

## SHIMON C. ANISFELD

Yale School of Forestry & Environmental Studies  
370 Prospect St., New Haven, CT 06511  
shimon.anisfeld@yale.edu  
<http://environment.yale.edu/anisfeld>

### EDUCATION

**Massachusetts Institute of Technology**, Ph.D. in Organic Chemistry, May 1993  
**Princeton University**, A.B. in Chemistry *cum laude*, May 1987

### EXPERIENCE

#### **Yale School of Forestry & Environmental Studies**

Senior Lecturer and Research Scientist in Water Resources and Environmental Chemistry, July 2006-present  
Lecturer and Research Scientist in Water Resources and Environmental Chemistry, July 2003 – June 2006  
Lecturer and Associate Research Scientist in Water Resources and Environmental Chemistry, July 2000 – June 2003  
Associate Research Scientist and Lecturer in Environmental Chemistry, July 1997-June 2000  
Postdoctoral Associate with Professor Gaboury Benoit, Sept. 1994 – June 1997  
Postdoctoral coursework in environmental chemistry and hydrology, Sept. 1993 – August 1994

### PUBLICATIONS – Peer-reviewed journal articles

1. **Anisfeld, S.C.**, A.C. Kemp, and J. O'Connell. 2019. Salt marsh migration into lawns revealed by a novel sediment-based approach. *Estuaries and Coasts* 42: 1419-1429. doi 10.1007/s12237-019-00590-6
2. Fagherazzi, S., **S.C. Anisfeld**, L.K. Blum, E.V. Long, R.A. Feagin, A. Fernandes, W.S. Kearney, and K. Williams. 2019. Sea level rise and the dynamics of the marsh-upland boundary. *Frontiers in Environmental Science* 7. doi 10.3389/fenvs.2019.00025
3. Lemoine, H.R., A.B. Paxton, **S.C. Anisfeld**, R.C. Rosemond, and C.H. Peterson. 2019. Selecting the optimal artificial reefs to achieve fish habitat enhancement goals. *Biological Conservation* 238: 108200. <https://doi.org/10.1016/j.biocon.2019.108200>
4. Dutton, C. L., A. L. Subalusky, **S. C. Anisfeld**, L. Njoroge, E. J. Rosi and D. M. Post. 2018. The influence of a semi-arid sub-catchment on suspended sediments in the Mara River, Kenya. *PLOS ONE* 13(2): e0192828. <http://dx.doi.org/10.1371/journal.pone.0192828>
5. **Anisfeld, S.C.**, K.R. Cooper, and A.C. Kemp. 2016. Upslope development of a tidal marsh as a function of upland land use. *Global Change Biology*. <http://dx.doi.org/10.1111/gcb.13398>
6. Schultz, R.A., **S.C. Anisfeld**, and T.D. Hill. 2016. Submergence and herbivory as divergent causes of marsh loss in Long Island Sound. *Estuaries and Coasts* 39: 1-9. <http://dx.doi.org/10.1007/s12237-016-0080-6>
7. **Anisfeld, S.C.**, T.D. Hill, and D.R. Cahoon. 2016. Elevation dynamics in a restored versus a submerging salt marsh in Long Island Sound. *Estuarine, Coastal and Shelf Science* 170: 145-154. <http://dx.doi.org/10.1016/j.ecss.2016.01.017>

8. Hill, T.D., and **S.C. Anisfeld**. 2015. Coastal wetland response to sea level rise in Connecticut and New York. *Estuarine, Coastal and Shelf Science* 163: 185-193.  
<http://dx.doi.org/10.1016/j.ecss.2015.06.004>
9. Shih, J.-S., J.E. Saiers, **S.C. Anisfeld**, Z. Chu, L.A. Muehlenbachs, and S.M. Olmstead. 2015. Characterization and analysis of liquid waste from Marcellus Shale gas development. *Environmental Science & Technology* 49: 9557-9565.  
<http://dx.doi.org/10.1021/acs.est.5b01780>
10. Kemp, A.C., A.D. Hawkes, J.P. Donnelly, C.H. Vane, B.P. Horton, T.D. Hill, **S.C. Anisfeld**, A.C. Parnell, and N. Cahill. 2015. Relative sea-level change in Connecticut (USA) during the last 2200 yrs. *Earth and Planetary Science Letters* 428: 217-229.  
<http://dx.doi.org/10.1016/j.epsl.2015.07.034>
11. Dutton, C., **S.C. Anisfeld**, and H. Ernstberger. 2013. A novel sediment fingerprinting method using filtration: application to the Mara River, East Africa. *Journal of Soils and Sediments* 13: 1708-1723. <http://dx.doi.org/10.1007/s11368-013-0725-z>
12. Kemp, A.C., R.J. Telford, B.P. Horton, **S.C. Anisfeld**, and C.K. Sommerfield. 2013. Reconstructing Holocene sea level using salt-marsh foraminifera and transfer functions: lessons from New Jersey, USA. *Journal of Quaternary Science* 28: 617-629.  
<http://dx.doi.org/10.1002/jqs.2657>
13. Kemp, A.C., B.P. Horton, C.H. Vane, C.E. Bernhardt, D.R. Corbett, S.E. Engelhart, **S.C. Anisfeld**, A.C. Parnell, and N. Cahill. 2013. Sea-level change during the last 2500 years in New Jersey, USA. *Quaternary Science Reviews* 81: 90-104.  
<http://dx.doi.org/10.1016/j.quascirev.2013.09.024>
14. **Anisfeld, S.C.** and T.D. Hill. 2012. Fertilization effects on elevation change and belowground carbon balance in a Long Island Sound tidal marsh. *Estuaries and Coasts* 35: 201-211.  
<http://dx.doi.org/10.1007/s12237-011-9440-4>
15. Kemp, A.C., C.K. Sommerfield, C.H. Vane, B.P. Horton, S. Chenery, **S.C. Anisfeld**, and D. Nikitina. 2012. Use of lead isotopes for developing chronologies in recent salt-marsh sediments. *Quaternary Geochronology* 12: 40-49.  
<http://dx.doi.org/10.1016/j.quageo.2012.05.004>
16. Kemp, A.C., B.P. Horton, D.R. Vann, S.E. Engelhart, C.A.G. Pre, C.H. Vane, D. Nikitina, and **S.C. Anisfeld**. 2012. Quantitative vertical zonation of salt-marsh foraminifera for reconstructing former sea level, an example from New Jersey, USA. *Quaternary Science Reviews* 54: 26-39. <http://dx.doi.org/10.1016/j.quascirev.2011.09.014>
17. Mitch, A.A. and **S.C. Anisfeld**. 2010. Contaminants in Long Island Sound: Data synthesis and analysis. *Estuaries and Coasts* 33: 609-628. <http://dx.doi.org/10.1007/s12237-009-9249-6>
18. **Anisfeld, S.C.**, R.T. Barnes, M.A. Altabet, and T. Wu. 2007. Isotopic apportionment of atmospheric and sewage nitrogen sources in two Connecticut rivers. *Environmental Science & Technology* 41: 6363-6369. <http://dx.doi.org/10.1021/es070469v>
19. **Anisfeld, S.C.** 2007. Emerging markets for ecosystem services: Setting the context. *Journal of Sustainable Forestry* 25: 1-14.  
[http://www.tandfonline.com/doi/abs/10.1300/J091v25n01\\_01](http://www.tandfonline.com/doi/abs/10.1300/J091v25n01_01)
20. Traister, E. and **S.C. Anisfeld**. 2006. Variability of indicator bacteria at different time scales in the upper Hoosic River watershed. *Environmental Science & Technology* 40: 4990-4995.  
<http://dx.doi.org/10.1021/es0601437>

21. Chmura, G.L., **S.C. Anisfeld**, D.R. Cahoon, and J.C. Lynch. 2003. Global carbon sequestration in tidal, saline wetland soils. *Global Biogeochemical Cycles* 17.  
<http://dx.doi.org/10.1029/2002gb001917>
22. **Anisfeld, S.C.**, M. Tobin, and G. Benoit. 1999. Sedimentation rates in flow-restricted and restored salt marshes in Long Island Sound. *Estuaries* 22: 231-244.  
<http://dx.doi.org/10.2307/1352980>
23. **Anisfeld, S.C.** and G. Benoit. 1997. Impacts of flow restrictions on salt marshes: An instance of acidification. *Environmental Science & Technology* 31: 1650-1657.  
<http://dx.doi.org/10.1021/es960490o>
24. **Cohen-Anisfeld, S.T.** and P.T. Lansbury Jr. 1993. A practical, convergent method for glycopeptide synthesis. *Journal of the American Chemical Society* 115: 10531-10537.
25. Hendrix, J.C., J.T. Jarrett, **S.T. Anisfeld**, and P.T. Lansbury Jr. 1992. Studies related to a convergent fragment coupling approach to peptide synthesis using the Kaiser oxime resin. *Journal of Organic Chemistry* 57: 3414-3420.
26. **Anisfeld, S.T.** and P.T. Lansbury Jr. 1990. A convergent approach to the chemical synthesis of asparagine-linked glycopeptides. *Journal of Organic Chemistry* 55: 5560-5562.

#### **PUBLICATIONS – Books, Book Chapters, Book Reviews, Reports**

1. Cahoon, D.R., J.H. Olker, A.G. Yeates, G.R. Guntenspergen, J.B. Grace, S.C. Adamowicz, **S.C. Anisfeld**, A.H. Baldwin, N. Barrett, L. Beckett, A. Benzecry, L.K. Blum, D.M. Burdick, W. Crouch, M.C. Ekberg, S. Fernald, K.W. Grimes, J. Grzyb, E.K. Hartig, D.A. Kreeger, M. Larson, S. Lerberg, J.C. Lynch, N. Maher, M. Maxwell-Doyle, L.R. Mitchell, J. Mora, V. O'Neill, A. Padeletti, D.J. Prosser, T. Quirk, K.B. Raposa, W.G. Reay, D. Siok, C. Snow, A. Starke, J.C. Stevenson, L. Staver, and V. Turner. 2019. Hurricane Sandy impacts on coastal wetland resilience. Open-File Report 2018-1142. U.S. Geological Survey, Reston, VA,  
<https://doi.org/10.3133/ofr20181142>
2. **Anisfeld, S.C.** 2012. Biogeochemical responses to marsh restoration. In C. T. Roman and D. M. Burdick, eds. ***Restoring Tidal Flow to Salt Marshes: A Synthesis of Science and Management***. Island Press.
3. **Anisfeld, S.C.** 2012. Review: The Rising Sea by Orrin H. Pilkey and Rob Young. *Environmental Conservation* 39: 94-95
4. **Anisfeld, S.C.** 2010. ***Water Resources***. Island Press.
5. Gentry, B.S., Q. Newcomer, **S.C. Anisfeld**, and M.A. Fotos, eds. 2007. ***Emerging Markets for Ecosystem Services: A Case Study of the Panama Canal Watershed***. The Haworth Press, Inc.

#### **CURRENT GRANTS**

**Quinnipiac River Marsh Studies**, 2019-2020, Quinnipiac River Fund, sole PI, \$8400

**Sea-Level Rise, Storm Surge, and Salt Marsh Migration**, 2020-2022, Connecticut Sea Grant Institute, PI (with Craig Brodersen as co-PI), \$132,002

#### **COMPLETED GRANTS**

**Quinnipiac River Marsh Studies**, 2018-2019, Quinnipiac River Fund, sole PI, \$13,100

**The Future of Long Island Sound Tidal Marshes: Understanding Marsh Migration into Different Upland Types**, 2014-2017, Connecticut Sea Grant Institute, sole PI, \$129,995

**Accretion, Elevation Change, and Herbivory in the Quinnipiac Marshes**, 2 grants, 2016-2018, Quinnipiac River Fund, sole PI, \$27,500

**Systematic Evaluation of Nitrogen Removal by BMPs in the Long Island Sound Watershed**, 2011-2014, New York Sea Grant Institute, lead PI with Gaboury Benoit, \$213,000

**Wetland Loss in the Quinnipiac River Estuary**, 9 grants, 2001-2015, Quinnipiac River Fund, sole PI, \$105,644

**Efficiency of Standard Stormwater Best Management Practices for Nitrogen Removal**, 2008-2010, Long Island Sound License Plate Fund, sole PI, \$25,000

**Environmental Indicator Review and Assessment for Long Island Sound**, 2006-2008, New England Interstate Water Pollution Control Commission, sole PI, \$56,811

**Understanding the Role of Nutrient Enrichment in Wetland Loss in Long Island Sound**, 2004-2007, US EPA, sole PI, \$125,372

**Isotopic Nitrogen and Oxygen Ratios in Nitrates Delivered to Long Island Sound**, 2002-2005, Long Island Sound License Plate Fund, sole PI, \$24,975

**Acquisition of a Carbon-Nitrogen-Sulfur Analyzer**, 2004, NSF Earth Sciences, lead PI, \$32,130

**Quinnipiac River: Integration, Synthesis, and Public Dissemination of Results of Comprehensive Watershed NPSP Assessment**, 2003-2004, CT DEP, co-PI with R. Zajac, \$16,461

**Quinnipiac River Bacterial Contamination Assessment**, 2002-2004, US EPA/CT DEP 319 Nonpoint Source Funding, sole PI, \$19,500

**Water In, Water Out? An Analysis of Water and Nitrogen Use in the City of New Haven**, 2002-2004, Hixon Center for Urban Ecology, co-PI with S. Olmstead, \$14,510

**Water Quality Assessment in Connecticut: Evaluation of Current Protocols and Development of Improved Methods**, 2002-2003, Connecticut Institute of Water Resources, sole PI, \$24,836

**Understanding the Fate of Formaldehyde in the Quinnipiac River**, 2000-2002, Quinnipiac River Fund, sole PI, \$14,000

**Understanding the Biological Impoverishment of the Lower Quinnipiac River: Assessment of Sediment-Bound Organic Contaminants**, 1999-2000, Quinnipiac River Fund, sole PI, \$12,500

**Point and Nonpoint Nitrogen Loading to the Quinnipiac River**, 1998-1999, Quinnipiac River Fund, sole PI, \$6800

**Quinnipiac River Watershed Nonpoint Source Pollution Project**, 1996-1999, USEPA/CT DEP, co-PI with G. Benoit, R. Zajac, R. Pupedis, \$297,566

**Formaldehyde Dynamics Downstream of a Point Source**, 1997-1998, Quinnipiac River Fund, sole PI, \$12,000

### **TEACHING – Yale School of Forestry & Environmental Studies**

**Teaching Excellence Award**, Yale School of Forestry & Environmental Studies: 1997, 2000, 2002, 2003, 2005, 2006, 2011, 2018

**Physical Sciences for Environmental Management** (Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018, Fall 2019). A core introduction to the physical sciences (geology, hydrology, soil science, environmental chemistry, atmospheric science) for environmental management students.

**Water Resource Management** (Fall 2000, Spring 2002, Spring 2003, Spring 2004, Fall 2005, Fall 2006, Spring 2009, Spring 2010, Spring 2012, Spring 2015, Spring 2016, Spring 2017, Spring 2018, Fall 2018, Spring 2020). An integrated analysis of the problems facing both human water users and aquatic ecosystems (e.g., water quality degradation, water scarcity, streamflow changes, habitat destruction, etc.), and the technical, policy, and legal tools which can help provide solutions.

**Coastal Ecosystems: Natural Processes and Anthropogenic Impacts** (Fall 1999, Spring 2001, Fall 2001, Fall 2002, Fall 2003, Fall 2004, Fall 2005, Fall 2007, Fall 2008, Fall 2009, Fall 2012, Fall 2013, Fall 2015, Fall 2017, Fall 2019). Natural processes dominating coastal ecosystems and anthropogenic perturbations to these processes.

**Urban Sanitation** (Spring 2020). An inter-disciplinary co-taught course on traditional and innovative approaches for managing human excreta.

**Organic Pollutants in the Environment** (Spring 1996, Spring 1997, Fall 1997, Spring 1999, Spring 2000, Spring 2001, Spring 2002, Spring 2003, Spring 2004, Spring 2005, Spring 2006, Fall 2006, Fall 2007, Spring 2009, Spring 2010, Spring 2011, Spring 2013, Fall 2014, Fall 2016). An introduction to the various classes of organic pollutants and their behavior in the environment.

**Science to Solutions: How Should We Manage Freshwater?** (Fall 2010, Fall 2011). An interdisciplinary, team-taught, problem-solving course using a case study approach to examine water problems.

**Case Studies in Water Resources** (Spring 2008).

**Managing the Coastal Nutrient Problem: The Case of Long Island Sound** (Spring 2006). A team-taught seminar course investigating the successes and failures of nutrient management in Long Island Sound and their impacts on ecosystem health.

**Isotopes in Environmental Science** (Spring 2005). A team-taught course, with broad-ranging coverage of the use of stable and radioactive isotopes in different branches of the environmental sciences.

**Emerging Markets for Ecosystem Services: Developing an Integrated Framework for Analysis** (Spring 2005). A team-taught course on science, business, and policy of markets for watershed services, carbon sequestration, and biodiversity protection, including application to case studies in Panama.

**The Science and Policy of Coastal Eutrophication and Restoration** (Fall 2003). An interdisciplinary, team-taught course on coastal nutrient problems.

**Environmental Organic Chemistry** (Spring 1995, Fall 2002). An advanced course in fate and transport of organic compounds in the environment.

**Seminar in Coastal Science and Management** (Fall 2000). A seminar course with two goals: learning how to read and critique journal articles on coastal science topics; and exploring the ways in which coastal management plans make use of scientific information.

**Seminar in Environmental Organic Chemistry** (Fall 2001). An advanced seminar focused on biodegradation and bioremediation of organic pollutants.

### **SUPERVISION – Postdoctoral Associate**

**Andrew Kemp**, 2010-2013, now Associate Professor at Tufts University

## **SUPERVISION – Completed Ph.D. Dissertation**

**Troy D. Hill**, Sediment and Vegetation Dynamics in Coastal Wetlands of Connecticut and New York, USA (2015)

## **SUPERVISION – Completed Masters Theses**

- Mapping Water Demand and Availability in Laikipia County, Kenya (2019)
- A Comparison of Salt Marsh Migration Rates Onto Lawn and Forested Landscapes (2016)
- Urban Water Management and Drought: What can Southern California Learn from Australia's Millennium Drought? (2015)
- Using Sediment Cores to Understand the Recent History of Marsh Migration in Connecticut (2015)
- Greenhouse Gas Emissions (CH<sub>4</sub>, CO<sub>2</sub>, N<sub>2</sub>O) in Tidal Marshes of Tomales Bay, California (2015)
- Factors Controlling Nitrogen Removal Efficiency in Constructed Wetlands (2014)
- Differentiating Drivers of Marsh Loss in Long Island Sound (2014)
- History, Applications, and Opportunities for Innovation in Utility Water Quality Communication (2014)
- Inter-Storm Variability in Nitrogen Removal in a Connecticut Constructed Wetland (2013)
- Nor Any Drop to Drink: Mapping the Pollution Vulnerability of the Mountain Aquifer (2012)
- Sediment Metal Levels in Long Island Sound Salt Marshes (2012)
- Sediment Fingerprinting in the Mara River: Uncovering Relationships Between Wildlife, Tourism, and Non-point Source Pollution (2012)
- Water Quality and Glacial Recession in the Rio Negro Watershed, Cordillera Blanca, Peru (2012)
- Establishing Collaborations Between Early Childhood and Environmental Education Organizations (2012)
- Overland Flow Potential Following Deforestation in an Andean Amazon Montane Forest (2011)
- Analysis of Potable Water Use at Yale University (2010)
- Environmental Flow Requirements for the Lower Jordan River (2010)
- Efficiency of Wet Ponds and Constructed Wetlands for Removal of Nitrogen From Connecticut Stormwater (2010)
- Safeguarding the Lifeblood of the West: Acquiring Water Rights for Instream Flow Restoration (2010)
- Regional Hydro-Ecological Relationships: A Comparative Case Study of Connecticut Streams Across a Range of Water Supply Diversion Rates (2009)
- Integrating Water Supply Management and Ecological Flow Requirements in Connecticut (2009)
- In Pursuit of Participatory, Science-Driven, Transboundary Management of the Headwaters of the Coco, Honduras and Nicaragua (2009)
- Carbon Dynamics in Long Island Sound Salt Marshes: Impacts of Nutrients and Hydrology (2008)
- Dry Cleaners and Perchloroethylene in Connecticut (2008)

- Management of PCB's in Ghana (2008)
- A Study of the Fluorosis Mitigation Project in Mundargi Taluk, Karnataka, India (2008)
- Estuarine Water Quality Prediction Using MODIS Satellite Imagery (2007)
- Controls on Aboveground Productivity in Three Salt Marshes on Long Island Sound (2006)
- Household Water Use and Stream Health in the Path of the Tapir Biological Corridor, Costa Rica (2006)
- Trace Metals Analysis of Impounded Sediments in Raymond Brook Dam, Salmon River Watershed, CT (2006)
- Sustainable Water Supply in Indonesia's Tsunami Affected Region: Barrack and Community (2006)
- A Controlled Experiment Investigating the Effects of Mycorrhizal Inoculation on the Sequestration of Chlordane by *Cucurbita pepo pepo* (2006)
- Surface Water Bacterial Fluctuation in the Upper Hoosic River Watershed (2005)
- Water Use and Streamflow in the Salmon River Basin (2005)
- Assessment of Wetland Condition: A New Approach for New England Marshes (2005)
- Comparison of Watershed Models: Case Study Analysis of Long Island Sound and Chesapeake Bay (2004)
- Surface Water Bacterial Fluctuation in the Upper Hoosic River Watershed (2004)
- Descriptive Survey of Watershed Planning and the Recommendation of Minimum Instream Flows Under Chapter 90.82 Revised Code of Washington (2003)
- Tracking Nonpoint Sources of Bacterial Contamination in Misery, Harbor, and Sodom Brooks, CT (2003)
- Exploring Alternative Indicators for Water Quality (2003)
- Evaluating the Nature, Functions, and Values of Wetlands in the Nonnewaug Falls Open Space and Agricultural Area in Woodbury, CT (2002)
- Water Resource Management and the TMDL Program in Korea (2002)
- Understanding the Fate of Formaldehyde in the Quinnipiac River (2002)
- Wetland Loss in the Quinnipiac River Estuary: Baseline Assessment (2002)
- Stormwater Management in Coastal Connecticut: An Assessment of Stormwater Practices in Connecticut's Coastal Communities and Readiness for EPA Phase II Regulations (2001)
- Source Water Assessment and Protection in Nicaragua (2001)
- The Effects of Docks and Mechanical Disturbance on Submerged Aquatic Vegetation in Tidal-Fresh Hamburg Cove, Lyme, Connecticut (2001)
- Understanding the Temporal and Spatial Variability in Stream Nitrogen Concentrations Using a High-Resolution Data Set (2000)
- Analysis of Patterns in High-Resolution Turbidity and Streamflow Data Obtained by a Datalogger (2000)
- High-Temporal-Resolution Investigation of the Timing and Quality of Stormflow in Tributaries of the Quinnipiac River (1999)
- Relationship Between Land Use and Nitrogen Loading in Nine Small Watersheds (1998)
- The Effect of Oil Pollution on Bonny Island, Nigeria and Options for its Remediation (1997)
- Nutrient Loading in the Tenmile River: A Watershed-Level Analysis (1997)

## **SERVICE**

**A Short Course in River Processes for Environmental Activists and Municipal Officials**, funded by The Community Foundation for Greater New Haven, offered annually, 2002-2008

**Manuscript Review:** Agricultural and Forest Meteorology, Aquatic Geochemistry, Biogeosciences, Biological Conservation, Environmental Research Letters, Environmental Science and Technology, Estuaries and Coasts, Estuarine Coastal and Shelf Science, Geochimica et Cosmochimica Acta, Global Change Biology, International Journal of River Basin Management, Island Press, Journal of Environmental Quality, Journal of Industrial Ecology, Marine Environmental Research, PeerJ

**Proposal Review:** CalFed, EPA, Maryland Sea Grant, New York Sea Grant