

ANNUAL REPORT: June 1, 2013 – May 31, 2014
(i.e., Summer 2013, AY 2013-2014)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: Myron J. Mitchell

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

	Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
SUMMER:					
FALL:	EFB 415	Biogeochemistry	3 credit hours		23 students
	EFB 610	Biogeochemistry	3 credit hours		7 students
SPRING:	EFB 797	Hydrology/Biogeochemistry Seminar	1 credit hour		11 students
	(This seminar had an average attendance of ~30 individuals including students, staff and faculty with a total participation of ~55 individuals)				

NOTE: PLEASE INDICATE WHICH COURSE(S) HAD A SERVICE-LEARNING COMPONENT AND BRIEFLY EXPLAIN THE NATURE OF THIS COMPONENT. For examples of service-learning in courses, see: <http://www.esf.edu/students/service/courses.htm>. Service-learning is a form of structured experiential education in which students engage with the community to be active learners, to enrich their sense of civic responsibility, and to explore practical application for course content. Faculty oversight, reflective thinking, and reciprocity are key components of service-learning.

2. Non-Scheduled Course Offerings (e.g., 496, 899, 999)

	Course No.	Title	Credit Hrs.	No. Students
Fall	EFB899	17 Masters Thesis Research	2	2

EFB999	17	Doctoral Thesis Research	1	1
ENS999	25	Doctoral Thesis Research	2	1
Spring				
EFB298	17	Rsrch Internship/Envrn Biology	1	3
EFB899	17	Masters Thesis Research	2	2
EFB999	17	Doctoral Thesis Research	6	2

3. Continuing Education and Extension (short courses, workshops, etc.)

4. Guest Lecture Activities

<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
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II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 13 and unofficial advisor _____

B. Graduate Students: (list name, degree sought, starting date, month & year; if a degree was completed, please give date and full citation for the thesis or dissertation).

MAJOR PROFESSOR

Laura Hartley, M.P.S. (Major Professor) (January 2008), Graduated December 2013

Phil-Goo Kang, Ph.D. (Major professor) (August 2007)

Tamir Puntsag, Ph.D. (Major professor) (August 2011)

CO-MAJOR PROFESSOR

Ceili E Bachman, M.S. (Co-Major Professor) (August 2011)

Daniele Baker, M.S. (Co-Major Professor) (August 2008) (Graduated December 2013) Thesis Title: Recovery of a hypereutrophic Urban Lake (Onondaga Lake, NY): Implications for Monitoring Water Quality and Phytoplankton Ecology

MEMBER, STEERING COMMITTEE (other than those listed above)

Andrew Brainard (EFB, Ph.D.)

Monica Berdugo (EFB, Ph.D.)

Whitney Calton ((M.S., Forest Resources Management)

John Cole (Civil and Envir. Engin, M.S.)

Jason Dittman (Civil and Envir. Engin, Ph.D.)

Colin Fuss (Civil and Envir. Engin, Ph.D.)

Jacob Gillette (EFB, Ph.D.)

Gordon Gross (M.S., Forest Resources Management)

Xinli Ji (Civil and Environ. Engin.)
Wei Le (Civil and Environ. Engin., Ph.D.)
Devi Mateti (Civil and Envir. Engin.)
Renato Pecaldo (Ph.D. Forest Resources Management)
Cheryl A Whritenour (Ph.D.)
Xue Yu (Civil and Environ. Engin., Ph.D.)
Yang Yang (Ph.D. Forest Resources Management)
Qunito Zhou (Civil and Environ. Engin., Ph.D.)
Jing Zhai (Civil and Environ. Engin., Ph.D.)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Chairman for Samantha Delfing (M.S., FRM)

III. RESEARCH COMPLETED OR UNDERWAY

A. Departmental Research (unsupported, boot-legged; title - % time spent)

B. 1. Grant-supported Research (source, subject, amount - total award and current year, award period starting and ending dates; list graduate research assistants supported by each grant)

Principal Investigator. Monitoring of an Adirondack Ecosystems: Impacts of Acidic and Mercury Deposition and Climate Change on Watersheds NYSERDA \$497,176. 2013-2017.

Co-Investigator. Determination of Climatic and Geomorphological Drivers of Greenhouse Gas Emissions in Forested Landscapes of the US Northeast. McIntire-Stennis. \$77,807. 2012-2015

Co-Investigator. Long-Term Ecological Research (LTER) at Hubbard Brook Experimental Forest (HBR) (MJ Mitchell, \$90,000) 2011-2016

Co-Investigator. NOAA Coastal and Marine Habitat Restoration Project Grants under the American Recovery and Reinvestment Act, "Recovery Act – Coastal Fisheries Habitat Restoration in the St. Lawrence River (\$202,317 subcontract to ESF) of \$1,086,010 Ducks Unlimited. 2011-2013

Principal Investigator. Collaborative Research: Winter Climate Change in a Northern Hardwood Forest. NSF Ecosystems. \$179,149. 2010-2013.

2. Research Proposals pending (include information as in B.1., above).

3. Research Proposals submitted, but rejected (include information as in B.1., above)

IV. PUBLICATIONS (Full bibliographic citation, i.e., do not use "with Jones," or "Jones, et al."; please list only

publications published, in press, or actually submitted during this reporting period --- **do not list manuscripts in preparation**).

A. Refereed Publications

Duran, J., Morse, J.L., Groffman, P.M., Campbell, J.I., Christenson, L.M., Driscoll, C.T., Fahey, T.J., Fisk, M.C., Mitchell, M.J., and Templer, P.H. 2014. Winter climate change affects growing-season soil microbial biomass and activity in northern hardwood forests. *Global Change Biology*. doi: 10.1111/gcb.12624 (In Press)

Vidon, P., Carleton W., Mitchell, M. J. 2014. Spatial and temporal variability in stream dissolved organic carbon quantity and quality in an Adirondack Forested Catchment. *Applied Geochemistry* (In Press)

Buckley, S.M., M.J. Mitchell, P.J. McHale and G.D. Millard. 2014. Variations in carbon dioxide fluxes within a city landscape: identifying a vehicular influence. *Urban Ecosystems* (In Press).

Christenson, L.M., Mitchell, M.J., Groffman, P.M. and Lovett, G.M. 2014. Cascading effects of climate change on forest ecosystems: Biogeochemical links between trees and moose in the Northeast USA *Ecosystems* 17: 442-457.

Inamdar, S., G. Dhillon, S. Singh, S. Dutta, D. Levia, M. Mitchell, J. Van Stan, D. Scott, P. McHale. 2013. The controls of end-member chemistry and hydrologic conditions on the temporal patterns of runoff in a forested, Piedmont catchment. *Water Resources Research* (In Press).

Kang, P.G. and M.J. Mitchell. 2013. Bioavailability and size-fraction of dissolved organic carbon, nitrogen, and sulfur at the Arbutus Lake watershed, Adirondack Mountains, NY. *Biogeochemistry*. 115: 213-234.

Kurian, L.M., L. K. Lautz and M. J. Mitchell. 2013. Winter hydrology and concentrations in a forested watershed: a detailed field study in the Adirondack Mountains of New York. *Journal of the American Water Resources Association* 49: 264-283.

McEathron, K.M., M. J. Mitchell and L. Zhang. 2013. Acid-base characteristics of the Grass Pond watershed in the Adirondack Mountains of New York State, USA: interactions between soil, vegetation and surface waters. *Hydrology and Earth System Science* 17: 2557-2568, doi:10.5194/hess-17-2557-2013 .

Mitchell, M.J., C.T. Driscoll, P.J. McHale, K. M. Roy and Zheng Dong. 2013. Lake-Watershed Sulfur Budgets and Their Response to Decreases in Atmospheric Sulfur Deposition: Watershed and Climate Controls. *Hydrological Processes*. 27:710-720. DOI: 10.1002

Singh, S., S. Inamdar, M. Mitchell, and P. McHale. 2013. Seasonal pattern of dissolved organic matter (DOM) in watershed sources: Influence of hydrologic flow paths and autumn leaf fall. *Biogeochemistry* (In Press)

B. Non-refereed Publications

C. Papers Presented at Science Meetings (give title, date, occasion, and location)

Keynote Address entitled “Direct and Indirect Impacts of Climate Change on the Nutrient Cycling of Forested Watersheds in the Northeastern U.S. and Southeastern Canada” at North American Forest Soils Conference in Whitefish, Montana (June 15-20, 2013)

D. Public Service Presentations (lectures, seminars, etc. to and for the public; give group or occasion, date(s), and attendance)

V. PUBLIC SERVICE

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local):

Panel on Policy-Relevant Science to Inform EPA’s Review of the Secondary National Ambient Air Quality Standards (NAAQS) for Oxides of Nitrogen and Sulfur(2014-present).

2. Industrial and Commercial Groups, etc.

B. Unfunded Service to Governmental Agencies, Public Interest Groups, etc.

Evaluation of Faculty Member for Promotion at U.C. Riverside.

Board of Directors of Upstate Freshwater Institute

Member of Finance Committee of Upstate Freshwater Institute

Member of City of Syracuse the Natural Environment team for developing the sustainability plan for the City of Syracuse (2012-present)

VI. PROFESSIONAL DEVELOPMENT

A. Professional Honors and Awards (for teaching, research, outreach, etc.)

Adirondack Achievement Award from the Adirondack Research Consortium (2014)

B. 1. Activities in Professional Organizations (offices held, service as chairman, member, participant or consultant)

2. Professional Society Membership

American Association for the Advancement of Science (Fellow)

American Geophysical Union

Sigma Xi

Soil Science Society of America

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

Journal(s)

No. of manuscripts

Environmental Science and Technology

3

Agency

No. of proposals

National Science Foundation, GEOBIOLOGY & LOW TEMP GEOCHEM
SUNY Empire Innovation Program

1

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Other

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

Date

Place

C. Further Education/Re-training Undertaken, Leaves, Workshops, etc.

D. Foreign Travel (Where, When, Purpose)

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

B. College-level

Director of Council of Hydrologic Systems Science

Consortium of Universities for the Advancement of Hydrologic Sciences, Incorporated (CUAHS), alternate representative for ESF (2001-present).

Evaluation of Teaching of Philippe Vidon, Department of Forest and Natural Resources Managemen

C. University-wide, including Research Foundation

Member of Board of Directors of New York Research Foundation

Vice-Chair of Board of Directors of New York Research Foundation (January 2011-present)

Member of SUNY Empire Innovation Program Advisory Committee

VIII. SUMMARY OF SIGNIFICANT ACTIVITIES AND ACCOMPLISHMENTS DURING THIS REPORTING PERIOD, ESPECIALLY THOSE MOST NOTEWORTHY AND RELATIVE TO THE COLLEGE'S AND DEPARTMENT'S MISSION.

One paragraph on each of the following (**i.e., three paragraphs total**) would be most helpful: this past year, what have you done for our students, department/college, and self professionally? NOTE: The information in this section (along with the supporting specific information elsewhere in this report) should be your strongest case for being considered for a discretionary raise (when available), which I'll continue to award based on your contributions to the department and college this reporting period.

Students

My major teaching commitment in recent years has been associated with an undergraduate and graduate course (Ecological) Biogeochemistry taught jointly as an ESF and SU course with me and Charles Driscoll as instructors. This has been a very successful course and has engaged a broad array of students. Last fall (2013) we had 33 students in this class. With my conversion to an emeritus status on Sept. 1, 2014 there is no faculty member who is willing to teach this class with Dr. Driscoll. Hence it will be offered only as an SU course. I hope that there will be a future hire for a biogeochemist in EFB who would be interested in teaching this class. I have been responsible for organizing a "Cross-disciplinary Seminar in Hydrological and Biogeochemical Processes." This past spring (2013) we had more than 55 students, faculty and staff who came from academic programs at both ESF and SU that participated in this seminar with an average attendance of ~30 individuals. I am not sure if other ESF faculty members will take a lead in offering this seminar series. I currently have two Ph.D. students (Phil-Goo Kang, Tamir Puntsag) and one M.S. student (Ceili Baker). Daniel Baker graduated with an M.S. in December 2013. For these two M.S. students I am a co-major professor with Kim Schulz. Laura Hartley graduated in December 2013 with an MPS. Phil-Goo Kang has had to return to Korea, but he is still working on his Ph.D. Dissertation. He has had two chapters of his dissertation published, a third chapter in review in ES&T and the final fourth chapter under development that will also be submitted to an international journal. He should complete his dissertation in 2014. Tamir Puntsag is supported by a Fulbright Fellowship and is working on project using the stable isotopes of water to analyze the effect of climate change on the hydrology at Hubbard Brook Experimental Forest in NH. This work is being done with collaboration from Jeff Welker at the University of Alaska who is one of the world's foremost experts on the stable isotopes of water. Tamir has completed the written portion of her Ph.D. Candidacy Examination and is scheduled to do the oral portion of the examination in July 2014.

Department/College

I currently serve as Director of Council of Hydrologic Systems Science and also am the alternate ESF representative for the Consortium of Universities for the Advancement of Hydrologic Sciences, Incorporated (CUAHS). I will resign from both of these positions when I change to an emeritus status. My largest current administrative commitments have been involved with the Research Foundation Board on which I serve as Vice-Chair, and Member of the Executive Committee. I am planning on staying on the Board until my term expires in 2016. I hope that ESF and EFB can hire a

new faculty member whose interests would build upon the major program in Biogeochemistry that has developed over the past 39 years. We have developed both laboratory and field facilities that provide an exceptional opportunity for doing biogeochemical work especially those aspects of biogeochemistry that evaluate the effects of atmospheric deposition and climate change on forested watersheds.

Self Professionally

I have continued the development of a major research program in biogeochemistry that has focused mostly on the role of air pollutants and climate change on forested watersheds, but has also expanded into other areas including the urban environment and international cooperative work in Asia and Europe. This research has resulted in 10 refereed papers published or in press for this reporting period and research grants totaling ~ one million \$ for this reporting period. The Huntington Forest/Arbutus Lake facility is used by a variety of agencies and a new grant has been awarded from NYSERDA cover and expand basic monitoring from 2013-2017. After considerable discussion on how to go forward with this effort when I have emeritus status it has been decided that Pat McHale will become the PI and I will be co-PI starting on September 1, 2014. The other major research infrastructure that I have helped develop is in the City of Syracuse where we have two towers with one located in a residential area in Upper Onondaga Park for which details can be found at: <http://www.esf.edu/hss/em/onondaga/index.html>. The other tower is located at the Center of Excellence (CoE) Headquarters at a downtown location. For a recent paper on this project see: Buckley, S.M., M.J. Mitchell, P.J. McHale and G.D. Millard. 2014. Variations in carbon dioxide fluxes within a city landscape: identifying a vehicular influence. *Urban Ecosystems* (In Press). We are currently collecting meteorological data as well as using eddy correlation measurements for determining the fluxes of carbon dioxide, water and heat at both of these sites. I am working with Geoff Millard in developing a paper for this work including carbon dioxide, water and heat fluxes in the City of Syracuse. In addition at the CoE site we are collecting traffic data from the two adjacent interstate highways (I81 and I690) as detailed: <http://www.esf.edu/hss/em/coe/index.html>. I have had conversations and meetings with a various individuals at ESF, SU and the CoE discussing how to continue the work using these urban towers. Hopefully a plan will be developed before Sept. 1, 2014. I am looking forward to transitioning to an emeritus status and doing some new things in my personal life, but also continuing with my scientific and academic interests.

IX. A. FUTURE PLANS, AMBITIONS, AND POTENTIAL CONTRIBUTIONS FOR YOUR OWN PROFESSIONAL DEVELOPMENT AND THE ENHANCEMENT OF THE PROGRAM IN ENVIRONMENTAL AND FOREST BIOLOGY (brief summary)

With my change to emeritus status on September 1, 2014, I will still be engaged in scientific activity including data analyses, interpretation and writing up results. There are a number of data sets and started papers that I am looking forward to working on in the future.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2014

a. Course(s) to be offered

b. Proposed research activity

Work on data analyses and paper writing.

c. University, professional society, and public service

Member of the SUNY-RF Board
Member of EPA Board on Air Pollution

2. Fall Semester 2014—I become an Emeritus Distinguished Professor on September 1, 2014

a. Course(s) to be offered

b. Proposed research activity
Work on data analyses and paper writing.

c. University, Professional society, and public service

Member of the SUNY-RF Board
Member of EPA Board on Air Pollution

3. Spring Semester 2015

a. Course(s) to be offered

b. Proposed research activity
Work on data analyses and paper writing.

c. University, professional society, and public service

Member of the SUNY-RF Board
Member of EPA Board on Air Pollution