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Ferdi L. Hellweger

Curriculum Vitae

Wasserreinhaltung / Water Quality Engineering
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1. EDUCATION/EMPLOYMENT HISTORY

1.1. Education

Dr.Eng.Sc., Columbia University, 2004
Doctor of Engineering Science
Earth and Environmental Engineering
Department of Earth and Environmental Engineering
Columbia University, New York City, New York
Thesis Title: Arsenic Transformation by Phytoplankton: The Effect of Phosphorus Luxury Uptake

M.S.E., University of Texas at Austin, 1997
Master of Science in Engineering
Environmental and Water Resources Engineering
Department of Civil Engineering
University of Texas, Austin, Texas

B.S.C.E., Northeastern University, 1995
Bachelor of Science in Civil Engineering
Environmental Engineering
Department of Civil Engineering
Northeastern University, Boston, Massachusetts
GPA: 3.9; Summa cum Laude

1.2. Employment

Technical University of Berlin, Berlin, Germany (2018+)
Water Quality Engineering, Professor and Chair, 2018+

Northeastern University, Boston, MA, USA (2004 – 2017)
Civil and Environmental Engineering Department, Associate Professor, 2010 – 2017
Marine and Environmental Sciences Department, Affiliated Faculty, 2016 – 2017
Bioengineering Department, Affiliated Faculty, 2014 – 2017
Center for Urban Environmental Studies, Acting Director, 2010 – 2017
Civil and Environmental Engineering Department, Assistant Professor, 2004 – 2010
Center for Urban Environmental Studies, Associate Director, 2004 – 2010

HydroQual, Inc., Mahwah, NJ, USA (1997 – 2004)
Environmental engineering consulting firm, specialized in surface water quality modeling
Now HDR
Last rank: Project Manager

University of Texas at Austin, Center for Research in Water Resources (1995 – 1997)
Rank: Graduate research assistant

Cochrane Associates, Inc., Boston, MA (1992 – 1995)
Environmental engineering consulting firm
Rank: CO-OP– Engineer

City of Cambridge, Cambridge, MA (1992)
Department of Public Works
Rank: CO-OP

WARTIG Chemieberatung (Summer 1990, 1991)
Environmental chemistry consulting firm
Rank: Laborer

2. SCHOLARSHIP/RESEARCH

2.1. Publications

● My 5 best papers in the past 5 years
(corresponding author **bold**) (*my graduate student) (**my undergraduate student)
[IF = ISI 2015 impact factor, Cited = citations in Google Scholar 2/2020]

Refereed Journal Papers (J)

Current/Primary Research Area

J58 **Hellweger, F. L.**, Vick, C.*, Rückbeil, F.*, Bucci, V. 2019. Fresh Ideas Bloom in Gut Healthcare to Cross-Fertilize Lake Management. *Environmental Science & Technology*, 53(24): 14099-14112. DOI link [IF = 5.4, Cited = n/a]

J57 **Hellweger, F. L.**, Jabbur, M. L., Johnson, C. H., van Sebille, E., Sasaki, H. 2019.
ABM Circadian clock helps cyanobacteria manage energy in coastal and high latitude ocean.
● *ISME J.*, 14: 560–568. DOI link [IF = 9.3, Cited = n/a]

J56 **Hellweger, F. L.** 2019. Combining Molecular Observations and Microbial Ecosystem
ABM Modeling: A Practical Guide. *Annual Review of Marine Science*, 12: 267-289. DOI link [IF = 15.2, Cited = n/a]

J55 **Hellweger, F. L.** 2019. Heterotrophic substrate specificity in the aquatic environment: The role of microscale patchiness investigated using modelling. *Environmental Microbiology*, 20(10): 3825-3835. DOI link [IF = 5.9, Cited = 1]

J54 ABM **Leveau, J.**, Hellweger, F., Kreft, J.-U, Prats, C., Zhang, W. 2018. The individual microbe: single-cell analysis and agent-based modelling. *Frontiers in Microbiology*, 9: 2825. DOI link [IF = 4.2, Cited = 2]

J53 Schellenger, F. L.*, **Hellweger, F. L.** 2018. Phosphorus loading from onsite wastewater systems to a lake (at long time scales). *Lake and Reservoir Management*, 35(1): 90-101. DOI link [IF = 1.0, Cited = 1]

J52 ABM ● **Hellweger, F. L.**, Huang, Y., **Luo, H.** 2018. Carbon Limitation Drives GC Content Evolution of a Marine Bacterium in an Individual-Based Genome-Scale Model. *ISME J.* 12: 1180–1187. DOI link [IF = 9.3, Cited = 6]

J51 Ruan, X.*, Smith, R. A., **Hellweger, F. L.** 2018. Effect of Lake Nitrogen Fixation on Watershed Export under Loading Reduction Scenarios. *ASCE J. Environmental Engineering*, 144(9): 04018094. DOI link [IF = 1.1, Cited = 0]

J50 ABM Kreft, J.-U., Plugge, C. M., Prats, C., Leveau, J. H. J., Zhang, W., **Hellweger, F. L.** 2017. From Genes to Ecosystems in Microbiology: Modeling Approaches and the Importance of Individuality. *Frontiers in Microbiology*, 8: 2299. DOI link [IF = 4.2, Cited = 13]

J49 **Gardner, W. S.**, Newell, S. E., McCarthy, M. J., Hoffman, D. K, Lu, K., Lavrentyev, P. J, Hellweger, F. L., Wilhelm, S. W., Liu, Z., Bruesewitz,. D. A., Paerl, H. W. 2017. Community Biological Ammonium Demand: A Conceptual Model for Cyanobacteria Blooms in Eutrophic Lakes. *Environ. Sci. Technol.*, 2017, 51 (14): 7785–7793. DOI link [IF = 5.4, Cited = 25]

J48 ABM ● Shirani, S.*, **Hellweger, F. L.** 2017. Dispersal limitation and neutral evolution produce substantial biogeographic patterns in *Microcystis aeruginosa* populations of lake systems. *Microbial Ecology*. 74(2): 416–426. DOI link [IF = 3.2, Cited = 6]

J47 **Hellweger, F. L.** 2017. 75 years since Monod: it is time to increase the complexity of our predictive ecosystem models (opinion). *Ecological Modelling*, 346: 77-87. DOI link [IF = 2.3, Cited = 11]

J46 ABM **Hellweger, F. L.**, van Sebille, E., Calfee, B. C., Chandler, J. W., Zinser, E. R., Swan, B. K., Fredrick, N. D.* 2016. The role of ocean currents in the temperature selection of plankton: insights from an individual-based model. *PLOS ONE*, 11(12): e0167010. DOI link [IF = 3.1, Cited = 4]

J45 ABM ● **Hellweger, F. L.**, Fredrick, N. D.*, McCarthy, M. J., Gardner, W. S., Wilhelm, S., Paerl, H. W. 2016. Dynamic, mechanistic, molecular-level modeling of cyanobacteria: *Anabaena* and nitrogen interaction. *Environmental Microbiology*, 18(8): 2721-2731. DOI link [IF = 5.9, Cited = 13]

J44 ABM Hellweger, F. L., Clegg, R. J, Clark, J., Plugge, C. M., **Kreft, J.-U.** 2016. Advancing microbial research by simulation: technologies for individual-based modelling. *Nature Reviews Microbiology*, 14: 461–471. DOI link [IF = 24.7, Cited = 99]

J43 ABM Koleva, K. Z.*, **Hellweger, F. L.** 2015. From protein damage to cell aging to population fitness in *E. coli*: Insights from a multi-level agent-based model. *Ecological Modelling*, 301: 62–71. DOI link [IF = 2.3, Cited = 12]

J42 ABM ● **Hellweger, F. L.**, van Sebille, E., Fredrick, N. D.* 2014. Biogeographic patterns in ocean microbes emerge in a neutral agent-based model. *Science*, 345(6202): 1346-1349. DOI link [IF = 34.7, Cited = 79]

J41 Ruan, X.*, Schellenger, F.*, **Hellweger, F. L.** 2014. Accounting for N fixation in simple models of lake N loading/export. *Environmental Science & Technology*, 48(10): 5667–5673. DOI link [IF = 5.4, Cited = 6]

J40 ABM **Hellweger, F. L.**, Fredrick, N. D.*, Berges, J. A. 2014. Age-correlated stress resistance improves fitness of yeast: support from agent-based simulations. *BMC Systems Biology*, 8: 18. DOI link [IF = 2.2, Cited = 9, highly accessed]

J39 ABM **J.-U. Kreft**, **C. Plugge**, V. Grimm, C. Prats, J. Leveau, T. Banitz, S. Baines, J. Clark, A. Ros, I. Klapper, C.Topping, T. Field, A. Schuler, E. Litchman, **F. L. Hellweger**. 2013. Mighty small: Observing and Modeling Individual Microbes Becomes Big Science. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 110(45): 18027-18028. DOI link [IF = 9.4, Cited = 51]

J38 ABM Fredrick, N. D.*, Berges, J. A., Twining, B. S., Nuñez-Milland, D., **Hellweger, F. L.** 2013. Use of Agent-Based Modeling To Explore the Mechanisms of Intracellular Phosphorus Heterogeneity in Cultured Phytoplankton. *Applied & Environmental Microbiology*, 79(14): 4359-4368. DOI link [IF = 3.8, Cited = 8]

J37 **Hellweger, F. L.** 2013. A simple model of tetracycline antibiotic resistance in the aquatic environment: Accounting for metal co-selection. *Journal of Environmental Engineering*, 139(6): 913-921. DOI link [IF = 1.1, Cited = 16]

J36 ABM **Hellweger, F. L.** 2013. *Escherichia coli* adapts to tetracycline resistance plasmid (pBR322) by mutating endogenous potassium transport: *in silico* hypothesis testing. *FEMS Microbiology Ecology*, 83(3): 622–631. DOI link [IF = 3.5, Cited = 18]

J35 ABM Bucci, V.*, Majed, N., **Hellweger, F.L.**, Gu, A.Z. 2012. Heterogeneity of intracellular polymer storage states in enhanced biological phosphorous removal (EBPR) - observation and modeling. *Environmental Science & Technology*, 46(6): 3244-3252. DOI link [IF = 5.4, Cited = 26]

J34 **Hellweger, F. L.**, Ruan, X.*, Cherchia, E.**, Sanchez, S.** 2012. Applicability of Standard Antibiotic Toxicity Tests to the Ambient Aquatic Environment. *Annals of Environmental Science* 5(1), 8. DOI n/a [IF = n/a, Cited = 5]

J33 ABM Bucci, V.*, Hoover, S., **Hellweger, F. L.**, 2012. Modeling Adaptive Mutation of Enteric Bacteria in Surface Water Using Agent-Based Methods. *Water Air Soil Pollut*, DOI 10.1007/s11270-011-1003-6. DOI link [IF = 1.6, Cited = 12]

J32 ABM Bucci, V.*, Nunez-Milland, D., Twining, B., **Hellweger, F. L.**, 2012. Microscale patchiness leads to large and important intraspecific internal nutrient heterogeneity in phytoplankton. *Aquatic Ecology* 46(1): 101-118. DOI link [IF = 1.8, Cited = 28]

J31 Mathew, M.*, Yao, Y.*, Cao, Y.*, Shodhan, K., Ghosh, I.*, Bucci, V.*, Leitao, C.**, Njoka, D.**, Wei, I., **Hellweger, F. L.**, 2011. Anatomy of an Urban Waterbody: A Case Study of Boston's Muddy River. *Environmental Pollution*, 159(8-9):1996-2002. DOI link [IF = 4.8, Cited = 4]

J30 **Hellweger , F. L.**, Ruan, X.*, Sanchez, S.** 2011. A Simple Model of Tetracycline Antibiotic Resistance in the Aquatic Environment (with Application to the Poudre River). *International Journal of Environmental Research and Public Health*, 8(2), 480-497. DOI link [IF = 2.0, Cited = 31]

J29 ABM **Schuler, A.**, Majed, N., Bucci, V.*, Hellweger, F. L., Tu, Y., Gu, A. Z. 2011. Is the Whole the Sum of Its Parts? Agent-based Modelling of Wastewater Treatment Systems. *Water Science and Technology*, 63(8), 1590-8. DOI link [IF = 1.1, Cited = 10]

J28 Bucci, V.*, Vulić, M., Ruan, X.*, **Hellweger, F. L.** 2011. Population dynamics of *Escherichia coli* in surface water. *Journal of the American Water Resources Association*, 47(3), 611–619. DOI link [IF = 1.7, Cited = 13]

J27 ABM **Hellweger, F. L.** 2010. Resonating circadian clocks enhance fitness in cyanobacteria *in silico*. *Ecological Modelling*, 221:1620-1629. DOI link [IF = 2.3, Cited = 29]

J26 **Hellweger, F. L.**, Bucci, V.*, Litman, M. R., Gu, A. Z., Onnis-Hayden, A. 2009. Biphasic Decay Kinetics of Fecal Bacteria in Surface Water Not a Density Effect. *Journal of Environmental Engineering*, 135(5):372-376. DOI link [IF = 1.1, Cited = 35]

J25 ABM **Hellweger, F. L.** 2009. Carrying photosynthesis genes increases ecological fitness of cyanophage *in silico*. *Environmental Microbiology*, 11(6):1386-1394. DOI link [IF = 5.9, Cited = 59]

J24 ABM **Hellweger, F. L.**, Bucci, V.* 2009. A bunch of tiny individuals – Individual-based modeling for microbes (review paper). *Ecological Modelling*, 220(1):8-22. DOI link [IF = 2.3, Cited = 155]

J23 ABM **Hellweger, F. L.**, Kravchuk, E. S., Novotny, V., Gladyshev, M. I. 2008. Agent-based modeling of the complex lifecycle of a cyanobacterium (*Anabaena*) in a shallow reservoir. *Limnology & Oceanography*, 53(4):1227-1241. DOI link [IF = 3.7, Cited = 53]

J22 ABM **Hellweger, F. L.** 2008. The role of inter-generation memory in diel phytoplankton division patterns. *Ecological Modelling*, 212:382-396. DOI link [IF = 2.3, Cited = 8]

J21 **Hellweger, F. L.**, Masopust, P.* 2008. Investigating the fate and transport of *E. coli* in the Charles River, Boston using high-resolution observation and modeling. *Journal of the American Water Resources Association*, 44(2):509-522. DOI link [IF = 1.7, Cited = 53]

J20 ABM **Hellweger, F. L.** 2008. Spatially Explicit Individual-Based Modeling Using a Fixed Super-Individual Density. *Computers & Geosciences*, 34(2):144-152. DOI link [IF = 0.1, Cited = 19]

J19 ABM **Hellweger, F. L.**, Kianirad, E.* 2007. Individual-Based Modeling of Phytoplankton: Evaluating Approaches for Applying the Cell Quota Model. *Journal of Theoretical Biology*, 249:554-565. DOI link [IF = 2.0, Cited = 28]

J18 **Hellweger, F. L.** 2007. Ensemble Modeling of *E. coli* in the Charles River, Boston, Massachusetts, USA. *Water Science & Technology*, 56(6):39-46. DOI link [IF = 1.1, Cited = 11]

J17 ABM **Hellweger, F. L.**, Kianirad, E.* 2007. Accounting for Intra-Population Variability in Biogeochemical Models using Agent-Based Methods. *Environmental Science & Technology*, 41(8):2855-2860. DOI link [IF = 5.4, Cited = 23]

J16 **Hellweger, F. L.**, 2005. Dynamics of As Speciation in Surface Water: As(III) Production by Algae. *Applied Organometalic Chemistry*, 19:727-735. DOI link [IF = 2.5, Cited = 14]

J15 **Hellweger, F. L.**, and U. Lall, 2004. Modeling the Effect of Algal Dynamics on Arsenic Speciation in Lake Biwa. *Environmental Science and Technology*, 38:6716-6723. DOI link [IF = 5.4, Cited = 60]

J14 **Hellweger, F. L.**, K. J. Farley, U. Lall, and D. M. Di Toro, 2003. Greedy Algae Reduce Arsenate. *Limnology & Oceanography*, 48:2275-2288. DOI link [IF = 3.7, Cited = 106]

Other Areas

J13 **Meric, D.**, Hellweger, F. L., Alshawabkeh, A. N., Sheahan, T. C. One-Dimensional Large Strain Consolidation Coupled Non-linear Non-Equilibrium Contaminant Transport Model of Capped Sediments (RCM-XPORT2K). *J. Geotechnical and Geoenvironmental Engineering, accepted*. [IF = 1.7, Cited = 16]

J12 Ghasemizadeh, R.*, Yu, X., Butscher, C., Hellweger, F., Padilla, I., **Alshawabkeh, A.**, 2015. Equivalent Porous Media (EPM) Simulation of Groundwater Hydraulics and Contaminant Transport in Karst Aquifers. *PLoS ONE*, 10(9): e0138954. DOI link [IF = 3.1, Cited = n/a]

J11 **Meric, D.**, Hellweger, F. L., Barbuto, S., Rahbar, N., Alshawabkeh, A. N., Sheahan, T. C. 2013. Model Prediction of Long-Term Reactive Core Mat Efficacy for Capping Contaminated Aquatic Sediments. *Journal of Environmental Engineering*, DOI link [IF = 1.1, Cited = 6]

J10 **Ghasemizadeh, R.***, Hellweger, F., Butscher, C., Padilla, I., Vesper, D., Field, M., Alshawabkeh, A. 2012. Review: Groundwater flow and transport modeling of karst aquifers, with particular reference to the North Coast Aquifer of Puerto Rico. *Hydrogeology Journal*, 20(8), 1441-1461. DOI link [IF = 2.0, Cited = 126]

J9 Ghosh, I.*, **Hellweger, F. L.** 2011. Effects of Spatial Resolution in Urban Hydrologic Simulations. *Journal of Hydrologic Engineering*, 17(1), 129–137. DOI link [IF = 1.5, Cited = 48]

J8 D'Artista, B.**, **Hellweger, F. L.** 2007. Urban Hydrology in a Computer Game? (Short Communication). *Environmental Modelling & Software*, 22(11):1679-1684. DOI link [IF = 4.2, Cited = 35]

J7 **Hellweger, F. L.**, Miller, W.**, Oshodi, K. S.** 2006 Mapping Turbidity in the Charles River, Boston Using a High-resolution Satellite. *Environmental Monitoring & Assessment*, 132(1-3):311-320. DOI link [IF = 1.6, Cited = 30]

J6 McGrath, J., Parkerton, T., Hellweger, F. L., **Di Toro, D. M.** 2005. Validation of the narcosis target lipid model for petroleum products: gasoline as a case study. *Environmental Toxicology & Chemistry*, 24(9):2382-2394. DOI link [IF = 2.7, Cited = 76]

J5 **Hellweger, F. L.**, P. Schlosser, U. Lall, and J. K. Weissel, 2004. Use of Satellite Imagery for Water Quality Studies in New York Harbor. *Estuarine Coastal and Shelf Science*, 61(3):437-448. DOI link [IF = 2.3, Cited = 225]

J4 **Hellweger, F. L.**, A. F. Blumberg, P. Schlosser, D. T. Ho, T. Caplow, U. Lall, and H. Li, 2004. Transport in the Hudson Estuary: A modeling study of estuarine circulation and tidal trapping. *Estuaries*, 27(3):527-538. DOI link [IF = 2.1, Cited = 30]

J3 **Hellweger, F. L.** and A. L. Gordon, 2002. Tracing Amazon River Water into the Caribbean Sea. *Journal of Marine Research*, 60(4):537-549. DOI link [IF = 1.2, Cited = 97]

J2 **Hellweger, F. L.**, L. Hay Wilson, E. M. Naranjo, and P. J. Anid, 2002. Adding Human Health Risk Analysis Tools to Geographic Information Systems. *Transactions in GIS.* 6(4):471-484. DOI link [IF = 1.5, Cited = 11]

J1 Hellweger, F. L., and **D. R. Maidment**, 1999. Definition and Connection of Hydrologic Elements Using Geographic Data. *Journal of Hydrologic Engineering*, 4(1):10-18. DOI link [IF = 1.5, Cited = 84]

Other papers (O)

O7 **Hellweger, F. L.** 2017. Biology 2.0: It is time to delegate understanding to computers. Guest blog post at *On Biology*. Link.

O6 **Hellweger, F. L.** 2015. My Computerized Charles River. *River Stories III*, Charles River Conservancy, Cambridge, MA, p. 28.

O5 **Hellweger, F. L.** 2015. 100 Years since Streeter and Phelps: It Is Time To Update the Biology in Our Water Quality Models. *Environmental Science & Technology*, 49(11):6372–6373.

O4 **Hellweger, F. L.** 2006. Where the Pipe Ends: The Fate of Discharges. *Utility Executive*, 9(1):144-15.

O3 **Cochrane, J. J.**, A. Banoub, and F. L. Hellweger, 1996. Growing LIMS. *Operations Forum*, 13(2):22-25.

O2 **Cochrane, J. J.**, and F. L. Hellweger, 1995. A Method amid the Madness - Introducing a straightforward procedure for process control. *Operations Forum*, 12(2):14-17.

O1 **Cochrane, J. J.**, and F. L. Hellweger, 1994. Identifying the key factors for predicting and maintaining treatment plant performance. *Journal of the New England Water Environment Association*, 28(1):79-90.

Proceedings Papers (P)

P11 **Patterson Greene, K.**, Nelson, M., Hellweger, F. L. 2010. Challenges to Returning Public Access Swimming to the Charles River in an Urban Environment. In *Proceedings of Cities of the Future & Urban River Restoration 2010*, Water Environment Federation (WEF), Alexandria, VA.

P10 **ABM** **Hellweger, F. L. 2007**. Is it time to abandon the chemistry approach to biogeochemistry? (Agent-based water quality modeling). In: *Proceedings of WEFTEC 07*, Water Environment Federation (WEF), Alexandria, VA., pp. 5646-5665.

P9 Ghosh, I.*, **Hellweger, F. L.**, Fritch, T. G. 2006. Fractal Generation of Artificial Sewer Networks for Hydrologic Simulations. In: *Proceedings of 2006 ESRI International User Conference*. Environmental Systems Research Institute (ESRI), Redlands, CA.

P8 **Li, H.**, Blumberg, A. F., Hellweger, F. L., Ahsan, Q. 2005. Understanding the Hydrodynamics of a Multidam River System. In: *Proceedings of the American Water Resources Association 2005 Annual Conference*, Steward, C., Ed., Middleburg, VA.

P7 **Hellweger, F. L.**, 2005. Measuring and Modeling Large-Scale Pollutant Dispersion in Surface Waters. In: *Collection Systems 2005*, Water Environment Federation (WEF), Alexandria, VA, pp. 812-835.

P6 **Di Toro, D. M.**, Hellweger, F. L., Thuman, A. J., 2004. Assessment of PCB Contamination in the Delaware River Estuary - Decadal Scale Consistency Check. In: *Proceedings of WEFTEC 04*, Water Environment Federation (WEF). New Orleans, LA.

P5 Naranjo, E., **F. L. Hellweger**, L. Wilson and P. J. Anid, 2000. Mapping Risk from Mining Activities: A Case Study of Oruro, Bolivia. In: *Proceedings of the 20th Annual ESRI International User Conference*, Environmental Systems Research Institute (ESRI), Redlands, CA.

P4 Shrestha, P. L., **A. F. Blumberg**, D. M. Di Toro, and F. L. Hellweger, 2000. A Three-Dimensional Model for Cohesive Sediment Dynamics in Shallow Bays. *Water Resources 2000*, R. H. Hotchkiss, M. Glade, Eds., ASCE.

P3 **Hellweger, F. L.**, E. M. Naranjo, G. M. Ostroff, and P. J. Anid, 2000. A Shared Environmental Geographic Information System to Build an Inter-Agency Relationship. *Water Resources 2000*, R. H. Hotchkiss, M. Glade, Eds., ASCE.

P2 **Hellweger, F. L.**, E. Naranjo, G. M. Ostroff, R. Veneros and P. J. Anid, 2000. SWMOD: A Simple GIS Based Toxics Modeling Framework. In: *Proceedings of the Watershed 2000 Specialty Conference*, Water Environment Federation, Alexandria, VA.

P1 **Hellweger, F. L.**, E. Naranjo, P. Shanahan, K. Fellows, G. M. Ostroff and P. J. Anid, 1999. Screening-Level GIS Tools for Modeling Environmental Contamination from Mining Activities. *Proceedings of the 19th Annual ESRI International User Conference*, Environmental Systems Research Institute (ESRI), Redlands, CA.

Book chapters (B)

B3 **Hellweger, F. L.** 2008. Ecological Models: Biogeochemical Models. In: *Encyclopedia of Ecology*, S. E. Jorgensen (Editor), pp. 386-396.

B2 **Blumberg, A. F.**, and F. L. Hellweger, 2006. Hydrodynamics of the Hudson River Estuary. In: Hudson River Fishes and their Environment, Waldman, J., K. Limburg, and D. Strayer, Eds. *American Fisheries Society Symposium* 51:9-28.

B1 McGrath, J. A., F. L. Hellweger and **D. M. Di Toro**, 2001. Equilibrium Partitioning Sediment Guidelines (ESGs) for PAH Mixtures and their Application to MGP Sites. In: *Sediments Guidance Compendium*. A. Coleman, Ed. Electric Power Research Institute (EPRI), Palo Alto, CA.

Published Abstracts (A)

A3 **Hellweger, F. L.**, Ghosh, I.*, 2006. Simulating Urban Hydrology Using Artificial Sewer Networks. *Geological Society of America (GSA), Annual Meeting*, Philadelphia, Pennsylvania. Geological Society of America Abstracts with Programs 38(7):290.

A2 **Ho, D.**, P. Schlosser, F. L. Hellweger, T. Caplow, 2003. Factors Controlling Net Advection and Longitudinal Dispersion in the Tidal Hudson River: Results from SF6 Tracer Experiments. *EOS Transactions AGU*, 84(46), Fall Meet. Suppl., Abstract H41D-1041, 2003.

A1 **Hellweger, F. L.**, A. F. Blumberg, P. Schlosser, D. T. Ho, T. Caplow, U. Lall and H. Li, 2002. Mixing in the Hudson Estuary – The role of estuarine circulation and tidal trapping. *EOS Transactions AGU*, 83(47), Fall Meet. Suppl., Abstract OS21D-10, 2002.

2.2. Oral Presentations

(presenter in **bold**)

International (OI)

OI11 **ABM** **Hellweger, F. L.** 2018. Bringing modern biology into water quality modeling using agent-based techniques. *13th International Hydroinformatics Conference HIC 2018*, IWA, Palermo, Italy (combined oral and poster presentation).

OI10 **ABM** **Hellweger, F. L.** Fredrick, N. D.*, McCarthy, M. J., Gardner, W. S., Wilhelm, S., Paerl, H. W. 2018. Predicting the effect of nutrient load reduction using dynamic, mechanistic, molecular-level modeling of cyanobacteria. *LAHTI LAKES 2018 Restoration of Eutrophic Lakes: Current Practices and Future Challenges*, June 4-6 2018, Lahti, Finland.

OI9 **ABM** **Shirani, S.***, Hellweger, F. L. 2016. The role of neutral evolution in the biogeography of cyanobacteria populations of lake systems. *59th Annual Conference on Great Lakes Research*, IAGLR, Guelph, Ontario, Canada.

OI8 **ABM** **Hellweger, F. L.**, Fredrick, N. D.*, 2015. Bringing more biology to eutrophication models: Agent-based modeling of *Anabaena*-N interaction. 17th IWA International Conference on Diffuse Pollution and Eutrophication, Berlin, Germany.

OI7 **ABM** Koleva, K. Z.*, **Hellweger, F. L.** 2014. From protein damage to cell aging to population fitness in *E. coli*: Insights from a multi-level agent-based model. *Stochastic Biology: from Cells to Populations*, IST Austria, Klosterneuburg, Austria.

OI6 **ABM** **INV** **Hellweger, F. L.**, Fredrick, N. D.*, Berges, J. A. 2013. Agent-based simulation of individual yeast cells supports fitness benefit of heterogeneous, age-correlated stress resistance. *5th Congress of European Microbiologists (FEMS 2013)*, Leipzig, Germany.

OI5 **Ruan, X.***, Hellweger, F. L. 2013. Quantifying the relationship between external N loading and export to/from lakes and reservoirs: lab experiments, observations and models. *16th International Conference on Diffuse Pollution and Eutrophication*, International Water Association (IWA), Beijing, China.

OI4 **ABM** **INV** **Hellweger, F. L.**, Fredrick, N. D.*, Berges, J. A. 2013. Bet hedging: Exploring the role of age-correlated stress resistance using agent-based modeling. *Computational methods for spatially structured microbial populations*, Edinburgh, UK.

OI3 **ABM** **Schuler, A.**, Majed, N., **Bucci, V.***, Hellweger, F. L., Tu, Y., Gu, A. Z., 2010. Is the whole the sum of its parts? Agent-based modeling of wastewater treatment systems. *2nd IWA/WEF Wastewater Treatment Modeling Seminar*, Mt. Saint-Anne, Quebec, Canada.

OI2 **ABM** **INV** **Hellweger, F. L.** 2010. Modeling the Evolution of Light Adaption in Marine Viruses using Systems BioEcology. *Workshop on modelling evolutionary and ecological processes in biogeochemical cycles*. University of East Anglia, Norwich, UK.

OI1 **ABM** Bucci, V.*, Vulić, M., Ruan, X.*, **Hellweger, F. L.** 2009. Survival dynamics of enteric bacteria in surface water: role and relevance of GASP-mutant population shifts. *15th International Symposium on Health-Related Water Microbiology*, International Water Association (IWA), Naxos, Greece.

National (ON)

ON39 **ABM** **INV** **Hellweger, F. L.**, 2017. Individual-based, genome-scale modeling of microbe ecology & evolution. *ASM Microbe 2017*, New Orleans, LA.

ON38 **ABM** **INV** **Hellweger, F. L.**, 2016. From genes to ecosystems. Adding modern biology to water quality modeling. *Environmental Science - Water*, Gordon Research Conference, Holderness, NH.

ON37 **Gardner, W. S.**, McCarthy, M. J., Newell, S. E., Lu, K., Hoffman, D., Lavrentyev, P. J., Hellweger, F. L., Wilhelm, S., Liu, Z., Paerl, H. W. 2016. Photic ammonium demand, a new concept in examining N-limitation in eutrophic ecosystems: Potential implications to regional cyanoHABs in large lakes. *ASLO Summer Meeting*, Santa FE, New Mexico.

ON36 **Hellweger, F. L.**, 2016. ABM of *Anabaena* – nitrogen interaction. *The individual microbe: Single-cell analysis and agent-based modelling*, @ASM Conference, American Society of Microbiology, Washington, DC.
ABM
INV

ON35 **Hellweger, F. L.**, Fredrick, N. D.*, 2015. Time to Add More Biology to Ecosystem Models? Agent-based Modeling of *Anabaena*-nitrogen Interaction. *58th Annual Conference on Great Lakes Research*, IAGLR, Burlington, Vermont.
ABM

ON34 **Fredrick, N. D.***, Li, W., McCarthy, M. J., Zhu, G., Chen, Y. W., Qin, B., Gardner, W. S., Hellweger, F. L., 2015. Nitrogen Cycling Dynamics in Lake Taihu Explored With Mathematical Modeling. *58th Annual Conference on Great Lakes Research*, IAGLR, Burlington, Vermont.

ON33 **Hellweger, F. L.**, van Sebille, E., Fredrick, N. D.*, 2014. Exploring the contribution of neutral evolution to biogeography in global surface ocean microbes using agent-based modeling. *Joint Aquatic Science Meeting*, ASLO, Portland, Oregon.
ABM
INV

ON32 **Fredrick, N. D.***, Li, W., McCarthy, M. J., Zhu, G., Qin, B., Gardner, W. S., Hellweger, F. L., 2014. Lake nitrogen cycling dynamics explored with isotope tracing and mathematical modeling. *Joint Aquatic Science Meeting*, ASLO, Portland, Oregon.

ON31 **Hellweger, F. L.**, 2013. Modeling antibiotic resistance: From genes to ecosystems. *Microbe Ecology and Water Engineering (MEWE)*, International Water Association (IWA), Ann Arbor, MI.
ABM
INV

ON30 **Fredrick, N. D.***, Berges, J. A., Twining, B. S., Nuñez-Milland, D., Hellweger, F. L., 2013. Exploring Mechanisms of P Content Heterogeneity on Cultured Phytoplankton using Agent-Based Modeling. *ASLO Aquatic Sciences Meeting*, New Orleans, LA.
ABM

ON29 **Berges, J. A.**, Sandgren, C. D., Kozik, C. R., Hellweger, F., 2013. Diverse Causes of Cell Death in Phytoplankton in Small Freshwater Ecosystems. *ASLO Aquatic Sciences Meeting*, New Orleans, LA.

ON28 **Hellweger , F. L.**, Ruan, X.*, Sanchez, S.** 2010. MAQUIS: A Simple Model of Antibiotic Resistance in the Aquatic Environment. *SETAC Annual Conference*, Portland, OR.

ON27 **Bucci, V.***, Hoover, S., Hellweger, F. L. 2010. Incorporating Growth and Mutation into Enteric Bacteria Fate and Transport Models. *AWRA Annual Conference*, Philadelphia, PA.
ABM

ON26 Bucci, V.*, Nunez-Milland, D., Twining, B., **Hellweger, F. L.**, 2010. Combining agent-based modeling and observations of intrapopulation-variability in phytoplankton. *Summer Meeting*. American Society of Limnology and Oceanography (ASLO). Santa Fe, NM.
ABM

ON25 INV **Hellweger, F. L.**, Ruan, X.*, Sanchez, S. A.**, 2010. MAQUIS: A simple model of antibiotic resistance in the aquatic environment. The Sixth International Conference on Sustainable Water Environment. University of Delaware, Newark, DE.

ON24 ABM **Hellweger, F. L.**, Kianirad, E.*, 2006. Spatially Explicit Individual-Based Modeling: Global vs. Local Fixed Agent Number Methods. *SwarmFest 2006 - Agent-Based Simulation Meeting*. Notre Dame University, South Bend, IN.

ON23 INV **Jain, A.**, Skorobogatov, Y., Gallucci, M., Lingle, J., Blazicek, T., Hellweger, F. 2005. Development of Concept Designs for Remediation Contaminated Sediment Sites using Model for Assessment and Remediation of Sediments (MARS): Current Status and Future Plans. *Natural Gas Technologies 2005*, Gas Technology Institute (GTI), Orlando, FL.

ON22 **Hellweger, F. L.**, 2005. Use of Interactive Web Pages in Environmental Engineering Education. *Research and Education Conference*, Association of Environmental Engineering and Science Professors (AEESP), Clarkson University, Pottsdam, NY.

ON21 **Hellweger, F.**, 2004. Modeling Phosphorus Luxury Uptake in Lake Biwa, Japan. *Summer Meeting*. American Society of Limnology and Oceanography (ASLO). Savannah, GA.

ON20 INV **Jain, A.**, F. L. Hellweger, Y. Skorobogatov, M. Gallucci, J. Lingle, and T. Blazicek, 2004. Model for the Assessment and Remediation of Sediments (MARS): Recent Modifications with Applications to Tidal Rivers and Future Plans. *Natural Gas Technologies II Conference and Exhibition*. Gas Technology Institute (GTI). Phoenix, AZ.

ON19 **Hellweger, F., 2004**. Arsenic transformation by phytoplankton: The effect of phosphorus luxury uptake **or** Greedy Algae Reduce Arsenate. *DIALOG VI Symposium*. American Society of Limnology and Oceanography (ASLO). Dauphin Island, Mobile, AL.

ON18 **Farley, K. J.**, K. J. Rader, R. Costanzo, J. Nemesh, F. L. Hellweger and D. M. DiToro, 2003. Development of a "Unit World" Model for Metals in Aquatic Environments. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Austin, TX.

ON17 **McGrath, J. A.**, F. L. Hellweger, T. F. Parkerton, and D. M. Di Toro, 2003. Application of the Narcosis Target Lipid Model to Complex Mixtures Using Gasolines as a Case Study. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Austin, TX.

ON16 **Hellweger, F. L.**, K. J. Farley, U. Lall, and D. M. Di Toro, 2003. Arsenic transformation by algae: The role of phosphorus luxury uptake. *226th National Meeting*, American Chemical Society (ACS), New York City, NY.

ON15 INV **Jain, A.,** M. Gallucci, Y. Skorobogatov, J. Lingle, and F. L. Hellweger, 2003. Model for the Assessment and Remediation of Sediments (MARS): Recent Modifications with Applications to Tidal Rivers and Future Plans. *A Workshop on In-situ Contaminated Sediment Capping*. Hosted by EPRI, USEPA, USACE, NOAA and US Navy. University of Cincinnati, OH.

ON14 INV Blumberg, A. F., and **F. L. Hellweger**, 2003. Circulation and Mixing in the Hudson River Estuary. *Hudson River Fishes & Their Environment*. Hudson River Environmental Society (HRES). Poughkeepsie, NY.

ON13 **Hellweger, F. L.**, K. J. Farley, D. Damiani, and P. J. Anid, 2001. Mathematical Modeling of Toxics Fate, Transport and Bioaccumulation using GIS . *21st Annual ESRI International User Conference*, Environmental Systems Research Institute (ESRI), San Diego, CA.

ON12 **Di Toro, D. M.**, J. A. McGrath, and F. L. Hellweger, 2001. The Intrinsic Toxicity of Narcotic Chemicals and PAHs in Pure Phases and Mixtures. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Baltimore, MD.

ON11 **McGrath, J. A.**, F. L. Hellweger, W. Stubblefield, and D. M. Di Toro, 2001. Predicting the Effects of Weathering on Crude Oil Using Narcosis Theory: Case Studies. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Baltimore, MD.

ON10 **Hellweger, F. L.**, K. J. Farley, D. Damiani, and P. J. Anid, 2001. Mathematical Modeling Of Toxics Fate, Transport and Bioacccumulation Using GIS. *33rd Mid-Atlantic Industrial and Hazardous Waste Conference*, New York City, NY.

ON9 INV **Hellweger, F. L.**, and D. M. Di Toro, 2001. Modeling the Distribution and Fate of PBTs in the Environment. *Workshop on Persistent, Bioaccumulative and Toxic Chemicals: Assessing the State of the Science*, Water Environment Federation (WEF), Arlington, VA.

ON8 **Hellweger, F. L.**, K. J. Farley, D. Damiani, and P. J. Anid, 2001. Toxic Fate and Bioaccumulation Modeling Inside GIS. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Nashville, TN.

ON7 INV **Di Toro, D. M.**, J. A. McGrath, and F. L. Hellweger, 2000. Review and Comparison of Existing and Developing Standards/Criteria/Screening Guidelines. *MGP Site Management Sediment Seminar II*, Electric Power Research Institute (EPRI), St. Simon's Island, GA.

ON6 **Hellweger, F. L.**, 2000. Mathematical Modeling of Mining Pollution Using GIS. *32nd Annual Mid-Atlantic Industrial and Hazardous Waste Conference*, Troy, NY.

ON5 **Garland, E. J.**, F. L. Hellweger, M. J. Carroll, D. M. Di Toro, A. Jain and O. K. Scheible, 1999. MARS: Model for the Assessment and Remediation of Sediments. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Philadelphia, PA.

ON4 **INV** **Jain, A.**, F. L. Hellweger, K. Summers, and S. Liu, 1998. Development of Remediation Scenarios Using Models, *Environmental Biotechnologies and Site Remediation Technologies Conference*, IGT.

ON3 **INV** **Maidment, D. R.**, F. L. Hellweger, and A. Quenzer, 1997. Integrating Land Surface Runoff and Receiving Water Impacts in Corpus Christi Bay. *Spring Meeting*, American Geophysical Union (AGU), Baltimore, MD.

ON2 **Cochrane, J. J.**, A. Banoub, and F. L. Hellweger, 1995. An affordable customized laboratory information management system (LIMS) for a medium sized plant. *Annual Conference*, Water Environment Federation (WEF), Miami Beach, FL.

ON1 **Cochrane, J. J.**, and F. L. Hellweger, 1994. Interpreting Treatment Plant Performance Using an Attainment Frequency Methodology. *Annual Conference*, Water Environment Federation (WEF), Chicago, IL.

Regional/Local (OR)

OR26 **ABM** **Shirani, S.***, Hellweger, F. L., 2016. Cyanobacteria in lake systems: Biogeographic patterns explored with a neutral agent-based model. *New England Graduate Student Water Symposium*, EWRE, University of Massachusetts, Amherst, Massachusetts.

OR25 **ABM** **INV** **Hellweger, F. L.**, Fredrick, N. D.*, 2016. Agent-based modeling of cyanobacteria nitrogen metabolism and ecology. *SIAM Conference on the Life Sciences*. Society for Industrial and Applied Mathematics (SIAM), Boston, Massachusetts.

OR24 **ABM** **Soltani, M. M.***, Hellweger, F. L., 2016. Effects of Outer Membrane Vesicles on the Gram-negative Bacteria Population. *Annual Conference*. New England Water Environment Association (NEWEA), Boston, Massachusetts.

OR23 **ABM** **Shirani, S.***, Hellweger, F. L., 2016. Diversity of Cyanobacteria in Lake Systems: Explaining Biogeographic Patterns Using a Neutral Agent-Based Model. *Annual Conference*. New England Water Environment Association (NEWEA), Boston, Massachusetts.

OR22 **Hellweger, F. L.**, 2014. Where the Pipe Ends: Antibiotics and Antibiotic Resistance in the Ambient Environment. *Microconstituents: Sources, Sinks and Sustainability*. Specialty Conference, NEWEA, Bentley University, Watertown, Massachusetts.
INV

OR21 **Hellweger, F. L.**, 2014. Using movies to visualize and understand dynamic data and models. *Science Café*, UMB, COSEE, GrOE, Lucky Strike Jillians, Boston, Massachusetts.
ABM
INV

OR20 Fredrick, N. D.*, **Hellweger, F. L.**, 2014. Lake nitrogen cycling dynamics explored with isotope tracing and mathematical modeling, *Water Systems, Science and Society Under Global Change*, UCOWR, NIWR, CUAHSI, Tufts University, Medford, Massachusetts.
INV

OR19 **Ruan, X.***, Schellenger, F.*, Hellweger, F. L., 2014. Accounting for N fixation in simple models of lake N loading/export, *Water Systems, Science and Society Under Global Change*, UCOWR, NIWR, CUAHSI, Tufts University, Medford, Massachusetts.

OR18 **Ruan, X.***, Cost, D., Burtch, K., Sanchez, S.**, Leung, J., Powers, R., Cost, R.**, Hellweger, F. L. 2012. Well I *miss* that dirty water, Ohhh, Boston you're my home: Evaluating potential swimming locations on the Charles River. *Annual Conference*, New England Water and Environment Association (NEWEA), Boston.

OR17 **Ghosh, I.***, Hellweger, F. L. 2011. Effects of Spatial Resolution on Hydrologic Predictions for an Urban Catchment. *Annual Conference*, New England Water and Environment Association (NEWEA), Boston.

OR16 **Bucci, V.***, Majed N., Hellweger F.L., Gu A.Z. 2010. Agent Based Modeling for phosphorous removal in Wastewater. *Annual Conference*, New England Water and Environment Association (NEWEA), Boston.
ABM

OR15 **Mathew, M.***, Yao, Y.*, Cao, Y.*, Jain, K., Ghosh, I.*, Bucci, V.*, Leitao, C.**, Njoka, D.**, Wei, I., Hellweger F. L., 2010. Anatomy of an Urban Waterbody: A Case Study of Boston's Muddy River. *Urban Environmental Pollution 2010*. Boston, MA.

OR14 **Hellweger, F. L.**, Heineman, M. 2009. Measuring, Modeling and Managing Water Quality in the Charles River Basin. *Research and Industrial Collaboration Conference (RICC)*, Gordon-CenSSIS, Northeastern University, Boston, MA.

OR13 **Hellweger, F. L.**, 2008. A systems bioecology modeling analysis of how photosynthesis genes affect the ecological fitness of viruses. *Prochlorococcusfest*, MIT, Cambridge, MA.
ABM
INV

OR12 **Hellweger, F. L.**, 2006. Use of the Internet for Environmental Education – Going Beyond Transferring Files. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR11 **Hellweger, F. L.**, A. F. Blumberg, P. Schlosser, D. T. Ho, T. Caplow, U. Lall, and H. Li, 2005. Modeling and Measuring Mixing of Pollutants in Surface Waters. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR10 INV **Farley, K. J.**, D. M. Di Toro, J. D. Mahony, F. L. Hellweger, P. Dombrowski, K. Bisceglia, and K. Rader, 2002. Modeling Arsenic Cycling in Lakes and Reservoirs. *Environmental Science - Water*, Gordon Research Conference, Holderness, NH.

OR9 **Hellweger, F. L.**, and G. M. Ostroff, 2001. www.ComCarto.com - An Internet Map Server. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR8 **Hellweger, F. L.**, 2000. Water Quality and GIS: An Overview of Current Technology. *Annual Conference*. New England Water Environment Association (NEWEA), Boston, MA.

OR7 **Hellweger, F. L.**, and D. R. Maidment, 1998. BALANCE: A GIS Based Water Quality Model. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR6 **Hellweger, F. L.**, 1997. Environmental Data and Education on the Internet: An Overview of Current Technology. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR5 **Cochrane, J. J.**, A. Banoub, and F. L. Hellweger, 1996. Implementation of a customized laboratory information management system (LIMS). *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR4 **Hellweger, F. L.**, and J. J. Cochrane, 1996. Using Technical Calculation Software as a Process Design and Evaluation Tool. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR3 **Cochrane, J. J.**, and F. L. Hellweger, 1995. An analysis of the advantages of combined CAD mapping & GIS with computerized collection system maintenance. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR2 **Cochrane, J. J.**, and F. L. Hellweger, 1994. Integrating GIS mapping with computerized collection system maintenance. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

OR1 **Cochrane, J. J.**, and F. L. Hellweger, 1994. Identifying the key factors for predicting and maintaining treatment plant performance. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

2.3. Poster Presentations

International (PI)

PI4 ABM **Hellweger, F. L.**, Fredrick, N. D.*, McCarthy, M. J., Gardner, W. S., Wilhelm, S., Paerl, H. W. 2016. Dynamic, mechanistic, molecular-level modeling of cyanobacteria: *Anabaena* and nitrogen interaction. *16th International Symposium on Microbial Ecology*, International Society of Microbial Ecology (ISME), Montreal, Canada.

PI3 ABM Fredrick, N. D.*, Twining, B. S., Berges, J. A., **Hellweger, F. L.** 2013. Cause and Consequence of Intraspecific Internal Nutrient Heterogeneity in Phytoplankton - Insights from Agent Based Models. *5th Congress of European Microbiologists (FEMS 2013)*, Leipzig, Germany.

PI2 ABM **Hellweger, F. L.** 2012. Adaption of bacteria to ameliorate the metabolic burden of carrying antibiotic resistance genes (A systems bioecology modeling analysis). *14th International Symposium on Microbial Ecology*, International Society of Microbial Ecology (ISME), Copenhagen, Denmark.

PI1 ABM Bucci, V.*, Majed, N., **Hellweger, F.L.**, Gu, A.Z. 2010. Agent-based modelling and observation of heterogeneity in wastewater microbe populations. *IWA World Water Congress and Exhibition*, Montreal, Canada.

National (PN)

PN19 ABM **Berges, J.**, Raphael, T., Rafa Todd, C., Bate, T. Hellweger, F. 2016. Agent-Based Phytoplankton Models of Cellular and Population Processes: Fostering Individual-Based Learning in Undergraduate Research. *Ocean Sciences Meeting*, American Society of Limnology and Oceanography (ASLO), New Orleans, LA.

PN18 ABM Hellweger, F. L., **van Sebille, E.**, Calfee, B. C., Chandler, J. W., Zinser, E. R., Fredrick, N. D.* 2016. Phytoplankton Temperature Adaptation: Upstream or Local Temperature? *Ocean Sciences Meeting*, American Society of Limnology and Oceanography (ASLO), New Orleans, LA.

PN17 **Krausfeldt, L. E.**, Tang, X., LeCleir, G. R., van de Kamp, J., Bodrossy, L., McCarthy, M. J., Boyer, G. L., Hellweger, F. L., Gardner, W. S., Paerl, H. W., Gao, G., Wilhelm, S. W. 2015. Investigating the Nitrogen Cycle within Harmful Algal Bloom Communities. *Eighth Symposium on Harmful Algae in the U.S.*, Long Beach, California.

PN16 **Fredrick, N. D.***, Li, W., McCarthy, M. J., Zhu, G., Chen, Y., Qin, B., Gardner, W. S., Hellweger, F. L. 2015. Nitrogen cycling dynamics in Lake Taihu explored with mathematical modeling. *Harmful Algal Bloom Workshop*. Bowling Green State University, Bowling Green, Ohio.

PN15 **Gardner, W. S.**, McCarthy, M. J., Lu, K., Newell, S. E., Lavrentyev, P. J., Liu, Z., Paerl, H., Wilhelm, S., Hellweger, F. 2015. Evaluating "Perfect Storm" conditions for how $NH4^+$ and urea may stimulate regional *Microcystis* blooms in Lakes Taihu and Lake Erie, using "Community $NH4^+$ Demand (CAD)" dynamics. *Harmful Algal Bloom Workshop*. Bowling Green State University, Bowling Green, Ohio.

PN14 **ABM** **Hellweger, F. L.**, 2013. *Escherichia coli* adapts to tetracycline resistance plasmid (pBR322) by mutating endogenous potassium transport: *in silico* hypothesis testing. *Microbe Ecology and Water Engineering (MEWE)*, International Water Association (IWA), Ann Arbor, MI.

PN13 **Ghosh, I.***, Hellweger, F. L., 2010. Spatial Resolution Effects in Urban Hydrology. *AWRA Annual Conference*, Philadelphia, PA.

PN12 **ABM** **Hellweger, F. L.**, 2009. Carrying Photosynthesis Genes Increases Ecological Fitness of Virus. *AEESP Conference*, University of Iowa, Iowa City, IO.

PN11 **Bucci, V.***, Vulić, M., Ruan, X.*, Hellweger, F. L. 2009. Survival dynamics of enteric bacteria in surface water: role and relevance of GASP-mutant population shifts. *AEESP Conference*, University of Iowa, Iowa City, IO.

PN10 **ABM** **Hellweger, F. L.**, Kravchuk, E. S., Novotny, V., Gladyshev, M. I. 2007. Agent-based modeling of the complex lifecycle of a cyanobacterium (*Anabaena*) in a shallow lake. *AEESP Conference*, Virginia Tech, Blacksburg, VA.

PN9 **ABM** **INV** **Hellweger, F. L.**, Kianirad, E.*, 2006. From Individuals to Populations in Biogeochemical Modeling. *Grand Challenges of the Future for Environmental Modeling*. NSF Sponsored Workshop on Modeling for Environmental Observatories, Tucson, AZ.

PN8 **Hellweger, F. L.**, K. J. Farley, U. Lall, and D. M. Di Toro, 2003. Arsenic transformation by algae: The role of phosphorus luxury uptake. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Austin, TX.

PN7 **INV** **Hellweger, F. L.**, M. J. Gallucci, A. Jain, D. K. Jackson, and B. Cheney, 2003. Model Helps Screen Remediation Alternatives at MGP Site. *A Workshop on In-situ Contaminated Sediment Capping*. Hosted by EPRI, USEPA, USACE, NOAA and US Navy. University of Cincinnati, OH.

PN6 **Hellweger, F. L.**, K. J. Farley, U. Lall, and D. M. Di Toro, 2002. Greedy Algae Reduce Arsenate. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Salt Lake City, UT.

PN5 **Hellweger, F. L.**, J. A. McGrath, W. Stubblefield, and D. M. Di Toro, 2001. Dissolution, Weathering and Toxicity of Exxon Valdez Crude Oil. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Baltimore, MD.

PN4 **Hellweger, F. L.**, K. J. Farley, U. Lall, and D. M. Di Toro, 2001. Arsenic Fate and Transport Modeling in Lakes: Approach and Preliminary Results. *Arsenic in Drinking Water, An International Conference at Columbia University*, Columbia University, New York City, NY.

PN3 **Jain, A.**, and F. L. Hellweger, 2001. MARS: Model for the Assessment and Remediation of Sediments. *Forum on Managing Contaminated Sediments at Hazardous Waste Sites*, US Environmental Protection Agency (USEPA), Alexandria, VA.

PN2 **Shrestha, P. L.**, A. F. Blumberg, D. M. Di Toro, J. J. Fitzpatrick, F. L. Hellweger and L.A. Khan, 1999. Sediment-Transport Modeling in Green Bay: A Precursor to Addressing PCB Fate and Transport, *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Philadelphia, PA.

PN1 **Hellweger, F. L.** and D. M. Di Toro, 1999. Orthogonal Distance Regression: An Alternative to Ordinary Least Squares, Poster Presentation. *Annual Meeting*, Society of Environmental Toxicology and Chemistry (SETAC), Philadelphia, PA.

Regional/Local (PR)

PR12 **ABM** **Shirani, S.***, Hellweger, F. L., 2015. Keeping up with cyanobacteria: Explaining biogeographic patterns of Great Lakes cyanobacteria using a neutral agent-based model. *New England Graduate Student Water Symposium*, EWRE, University of Massachusetts, Amherst, Massachusetts.

PR11 **Schellenger, F. L.***, Hellweger, F. L., 2014. Groundwater Contribution of Phosphorus from Near-lake Septic Systems to Eutrophication of a Lake. *New England Graduate Student Water Symposium*, EWRE, University of Massachusetts, Amherst, Massachusetts.

PR10 **ABM** Koleva, K. Z.*, **Hellweger, F. L.**, 2014. From Protein Damage To Cell Aging To Population Fitness In *E. coli*: Insights From A Multi-level Agent-based Model. *General Meeting*, ASM, Boston, Massachusetts.

PR9 **Hellweger, F. L.**, Fredrick, N. D.*, Van Sebille, E., 2014. Exploring the Contribution of Neutral Evolution to Biogeography in Global Surface Ocean Microbes Using Agent-Based Modeling. *General Meeting*, ASM, Boston, Massachusetts.

PR8 **Ruan, X.***, Hellweger, F. L. 2013. Quantifying the relationship between external N loading and export to/from lakes and reservoirs: lab experiments, observations and models. *Water: Systems, Science and Society (WSSS) Interdisciplinary Water Symposium*, Tufts University, Medford, MA.

PR7 **Ghosh, I.***, Hellweger, F. L. 2011. Effects of Spatial Resolution on Hydrologic Predictions for an Urban Catchment. Annual Conference, New England Water and Environment Association (NEWEA), Boston, MA.

PR6 **Hellweger, F. L.**, Ruan, X.*, Cherchia, E.**, Sanchez, S.**, 2011. Applicability of standard antibiotic toxicity tests to the ambient aquatic environment. *SETAC Annual Conference*, Boston, MA.

PR5 **Hellweger, F. L.**, 2008. Carrying Photosynthesis Genes Increases Ecological Fitness of Virus. *Environmental Sciences - Water*, Gordon Research Conference, Plymouth, NH.

PR4 **Masopust, P.***, and Hellweger, F. L., 2006. High resolution spatial and temporal patterns of *Escherichia coli* in the Charles River. *Annual Conference*, New England Water Environment Association (NEWEA), Boston, MA.

RP3 **ABM** **Hellweger, F. L.**, Kianirad, E.*, 2006. Individual-Based Modeling of Phytoplankton. *Environmental Sciences - Water*, Gordon Research Conference, Plymouth, NH.

RP2 Miller, W.**, and **F. L. Hellweger**, 2005. Remote Sensing of Turbidity in the Lower Charles River. *3rd Annual Conference of the Massachusetts Water Resources Research Center*, University of Massachusetts, Amherst, MA.

PR1 **Hellweger, F. L.**, K. J. Farley, U. Lall, and D. M. Di Toro, 2002. A Model for Arsenic Transformation by Algae. *Environmental Bioinorganic Chemistry*, Gordon Research Conference, Andover, NH.

2.4. Research Seminars

International (SI)

SI9 **ABM** **INV** Life Sciences Seminar Series, School of Life Sciences, The Chinese University of Hong Kong, Shatin, Hong Kong, 2018.

SI8 **ABM** **INV** Symposium on Marine Pelagic Ecology, GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel University, Kiel, Germany, 2017.

SI7 **ABM** **INV** Research Seminar, Institute for Sanitary Engineering, Water Quality and Solid Waste Management (ISWA), Stuttgart University, Stuttgart, Germany, 2016.

SI6 **ABM** **INV** Research Seminar, Department of Hydrosciences, Technical University of Dresden, Dresden, Germany, 2016.

SI5 Research Seminar, Department of Environmental Technology, Technical University of
ABM Berlin, Berlin, Germany, 2015.
INV

SI4 Research Seminar, Department of Environmental Engineering, Middle East Technical
ABM University, Ankara, Turkey, 2013.
INV

SI3 Research Seminar, Swiss Federal Institute for Aquatic Research (EAWAG), Swiss Federal
ABM Institute of Technology (ETH), Zuerich, Switzerland, 2009.
INV

SI2 Research Seminar, Department of Sanitary and Environmental Engineering, Budapest
ABM University of Technology and Economics, Budapest, Hungary, 2009.
INV

SI1 Research Seminar, Queens University, Kingston, Ontario, Canada, 2004.
INV

National (SN)

SN16 Research Seminar, Department of Microbiology, University of Tennessee at Knoxville,
ABM Knoxville, TN, 2015.
INV

SN15 Biological Sciences Colloquium, University of Wisconsin at Milwaukee, Milwaukee,
ABM WI, 2015.
INV

SN14 Research Seminar, Department of Earth and Environmental Engineering, Columbia
ABM University, New York, NY, 2013.
INV

SN13 Research Seminar, Geosyntec Consultants, Oak Brook, IL, (via WebEx), 2012.
ABM
INV

SN12 Research Seminar, U. of Texas Health Science Center at San Antonio, San Antonio, TX,
ABM 2011.
INV

SN11 Research Seminar, Vanderbilt University, Nashville, TN, 2011.
ABM
INV

SN10 Research Seminar, University of Wisconsin at Milwaukee, Milwaukee, WI, 2010.
ABM
INV

SN9 Warren Lecture Series, Department of Civil Engineering, University of Minnesota,
ABM 2010.
INV

SN8 Research Seminar, University of Maryland, College Park, MD, 2008.
ABM
INV

SN7 Warren Lecture Series, Department of Civil Engineering, University of Minnesota,
ABM 2008.
INV

SN6 WaterCAMPWS Seminar Series, Department of Civil and Environmental Engineering,
ABM University of Illinois at Urbana-Champaign, 2008.
INV

SN5 Earth & Environmental Engineering Seminars, Department of Earth & Environmental Engineering, Columbia University, 2007.
ABM
INV

SN4 Research Seminar, University of Illinois at Chicago, Chicago, IL, 2004.
INV

SN3 Research Seminar, Georgia Institute of Technology, Atlanta, GA, 2004.
INV

SN2 Research Seminar, Rosenstiel School of Marine Science, University of Miami, Miami, FL, 2004.
INV

SN1 Research Seminar, University of Colorado at Boulder, Boulder, CO, 2004.
INV

Regional/Local (SR)

SR12 Research Seminar, Department of Biology, University of Massachusetts at Dartmouth, Dartmouth, MA, 2014.
ABM
INV

SR11 Research Seminar, School for the Environment, University of Massachusetts at Boston, Boston, MA, 2014.
ABM
INV

SR10 Research Seminar, School of Marine Science and Technology, University of Massachusetts at Dartmouth, New Bedford, MA, 2013.
ABM
INV

SR9 Research Seminar, Bigelow Laboratory for Ocean Sciences, East Boothbay, ME, 2013.
ABM
INV

SR8 Research Seminar, Camp Dresser & McKee University, Cambridge, MA, 2011.
ABM
INV

SR7 Research Seminar, University of Massachusetts, Amherst, MA, 2010.
ABM
INV

SR6 Department Seminar Series, Department of Civil & Environmental Engineering, Tufts University, 2009.
ABM
INV

SR5 Science Seminars, Department of Environmental, Earth & Ocean Sciences, University of Massachusetts at Boston, 2009.
ABM
INV

SR4 Microbial Systems Seminar Series, Parsons Lab, Department of Civil and Environmental Engineering & Earth Systems Initiative, MIT, 2008.
ABM
INV

SR3 Department Seminar Series, Department of Civil & Environmental Engineering, Tufts University, 2007.
ABM
INV

SR2 Science Seminars, Department of Environmental, Earth & Ocean Sciences, University of Massachusetts at Boston, 2006.
INV

SR1 INV Research Seminar, Northeastern University, Boston, MA, 2004.

2.5. Videos

[YouTube views 1/19/2017]

V17 ABM **Hellweger, F. L.**, Shirani, S.*. 2016. *Dynamic Phylogeny - Doing the Time Warp*. Link. [views: 6]

V16 ABM **Hellweger, F. L.**, van Sebille, E., Calfee, B. C., Chandler, J. W., Zinser, E. R., Swan, B. K., Fredrick, N. D.* 2016. *Ocean currents and temperature selection*. Link. [views: 11]

V15 ABM **Hellweger, F. L.**, Fredrick, N. D.*, McCarthy, M. J., Gardner, W. S., Wilhelm, S., Paerl, H. W. 2016. *ABM of* Anabaena – *Nitrogen Interaction*. Link [views: 56]

V14 ABM **Hellweger, F. L.**, van Sebille, E., Fredrick, N. D.* 2014. *World Traveler: Macroscale journey of a microscale individual (*Pelagibacter ubique*, SAR11)*. Link [views: 281]

V13 ABM **Hellweger, F. L.**, Fredrick, N. D.*, Berges, J. A. 2014. *Bet Hedging in Yeast*. Link [views: 220]

V12 **Hellweger, F. L.** 2013. *Lecture: Modeling antibiotic resistance in the ambient aquatic environment*. Link [views: 1,198]

V11 ABM **Hellweger, F. L.** 2012. E. coli *adapts to tetracycline resistance* in silico. Link [views: 830]

V10 ABM Bucci, V.*, Nunez-Milland, D., Twining, B., **Hellweger, F. L.**, 2012. *Microscale patchiness leads to intraspecific internal nutrient heterogeneity in phytoplankton*. Link [views: 178]

V9 ABM Bucci, V.*, Hoover, S., **Hellweger, F. L.**, 2010. *Wildtype and Mutant* E. coli *in the Charles River*. Link 1 [views: 1,185], Link 2 [views: 189], Link 3 [views: 270]

V8 ABM **Hellweger, F. L.**, 2009. *Circadian Clock of* Synechococcus. Link 1 [views: 348], Link 2 [views: 1,174]

V7 **Hellweger, F. L.**, A. F. Blumberg, P. Schlosser, D. T. Ho, 2008. *Hudson River SF6 Data & Model (2003)*. Link [views: 137]

V6 **Hellweger, F. L.**, Masopust, P.* 2008. *Charles River* E. coli. Link 1 [views: 3,756], Link 2 [views: 548]

V5 **Hellweger, F. L.**, A. F. Blumberg, P. Schlosser, D. T. Ho, T. Caplow, U. Lall, and H. Li, 2008. Hudson River SF6 Data & Model. Link [views: 1,558]

V4 ABM **Hellweger, F. L.**, 2008. Prochlorococcus *MED4 and Podovirus P-SSP7 Evolution*. Link 1 [views: 534], Link 2 [views: 482]

V3 ABM **Hellweger, F. L.**, Kravchuk, E. S., Novotny, V., Gladyshev, M. I. 2008. *Agent-Based Cyanobacteria Model*. Link [views: 1,904]

V2 ABM **Hellwger, F. L.**, 2008. *ABM vs. PLM*. Link [views: 290]

V1 ABM **Hellwger, F. L.**, 2008. *Systems BioEcology*. Link [views: 979]

2.6. News Coverage of Research

N8 ABM *Microorganisms in Oceans May Arise Faster than Currents Disperse Them*. ASM Microbe, January 2015.

N7 *Earth Day is on the horizon. But is 'greener' always better? Not when it's the bright green waters of algae-fouled lakes and rivers*. NSF Discoveries, April 15, 2015.

N6 ABM *Patterns of life in the ocean wave.* Science, 12 September, 2014.

N5 ABM *Modeling of Microbial World Comes of Age*, The blog of the National Institute for Mathematical and Biological Synthesis (NIMBioS), November 6, 2013.

N4 *Parklands with Ferdi Hellweger*, Charles River Parklands TV program hosted by Charles River Conservancy, Cambridge Channel 9. October 28, 2009.

N3 *Tracking* E. coli *in the Charles River*, Interview on evening news, Fox 25 News. February 12, 2009.

N2 *That Dirty Water.* The Northeastern Voice. May 2, 2008.

N1 *Sleuthing Collection Systems: Larger-scale artificial networks could aid stormwater managers*. Water Environment & Technology News, May 2007, Vol. 19, No. 5

2.7. Workshop Organization, Session Chairing, Panel Participation

Workshop & Event Organization

WE6 ABM *The individual microbe: Single-cell analysis and agent-based modelling*, @ASM Conference, American Society of Microbiology, Washington, DC. Chair: C. Plugge (Wageningen U., Netherlands), Co-chair: F. L. Hellweger. 2016.

WE5 *Swimming-related water quality of the Charles River*, Northeastern University, Boston,

MA. Organizers: F. L. Hellweger and K. Patterson Greene (CRC). 2013

WE4 *Toxic Chemical Pollution of Drinking Water*. Let's Talk About Water, Northeastern University, Boston, MA. Organizers: F. L. Hellweger, R. Hooper (CUAHSI), L. Lilienfield (LTAW). 2011.

WE3 *Swimming-related water quality of the Charles River*, EPA/NE, Chelmsford, MA. Organizers: F. L. Hellweger and K. Patterson Greene (CRC). 2011.

WE2 ABM *Individual-based ecology of microbes: Observations and modeling*, NIMBioS, University of Tennessee, Knoxville, TN. Organizers: F. L. Hellweger, J. U. Kreft (U. Birmingham, UK), C. Plugge (Wageningen U., Netherlands). 2011.

WE1 *Swimming-related water quality of the Charles River*, Northeastern University, Boston, MA. Organizers: F. L. Hellweger and K. Patterson Greene (CRC). 2010.

Session Chairing & Moderating

SC4 *Microbial populations and communities: Modelling today's data*. 5th Congress of European Microbiologists (FEMS 2013), Leipzig, Germany. Co-chairs: J. U. Kreft (U. Birmingham, UK), F. L. Hellweger. 2013.

SC3 *CSO/Wet Weather Issues*. New England Water Environment Assoc. (NEWEA), Annual Conference, Boston, MA. Moderator: F. L. Hellweger. 2005 – 2009.

SC2 ABM *Session*. SwarmFest (agent-based modeling meeting). Notre Dame University, South Bend, IN. Moderator: F. L. Hellweger. 2006

SC1 *Session*. American Society of Limnology and Oceanography (ASLO), Summer Meeting. American Society of Limnology and Oceanography (ASLO). Savannah, GA. Moderator: F. L. Hellweger. 2004.

Special Issues Editorship

SE1 ABM *The individual microbe: Single-cell analysis and agent-based modelling*, Research Topic, *Frontiers in Microbiology*. Topic Editors: W. Zhang, J. Leveau, C. Prats, J.-U. Kreft and F. L. Hellweger. 2016-2017

Panel Participation

PP4 INV *Google Presents the CRC's River Stories LIVE!* Charles River Conservancy (CRC). Google, Cambridge, Massachusetts. 2015.

PP3 INV *Microconstituents: Sources, Sinks and Sustainability*. Specialty Conference, NEWEA, Bentley University, Watertown, Massachusetts. 2014.

PP2 INV *Let's Talk About Water*, U. Mass. Boston, Boston, Massachusetts. 2010.

PP1 INV *Research Needs for Sustainable Water Environment - Built Water Environment* (Discussion Analyst). The Sixth International Conference on Sustainable Water Environment. University of Delaware, Newark, DE. 2010.

3. TEACHING AND ADVISING

3.1. Courses

(Fall 2010 – 2015)

Course number	Course title	Course type[4]	No. of students (No. responded)	Overall effectiveness score[1,2]	Comparison[3] CIVE courses & Faculty	Comparison[3] All courses & Faculty
2010-2011 ACADEMIC YEAR						
CIVE 2334	Environmental Engineering 1 (Fall 2010)	Undergraduate [Sp] (R)	57 (13)	Instructor 4.0 Learning 3.5	4.2 4.2	4.2 4.1
CIVE 4765	Sr. Design Proj. Environmental (Spring 2011)	Undergraduate [J/S] (R)	14 (10)	Instructor 4.0 Learning 4.3	4.1 4.1	4.3 4.1
CIVE 7261-V30	Surface Water Qual. Mod. (Spring 2011)	Graduate (R)	15 (7)	Instructor 4.7 Learning 5.0	4.1 4.1	4.3 4.1
CIVE 7261-V35	Surface Water Qual. Mod. (Spring 2011)	Graduate (R)	11 (8)	Instructor 4.6 Learning 4.6	4.1 4.1	4.3 4.1
CIVE 7392	Special Topics in Envir. Engr. (Summer 2 2011)	Graduate (E)	8 (6)	Instructor 4.8 Learning 4.6	4.7 4.5	4.4 4.2
2011-2012 ACADEMIC YEAR						
CIVE 5536	Hydrologic Engineering (Fall 2011)	Undergraduate [J/S] (R)	30 (23)	Instructor 4.4 Learning 4.2	4.3 4.3	4.3 4.1
CIVE 7260-V30	Hydrology (Fall 2011)	Graduate (R)	5 (5)	Instructor 4.4 Learning 4.4	4.3 4.3	4.3 4.1
CIVE 7260-V35	Hydrology (Fall 2011)	Graduate (R)	10 (6)	Instructor 4.3 Learning 4.0	4.3 4.3	4.3 4.1
CIVE 4765	Sr. Design Proj. Environmental (Spring 2012)	Undergraduate [J/S] (R)	14 (3)	Instructor 4.3 Learning 5.0	4.2 4.3	4.3 4.2
2012-2013 ACADEMIC YEAR						

CIVE 7260	Hydrology (Fall 2012)	Graduate (R)	19 (16)	Instructor 4.6 Learning 4.4	4.2 4.2	4.3 4.1
CIVE 4765	Sr. Design Proj. Environmental (Spring 2013)	Undergraduate [J/S] (R)	18 (5)	Instructor 4.2 Learning 4.8	4.3 4.3	4.3 4.2
CIVE 7261-V30	Surface Water Qual. Mod. (Spring 2013)	Graduate (R)	9(3)	Instructor 4.7 Learning 4.7	4.3 4.3	4.3 4.2
2013-2014 ACADEMIC YEAR						
CIVE 5536	Hydrologic Engineering (Fall 2013)	Undergraduate [J/S] (R)	25 (11)	Instructor 5.0 Learning 4.5	4.2 4.2	4.3 4.2
CIVE 7260-V30	Hydrology (Fall 2013)	Graduate (R)	16 (11)	Instructor 4.5 Learning 4.1	4.2 4.2	4.3 4.2
CIVE 7260-V35	Hydrology (Fall 2013)	Graduate (R)	10 (3)	Instructor 4.7 Learning 4.3	4.2 4.2	4.3 4.2
CIVE 4765	Sr. Design Proj. Environmental (Spring 2014)	Undergraduate [J/S] (R)	20 (4)	Instructor 4.8 Learning 5.0	4.4 4.3	4.3 4.2
2014-2015 ACADEMIC YEAR						
CIVE 7261 V30	Surface Water Qual. Mod. (Fall 2014)	Graduate (R)	7 (6)	Instructor 4.7 Learning 4.7	4.3 4.2	4.3 4.2
CIVE 7261 V35	Surface Water Qual. Mod. (Fall 2014)	Graduate (R)	6 (1)	Instructor 5.0 Learning 4.0	4.3 4.2	4.3 4.2

Note (1): Mean values are reported on a scale from 0.0 to 5.0.
Note (2): "Instructor" refers to question: "What is your overall rating of this instructor's teaching effectiveness?"
"Learning" refers to question: "I learned a lot in this course."
Note (3): Comparison against civil and environmental courses and university-wide (all) courses, taught in the same semester.
Note (4): Course type and designations. The undergraduate curriculum is based on a five-year CO-OP program with: "J/S," junior/senior (4th or 5th year), "M," "middler" (3rd year); "Sp," sophomore (2nd year). Semester: 15 weeks, 4 semester-hours, SH; Half-Semester: 7.5 weeks, 2SH. Regular load (R), Extra compensation (E).

3.2. Supervision of Graduate Students

G18 Ryan Shea, *Optimization of water distribution systems for leak detection*, MS/GLP, *2017*

G17 Scott Simpson, *Automated control of distributed stormwater control systems*, MS/GLP, 2017

G16 Koosha Kalhor, *DNA fingerprinting of rivers in the global ocean*, MS, *In progress*

G15 Masoud Soltani, *Bacterial vesicles as viral countermeasures*, MS, *In progress*

G14 Sahar Shirani, *Genetic connectivity of lake systems*, MS, 2017

G13 Frank Schellenger, *Phosphorus Loading from Onsite Wastewater Systems to a Lake (at Long Time Scales)*, PhD, 2018

G12 Neil Fredrick, *Spatial and temporal patterns of nitrogen biogeochemistry in Lake Taihu*, PhD, 2018 (expected)

G11 Wen Yao, *Modeling* Anabaena *in lakes*, MS, 2015.

G10 Zaichen Xiang, *Bacterial vesicles as viral countermeasures*, MS, 2015

G9 Xiaodan Ruan, *Effect of lake nitrogen fixation on watershed nitrogen export*, PhD, 2014

G8 Kathryn Eagan, *Design of Stormwater BMPs for Highway Systems*, MS/GLP, 2014

G7 Kami Koleva, *Agent-based modeling of* E. coli, MS, 2013

G6 Yixing Cao, *Muddy River Water Quality*, MS, 2010

G5 Yifu Yao, *Muddy River Water Quality*, MS, 2010

G4 Vanni Bucci, *Population dynamics of enteric bacteria in surface water: role of growth and mutation*, PhD, 2010

G3 Indrani Ghosh, *Characterizing and Understanding the Effects of Spatial Resolution in Urban Hydrologic Simulations*, PhD, 2010

G2 Miriam Mathew, *A Comparison Study of Gravimetric and Ultraviolet Fluorescence Methods for the Analysis of Total Petroleum Hydrocarbons in Surface Water*, MS, 2009

G1 Petr Masopust, *Spatial and temporal variability of* E. coli *in the Charles*, MS, 2005

3.3. Supervision of Undergraduate Student Research

U19 Margaret DiGiorno, *OUR Charles:Mapping septic systems and their impact on lake eutrophication*, 2015.

U18 Robert Cost, *OUR Charles: Water Quality Monitoring*, 2014 (UMass Boston student)

U17 Liz Cherchia, *OUR Charles: Antibiotic Resistance in the Environment*, 2014

U16 Sarah Sanchez, *OUR Charles: Evaluating Potential Swimming Locations*, 2014

U15 Jen Forbes, *OUR Charles: Cyanobacteria Sensor Surveys*, 2012

U14 Erin Stokes, *Study to develop a relationship between incubation time and temperature in water-quality indicating bacteria samples*, 2010

U13 Chris Leitao, *Muddy River Water Quality*, 2010

U12 Mike Andryuk, *Muddy River Water Quality*, 2011

U11 Danson Njoka, *Muddy River Water Quality*, 2010

U10 Kelly Crawford, *OUR Charles: Cyanobacteria Sensor Surveys*, 2009

U9 Ricky Adams, *Muddy River Water Quality*, 2008

U8 Nathan Chase, *OUR Charles: Quorum Sensing in Bacteria*, 2007

U7 Kaitlin Vacca, *OUR Charles: Effect of Green Roofs on Groundwater*, 2007

U6 Will Miller, *OUR Charles: Remote Sensing of Water Quality*, 2007

U5 Wellington Hall, *OUR Charles: Stony Brook Sewer History*, 2006

U4 Shaina Glidden, *OUR Charles: Effect of Canada Geese on Bacteria*, 2006

U3 Dave Brown, *OUR Charles Web Page*, 2006

U2 Benny D'Artista, *OUR Charles: Hydrology in SimCity*, 2006

U1 Kehinde Sarat Oshodi, *OUR Charles: Remote Sensing of Water Quality*, 2005

3.4. Member of PhD Thesis Committee

T13 Devashish Kumar. Climate Extremes-Predictability, and Consequences at regional scales, 2016.

T12 Na Gou, *Mechanistic Toxicity Assessment of Emerging Contaminants*, 2015.

T11 Reza Ghasemizadeh, *Groundwater flow and transport modeling of karst aquifers in Puerto Rico, 2015*

T10 Keith Cialino (U. Mass. Boston), *Measurement of Dissolved Organic Carbon Concentrations During Storm Events in the Neponset River Watershed*, 2015

T9 Evan Kodra, *Statistical modeling of climate extremes*, 2014

T8 Carla Cherchi, *Ecotoxicity and Environmental Implications of Nano Titanium Dioxide Revealed Though Primary Producers Surrogates – Cyanobacteria*, 2012

T7 Jiayi Shi, *Adhesion-detachment Mechanics of Thin Shells in the Presence of Intrinsic Surface Forces*, 2012

T6 Dogus Meric, *Multi stage experimental and modeling study to assess reactive core mats for remediation and reducing bioavailability of persistent organic compounds from aquatic sediments*, 2012

T5 Nehreen Majed, *Advanced nutrient removal by IFAS-EBPR-MBR process*, 2011

T4 Cindy Huang, *Water quality modeling in distribution systems*, 2009

T3 David Bedoya, *Model development for biotic integrity prediction based on instream habitat, water quality and land use patterns for several states of the U.S.*, 2008

T2 Hussam Sarahney, *Electrokinetic remediation of chromium in groundwater*, 2007

T1 Guoping Tang, *Time Integration for Groundwater Flow and Solute Transport Modeling*, 2006

3.5. Advising Activities

2006 – 2012: Faculty Advisor for Engineers Without Borders (EWB) (incl. 2-week trip to Honduras)

4. SERVICE AND PROFESSIONAL DEVELOPMENT

4.1. Service to the Institution

At Northeastern University

Department Service

2016 – 2017: CEE Sabbatical Leave Committee Representative
2011 – S017: CEE University Library Representative
2006 – 2015: Chi Epsilon Fundamentals of Engineering (FE) Exam Review of Hydraulics and Environmental Engineering
2014: CEE Merit Review Committee, Member (elected)
2012/13: CEE Search Committee, Chair
2011 - 2014: Graduate Studies Committee, Member
2008: CEE Strategic Planning Committee
2004 – 2011: Environmental Engineering Faculty Search Committee
2004 – 2010: Undergraduate Education Committee
2005 – 2006: CEE Dept. Web Page Committee

College Service

2010 - 2014: College of Engineering Faculty Council, Member (elected)
2011/12: College of Engineering Tenure & Promotion Committee, Member

University Service

2016: Udall Scholarship Selection Committee
2015: Rhodes, Marshall, Mitchell Scholarship Selection Committee
2015: 3Qs: Why you should not love that dirty water (advertisement campaign)
2015-2017: University Faculty Senate (elected)
2015: Making Tomorrow Happen (advertisement campaign)
2014: The State of Water: A Media Breakfast, "Swimming in the Charles"
2010: First Pages Honors Program lecture, "Hurricane Katrina from an Engineering Perspective"
2009: NU@Noon lecture, "Swimming in the Charles River: If, When, How and Why Not?"

4.2. Service to the Discipline/Profession

Editorial board membership

2015 – Present: Environmental Science: Water Research & Technology, Editorial Advisory Board Member
2012 – Present: ASCE Journal of Hydrologic Engineering, Associate Editor
2007 – Present: Estuarine and Coastal Shelf Science, Editorial Board Member

Paper peer-reviewing

2011-2015: Reviewed on average 10 papers per year

Aquatic Microbial Ecology, Biotechnology & Bioengineering, Chaos, Solitons & Fractals, Chemistry & Ecology, Coastal Engineering Journal, Deep-Sea Research, Ecological Modelling, Ecology Letters, Environmental Microbiology, Environmental Modeling and Software, Environmental Monitoring and Assessment, Environmental Science and Pollution Research, Environmental Science and Technology, Estuarine and Coastal Shelf Science, Freshwater Biology, GigaScience, International Journal of Environment and Pollution, Journal of Coastal Research, Journal of Computing in Civil Engineering, Journal of Environmental Engineering, Journal of Environmental Management, Journal of Environmental Management and Assessment, Journal of Hydrologic Engineering, Journal of the American Water Resources Association (JAWRA), Journal of Theoretical Biology, Journal of Water Resources Planning and Management, Molecular Phylogenetics and Evolution, Multi-scale Modelling & Simulation, Nature Communications, PLoS ONE, Processes, Royal Society Open Science, Royal Society Proceedings B, Science of the Total Environment (STOTEN), Soil Science, Water Research, Water Resources Management (WARM), Water

Resources Research (WRR), Water Science & Technology

Book reviewing

Pearson Higher Education, McGraw-Hill Higher Education, Bentham Science

Proposal peer-reviewing

2016: Served on NIH review panel
2011 – 2015: Served on 8 NSF review panels

Austrian Science Fund
Department of Defense (DoD), Strategic Environmental Research and Development Program (SERDP)
Lake Tahoe Science Consortium
National Science Foundation (NSF), CBET, BIO, OCE & others
Natural Environment Research Council (NERC), UK
NOAA SeaGrant (CT, NY)
Swiss National Science Foundation (SNF)
U.S. Army Corps of Engineers, Engineering Research and Development Center (ERDC)

Technical committee membership

2013 – Present: International Water Association (IWA) Microbial Ecology and Water Engineering (MEWE) Specialist Group
2010 – 2018: BSCES Freeman Committee
2010 – Present: New England Water Environment Association (NEWEA) Microconstituents Committee
2008 – Present: International Water Association (IWA) Diffuse Pollution and Eutrophication Specialist Group
2006 – Present: Society of Environmental Toxicology and Chemistry (SETAC) Exposure Modeling Advisory Group (EMAG)
2005 – Present: New England Water Environment Association (NEWEA) Combined Sewer Overflow (CSO)/Wet Weather Issues Committee
2009 – 2015, AEESP Conference Site Selection Committee
2012, Massachusetts Water Innovation Mission to Israel

Conference committee membership

(See also "Workshop Organization…" section under Scholarship)

2017: *Modeling of Environmental and Water Resources Systems*, Indian Institute of Technology at Delhi, Delhi, India, Technical Committee, Member.

2016 – 2017: *18th IWA International Conference on Diffuse Pollution & Eutrophication*, UCLA, Los Angeles, California, Scientific Committee, Member

Professional society membership

American Association for the Advancement of Science (AAAS)
American Society of Limnology and Oceanography (ASLO)
American Society of Microbiology (ASM)
American Society of Civil Engineers (ASCE)
Association of Environmental Engineering and Science Professors (AEESP)
Consortium of Universities for Advancement of Hydrologic Science, Inc. (CUAHSI)
Tau Beta Pi
International Society of Microbial Ecology (ISME)
International Association of Great Lakes Research (IAGLR)

4.3. Service to the Community/Public

2017 – Present: Member Beaches Science Advisory Committee organized by Save the Harbor/Save the Bay for Massachusetts Department of Energy and Environment.
2013 – Present: Keystone Symposia Programming Consultant
2006 – Present: Member of the Advisory Board of the Center for Coastal Environmental Sensor Networks (CESN) at the U. Mass. Boston.
2008 – 2010: Member of the Stormwater Stakeholder Workgroup organized by the Massachusetts Department of Environmental Protection (DEP).
2007 – 2008: Expert testimony for water quality case (did not go to court), Conservation Law Foundation.
2007: Expert review of water quality study, for California Water Resources Board.
2005 – 2006: Member of the "Expert Review Panel" for the development of a Total Maximum Daily Load (TMDL) model for the Lower Charles River.

5. OTHER

5.1. Awards and Honors

2012. Environmental Merit Award, New England Region, U.S. Environmental Protection Agency.
2011. Volunteer Recognition Award, Charles River Conservancy, Cambridge, MA.
2002. Outstanding Student Presentation Award (OSPA). American Geophysical Union (AGU) Fall Meeting, San Francisco, California.
1997. First Place Programming Competition. Environmental Systems Research Institute (ESRI) User Conference, San Diego, California.
1996. Top 5%. JARS Java Applet Rating Service. For UTFLOW Java Applet
1995. Sears B. Condit Award. Northeastern University, Boston, Massachusetts.

5.2. Licenses

Professional Engineer (PE), New York (#082650).
Engineer in Training (EIT), Massachusetts (#6539).

5.3. Personal

Fluent in English and German (mother language)
Born September 25, 1971 in Tuebingen, Germany
Married to wife Gunes, two sons Mario and Bernie
Likes jogging, sailboat racing and camping