

ANNUAL REPORT: June 1, 2011 – May 31, 2012
(i.e., Summer 2011, AY 2011-2012)
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>
SUMMER:	NA				
FALL:	EFB 415	Ecological Biogeochemistry	3	25	
	EFB 610	Ecological Biogeochemistry	3	10	
	This class had an additional 20 CIE (SU) students.				
SPRING:	EFB 797	Hydrology/Biogeochemistry Seminar	1	13 (EFB)	31 (total students) and 61 (total participants including outside speakers, students, faculty and staff)

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>
	EFB 797	Seminar	3	students
	EFB 899	Masters Thesis Research	2	students, 2 hours
	EFB 999	Doctoral Thesis Research	4	students, 4 hours
	ENS 999	Doctoral Thesis Research	2	students, 4 hours

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	Global Environment and Human Culture 2	

II. STUDENT ADVISING

- A. Number of undergraduates for whom you are the student's official advisor 16 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)

Shannon Buckley, Ph.D. (Major Professor) (June 2008), Graduated May 2012. Dissertation Title: Towards a Greater Understanding of the Urban Carbon Cycle: Variations of Atmospheric CO₂ Fluxes within Syracuse, New York, USA

Tamir Puntsag (Major Professor) (August 2011)

CO-MAJOR PROFESSOR

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

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

MEMBER, STEERING COMMITTEE (other than those listed above)

Hector Abegbidi (Forestry, 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.)

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

Xinli Ji

Wei Le (Civil and Environ. Engin., Ph.D.)

Jing Zhai
Devi Mateti (Civil and Envir. Engin).
Dorothy Richey (Civil and Environ. Engin.)
Stephen Rock (M.S. Forest Resources Management)
Pranesh Selvendiran (Civil and Environ. Engin., Ph.D.)

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Renato Sabanal Pacaldo

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

Co-Investigator. Nitrogen (N) Availability as Driver of Methylmercury Production in Forested Soils and Stream Sediments. New York State Water Resources Institute (WRI). \$20,000. 2011-2012.

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.

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. 2010-2012

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. \$453,568. 2008-2012.

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

Beier, C.M., Woods, A.M., Hotopp, K.P., Gibbs, J.P., Mitchell, M.J., Dovèiak, D., Leopold, D.J., Lawrence, G.B., and Page, B.D. 2012. Variability in gastropod and amphibian communities along a soil calcium gradient in Adirondack northern hardwood forests. *Canadian Journal of Forest Research* (In Press).

Inamdar, S., N. Finger, S. Singh, M.J. Mitchell, D. Levia, H. Bais, D. Scott and P. McHale. 2012. Dissolved organic matter (DOM) concentration and quality in a forested mid-Atlantic watershed, USA. *Biogeochemistry* 108:55-76.

Kang, P.G, B. Mayer and M.J. Mitchell. 2012. Comparison of sample preparation methods for stable isotope analysis of dissolved sulfate in forested watersheds. *Isotopes in Environmental & Health Studies* (In Press)

Van Stan, J. T., D. Levia, S. P Inamdar; M.. D Lepori-Bui and M.J. Mitchell. 2012. The effects of phenoseason and storm characteristics on throughfall solute washoff and leaching dynamics from a temperate deciduous forest canopy. *Science of the Total Environment* (In Press)

Buckley, S.M. and M.J. Mitchell. 2011. Improvements in Urban Air Quality: Case Studies from New York State, U.S.A. *Water, Air and Soil Pollution* 214:93-106

Inamdar, S., S. Singh, S. Dutta, D. Levia, M.J. Mitchell, D. Scott, H. Bais, and P. McHale. 2011. Fluorescence characteristics and sources of dissolved organic matter for stream water during storm events in a forested mid-Atlantic watershed. *Journal of Geophysical Research Biogeochemistry*. 116, GO3043, doi:10.1029/2011JG001735, 23 pages.

Kerr, J.G., M. C. Eimers, I. F. Creed, M. B. Adams, F. Beall, D. Burns, J. L. Campbell, S. F. Christopher, T. A. Clair, F. Courchesne, L. Duchesne, I. Fernandez, D. Houle, D. S. Jeffries, G. E. Likens, M. J. Mitchell, J. Shanley and H. Yao. 2011. The effect of seasonal drying on sulphate dynamics in streams across southeastern Canada and the northeastern USA. *Biogeochemistry* (In Press).

Levia, D.F., J.T. Van Stan, S.P. Inamdar, M.T. Jarvis, M.J. Mitchell, S.M. Mage C.E. Scheick, and P.J. McHale. 2011. Stemflow and dissolved organic carbon cycling: temporal variability in concentration,

flux, and UV-Vis spectral metrics in a temperate broadleaved deciduous forest in the eastern United States. *Canadian Journal of Forest Research* 42:207-216.

Levia, D., J. Van Stan, C. Siegert, S. Inamdar, M.J. Mitchell, S. Mage and Patrick McHale. 2011. Atmospheric deposition and corresponding variability of stemflow chemistry across temporal scales in a mid-Atlantic broadleaved deciduous forest. *Atmospheric Environment* 45:3046-3054.

Miles, G.R., M. J. Mitchell, B. Mayer, G.E. Likens and J. Welker. 2011. Long-term analysis of Hubbard Brook stable oxygen isotope ratios of stream water and precipitation sulfate. *Biogeochemistry* (In Press)

Mitchell, M.J. 2011. Nitrate Dynamics of Forested Watersheds: Spatial and Temporal Patterns in North America, Europe and Japan. *Journal of Forest Research* 16:333-340.

Mitchell, M.J. and G.E. Likens. 2011. Watershed Sulfur Biogeochemistry: Shift from Atmospheric Deposition Dominance to Climatic Regulation. *Environmental Science and Technology* 45:5267-5271 DOI: 10.1021/es200844n

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. 2011. Comparisons of Watershed Sulfur Budgets in Southeast Canada and Northeast US: New Approaches and Implications. *Biogeochemistry* 103:181-207.

Wang H., Wang R., Yue Y, Mitchell M.J., and Zhang L. 2011. Variability of soil organic carbon after freshwater restoration in degraded wetlands of the Yellow River Delta, China. *Journal of Environmental Management* 92:2628-2633.

B. Non-refereed Publications

Mitchell, M.J. 2012. Book Review: Levia, D.F. (Editor), Carlyle-Moses, D. and Tanaka, T. (Co-editors). 2011: Forest hydrology and biogeochemistry, synthesis of past research and future directions. *Progress in Physical Geography* (In Press).

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

International Acid Rain Meeting, Beijing China, June 15-18, 2011. Invited Presentation: Interactions between Atmospheric Deposition and Climate in Affecting Watershed Responses in Eastern North America with a Focus on Sulfur

Northwatch Workshop, Potsdam, Germany, May 21-25, 2012. Invited Presentation: Regulation of Sulfur Budgets of Forested lake/watersheds in the Adirondack Mountains of New York State: Shift from Atmospheric Regulation to Climatic Control

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

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

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 (Fellow)
American Geophysical Union
Ecological Society of America
Sigma Xi
Soil Science Society of America

3. Other Professional Activities

Member of International Scientific Steering Committee of the 8th International Conference on Acid Deposition to be held in Beijing, China, June 2011

Chair of Hubbard Brook Experimental Forest Archive Committee

Member of Search Committee for Data Manager for Hubbard Brook LTER (Syracuse University)

a. Editorial activity

Journal (s)

Responsibility

Other (books, symposia, etc.)

b. Reviewer

Journal(s)

No. of manuscripts

Agency

No. of proposals

Greek Ministry of Education Research Proposals

3

Norway Center of Excellence

1

Other

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

Date

Place

Acid Rain Meeting

June 2011

Beijing, China

Northwatch Workshop

May 2012

Potsdam, Germany

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

C. Foreign Travel (Where, When, Purpose)

Acid Rain meeting in China, June 2011

Northwatch workshop in Germany, May 2012

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

D. 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).

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 Executive Committee of the New York Research Foundation (January 2011-present)

Member of SUNY Higher Education Advisory Committee

Reviewer Committee for SUNY Distinguished Professors

Chair of Hubbard Brook Experimental Forest Archive Committee

Member of Research Foundation Board of Directors SUNY Relationship Task Force (2010-2011)

Member of Research Foundation Committee on Research Supported Economic Development

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. We have updated web page on water programs at ESF. This past spring we had another successful seminar entitled "Cross-Disciplinary Seminar in Hydrological and Biogeochemical Processes" with over 500 attendees including faculty members, staff and students. I also have employed four undergraduate students in my laboratory. I had five graduate students during the reporting period (3 Ph.D.; 2 M.S.). The newest member of my group Tamir Puntsag who has come from Mongolia with support from the Fulbright Foundation. One of my Ph.D. students, Shannon Buckley graduated in May 2012 and another Ph.D. graduate student, Phil-Goo Kang, will defend his dissertation in June 2012.

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 was elected to Vice-Chair in January 2011. Hence I now serve on the Executive Committee. The RF Board has been active in a number of areas including a revision of bylaws and various matters associated with research operation across the SUNY system. These activities necessitate regular trips to

Albany as well as New York City and numerous conference calls. I have also been involved with the personnel searches for a new president and new chief financial officer of the Research Foundation.

I have continued to maintain a vigorous research program with more than one million dollars in grants. I am also the lead scientist in maintaining the funding and infrastructure for atmospheric deposition and watershed analyses at the Huntington Forest in the Adirondack Mountains. The maintenance of the infrastructure, data analyses, data reporting and personnel for the watershed and deposition efforts at the Huntington Forest as well as the two urban tower sites in the City of Syracuse are all major challenges. Last year I was able to arrange through the Syracuse CoE the hiring of a technical support position (Geoffrey Millard) who is now being paid 50% by Syracuse University and 50% by ESF. This has been a critical support position. During the period of this report I authored or coauthored fifteen papers. I am currently finishing up a large synthesis paper examining nitrogen biogeochemistry for a broad range of sites across southeastern Canada and the northeastern United States. Another major research effort is associated with the measurements of carbon dioxide, heat and water fluxes at two sites (Upper Onondaga Park and the Syracuse Center of Excellence Headquarters). I was on the organizing committee for the International Acid Rain meeting that was held in Beijing in June 2011. I was also an invited participant for the Northwatch Workshop held in Potsdam Germany in May 2012.

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)

Maintain current level of effort.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2012

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 efforts at Hubbard Brook.

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 2012

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 efforts at Hubbard Brook.

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 2013

a. Course(s) to be offered

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 efforts at Hubbard Brook.

c. University, professional society, and public service

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