

**ANNUAL REPORT: June 1, 2009 – May 31, 2010**  
**(i.e., Summer 2009, AY 2009-2010)**  
**DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY**  
**SUNY-ESF**

**NAME:** Myron J. Mitchell

**I. INSTRUCTIONAL ACTIVITIES**

1. Regular Course Offerings

<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>	<u>No. of Lab. Sections</u>
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SUMMER:

FALL:

EFB 415 Biogeochemistry	14 students (+ 2 CIE students)
EFB 610 Biogeochemistry	10 students (+5 CIE students)
EFB 797 Seminar	5 students

SPRING:

EFB 497 Ecology Seminar	3 students
EFB 797 Hydrology/Biogeochemistry Seminar	7 EFB students for credit

For this interdepartmental seminar there were 59 participants with an average attendance of 28 individuals/seminar.

**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. EFB courses currently listed with service-learning components include: 416/6/1, 486, 518, 521, 532, 446/646.

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

<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>
	Fall		
EFB 899		5 hours	1 student

EFB 999	13 hours	2 students
Spring		
EFB 498	4 hours	2 students
EFB 899	5 hours	1 student
EFB 999	13 hours	2 students

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>
EFB 120	The Global Environment and Evolution of Human Culture	One lecture each in Fall 2009 and Spring 2010

## II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 12 and unofficial advisor \_\_\_\_\_
- B. Graduate Students: (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

Phil-Goo Kang, Ph.D. (Major professor) (August 2007)  
 Kimberly McEathron, M.S. (Major Professor) (August 2007) Finished thesis in June 2009 entitled "Tree Species and Acid-Base Characteristics of Grass Pond Watershed in the Adirondack Mountains of New York"  
 Shannon Buckley, Ph.D. (Major Professor) (June 2008)

### CO-MAJOR PROFESSOR

Daniele Baker, M.S. (Co-Major Professor) (August 2008)

### MEMBER, STEERING COMMITTEE (other than those listed above)

Hector Abegbidi (Forestry, Ph.D.)  
 Youngil Cho (Civil and Envir. Engin, Ph.D.)  
 John Cole (Civil and Envir. Engin, M.S.)  
 Jason Dittman (Civil and Envir. Engin, Ph.D.)  
 Colin Fuss (Civil and Envir. Engin, Ph.D.)  
 Lisa Giencke (EFB, M.S.)

Jacob Gillette (EFB, Ph.D.)  
Xinli Ji  
Wei Le (Civil and Environ. Engin., Ph.D.)  
Lisa Kurian (M.S., Forest Resources Management).  
Jing Zhai  
Devi Mateti (Civil and Envir. Engin).  
Dorothy Richey (Civil and Environ. Engin.)  
Pranesh Selvendiran (Civil and Environ. Engin., Ph.D.)  
Madeline Turnquist (EFB, MS)  
Cheryl Whritenour (EFB, MS)

### CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Mark Fabian, M.S. Thesis, Hydrological and Ecological Effects of Water Withdrawals from a Dry Tropical Stream, Department of Environmental Resources and Forest Engineering.

Ph.D. Candidacy Examination of Amos Quaye, Department of Forest and Natural Resources Management

Ph.D. Dissertation Examination of Youngil Cho (Civil and Envir. Engin. SU)

### **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)

Co-Investigator. Importance of calcium-rich substrates for supporting refugia of biodiversity and productivity in an increasingly acidified landscape. Northern States Research Cooperative (Theme 4: Biodiversity and Protected Area Management). \$41,543. 2009-2010.

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

Co-Investigator. Impacts of Acidic Deposition and Soil Calcium Depletion on Terrestrial Biodiversity and Food Webs in Northern Hardwood Forest Ecosystems. NSRC, Theme 2: Sustaining Ecosystem Health in Northern Forests. \$141,488. 2010-2012.

Co-Investigator. Positioning Rust-Belt Cities for a Sustainable Future: A Systems Approach to Enhancing Urban Quality of Life. NSF ULTRA-Ex. \$300,000 (M.J. Mitchell--\$33,304) 2010-2012

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

Principal Investigator. Collaborative Research: Evolution of Dissolved Organic Nitrogen (DON) from the Headwaters to the Catchment Outlet: Sources, Variation with Scale, and Differences with DOC. NSF-Hydrology. \$70,256.00. 2008-2011

Principal Investigator. Evaluation and Protection of Adirondack Ecosystems: Impacts of Acid and Mercury Deposition on Watersheds. NYSERDA-EMEP. \$378,568. 2008-2011.

Principal Investigator. Hydroclimatic effects on ecosystem response: A synthesis of long-term results from watersheds in the northeastern United States and southeastern Canada. NSRC/NERC U.S. Forest Service. \$146,000. 2007-2010.

Principal Investigator. Characterization of ambient air quality in Syracuse, NY and identification of its origins. CARTI -Collaborative Activities for Research and Technology Innovation. Total \$600,000 (\$200,000 SUNY-ESF). 2007-2010.

Consultant. PIRE: Ecological and evolutionary effects of climate change and anthropogenic influences in Mongolia. NSF. Total \$2,469,634 (\$47,465 SUNY-ESF) 2007-2012.

Co-Investigator. The Impact of Changing Climate on Winter Nitrogen Export from a Forested Watershed of the Adirondack Mountains. McIntire-Stennis (\$81,230) 2007-2010.

Co-Investigator. Water flux and nutrient cycling in the hyporheic zones of a semi-arid watershed. NSF-Hydrology (Total \$730,000; subcontract \$139,424) 2005-2010.

Co-investigator. Long-term ecological research at the Hubbard Brook Experimental Forest. NSF. (Total: \$4,920,000; subcontract \$167,784). 2004-2009. Graduate Student Supported: Phil-Goo Kang

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

Buckley, S.M. and M.J. Mitchell. 2010. Improvements in Urban Air Quality: Case Studies from New York State, U.S.A. Water, Air and Soil Pollution (In Press).

Christenson, L.M., Mitchell, M.J., Groffman, P.M. and Lovett G.M. 2010. Winter climate change implications for decomposition in Northeastern forests: comparisons of sugar maple litter to herbivore fecal inputs. Global Change Biology (in press)

Hubbard, K.A., L. K. Lautz, M. J. Mitchell, B. Mayer and E. R. Hotchkiss. 2010. Evaluating nitrate uptake in a Rocky Mountain stream using labeled <sup>15</sup>N and ambient nitrate chemistry. *Hydrological Processes* (In press)

Mayer, B., J.B. Shanley, S.W. Bailey and M.J. Mitchell. 2010. Identifying sources of streamwater sulfate after a summer drought in the Sleepers River watershed (Vermont, USA) using hydrological, chemical, and isotope techniques. *Applied Geochemistry* (In Press).

Mitchell, M.J., G. Lovett, S. Bailey, F. Beall, D. Burns, D. Buso, T. A. Clair, F. Courchesne, L. Duchesne, C. Eimers, D. Jeffries, S. Kahl, G. Likens, M.D. Moran, C. Rogers, D. Schwede, J. Shanley, K. Weathers and R. Vet. 2010. Comparisons of Watershed Sulfur Budgets in Southeast Canada and Northeast US: New Approaches and Implications. *Biogeochemistry* (In Press).

Park, J-H, B. Kim, D. Lei, M.J. Mitchell, and H. Shibata. 2010. Potential effects of climate change and variability on watershed biogeochemical processes and water quality in northeast Asia. *Environmental International* 36:212-225.

Campbell, J.L., L.E. Rustad, E.W. Boyer, S. F. Christopher, C. T. Driscoll, I.J. Fernandez, P.M. Groffman, D.Houle, J. Kiebusch, A.H. Magill, M.J. Mitchell, and S.V. Ollinger. 2009. Consequences of climate change for biogeochemical cycling in forests of northeastern North America. *Canadian Journal of Forest Research* 39:264-284.

Inamdar, S.P., J. Rupp and M. J. Mitchell. 2009. Groundwater flushing of solutes at wetland and hillslope positions during storm events in a small glaciated catchment in western New York, USA. *Hydrological Processes* 23:1912-1926.

Jin, L., Siegel, D.I., Lautz, L.K., Mitchell, M.J., Dahm, D.E. and Mayer, B. 2009. Calcite precipitation driven by the common ion effect during groundwater-surface water mixing: a potentially common process in streams with geologic settings containing gypsum. *The Geologic Society of America Bulletin*. (in press).

Piatek, K. B., S.F. Christopher, S. F., and M.J. Mitchell. 2009 Spatial and temporal dynamics of stream chemistry in a forested watershed, *Hydrol. Earth Syst. Sci.*, 13:423-439.

#### B. Non-refereed Publications

Driscoll, C.T., K.M. Driscoll, M.J. Mitchell, D.J. Raynal, K. Roy. Human Impacts from Afar. 2009 p. 114-127. In: W.P. Porter, R.S. Whaley & J. D. Erickson (eds.). *Light from an Adirondack Prism: The Great Experiment in Conservation* Syracuse University Press, Syracuse, NY.

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

Mitchell, M.J. 2009. Invited Presentation on " Impact of Climate Change on Events in Forested Watersheds: Hydrological, Chemical and Isotopic Approaches. Gordon Conference on Small Catchments" for Gordon Research Conference on Catchment Science: Interactions of Hydrology, Biology & Geochemistry Thresholds, tipping points and non-linearity: integrated catchment science for the 21st century. 12-17 July 2009, Proctor Academy, Andover, New Hampshire.

Mitchell, M.J. 2009. Invited Presentation on: Discrepancies in Watershed S Budgets in Southeast Canada and Northeast U.S.: A Comparison of Mass-Balance Approach. NADP Annual Meeting, Saratoga Springs, New York, October 6-8, 2009.

Mitchell, M.J. 2009. Invited Presentation on: "Climate and Weather Influences on Sulfur, Nitrogen and Mercury Flux". NYSERDA, EMEP meeting in Albany, New York, Oct. 14-15, 2009.

I helped lead a field trip on Friday, Oct. 9, 2009 to the Huntington Forest for NADP Annual Meeting, Saratoga Springs, New York.

Invited Plenary Presentation for CARTI and TAD Project Presentations and SAC Review in Syracuse, New York on April 16, 2010 entitled "Characterization of the Ambient Air Quality in Syracuse, NY and Identification of its Origins"

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):

Member of the EPA's Clean Air Scientific Advisory Committee (CASAC)

2. Industrial and Commercial Groups, etc.

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

Board of Directors of Upstate Freshwater Institute

Member of Finance Committee of Upstate Freshwater Institute

Review of Faculty for Tenure and Promotion in Department of Earth Sciences  
School of Science of Indiana University, Purdue University, Indianapolis, Indiana.

Review of Faculty for Promotion in Department of Geography and Earth Sciences  
University of North Carolina at Charlotte, Charlotte, NC 28223

Member of Scientific Advisory Committee for International Acid Rain meeting to be held in Beijing, China (2011)

## VI. PROFESSIONAL DEVELOPMENT

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

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  
American Geophysical Union  
Ecological Society of America  
Sigma Xi  
Soil Science Society of America

## 3. Other Professional Activities

### a. Editorial activity

<u>Journal (s)</u>	<u>Responsibility</u>
<u>Other (books, symposia, etc.)</u>	

### b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts</u>
Biogeochemistry	2
Journal of Geophysical Research-Biogeosciences	1

<u>Agency</u>	<u>No. of proposals</u>
EPA-Star Fellowship Proposals	19
National Science Foundation, Hydrological Sciences	1
University of California Kearney Foundation	1

Other

### c. Participation (workshops, symposia, etc.)

<u>Name of workshop, etc.</u>	<u>Date</u>	<u>Place</u>
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## C. Further Education/Re-training Undertaken, Leaves, Workshops, etc.

## D. Foreign Travel (Where, When, Purpose)

I was on the planning committee and participant for an “International Summer School on "Frontier in Ecosystem Ecology in Northern Forest" in Japan LTER sites”. The field training program, was held June 14-20, 2009 in Hokkaido University's experimental forests that are included within the JaLTER (Japan Long-Term Ecological Research Network). Nineteen Ph.D. students from seven countries (Australia, Bangladesh, China, India, Japan, Malaysia and Philippines) attended in this program.

## **VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)**

### A. Department-level

### B. College-level

Director of Council of Hydrologic Systems Science

Co-Chair of Faculty Advisory Committee on Establishing a Joint ESF-SU Doctoral Environmental Program

### C. University-wide, including Research Foundation

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

NYSTAR Team Leader for Urban Ecosystems.

Member of Board of Directors of New York Research Foundation

Chair (through December 2009) and Member of Committee on Human Resources (through December 2009) of New York Research Foundation.

Chair (beginning January 2010) and Member of Research Committee of New York Research Foundation.  
Member of Strategic Planning Committee for SUNY Research Foundation.

Member (200) of SUNY Strategic Planning.

Member of Committee on Research for the New York Research Foundation

Member of SUNY Higher Education Advisory Committee

Reviewer Committee for SUNY Distinguished Professors

Member of SUNY Committee of Distinguished Professors

**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 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, which I'll continue to award based on your contributions to the department and college this reporting period.

My contribution to students has focused on the support and development of our program related to water resources. This past spring we had a successful seminar entitled "Cross-Disciplinary Seminar in Hydrological and Biogeochemical Processes" with 59 participants including faculty members, visiting scientists, staff and students. I also have employed three undergraduate students in my laboratory. I have been a strong proponent for developing closer academic integration of graduate programs at ESF and SU, but some of this activity has been stalled due to budgetary constraints.

Over the past year a substantial portion of my time and energy has been devoted to SUNY wide efforts. I am a member of SUNY Research Foundation Board and currently chair the Committee on Research. Also, I am the RF Board representative for the Research Foundation Strategic Planning Committee. I also serve as a member of the SUNY Distinguished Professor Committee. I was appointed by the SUNY Strategic Planning group of 200. These activities have resulted in trips and meetings throughout the SUNY campuses of New York State, numerous trips to Albany and many hours of telephone and web conference calls. I feel fortunate to have this role and have tried to represent the general interests of SUNY faculty and also be sensitive to issues and needs associated with ESF. Within the teaching, research and public service components of SUNY, ESF is unique. This uniqueness has some advantages, but also some disadvantages with respect to the positioning of ESF within SUNY.

I have continued to maintain a vigorous research program with more than \$1.8 million in grants. During the period of this report I coauthored ten peer reviewed papers and one book chapter. One of these papers was the culmination of a multiyear effort and included 20 authors. This multi-authored paper is currently in press (and on line) in Biogeochemistry and is entitled "Comparisons of Watershed Sulfur Budgets in Southeast Canada and Northeast US: New Approaches and Implications". This project and resultant paper required coordination and agreement between three federal governmental agencies (US-EPA, US-USGS, and Environment Canada). In addition to a large effort associated with data analyses and interpretation there were important policy/science issues related to atmospheric deposition that needed to be addressed in this paper.

#### **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)**

I will continue my current teaching, public service and research activity. In the fall 2010, I have been invited to give a series of lectures at the University of Jinan in China. The current plan is for me to spend ~10 days in China in October. I have also been asked to be a member of the Scientific Planning meeting for the International Acid Rain meeting that will be held in Beijing (China) in June 2010.

#### **B. PROJECTED ACTIVITIES FOR NEXT YEAR**

##### **1. Summer 2009**

##### **a. Course(s) to be offered**

b. Proposed research activity

I will continue my various research efforts that include air pollution/meteorological monitoring in the City of Syracuse, continued activity at the Huntington Forest and continued effort at Hubbard Brook including the initiation of newly funded NSF project related to winter processes.

c. University, professional society, and public service

I will continue to serve in various capacities to ESF, SUNY and the Research Foundation.

2. Fall Semester 2009

a. Course(s) to be offered

Ecological Biogeochemistry

b. Proposed research activity

I will continue my various research efforts that include air pollution/meteorological monitoring in the City of Syracuse, continued activity at the Huntington Forest and continued effort at Hubbard Brook including the initiation of newly funded NSF project related to winter processes.

c. University, Professional society, and public service

I will continue to serve in various capacities to ESF, SUNY and the Research Foundation.

3. Spring Semester 2010

a. Course(s) to be offered

Ecology Seminar

Cross-disciplinary Seminar in Hydrological and Biogeochemical Processes

b. Proposed research activity

I will continue my various research efforts that include air pollution/meteorological monitoring in the City of Syracuse, continued activity at the Huntington Forest and continued effort at Hubbard Brook including the initiation of newly funded NSF project related to winter processes.

c. University, professional society, and public service

I will continue to serve in various capacities to ESF, SUNY and the Research Foundation.