102-1814

Contact Information:

Tel: 973-353-1008

karinavr@rutgers.edu

Education

Highest Earned Degree

PhD (2002), Duke University, School of Environment, Durham, NC, USA 27708

Dissertation

Effects of elevated CO₂ on water and carbon relations of four co-occurring tree species. Duke University, Durham, NC, September 2002. Thesis advisor: Ram Oren.

Other Earned Degrees

Diploma in Biology (1997), University of Bayreuth, Department of Biology, Bayreuth, Germany, D-94440

Certificates and Licenses Held

Certificate of Hydrology, Duke University 2002

Linguistic Ability

German, English

Research Interests

Professional Identification

Ecosystem Ecologist

Employment History

Positions Held

2016 – present Program Director, Ecosystem Science in the Division of Environmental Biology,
National Science Foundation

07/2014 – present Associate Professor, Rutgers University, Department of Biological Sciences

09/2008-06/2014 Assistant Professor, Rutgers University, Department of Biological Sciences

09/2008-ongoing Associated member of Earth and Environmental Science Department, Rutgers
University Newark

2007-2008 Part Time Lecturer, Rutgers University, Department of Biological Sciences

2005-2008 Post - doctoral Associate, Rutgers University, Department of Physics

2003 Post - doctoral Associate, Duke University, School of Environment

Graduate Program Affiliations

Graduate Faculty in the Earth and Environmental Science Department, Rutgers Newark

Graduate Faculty in Ecology, Evolution and Natural Resources, Rutgers University New
Brunswick

Books

2009 Schäfer KVR (2009) Water and Carbon relations of temperate forest species under
ambient and elevated atmospheric CO₂ conditions. VDM Verlag Saarbrücken, Germany, 144p

Chapters in Books or Monographs

2001 Katul, GG, C-T Lai, M Siqueira, K Schäfer, JD Albertson, K Wesson, D Ellsworth, and R Oren (2001) Inferring Scalar Sources and Sinks within Canopies using Forward and Inverse Methods, in Observations and modeling of land-surface fluxes within hydrologic systems. Editors: V Lakshmi, JD Albertson, and Schaake J, American Geophysical Union, Washington DC, pp 31-45.

Articles in Refereed Journals in preparation and under revision

Hu, Yanting; Duman, Tomer; Vanderklein, Dirk; Schäfer, Karina VR; Zhao, Ping (in revision) Canopy carbon assimilation and water use efficiency analysis using a multi-layer model combining sap flow measurements and stomatal optimization theory

Articles in Refereed Journals submitted

Schäfer KVR, Duman T, Tomasicchio K, Tripathee R, Sturtevant C (under review) Carbon dioxide fluxes of temperate urban wetlands with different restoration history. ECOSYSTEM HEALTH AND SUSTAINABILITY

Articles in Refereed Journals published/accepted

2017 Duman T, Schäfer KVR (2017) Partitioning net ecosystem carbon exchange of native and invasive plant communities by vegetation cover in an urban tidal wetland in the New Jersey Meadowlands (USA) ECOLOGICAL ENGINEERING in press

2017 Chen X, Schäfer KVR, Slater L (2017) Methane emission through ebullition from an estuarine mudflat: 2. Field observations and modeling of occurrence probability. WATER RESOURCES RESEARCH: doi: 10.1002/2016WR019720 in press

2017 Radwanski D (student), Gallagher F, Vanderklein DW, Schäfer KVR (2017) Photosynthesis and aboveground carbon allocation of two co-occurring poplar species in an urban brownfield. ENVIRONMENTAL POLLUTION **223**:497-506. doi: <http://dx.doi.org/10.1016/j.envpol.2017.01.051>

2016 Carlo NJ (student), Renninger HJ (postdoc), Clark KL, Schäfer KVR (2016) Impacts of prescribed fire on *Pinus rigida* Mill. in upland forests of the Atlantic Coastal Plain. TREE PHYSIOLOGY **36**:967-982, doi: 10.1093/treephys/tpw044

2016 Mirfenderesgi G, Bohrer G, Matheny AM, Fatichi S, de Moraes Frasson RP, Schäfer KVR (2016) Tree level hydrodynamic approach for resolving aboveground water storage and stomatal conductance and modeling the effects of tree hydraulic strategy. JOURNAL OF GEOPHYSICAL RESEARCH: BIOGEOSCIENCES **121**: 1792-1813, doi: 10.1002/2016jg003467

2016 Terry N, Slater L, Comas X, Reeve AS, Schäfer KVR, Yu Z (2016) Free phase gas processes in a northern peatland inferred from autonomous field-scale resistivity imaging. WATER RESOURCES RESEARCH **52**: 2996-3018, doi: 10.1002/2015WR018111

2015 Artigas F, Shin JY, Hobbie C, Marti-Donati A, Schäfer KVR, Pechmann I (2015) Long term carbon storage potential and CO₂ sink strength of a restored salt marsh in New Jersey. AGRICULTURAL AND FOREST METEOROLOGY, **200**, 313-321.

2015 Renninger HJ (postdoc), Carlo NJ (student), Clark KL, Schäfer KVR (2015) Resource use and efficiency, and stomatal responses to environmental drivers of oak and pine species in an Atlantic Coastal Plain forest. FRONTIERS IN PLANT SCIENCE, **6**.

2014 Yu Z, Slater LD, Schäfer KVR, Reeve AS, Varner RK (2014) Dynamics of methane ebullition from a peat monolith revealed from a dynamic flux chamber system. JOURNAL OF GEOPHYSICAL RESEARCH: BIOGEOSCIENCES, **119**, 2014JG002654.

2014 Tripathee R (student), Schäfer KVR (2014) Above- and belowground biomass allocation in four dominant salt marsh species of the Eastern United States. WETLANDS, **35**, 21-30.
doi:10.1007/s13157-014-0589-z

2014 Clark KL, Skowronski, NS, Gallagher, MR, Renninger, HJ and Schäfer KVR. (2014) Contrasting Effects of Invasive Insects and Fire on Ecosystem Water Use Efficiency. BIOGEOSCIENCES DISCUSSION, **11**, 9565-9600.

2014 Schäfer, KVR, Tripathee R. (student), Artigas F, and Bohrer G. (2014) Carbon dioxide fluxes of an urban tidal marsh in the Hudson-Raritan Estuary. *JOURNAL OF GEOPHYSICAL RESEARCH*, 2014JG002703, **119**(11): 2065-2081 doi:10.1002/2014JG002703

2014 Morin, T. H., Bohrer, G., Naor-Azrieli, L., Mesi, S., Kenny, W. T., Mitsch, W. J., Schäfer, K. V. R. (2014) The seasonal and diurnal dynamics of methane flux at a created urban wetland. *ECOLOGICAL ENGINEERING*, **72**, 74-83, doi:10.1016/j.ecoleng.2014.02.002

2014 Morin, T. H., G. Bohrer, R. P. d. M. Frasson, L. Naor-Azreli, S. Mesi, K. C. Stefanik and K. V. R. Schäfer (2014). "Environmental drivers of methane fluxes from an urban temperate wetland park." *JOURNAL OF GEOPHYSICAL RESEARCH: BIOGEOSCIENCES* **119**(11): 2014JG002750.

2014 Matheny, A. M., G. Bohrer, P. C. Stoy, I. T. Baker, A. T. Black, A. R. Desai, M. C. Dietze, C. M. Gough, V. Y. Ivanov, R. S. Jassal, K. A. Novick, K. V. R. Schafer and H. Verbeeck (2014). "Characterizing the diurnal patterns of errors in the prediction of evapotranspiration by several land-surface models: An NACP analysis." *JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES* **119**(7): 1458-1473

2014 Schäfer KVR, Renninger HJ (postdoc), Carlo N (student), Dirk W Vanderklein (2014) Forest response and recovery following disturbance in upland forests of the Atlantic Coastal Plain. *FRONTIERS IN PLANT SCIENCE* 5. doi: 10.3389/fpls.2014.00294

2014 Dahle GA, Gallagher FJ, Schäfer KVR, and Grabosky JC. (2014) Allometric and mass relationships of *Betula populifolia* in a naturally assembled urban brownfield: implications for carbon modeling. *URBAN ECOSYSTEMS* **17**(4): 1147-1160 doi: 10.1007/s11252-014-0377-9

2014 Renninger, H. J. (postdoc), N. Carlo (student), K. L. Clark, and K. V. R. Schäfer. (2014) Modeling respiration from snags and coarse woody debris before and after an invasive gypsy

moth disturbance. JOURNAL OF GEOPHYSICAL RESEARCH: BIOGEOSCIENCES
119:630-644

2014 Renninger, H. J. (postdoc), N. Carlo (student), K. L. Clark, and K. V. R. Schäfer. (2014). Physiological strategies of co-occurring oaks in a water- and nutrient-limited ecosystem. TREE PHYSIOLOGY **34**:159-173.

2014 Schäfer KVR, Renninger HJ (postdoc), Clark KL, and Medvigy D. (2014) Hydrological balance in an upland forest of the New Jersey Pine Barrens under drought and disturbance. HYDROLOGICAL PROCESSES, **28**, 6113-6123, <http://dx.doi.org/10.1002/hyp.10104>

2013 Reid MC, Tripathee R (student), Schäfer KVR, and Jaffe PR. (2013) Tidal Marsh Methane Dynamics: Difference in Seasonal Lags in Emissions Driven by Storage in Vegetated vs. Unvegetated Sediments, JOURNAL OF GEOPHYSICAL RESEARCH: BIOGEOSCIENCES, **118**, 1802-1813, <http://onlinelibrary.wiley.com/doi/10.1002/2013JG002438/abstract>

2013 Medvigy D, Jeong S-J, Clark KL, Skowronski NS, and Schäfer KVR. (2013) Effects of seasonal variation of photosynthetic capacity on the carbon fluxes of a temperate deciduous forest. JOURNAL OF GEOPHYSICAL RESEARCH: BIOGEOSCIENCES, **118**(4): 1703-1714. <http://onlinelibrary.wiley.com/doi/10.1002/2013JG002421/abstract>

2013 Thomsen JE, Bohrer G, Matheny AM, Ivanov VY, He L, Renninger HJ (postdoc), and Schäfer KVR. (2013) Contrasting strategies of hydrodynamic stress management in two deciduous broadleaf tree species in Michigan. FORESTS, **4**(4): 1106-1120, <http://www.mdpi.com/1999-4907/4/4/1106>

2013 Renninger HJ (postdoc), Wadhwa S., Gallagher FJ, Vanderklein D, and Schäfer KVR. (2013) Allometry and photosynthetic capacity of poplar (*Populus deltoides*) along a metal contamination gradient in an urban brownfield. URBAN ECOSYSTEMS **16**(2): 247-263, <http://link.springer.com/article/10.1007%2Fs11252-012-0259-y>

2013 Renninger HJ (postdoc), Clark KL, Skowronski N, and Schäfer KVR. (2013) Effects of a prescribed burn on the water use and photosynthetic capacity of pitch pines (*Pinus rigida* L) in the New Jersey Pine Barrens. *TREES* 27(4): 1115-1127.

<http://link.springer.com/article/10.1007%2Fs00468-013-0861-5>

2013 Medvigy D, Clark KL, Skowronski NS, and Schäfer KVR. (2013) Impacts of insect disturbance on the structure, composition, and functioning of oak-pine forests.

ENVIRONMENTAL RESEARCH LETTERS 7 [doi:10.1088/1748-9326/7/4/045703](https://doi.org/10.1088/1748-9326/7/4/045703)

<http://iopscience.iop.org/1748-9326/7/4/045703>

2012 Vanderklein, D., Schäfer K, and Martinez-Vilalta J. (2012) Sapflow, crown conductance, and growth in dwarf and tall pitch pines. *TREES* 26: 1617-1625

<http://link.springer.com/article/10.1007%2Fs00468-012-0736-1>

2012 Clark KL, Skowronski NS, Gallagher M, Renninger HJ (postdoc), and Schäfer KVR. (2012) Effects of invasive insects and fire on forest evapotranspiration and ecosystem water use efficiency. *AGRICULTURE AND FOREST METEOROLOGY* 166–167: 50-61.

http://www.nrs.fs.fed.us/pubs/jrnl/2012/nrs_2012_clark_001.pdf

2012 Renninger HJ (postdoc) and Schäfer KVR. (2012) Comparison of heat balance (Čermák) and thermal dissipation (Granier) sap flow measurements in ring-porous oaks and a pine species. *FRONTIERS IN PLANT FUNCTIONAL ECOLOGY* 3.

http://www.frontiersin.org/Functional_Plant_Ecology/10.3389/fpls.2012.00103/abstract

2012 Parsekian AD (student), Slater LD, and Schäfer KVR. (2012) Effect of small roots on the dielectric properties of soil. *VADOSE JOURNAL* 11(1).

<http://vzj.geoscienceworld.org/content/11/1/vzj2011.0049.abstract>

2012 Robinson JL (student), Slater LD, and Schäfer KVR. (2012) Identifying spatial variability in hydraulic redistribution within an oak-pine forest using resistivity imaging. *JOURNAL OF HYDROLOGY* 430–431(0): 69-79.

2011 Schäfer KVR. (2011) Canopy stomatal conductance following drought, disturbance and death. FRONTIERS IN PLANT FUNCTIONAL ECOLOGY 2.

http://www.frontiersin.org/functional_plant_ecology/10.3389/fpls.2011.00015/abstract

2010 Domec JC, Schäfer K, Oren R, Kim HS, and McCarthy HR. (2010) Variable conductivity and embolism in roots and branches of four contrasting tree species and their impacts on whole-plant hydraulic performance under future atmospheric CO₂ concentration. TREE PHYSIOLOGY 30 (8), 1001-1015

2010 Schäfer KVR, Clark K, Skowronski N, and Hamerlynck EP. (2010) Impact of insect defoliation on forest carbon balance as assessed with a canopy assimilation model. GLOBAL CHANGE BIOLOGY 16, 546-560.

http://www.nrs.fs.fed.us/pubs/jrnl/2010/nrs_2010_schafer_001.pdf

2003 Schäfer KVR, Oren R, Ellsworth DS, Lai C-T, Herrick JD, Finzi AC, Richter DD, and Katul GG. (2003) Exposure to enriched CO₂ atmosphere alters carbon assimilation and allocation in a pine forest ecosystem. GLOBAL CHANGE BIOLOGY 9, 1378-1400

2002 Schäfer KVR, Oren R, Katul GG, and Lai C-T. (2002) Hydrologic balance in an intact temperate forest ecosystem under ambient and elevated CO₂ concentration. GLOBAL CHANGE BIOLOGY 8, 895-911

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

2001 Luo Y, Wu L, Andrews JA, White L, Matamala R, Schäfer KVR and Schlesinger WH. (2001) Elevated CO₂ differentiates ecosystem carbon processes: a deconvolution analysis of Duke Forest data. ECOLOGICAL MONOGRAPHS 71 (3), 357-376

2001 Katul G, CT Lai, K Schäfer, B Vidakovic, J Albertson, D Ellsworth, and R Oren. (2001) Multiscale analysis of vegetation surface fluxes: from seconds to years. ADVANCES IN WATER RESOURCES 24, 1119-1132

2001 Katul, GG, C T Lai, JD Albertson, B Vidakovic, KVR Schäfer, CI Hsieh, and R Oren. (2001) Quantifying the complexity in mapping energy inputs and hydrologic state variables into land-surface fluxes. GEOPHYSICAL RESEARCH LETTERS 28 (17), 3305-3307

2000 Lai CT, Katul G, Oren R, Ellsworth D, and Schäfer K. (2000) Modeling CO₂ and water vapor turbulent flux distributions within a forest canopy. JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES 105 (D21), 26333-26351

2000 Hacke UG, Sperry JS, Ewers BE, Ellsworth DS, Schäfer KVR, and Oren R. (2000) Influence of soil porosity on water use in *Pinus taeda*. OECOLOGIA 124 (4), 495- 505

2000 Schäfer KVR, Oren R, and Tenhunen JD. (2000) The effect of tree height on crown level stomatal conductance. PLANT, CELL AND ENVIRONMENT 23 (4), 365-375

1999 Oren R, Sperry JS, Katul GG, Pataki DE, Ewers BE, Phillips N, and Schäfer KVR. (1999) Survey and synthesis of intra- and interspecific variation in stomatal sensitivity to vapour pressure deficit. PLANT, CELL AND ENVIRONMENT 22 (12), 1515-1526

Electronic Publications, Not Refereed

2011 Schäfer, KVR and Vanderklein, DW The Physical Environment Within Forests. Nature Education Knowledge 2(12):5 <http://www.nature.com/scitable/knowledge/library/the-physical-environment-within-forests-24202119>

Conference Presentations, Lectures, Demonstrations

Invited Lectures

2017 Schäfer KVR, invited seminar, “Carbon dioxide fluxes of temperate urban wetlands with different restoration history”, NASA Goddard, Greenbelt, MD, 17th of May 2017

2017 Schäfer KVR, invited seminar, “Carbon dioxide fluxes of temperate urban wetlands with different restoration history”, Smithsonian Environmental Research Center, Edgewater, MD, 24th of Mar 2017

2017 Schäfer KVR, invited seminar “Methane and carbon dioxide dynamics in mitigated and non-mitigated urban tidal wetlands”, Lamont-Doherty-Earth-Observatory, Palisade Park, NY, 30th of Jan 2017

2016 Schäfer KVR, invited seminar “Methane and carbon dioxide dynamics in mitigated and non-mitigated urban tidal wetlands”, Bryn Mawr, Bryn Mawr, PA, 14th of Nov 2016

2014 Schäfer KVR, invited seminar “Methane and carbon dioxide dynamics in an urban temperate estuary”, University of Alabama, Dauphin Sea Lab, Dauphin Island, AL, 14th of March 2014

2012 Schäfer KVR. Invited seminar "Canopy carbon net assimilation of an urban, naturally assembled brownfield forest" University of Maryland, Baltimore County, Baltimore, MD, 9th of Nov 2012

2012 Schäfer KVR and Bohrer G. Invited symposium “Ecosystem services and habitat functions of nonnative plants - Carbon sequestration by *Phragmites australis*”, NorthEast Natural History Conference, Syracuse NY, 18th of April 2012,

2012 Schäfer KVR, Tripathee R (student), Alcivar W, Bohrer G, Jaffe P, and Reid M. Invited seminar "Carbon dioxide and methane fluxes in a temperate urban wetland". Woods Hole Marine Biology Lab 28th of February 2012

2011 Schäfer KVR, Tripathee R (student), and Bohrer G. Invited seminar "CO₂ fluxes in the New Jersey Meadowlands". Invited Seminar Department of Geosciences, Princeton University, Princeton, NJ 27th of October 2011.

2010 Schäfer KVR. Invited seminar "Impact on stand disturbance on long-term carbon storage" Annual Society of American Foresters Meeting, Hamilton, NJ, 22 January 2010

2010 Schäfer KVR. Invited seminar "Carbon sequestration of forests and wetlands in New Jersey", Montclair State University, Montclair, NJ, 3 December 2009

2010 Schäfer KVR. Invited seminar "Carbon sequestration of forests and wetlands" Rutgers University New Brunswick Ecology, Evolution and Natural Resources, New Brunswick, NJ, 12 November 2009

2010 Schäfer KVR. Invited seminar "Carbon footprint of a music festival" NJIT, Department of Chemical and Environmental Sciences, Newark, NJ, 4 November 2009

2009 Schäfer KVR. Invited seminar "When Forests become carbon sources: Impact of herbivory on carbon balance", Boston University, Department of Environmental Science and Geography, Boston, MA, 18 November 2008

2004 Schäfer KVR. Invited seminar "Water and carbon relations of four co-occurring tree species under ambient and elevated atmospheric CO₂" ATREE (Ashoka Trust for Research in Ecology and Environment), Bangalore, India, January 2004

2000 Schäfer KVR. Invited seminar "Water relations in a CO₂ rich world." Wake Forest University, Winston Salem, NC, April 2000

Papers, Abstracts, and Lectures

2017 Hu Y, Duman T, Vanderklein D, Schäfer KVR “Combining sap flow measurements and stomatal optimization methods to improve prediction of carbon assimilation using a multi-layer model.” Ecological Society of America Meeting 6th – 11th of Aug 2017, Portland, OR, USA

2016 Schäfer KVR, Duman T, 2016 “Challenges and Opportunities assessing methane and carbon dioxide dynamics in tidal wetlands – the blue carbon perspective” AGU Fall Meeting 12th -16th December in San Francisco, 2016, California, USA

2016 Duman T, Schäfer KVR, “The contribution of coherent structures to momentum and heat fluxes in the atmospheric surface layer above a coastal urban wetland” AGU Fall Meeting 12th - 16th December in San Francisco, 2016, California, USA

Mirfenderesgi G, Bohrer G, Matheny AM, Fatichi S, Moraes Frasson RP, Schäfer KVR 2016 “Tree-Level Hydrodynamic Approach for Modeling Aboveground Water Storage and Stomatal Conductance Illuminates the Effects of Tree Hydraulic Strategy” AGU Fall Meeting 12th -16th December in San Francisco, 2016, California, USA

2016 Schäfer KVR, Duman T, 2016 “Methane dynamics in a mitigated and unmitigated wetland - implications for restoration”, EcoSummit 29th Aug – 1st Sept, 2016, Montpellier, France

2016 Schäfer KVR, Duman T, Radwanski D, Clark K 2016 “Canopy water use efficiency before, during and after gypsy moth attack in an upland forest in the New Jersey Pine Barrens” (invited) Ecological Society of America Meeting 7th – 12th of Aug 2016, Fort Lauderdale, Florida, USA

2015 Scott M, Schäfer KVR 2015 “Soil Respiration Hotspots in Temperate Tidal Restored and Natural Wetlands” AGU Fall Meeting 14-18 December in San Francisco, California, USA

2015 Chen X, Schäfer KVR, Slater L 2015 “Methane emission through ebullition from a non-vegetated estuarine mudflat: The mechanics of tide-driven water level changes” AGU Fall Meeting 14-18 December in San Francisco, California, USA

2015 Mirfenderesgi G., Bohrer G., Fatichi S., Matheny A.M., Frasson R. P. D. M., Schäfer K. V. R. "Application of a tree-level hydrodynamic model to simulate plot-level transpiration in the upland oak/pine forest in New Jersey", AGU Fall Meeting 14-18 December in San Francisco, California, USA

2015 Schäfer KVR, Jaffe P, Morin T, Bohrer G 2015 "Greenhouse Gas Balance in a Restored and Natural Wetland", AGU Fall Meeting 14-18 December in San Francisco, California, USA

2014 Schäfer KVR, Jaffe P, Morin T, Bohrer G 2014 "Greenhouse Gas Fluxes in a Natural and Restored Wetland before and after Hurricane Sandy, AGU Fall Meeting, 15-19 December, in San Francisco, California

2013 Schäfer KVR, Renninger HJ, Carlo NJ, Clark KL 2013 "Forest response and recovery following disturbance (Invited)" American Geophysical Union Fall Meeting 9-13 December, in San Francisco, California

2013 Thompson, H.A., W. J. Mitsch, B. Bernal, R, Tripathee, and K.V.R. Schafer. 2013. "Comparison of methane emissions from freshwater and coastal wetlands in Ohio, Florida and New Jersey using non-steady state chambers". Society of Wetland Scientists 34th Annual Meeting, Duluth, Minnesota, June 2-6 2013.

2012 Tripathee, R, Reid MC, Jaffe PR, and Schäfer KVR. "Methane emission from a restored wetland in the New Jersey Meadowlands, North-Eastern USA", Poster, 12/2012. American Geophysical Union Meeting 2012, San Francisco, CA.

2012 Schäfer KVR, Tripathee R, and Bohrer G. "Effect of restoration on carbon fluxes in urban temperate wetlands". Poster. American Geophysical Union Fall Meeting 2012, San Francisco, CA.

2012 Bohrer G., Naor Azrieli L, Mesi S, Schafer KVR, Mouser P, Stefanik K, and Mitsch WJ. "Determining the meteorological forcing that affect seasonal and diurnal dynamics of methane

emissions at a constructed urban wetland in Ohio", Ecosummit Symposium September 30th – October 5th 2012, Columbus, OH

2012 Schäfer KVR, Bohrer G, Reid M, Tripathee R (student), and Jaffe P. "Temporal and spatial dynamics of methane fluxes in a temperate urban wetland", Ecosummit Symposium September 30th – October 5th 2012, Columbus, OH

2012 Schäfer KVR, Bohrer G. "Effect of restoration on the carbon balance in the Meadowlands of New Jersey", Ecosummit Symposium September 30th – October 5th 2012, Columbus, OH

2012 Medvigy D, Clark KL, Skowronski NS, and Schäfer KVR. "Defining plant functional types for xeric habitats with disturbance regimes", Ecological Society of America Meeting Portland Oregon Aug 2012.

2012 Renninger HJ (postdoc), Clark KL, Skowronski N, and Schäfer KVR. "Effects of a prescribed burn on the water use and photosynthetic capacity of pitch pines (*Pinus rigida* L) in the New Jersey Pine Barrens". Ecological Society of America Meeting Portland Oregon Aug 2012.

2011 Wright WJ, Comas X, Slater LD, Monahan P, Alcivar W, Parsekian A, Doelger S, Schäfer KV, and Reeve AS. contributed poster "Autonomous ground penetrating radar (GPR) measurements for exploring biogenic gas dynamics of peat soils in a northern peatland" B21A-0248, American Geophysical Union, San Francisco, CA, 4th – 9th December 2011

2011 Terry N, Slater LD, Comas X, Parsekian A, Schäfer KV, and Reeve AS. contributed poster "Spatial variability in free phase gas dynamics in a Northern peatland using surface resistivity and GPR tomography" B21A-0247. American Geophysical Union, San Francisco, CA, 4th – 9th December 2011

2011 Slater LD, Comas X, Schäfer KV, Reeve AS, Terry N, Parsekian A, Wright WC, Alcivar W, Monahan P, and Doelger S. contributed oral presentation "Multi-scale, multi- method

characterization of methane cycling in northern peatlands" H44B-04 (Invited), American Geophysical Union, San Francisco, CA, 4th – 9th December 2011

2011 Medvigy D, Schäfer KV, and Clark KL. contributed oral presentation "Impacts of insect disturbance on the structure, composition, and functioning of oak-pine forests", B31I-02. American Geophysical Union, San Francisco, CA, 4th – 9th December 2011

2011 Schäfer KV, Bohrer G, Naor L, Mouser PJ, Mitsch WJ, and Wu M. contributed oral presentation "Temporal dynamics of methane fluxes in temperate urban wetlands". B12C-05, American Geophysical Union, San Francisco, CA, 4th – 9th December 2011

2011 Schäfer KVR. contributed oral presentation "Canopy stomatal conductance under drought, disturbance and death". 96th Annual Meeting Ecological Society of America, Austin, TX, 7th – 12th August 2011

2011 Renninger HJ (postdoc) and Schäfer KVR. contributed poster "Comparison of heat balance (Čermák) and thermal dissipation (Granier) sap flow measurements in ring-porous oaks and a pine species". 96th Annual Meeting Ecological Society of America, Austin, TX, 7th – 12th August

2011 Haines CE, Gallagher F, Grabosky J, and Schäfer K. contributed poster "The impact of soil metal and water stress on leaf area in *Betula populifolia*: Implications for carbon modeling". 96th Annual Meeting Ecological Society of America, Austin, TX, 7th – 12th August

2011 Dahle GA, Gallagher FJ, Schäfer KVR, and Grabosky JC. contributed oral presentation "Allometric Relationships of *Betula populifolia* Under Conditions of Soil Metal Induced Stress". 96th Annual Meeting Ecological Society of America, Austin, TX, 7th – 12th August 2011

2011 Clark KL, Skowronski NS, Schäfer K, and Gallagher M. contributed poster "Effects of Invasive Insects and Fire on Forest Evapotranspiration and Ecosystem Water Use Efficiency". 96th Annual Meeting Ecological Society of America, Austin, TX, 7th – 12th August 2011

2011 Parsekian AD (student), Slater LD, Schäfer KVR, and Gray D. contributed oral presentation "Subsurface hydrologic controls on sensitive wetland ecosystems in the New Jersey Pinelands". Ecological Society of America Mid-Atlantic Chapter Meeting, Montclair State University, Montclair, NJ, 9 April 2011

2011 Tripathee R (student), and Schäfer KVR. contributed oral presentation "Ecophysiological study of native *Spartina alterniflora* and invasive *Phragmites australis* in a restored salt marsh of New Jersey, USA". Ecological Society of America Mid-Atlantic Chapter Meeting, Montclair State University, Montclair, NJ, 9 April 2011

2011 Wadha S and Schäfer KVR. contributed oral presentation "Effect of heavy metals on photosynthesis in *Betula populifolia* and *Populus deltoides* in contaminated urban brownfields, at Liberty State Park, New Jersey, USA". Ecological Society of America Mid-Atlantic Chapter Meeting, Montclair State University, Montclair, NJ, 9 April 2011

2010 Schäfer KVR, Wadha S, and Tripathee R. (student), Gallagher FJ contributed poster "Canopy carbon net assimilation of an urban, naturally assembled brownfield forest". American Geophysical Union, San Francisco, CA, 13th – 17th December 2010

2010 Schäfer KVR and Clark KL. contributed oral presentation "Hydrologic balance of the New Jersey Pine Barrens – five years of investigation", 95th Ecological Society of America Annual Meeting, Pittsburgh, PA, 1st – 6th August 2010

2010 Vanderklein D, Schäfer KVR, and Martinez-Vilalta J. contributed poster "Sapflow, crown conductance, and growth in dwarf and tall pitch pines", 95th Ecological Society of America Annual Meeting, Pittsburgh, PA, 1st – 6th August 2010

2009 Schäfer KVR. contributed poster "Carbon footprint of a music festival" American Geophysical Union, San Francisco, CA, 14th -18th December 2009

2009 Schäfer KVR. contributed oral presentation “CO₂ sink strengths of the New Jersey Meadowlands” 5th Annual Canopy Conference, Bangalore, India, 26th – 30th October 2009

2009 Schäfer KVR, Clark KL, and Skowronski NS. contributed poster “When Forests become carbon sources: Impact of herbivory on carbon balance”. American Geophysical Union Fall Meeting, San Francisco, CA, 15th – 19th December

2007 Schäfer KVR, Clark KL, Skowronski NS, Xu M, and Hamerlynck EP. contributed poster “Carbon balance of an oak / pine stand in the New Jersey Pine Barrens”. Ecological Society of America 92nd Annual Meeting, San Jose, CA, 5th – 10th August 2007

2007 Schäfer KVR, Murnick DE, Hamerlynck EP, Xu M, and Skowronski NS contributed poster “Innovative instrumentation for measuring isotopic CO₂ fluxes for ecological applications.” American Geophysical Union Fall Meeting, San Francisco, CA, 11th – 15th December 2006

2007 Clark KL, Hom J, Skowronski NS, Somes R, Schäfer KVR, Xu M, and Hamerlynck EP. contributed poster “Carbon dynamics of contrasting stands in the New Jersey Pine Barrens.” Ecological Society of America 91st Annual Meeting, Memphis, TN, 6th – 11th August 2006

2003 Schäfer KVR, Oren R, Poulter B, Oishi AC, Ellsworth DS, and Katul GG. contributed poster “Can we constrain carbon assimilation and allocation in a multi-species hardwood forest using water flux measurements?” American Geophysical Union Fall Meeting, San Francisco, CA, 6th – 10th December 2002

2003 Oren R and Schäfer KVR. contributed oral presentation “Linking water to carbon balance at the Duke Forest FACE based on sapflux –scaled conductance.” European Science Foundation Life and Environmental Sciences. Exploratory Workshop on CO₂ and Water in Basel, Switzerland, August 2002

2003 McCarthy HR, Palmroth S, Schäfer KVR, and Oren R. contributed poster “Effects of elevated CO₂ and nutrient supplies on carbon allocation in a pine forest.” CO₂ Ecological Society of America 87th Annual Meeting, Tucson, AZ, 4 – 9 August 2002

2002 Schäfer KVR, Oren R, Katul GG, Ellsworth DS, Lai C-T and Herrick JD. contributed poster “Differences in carbon assimilation and allocation between pine forests growing under ambient and elevated CO₂” American Geophysical Union Spring Meeting, Washington, DC, 28-31 May 2002

2001 Schäfer KVR, Oren R, Katul GG, Ellsworth DS, Lai C-T and Herrick JD. contributed oral presentation “Estimating canopy net assimilation via sap-flux scaled conductance under ambient and elevated CO₂.” Southeastern Regional Center for Global Environmental Change Annual Meeting, Duke University, Durham, NC, November 2001

2001 Schäfer KVR, Oren R, Katul GG, Naumburg NS, Lai C-T and Ellsworth DS. contributed oral presentation “Estimating canopy CO₂ uptake under ambient and elevated atmospheric CO₂ concentrations with scaled sap-flux and $\delta^{13}C$ ” Ecological Society of America 86th Annual Meeting, Madison, WI, 5th – 10th August 2001

2000 Katul GG, Lai C-T, Schäfer K, Oren R, Albertson J, Vidakovic B, and Hsieh C-I. contributed oral presentation “Quantifying the Complexity in Mapping Energy Inputs and Hydrologic State Variables into Land-Surface Fluxes.” American Geophysical Union Fall Meeting, San Francisco, CA, 15th – 19th December 2000

2000 Schäfer KVR, Oren R, Lai C-T and Katul GG. contributed poster “Canopy water use under ambient and elevated atmospheric CO₂ concentrations.” At the Atmospheric, Surface and Subsurface Hydrology and Interactions, American Institute of Hydrology Meeting, Research Triangle Park, NC, November 2000

2000 Schäfer KVR, Oren R, Lai C-T and Katul GG. contributed oral presentation “Water use and stomatal conductance in *Pinus taeda* and *Liquidambar styraciflua* under ambient and

elevated CO₂.” Ecological Society of America 85th Annual Meeting, Snowbird, UT, 7th – 11th August 2000

1999 Schäfer KVR, Oren R, Katul GG, Ellsworth DS and Lai C-T. contributed poster “Estimating net assimilation via sap-flux scaled conductance.” Global Change and Terrestrial Ecosystem Focus 3 Meeting Food and Forestry: Global Change and Global Challenges, Reading, UK, September 1999

1999 Schäfer KVR, Tenhunen JD and Oren R. contributed oral presentation “Effect of tree height on sap-flux scaled canopy stomatal conductance of *Fagus sylvatica*.” Ecological Society of America 84th Annual Meeting, Spokane, WA, 9th – 13th August 1999

Organizing and Chairing Activities

Participation in Organizing or Chairing Conferences, Workshops, and Organizations

2012 Comas X, Schäfer KVR, Wright W, and Yu Z. B010: Carbon Release and Storage Mechanisms in Peatland Ecosystems, American Geophysical Union, Fall Meeting 2012

2012 Schäfer KVR, Mitsch WJ, and Bohrer, G. Carbon sequestration and greenhouse gases in wetlands, Symposium 59, Ecosummit 2012, Columbus, Ohio

2012 Wu M, Schäfer KVR, and Weinstein M. Restoration of the Hackensack Meadowlands in northern New Jersey, Symposium 09, Ecosummit 2012, Columbus, Ohio

2011 Slater L, Schäfer KVR, Comas X, and Reeve A. B13: Biogenic Gas Production, Storage and Release in Peatland Ecosystems, American Geophysical Union Fall 2011 meeting

2011 Organizer and co-convener of the poster session at the Ecological Society of America Mid-Atlantic Chapter meeting, Montclair State University April 2011

Teaching Activities

Development of Audio-visual, Media, and Computer Materials

Online learning resource:

<http://www.nature.com/scitable/knowledge/library/the-physical-environment-%20within-forests-24202119>

Courses Taught

Undergraduate:

Field Ecology, Environmental Issues, Ecology, Seminar in Biology, Geologic Problems

Graduate:

Ecophysiology, Colloquium, Resource Sustainability, Introduction into Environmental Biophysics

Special Courses Taught

Interdisciplinary

Introduction into Environmental Biophysics (F10, F12, F14), Resource Sustainability (F11, F13, F15) Collegiate mission course for Urban Sustainability Master in Business and Science
Resource Sustainability (F11, F13, F15)

Curricular Development - Courses and Programs Developed

Created new courses:

26:120:590 F10, F12, F14 Introduction into Environmental Biophysics

26:120:520 F11, F13, F15 Resource Sustainability

New curriculum and re-structuring into team based learning:

21:120:280 Ecology F09, F10, F11, F12, F13, F14, F15

Instructional Development

Attended “Effective College Teaching” 26:120:560 course offered at Rutgers Newark by Dr L Gardiner, invited seminar speaker Dr Janette Norden to speak on education on how to involve undergraduate students in their own learning.

Students Supervised

Students Supervised for Independent Studies

Undergraduate

2011 Ronald Kulwatdanaporn: Carbon baseline at Duke Farms. Determining the organic and inorganic carbon content of soil to determine sequestration rates over time. Conducted at Duke Farms, Somerset County. Honor thesis project

2011 Frank Amatucci: Peat coring and characterization of recent geological transgressions in the Hackensack estuary. Project at the Meadowlands measuring carbon on soil cores, Spring 2011

2011 Arlette Santana: Parameterization of gas-flux model through the roots of plants. Determining major belowground parameters for modeling gas-fluxes through the root system of wetland species in the Meadowlands district, Spring 2011

Master's or Doctoral Students by Type of Supervision

Doctoral-Primary

2009 Rajan Tripathee (PhD), Primary Adviser, Department of Biological Sciences, Rutgers Newark, completion date 05/2014

Doctoral-Committee

2014 Marlon Ramlogan (PhD) Committee, Department of Earth and Environmental Science, Rutgers Newark, ongoing

2012 Timothy Morin (PhD), Department for Civil, Environmental and Geodetic Engineering, The Ohio State University, ongoing

2011 Neil Terry (PhD), Committee, Department of Earth and Environmental Sciences, Rutgers Newark, ongoing

2009 Andrew Parsekian (PhD), Committee, Department of Earth and Environmental Science, Rutgers Newark, completion date 10/2011

Master's-Primary

2015 Diane Radwanski (MS), Primary Advisor, Biological Sciences, completion date 05/2016

2012 Kristen Tomasicchio (MS), Primary Adviser, Department of Earth and Environmental Sciences, Rutgers Newark, completion date 12/2016

2012 Nicholas Carlo (MS), Primary Adviser, Department of Environmental Science, Rutgers Newark, completion date 05/2014

2012 Arman Yalcin (MS), shared advisor with E. Kirby, Biological Sciences, Rutgers University Newark, completion 09/2013

2011 Zhongji Yu (MS), shared advisor with L. Slater, Department of Earth and Environmental Sciences, Rutgers Newark, completion 09/2014

2011 Judith Robinson (MS), shared advisor with L. Slater, Department of Earth and Environmental Science, Rutgers Newark, completion 05/2011

Postdoctoral Trainees

2016 Tomer Duman (2016 – present)

2012 Heidi Renninger (11/10-12/14)

2011 Bhaskar Mitra (07/10-02/11)

Academic Advisement

Advisor of >20 undergraduates in the Bachelor of Arts and Bachelor of Science Program in Biology

Advisement of >10 Lois Stokes of Minority Participation undergraduate students in research project in my lab, enhancing retention of minorities in the Science, Technology, Engineering and Mathematics (STEM) discipline

Editorial Activities

Editorship of Scholarly or Professional Journals

2011-2014 Associate Editor Frontiers in Plant Functional Ecology

2015-ongoing Chief Specialty Editor Frontiers in Plant Functional Ecology

Memberships

Membership/Offices Held in Scholarly and Professional Societies

Member of the Ecological Society of America

Member of the American Geophysical Union

Member of the Pineland Preservation Alliance

Funding

Externally-Funded Research and/or Training Grants Pending

Please note – I am program officer at the National Science Foundation since January 2016 and thus I was just removed from an about to be granted award and have no current awards.

Awarded

09/2013-08/2016 (Grant Amount: \$109,465) PHY [1337450](#) MRI: Acquisition of a Powder X-Ray Diffractometer for Research and Teaching in Earth and Environmental Sciences at Rutgers University in Newark, Schafer, co-PI

12/2012-11/2013 (Grant Amount: \$81,941) NSF - CBET [1311713](#) Collaborative Research: RAPID: Impact of disturbance from hurricane Sandy on methane emission and carbon sequestration rates in NJ coastal wetlands, Schafer (PI), Bohrer, Jaffe

09/2011-12/2011 (Grant Amount: \$15,660) Duke Farms “Carbon Consulting”, PI

09/2011-08/2014 (Grant Amount: \$325,000) NSF – CBET 1133275 “Collaborative research: Controls affecting greenhouse gas fluxes in restored and natural tidal wetlands”, PI, co-PI Jaffe (Princeton University)

01/2011-12/2014 (Grant Amount: \$549,343) DOE – BER “Collaborative Research: Effects of disturbance on carbon sequestration in the New Jersey Pine Barrens” AWARDED, PI, co-PI Bohrer Ohio State University (subcontract), non-funded collaborators, Clark, Skowronski (US Forest Service)

03/2011-02/2014 (Grant Amount: \$515,000) NSF - EAR 1045084 “Collaborative research: Investigating hydrology- driven models for methane cycling in northern peatlands” Rutgers U

Newark AWARDED, co-PI, PI Slater, Rutgers University Newark, co-PI Comas (Florida Atlantic University), co-PI Reeve (University of Maine, Orono)

09/2010-08/2013 (Grant Amount: \$300,000) NSF - CBET 1033639 “Collaborative research: Greenhouse gas balance of urban temperate wetlands”, Rutgers U Newark, PI, co-PI G. Bohrer, W. Mitsch Ohio State University, co-PI M. Wu Montclair State University

09/2010-08/2012 (Grant Amount: \$104,935) USDA agreement “Carbon inventory and wood decomposition measurements to evaluate the accuracy of carbon sequestration estimates in the New Jersey Pine Barrens”, PI

07/2009-06/2010 (Grant Amount: \$40,000) Meadowlands Environmental Research Institute Fellowship Award – “CO₂ sink strengths of the New Jersey Meadowlands”, PI

Internally-Funded Research and/or Training Grants

05/2010-05/2011 (Grant Amount: \$3,960) University Research Council grant “Carbon allocation and plant water use efficiency in transgenic poplar plants with ectopic expression of the pine cytosolic glutamine synthetase GS1a” – PI

07/2015 – ongoing (Grant Amount: \$100,000) SEED GRANT CATEGORY II PROPOSAL - Institute of Urban Sustainability and Environment (iUSE) at Newark

07/2015 – ongoing (Grant Amount: \$24,000) INITIATIVE FOR MULTIDISCIPLINARY RESEARCH TEAMS (IMRT) AWARDS – PHASE I - Urban Environmental Sustainability

Service

Contributions to the Advancement of the Academic Profession

Panelist, National Science Foundation review panel for unsolicited proposals in Environmental Sustainability CBET (December 2010 and April 2012)

Panelist, National Science Foundation review panel for unsolicited proposals in Ecosystem Studies DEB (March 2012, April 2013, October 2014)

Panelist, National Science Foundation review panel for unsolicited proposals in Integrated Organism Systems IOS (October 2015)

Panelist, Environmental Protection Agency Science To Achieve Results (STAR) program graduate fellowship review (March 2011, September 2015)

Reviewer, National Science Foundation Hydrological Science and Ecosystem Studies DEB program, ad-hoc reviewer

Reviewer, Wyoming Water Resource Institute

Reviewer, Agriculture and Forest Meteorology

Reviewer, Canadian Journal of Forest Research

Reviewer, Ecohydrology

Reviewer, Ecology Letters

Reviewer, Ecological Modeling

Reviewer, Environmental Pollution

Reviewer, Estuaries and Coasts

Reviewer, Forests

Reviewer, Forest Ecology and Management

Reviewer, Global Change Biology

Reviewer, Hydrological Processes

Reviewer, International Journal of Biometeorology

Reviewer, Journal of Environmental Engineering

Reviewer, Journal of Geophysical Research- Biogeosciences

Reviewer, New Phytologist

Reviewer, Oecologia

Reviewer, PLoS ONE

Reviewer, Scandinavian Journal of Forest Research

Reviewer, Soil Science

Reviewer, Tree Physiology

Reviewer, Water Resource Research

Reviewer, Wetlands

Service to Rutgers University

2014/2015 Chancellors Anchor Institution Study Group

2014/2015 University Senate

2009-2014 Member of the standards committee in the Department of Biological Sciences

2010 Search committee for an Evolutionary Biologist J. Ware

2009-2010 Participation in Rutgers Newark Earth Day activities

2009 Participation in Rutgers Day, New Brunswick

2009 Panelist Bioscience Career Day for highschool students, Douglass Campus, particular emphasis given to recruiting females

2009 – ongoing part of the RU Fair networking of female faculty on campus to enhance female faculty retention in STEM fields

Service to Other Public Bodies

2013 Granted interview to James O'Neill, Bergen Record, which resulted in an article at http://www.northjersey.com/news/environment/Meadowlands_shown_to_be_valuable_for_pulling_carbon_dioxide_from_the_air.html

2013 Granted interview to Jeff Goettemoeller, LICOR Biosciences, which resulted in http://www.envirotech-online.com/articles/portable-field-testing/43/licor_biosciences/case_studies_of_greenhouse_gas_flux_measurements/1425/

2012 Granted interview to Eunice Lee, Star Ledger, that resulted in the article

[http://blog.nj.com/ledgerupdates_impact/print.html?
entry=/2012/03/warm_winter_coaxes_early_bloom.html](http://blog.nj.com/ledgerupdates_impact/print.html?entry=/2012/03/warm_winter_coaxes_early_bloom.html)

2012 Interview with Chad Miller, LICOR Bioscience, resulting in the article at

<http://www.licor.com/env/newsline/2012/03/closing-the-methane-gap-scaling-up-from-the-ecosystem-to-the-globe/>

2011 Facilitated the Summer Program in Earth Ecology of the Aim High Science outreach program for 40 high school students summer 2011

2009-2010 Taught in the summer thirty to forty high school children environmental issues within the Newark Youth Leadership Program administered by the Greater Newark Conservancy

2009 Granted interview with Violet Snow, NJ- Newsroom, that resulted in the article

<http://www.newjerseynewsroom.com/science-updates/new-jersey-scientists-oppose-cap-and-trade-support-carbon-tax>

2009 Outreach activities at the PSE&G Greenfest

2009 Newark Lincoln Park Music Festival