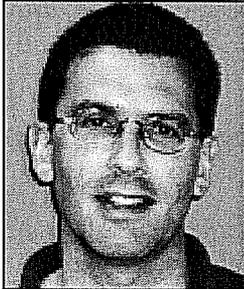




August 15, 2007

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Lawrence Band



Voit Gilmore Distinguished Professor
Phone: (919) 962-3921
E-mail: lband@email.unc.edu
Office: Saunders 206

[Curriculum Vita](#) (HTML format)

Related links:
[Baltimore Ecosystem Study](#)
[Assoc. of American Geographers](#)
[American Geophysical Union](#)
[Research Group](#)

Research

Our research group is primarily interested in the structure, function and dynamics of watershed systems. In this work we combine field measurement and observation of hydrological and ecological variables with the development and application of distributed simulation models, GIS and remote sensing techniques. Our projects are particularly concerned with the integration and coupling between water, carbon and nutrient cycling and transport with watersheds, and the interactions of human individual and institutional behavior as part of watershed ecosystems. Currently we are working in a range of watersheds within forested, agricultural and urban environments. This encompasses a set of LTER sites, as well as sites within and near Chapel Hill, NC. Our major research site is in the Baltimore Ecosystem Study (www.beslter.org). Previous work has included work in northern Manitoba, central Saskatchewan, central Ontario, the Loess Plateau of northern China and the Pacific Northwest.

An emphasis in our work in GISci is the representation of watersheds as hierarchical systems based on a geomorphic framework of the landscape, and including the integrated patterns of topography, soils and surface materials, arranged within a progressively nested subcatchments, hillslopes, bottomlands and channels. Remote sensing techniques are used and developed to extract key attributes of vegetation canopies, along with anthropogenic features. Digital terrain analysis is keyed towards the extraction of the full flowpath network, and the partition of the catchment into the component geomorphic hierarchy features.

Recent Publications

D.L. Tenenbaum, L.E. Band, C.L. Tague, S. Kenworthy, 2006. Analysis of soil moisture patterns in forested and suburban catchments using high resolution photogrammetric and

LIDAR digital elevation datasets. *Hydrological Processes*, v.20(2), p.219-240..

Band, L.E., M. Cadenasso, S. Grimmond, M. Grove, S.T. Pickett, 2005. Heterogeneity in Urban Ecosystems: Pattern and Process. In, Lovett, G.M., C.G. Jones, M.G. Turner, and K.C. Weathers, editors. *Ecosystem Function in Heterogeneous Landscapes*. Springer-Verlag, NY ().

C.L. Tague, L.E. Band and J. Franklin 2005. Terrestrial Ecosystems. Ch.H109 in, eds. M. Anderson, J. McDonnell, *Encyclopedia of Hydrology*, John Wiley.

L.E. Band and C. Tague 2005. Feedbacks and Coupling between Water, Carbon and Nutrient Cycling at the Hillslope Scale. Ch. 4.10, in Axel Bronstert, Jesus Carrera, Pavel Kabat, Sabine Lütke-meier (Eds), *Coupled Models for the Hydrological Cycle - Integrating Atmosphere, Biosphere, and Pedosphere*. Springer-Verlag, 2005

- Song, C. and L.E. Band, 2004. MVP: A Model to Simulate the Spatial Patterns of Photosynthetically Active Radiation Under Discrete Forest Canopies. *Canadian Journal of Forest Research*, v.34, p.1192-1203.
- Groffman, P.M., N.L. Law, K.T. Belt, L.E. Band and G.T. Fisher. 2004. Nitrogen fluxes and retention in urban watershed ecosystems. *Ecosystems*, v.7, p.393-403.
- Law, N.L., L.E. Band, J.M. Grove, 2004. Nitrogen input from residential lawn care practices in suburban watersheds in Baltimore County, MD. *Journal of Environmental Management*, 47(5), 737-755.
- Tague, C.L., L.E. Band, 2004. RHESSys: Regional Hydro-Ecologic Simulation System—An Object-Oriented Approach to Spatially Distributed Modeling of Carbon, Water, and Nutrient Cycling. *Earth Interactions* 2004 8: 1-42.
- Groffman, P.M., D.J. Bain, L.E. Band, K.T. Belt, G.S. Brush, J.M. Grove, R.V. Pouyat, I.C. Yesilonis, W.C. Zipperer, 2003. Down by the riverside: Urban riparian ecology. *Front Ecol Environ*, 1(6), 315-321.
- Mackay, D.S., S. Samanta, R.R. Nemani, and L.E. Band. 2003. Multi-objective parameter estimation for simulating canopy transpiration in forested watersheds. *Journal of Hydrology* v.277, 230-247.
- Creed, I. F., C. G. Trick, L. E. Band, I. K. Morrison 2002. Characterizing the Spatial Pattern of Soil Carbon and Nitrogen Pools in the Turkey Lakes Watershed: A Comparison of Regression Techniques. *Water, Air, & Soil Pollution*, v.2, p.81-102.
- Groffman, P.M., N.J. Boulware, W.C. Zipperer, R.V. Pouyat, L.E. Band, M.F. Colosimo 2002. Soil nitrogen cycle processes in urban riparian zones. *Environmental Sciences and Technology*, v.36, p.4547-4552.
- Wing, S., S. Friedman and L. Band 2002. The potential influence of flooding on confined animal feeding operations in eastern North Carolina. *Environmental Health Perspectives*, v.110, p.387-391.
- L.E. Band, C.L. Tague, P. Groffman and K. Belt, 2001. Forest ecosystem processes at the watershed scale: Hydrological and ecological controls of nitrogen export. *Hydrological Processes*, v.15, p.2013-2028.
- C.L. Tague and L.E. Band, 2001. Simulating the impacts of road construction and forest harvesting on hydrologic response. *Earth Surface Processes and Landforms*, v26, p.135-151.
- C.L. Tague and L.E. Band, 2001. Evaluating explicit and implicit routing for watershed, hydroecological models of forest hydrology at the small catchment scale. *Hydrological Processes*, v.15, p.1415-1439.
- L.E. Band, C.L. Tague, S.E. Brun, D.E. Tenenbaum, R.A. Fernandes 2000. Modeling watersheds as spatial object hierarchies: Structure and dynamics. *Transactions in Geographic Information Systems*, v.4, p.181-196.
- S.E. Brun and L.E. Band 2000. Simulating runoff behavior in an urbanizing watershed. *Computers, Environment and Urban Systems*, v.24, p.5-22.
- Walko, R.L., L.E. Band, J. Baron, T.G.F. Kittel, R. Lammers, T.J. Lee, R.A. Pielke, Sr., C. Taylor, C. Tague, C.J. Treback, P.L. Vidale 2000. Coupled atmosphere-biophysics-

hydrology models for environmental modeling. *Journal of Applied Meteorology*, v39, p.931-944.

J.S Baron, M.D. Hartman, L.E. Band and R.B. Lammers 2000. Sensitivity of a high-elevation Rocky Mountain watershed to altered climate and CO2. *Water Resources Research*, v.36, p.89-100.

Teaching

I teach courses in hydrology, earth surface processes, environmental modeling, biogeoscience and GISci. My teaching has included additional courses in soils, remote sensing, quantitative methods at UNC, University of Toronto and Hunter College (CUNY).

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Date of Last Up-date: May, 2007

CURRICULUM VITAE

A. BIOGRAPHICAL INFORMATION

1. Personal

Name: Lawrence E. Band

University address:
Department of Geography
CB#3220
University of North Carolina
Chapel Hill, NC 27599

Telephone: 919-962-3921
fax: 919-962-1537
Email: lband@email.unc.edu

2. Degrees

Ph.D., 1983, Geography, University of California, Los Angeles "Measurement and simulation of hillslope development", Supervisor: Dr. A.R. Orme

M.A., 1979, Geography, University of California, Los Angeles
"Environmental constraints on the development of small, headwater stream networks", Supervisor: Dr. A.R. Orme

B.A., Geography, S.U.N.Y. at Buffalo, 1977

3. Employment

| | |
|----------------|--|
| 2002 - present | Chair, Department of Geography, UNC |
| 1998 - present | Voit Gilmore Distinguished Professor of Geography Department of Geography University of North Carolina - Chapel Hill |
| 1994 - 1998 | Professor, Department of Geography, Graduate Faculty of Forestry, University of Toronto |
| 1989 - 1994 | Associate Professor, Department of Geography, University of Toronto |
| 1987 - 1989 | Assistant Professor, Department of Geography, University of Toronto |
| 1983 - 1987 | Assistant Professor, Department of Geology and Geography, Hunter College and Graduate Faculty, City University of New York |
| 1981 - 1983 | Lecturer, Department of Geography and Environmental Studies, San Francisco State University |

4. Honors and Awards

- 1985 Chancellor's Distinguished Service Award, City University of New York
- 1985 NASA-ASEE Summer Faculty Fellowship, Ames Research Center, Moffett Field, California
- 1984 NASA-ASEE Summer Faculty Fellowship, Ames Research Center, Moffett Field, California
- 1994 Dean's Excellence Award, Faculty of Arts and Science, University of Toronto
- 1996 Dean's Excellence Award, Faculty of Arts and Science, University of Toronto

5. Professional Affiliations and Activities

- 1986-1987 NASA Topographic Science Working Group
- 1988 NASA Shuttle Image Radar-C and EOS/SAR Review Panel
- 1986-1989 Consultant to New York City Department of Parks and Recreation on three different projects advising on park resource management, resource inventory, and erosion and runoff control.
- 1990 Consultant to Legal Department, City of Toronto for court cases at Ontario Municipal Board on challenges to ravine designation pursuant to the City of Toronto Ravine Control By-Law
- 1990-1991 NASA Global Topography Mission Working Group
- 1990 NASA Soil Science Steering Group
- 1990 IGBP/IAHS/IHP Working Group on Plant-Water Interactions in Large Scale Hydroecological Modeling
- 1992-1998 Consultant to Ontario Ministry of Natural Resources for Landscape Ecology of Old Growth Forests, regional forest productivity, ecoregionalization.
- 1992-1993 Visiting Scientist, CRC for Catchment Hydrology, CSIRO, Canberra, Australia
- 1994-present Member, AGU Surface Water Hydrology Committee
- 2000-2003 Chair, AGU Surface Water Hydrology Committee
- 1999 Member NASA AO-1 Review Team
- 2000 Hydrology Editor, Encyclopedia Britannica
- 2001 Co-organized and chaired AGU Chapman Conference on Hillslope Hydrology, Bend Oregon
- 2001-2004 Deputy Editor, Surface Water Hydrology, Water Resources Research
- 2002 Consultant, British Columbia Ministry of Forests, Ecoregionalization
- 2002-2004 Chair, Consortium of Universities for the Advancement of Hydrologic Science Committee on Hydrologic Observatories
- 2005-2007 Member, NRC Committee on Integrated Observations for Hydrologic and Related Sciences
- 2005 Member, Review Team for the Chesapeake Bay Watershed Model, Chesapeake Bay Foundation
- 2006 Organized and chaired Spring AGU Union Sessions on Urbanization Impacts on the Environment
- 2006-2007 Member, Review Team for the Everglades Land Model, South Florida Water Management District
- 2007- Member, NRC Committee: Reducing stormwater discharge contributions to water pollution

1990-1991.

Dr. Soren Brun, University of Toronto, Physical Geography, 1998-1999.
Dr. Christina Tague, University of Toronto, Physical Geography, 1999.
Dr. Chris Kees, UNC, Environmental Sciences and Engineering, 2001-2002.
Dr. Steve Kenworthy, Johns Hopkins University, Geography, 2001-2002.
Dr. Daehyok Shin, UNC Chapel Hill, Geography, 2006.
Dr. TC Hales, University of Oregon, 2006.

E. UNIVERSITY ADMINISTRATIVE POSITIONS AND OTHER UNIVERSITY SERVICE

Science Curriculum Renewal, Hunter College, CUNY, 1985-1986
Graduate Coordinator - Dept. of Geography, University of Toronto, 1994-1998
Member, Arts & Sciences Promotion Committee, University of Toronto, 1995-1998
Member, School of Grad. Studies, U. Toronto, Div. II Degree Comm. 1994-1996
Member, U. Toronto, University Research Advisory Board 1995-1998
Member, Faculty Steering Committee, Carolina Environment Program 1998-
Member, Executive Committee, Carolina Environment Program 1999-
Chair, Department of Geography, UNC July 2002 - present
Chair, UNC A&S Committee on Distance Learning, 2007

F. OTHER RELEVANT INFORMATION

Reviewer, Journal of Geology, Water Resources Research, Catena, Annals of the American Association of Geographers, Photogrammetric Engineering and Remote Sensing, IEEE Transactions on Remote Sensing and Geosciences, Artificial Intelligence in Natural Resources, Hydrological Processes, Quaternary Research, Computers in Geoscience, Soil Technology, Geographical Analysis, Journal of Hydrology, International Journal of Geographic Information Systems, Computers Environment and Urban Systems, Earth Surface Processes, Journal Vegetation Science, Transactions in GIS.

Reviewer, National Aeronautics and Space Administration, Branches of Global Biology and Hydrology, Solid Earth Science, grant proposals, National Science Foundation, grant proposals, NSERC, grant proposals, NERC, grant proposals, NOAA, grant proposals, Australian Research Council.

GEOG 10 - Introduction to Physical Geography
 GEOG 141 - Watershed Systems
 GEOG 140 - Earth Surface Processes
 GEOG 192 - Applications in Watershed GIS
 GEOG 210 - Advanced Physical Geography - Biogeoscience
 GEOG 308 - Graduate Seminar in Physical Geography

University of Toronto

GGR 205F - The Soils That Support Us
 GGR 206S - Introduction to Hydrology
 GGR 301F - Quantitative and Environmental Geomorphology
 GGR 373F - Geographic Information Processing
 GGR 461S/1911S - Remote Sensing of Environment
 GGR 462S/1914 - Geographic Information Systems

Primary Graduate Student Supervision

Masters

| | | |
|---------------------|------|-----------------|
| Richard Lammers | MSc. | Completed 1990. |
| D. Scott Mackay | MSc. | Completed 1990. |
| Pitman Patterson | MSc. | Completed 1990. |
| Christina Tague | MSc. | Completed 1994. |
| David Baldwin | MSc. | Completed 1997 |
| Anastasia Svirejeva | Msc. | Completed 1997 |
| Sandy Maunz | Msc. | Completed 2002 |
| Catherine Shields | MA | Continuing |
| Tamara Mittman | MA | Continuing |
| Katerina Savvas | Msc. | Continuing |

Doctoral

| | | |
|-------------------|------|---|
| Axing Zhu | Phd. | Completed 1994 - Professor, University of Wisconsin |
| Richard Lammers | Phd. | Completed 1998 - Res. Assoc, U. New Hampshire |
| Irena Creed | Phd. | Completed 1998 - Assoc. Professor, University of Western Ontario |
| Richard Fernandes | Phd. | Completed 1999 - Res. Scientist, Canada Centre for Remote Sensing, Ottawa. |
| Christina Tague | Phd. | Completed 1999 - Assist. Professor, Bren School of the Environment, U. Cal. Santa Barbara |
| Tongzhin Zhu | Phd. | Completed 1998 - Assoc. Professor, University of Minnesota, Duluth |
| Scott Mackay | Phd. | Completed 1997 - Assoc. Professor, University of Buffalo |
| Neely Law | Phd. | Completed 2003 - Center Watershed Protection |
| David Tenenbaum | Phd. | Completed 2004 - Assistant Professor, U. Mass. Boston |
| Laura Jackson | Phd. | Completed 2005 - Environ Protection Agency |
| Daehyok Shin | Phd. | Completed 2005 - Post-doc, UNC |
| Monica Lipscomb | Phd. | Continuing |
| Taehee Hwang | Phd. | Continuing |
| Tony Randolph | Phd. | Continuing |
| Yuri Kim | Phd. | Continuing |

Post-Doctoral Fellows

Dr. Ramakrishna Nemani, Forest Ecology, Meteorology and Remote Sensing

Modeling flowpath impacts on nitrogen export in urbanizing watersheds, University of Maryland, Baltimore County, April, 2000.

Monitoring and modeling of watersheds along an urbanizing gradient: The Baltimore LTER, Department of Geography and Environmental Engineering, The Johns Hopkins University, March, 2001.

Integrated modeling of urbanizing ecosystems, CRC for Catchment Hydrology, Canberra, Australia, August, 2001.

Ecosystem approaches to urbanizing watersheds, Keynote Presentation at the Metropolitan Water Managers Council, Baltimore, MD., November, 2001.

Ecosystem approaches to urban watersheds: Annual EDWARD J. TAAFFE COLLOQUIUM SERIES Speaker, Ohio State University, February, 2002.

Coupling water, carbon and nitrogen cycling with variable source area dynamics in forested and urbanizing catchments. LTER Science Meeting, Sevilleta Long Term Ecological Research Site, New Mexico, April, 2002

Integrated watershed simulation of linked water, carbon and nitrogen cycling: Frontiers in Geoscience Lecture, Los Alamos National Laboratory, May 2002.

Hydroecology of urban ecosystems: Spring Meetings of the AGU, May, 2002, Washington.

Use of MODIS to quantify ecosystem drought impacts: Annual Meetings of the AAG, February 2003, New Orleans.

Integrated water, carbon and nutrient cycling in urban watersheds. Distinguished Visitor Series, Department of Geography, University of Maryland, March 2003.

Invited lecture at 10th Cary Conference on Ecosystem Heterogeneity, Millbrook, NY, April 2003: Heterogeneity in urban ecosystems.

Invited Plenary Lecture: Transdisciplinary approaches to urban ecosystems: Hydroecology in the 'burbs. International Association of Landscape Ecology, March 30-April 2, 2004, Las Vegas, Nevada.

The Baltimore Ecosystem Study: Lessons for Hydrologic Observatories. Invited lecture, Oregon State University, May 2005.

Invited Lecture: Integrated water, carbon and nutrient cycling in the 'burbs. University of Buffalo, October 2005.

Invited Lecture: A tale of three catchments: Coupling water and nitrogen cycling in the Baltimore Ecosystem Study, January 2006. University of South Carolina.

D. LIST OF COURSES

University of North Carolina

"Simulation modeling of hillslope form with reference to time-independent properties", Department of Geography, Universite de Montreal, 1983.

"Stream networks, digital elevation models and geographic information systems", Department of Geography, Rutgers University, 1984.

"Hydrologic information systems and topographic networks", NASA-Ames Research Center, 1984.

"Digital terrain models: implications for drainage basin research", Department of Geography, S.U.N.Y. at Albany, 1985.

"Mesure et simulation des versants", 53e Congres de l'Association Canadienne-Francaise pour l'Avancement des Sciences, Chicoutimi, Quebec, 1985.

"Numerical simulation of lateral stream migration", IGU Workshop on Theoretical Geomorphology, Aachen, West Germany, 1986.

L.E. Band and V.B. Robinson, "Automated construction of a hydrologic information system from digital elevation data", Workshop on Geographical Information Systems for Environmental Protection, January 22-23, Environmental Research Center, University of Nevada, Las Vegas, 1986.

L.E. Band and E.F. Wood, "Computer graphics for distributed hydrologic modeling", Spring Meetings of the American Geophysical Union, Baltimore, 1986.

L.E. Band "Current examples of water and soil dynamics", NSF Workshop on Super-computers in Landscape Ecology, September 14-17, Pingree Park, Colorado, 1986.

L.E. Band "Digital terrain analysis and variable source area simulation", SUNY at Buffalo, 1986.

Plenary talk on Integrated Watershed Simulation. Given to the American Society of Limnology and Oceanography, October, 1994, Leesburg, Va.

Alternative methods of climate change impact assessment. Given to the Climate Adaptation Group, AES, Burlington, ONT, March, 1995.

Scaling issues in forest water and carbon budgets. Gordon Conference on Forest Hydrogeochemistry, NH, August, 1995.

Nitrate flushing in northern hardwood watersheds. Institute for Ecosystem Studies, Millbrook, NY, November, 1995.

Nitrate export from forested catchments. Workshop on Chesapeake Bay Watershed Nitrogen Cycling. University of Maryland, Frostberg, June 1997.

Integrating biophysical and socioeconomic processes in an urbanizing watershed model, University of Delaware, November, 1998.

Simulation modeling of integrated biophysical and socioeconomic processes in the Baltimore Ecosystem Study, Annual Trewartha Lecture: University of Wisconsin, April, 1999.

Hydrological and ecological controls on catchment nitrogen export, Lamont-Doherty Geological Observatory, Columbia University, April 2000.

nitrogen loading in the Coweeta LTER. Poster presentation at Mid-Atlantic Ecological Society of America Meetings, Baltimore, March 2005.

Band, L E, C. Tague, P. Groffman, S. Kaushal, S. Kenworthy 2005. Coupling of Hydrologic and Ecosystem Nutrient Cycling in Forest and Suburban Catchments. Paper given at the Fall Meetings of the American Geophysical Union, San Francisco.

Shin, D. Lawrence E. Band, and Taehee Hwang, 2005. Toward more usable environmental model: an experience to integrate RHESSys with CatchLab, Annual Meeting Program of Association of American Geographers, Denver,

Band, LE, 2006. Drought vulnerability in North Carolina: Low flow response to expected climate and land use change in water supply watersheds. Annual Meetings of the Association of American Geographers, Chicago.

Band, L.E., Shin, S., Hwang, T., 2006. Integrated climate and geomorphic controls on space-time variability in coupled canopy and soil water and carbon cycling in an experimental watershed Annual Meeting of the European Geophysical Union, Vienna.

Shin, D., L.E. Band, 2006. Emergent Properties and Dominant Processes with Temporal Scales: Application of Nonlinear System Identification Method for Rainfall-Runoff Modeling Paper given at the Spring Meetings of the American Geophysical Union, Baltimore.

Shin, D. and Lawrence E. Band, 2006. Emergent properties and dominant processes with changing scales: an application of nonlinear system identification method for rainfall-runoff modeling, 2nd Interagency Conference on Research in the Watersheds, USDA SRS Coweeta Hydrologic Laboratory.

Shields, C., L.E. Band, P.S. Groffman, G. Fisher and S. Kaushal 2006. Temporal distribution of nitrogen loading: an urban-rural gradient? Paper given at the Spring Meetings of the American Geophysical Union, Baltimore.

Hwang, T., D. Shin, and L.E. Band 2006. Signals Of Hydrologic Responses To Climatic Changes And External Disturbances. Poster given at the Spring Meetings of the American Geophysical Union, Baltimore.

Band, L.E., Smith, M., Hwang, T., Tague, C. and Groffman, P. 2006. Ecohydrologic pattern optimization at the hillslope scale: Implications for ecosystem management and restoration in the Anthropocene. Paper given at the Fall Meetings of the American Geophysical Union, San Francisco.

Shin, D, Hwang, T, Band, L E 2006. How to detect vegetation controls on evapotranspiration loss and improve physical process modeling? Paper given at the Fall Meetings of the American Geophysical Union, San Francisco.

11. Invited Lectures

"Numerical simulation of hillslope form", Department of Geology and Geophysics, University of California, Berkeley, 1982.

Groffman, P.E., M.K. Crawford and L.E. Band 1999. Riparian ecosystem function in urban watersheds. Paper given at Spring Meetings of the American Geophysical Union, Boston, June 1999.

L.E. Band 1999. Integrating hydroecological and socioeconomic processes in urbanizing watersheds. Paper given at Spring Meetings of the American Geophysical Union, Boston, June 1999.

N.L. Law and L.E. Band 1999. Spatial interactions of societal and biophysical attributes of urbanizing watersheds. Paper given at Spring Meetings of the American Geophysical Union, Boston, June 1999.

L.E. Band 1999. Urban flowpath alteration: Feedback to biogeochemical cycles. Paper given at the Meetings of the Ecological Society of America, Spokane, WA, August, 1999.

L.E. Band 1999. Hydrologic interactions and adjustments of soil-plant systems in catchments. Paper given at Fall Meetings of the American Geophysical Union, San Francisco, December 1999.

L.E. Band, C. Tague and P. Groffman 2000. Integrated modeling and monitoring of urbanizing watersheds. Paper given at the Annual Meeting of the American Association of Geographers, Pittsburgh, March 2000.

D. Tenenbaum and L.E. Band 2000. Developing the RHESSys/Arc-View Integrated Modeling Environment for use in Urban Watersheds. Paper given at the Annual Meeting of the American Association of Geographers, Pittsburgh, March 2000.

L.E. Band. Hydroecology of Urban Watersheds: The Baltimore LTER. Paper given at the Annual Meeting of the American Association of Geographers, Los Angeles, CA., March 2002.

N. Law, L.E. Band 2002. Lawns: One piece of the nutrient puzzle in urban watersheds. Paper given at the Spring Meetings of the American Geophysical Union, Washington, May 2002.

Shin, D. Bomchul Kim, and Lawrence E. Band, Impact of summer monsoon on a reservoir in East Asia, Proceedings of AWRA Water Resources Conference, Philadelphia, 2002.

Band, L E, Tague, C, Kenworthy, S, Law, N, 2002. Coupling water, carbon and nitrogen cycling with variable source area dynamics in forested and urban catchments. Paper given at the Spring Meetings of the American Geophysical Union, Washington, May 2002.

Band, L.E. 2004. Geomorphic controls of catchment scale linkages between hydrologic and nitrogen cycling: Paper given at Fall Meetings of the American Geophysical Union, San Francisco, December 2004.

Band, L.E. 2005. Integrated modeling of carbon, water and nutrient cycling at the watershed scale: Paper given at the Association of American Geographers Meetings, Denver, April 2005.

M J. Small, L. Band, and T. Hwang 2005. Using RHESSys eco-hydrological model to examine the affect of riparian buffer zone width and placement on

Creed, I.F., L.E. Band, I.K. Morrison, J.A. Nicolson, D.S. Jeffries, R.S. Semkin 1995. Topographic controls on the nitrogen content of discharge waters from catchments in the Turkey Lakes Watershed. American Geophysical Union. May 30-June 2, Baltimore, MD.

Creed, I.F., L.E. Band, J.A. Nicolson and N.W. Foster, 1995. Natural variation in biogeochemical fluxes from small catchments in an old-growth sugar maple forest. American Geophysical Union Meeting, December 11-15, San Francisco, CA.

L.E. Band 1995. Simulation of ecosystem processes at the watershed scale. Ecological Society of America Meeting, Jul 31-Aug 3, Snowbird, Utah.

Creed, I.F. and L.E. Band 1995. Topographic controls of nitrogen discharge from forested catchments. Ecological Society of America Meeting, Jul 31- Aug 3, Snowbird, Utah.

Creed, I.F. and L.E. Band 1996. Predicting nutrient flows from land to lakes: Topography is the key. Canadian Society of Limnology Meeting. Jan 4-6, Montreal, Quebec.

L.E. Band and I.F. Creed 1996. Effect of spatial organization of runoff-generating areas on water and nutrient fluxes in headwater catchments. AGU Fall Meetings, December 1996, San Francisco, CA.

Bonney, L., C.G. Trick, I.F. Creed and L.E. Band 1996. Spatial variability of dissolved organic carbon in soils of a forested catchment. Canadian Society of Limnology Meeting, Jan 4-6, Montreal, Quebec.

Fernandes, R.A., X. Wang and L.E. Band 1997. Scaling evapotranspiration in boreal ecosystems: The effect of uncertainties in remotely sensed parameters. AGU Spring Meeting, May 1997, Baltimore, MD.

Wang, X., R. Fernandes and L.E. Band 1997. Hydro-ecological simulation of boreal ecosystems: Scaling up from local to regional extent. AGU Spring Meeting, May 1997, Baltimore, MD.

Creed, I.F. and L.E. Band 1997. Export of Nitrate-N from catchments in a temperate forest: Role of organized versus disorganized N source areas. AGU Fall Meeting, San Francisco, CA.

Fernandes, R. and L.E. Band 1997. Estimating surface moisture status in Boreal peatlands using top of canopy mid-infrared reflectance. AGU Fall Meetings, San Francisco, CA.

Band, L.E. 1998. Linking hydroecological and socioeconomic form and process in a dynamic patch model for an urbanizing gradient in Baltimore. Ecological Society of America Annual Meeting, August 1998, Baltimore, MD.

Tague, C.L. and L.E. Band 1998. Using a composite index of landscape drainage in scaling distributed hydro-ecological modeling applications. AGU Spring Meetings, Boston, MA.

Tague, C.L. and L.E. Band 1998. Modeling the combined effects of forest roads and harvest on seasonal high and low flows in mountainous catchments. AGU Fall Meetings, San Francisco, CA.

A. Zhu and L.E. Band "Fuzzy inference of spatial soil properties," Paper given at 1992 meetings of the Ecological Society of American, Honolulu.

L.E. Band, R. Vertessey and R. Lammers "Distributed watershed processes using different terrain representation schemes." Paper given at the Third International Geomorphology Conference, August, 1993, Hamilton, Ontario.

J. Baron, L.E. Band, S.W. Running, D.W. Cline 1993. The effects of snow distribution on the hydrologic simulation of a high elevation Rocky Mountain watershed using Regional HydroEcological Simulation System, RHESys. Invited paper given at the Fall Meetings of the American Geophysical Union, EOS, v.74, no.43, p.237.

Band, L.E., R. Nemani, A. Perara 1994. Multiple scale simulations of forest water and carbon flux in Ontario. Poster given at the Fall Meetings of the American Geophysical Union, EOS, v.75, no.44, p.216.

R.B. Lammers, L.E. Band, C. Tague 1994. Scale effects of hydro-ecological simulations over variable landscape. Poster given at the Fall Meetings of the American Geophysical Union, EOS, v.75, no.44, p.218.

R.L. Walko, R.A. Pielke, L.E. Band, R. Lammers, C. Tague, J. Baron, T. Kittel 1994. Coupled ecosystem models for simulating the transport of groundwater. Invited paper given at the Fall Meetings of the American Geophysical Union, EOS, v.74, no.44, p.227.

L.E. Band 1994. A spatial framework for the parameterization and diagnosis of distributed simulation of watershed processes. Invited paper given at the Spring Meetings of the American Geophysical Union.

Lammers, R.B. and L.E. Band (1994) The Effects of Scale on a Regional Hydro-Ecological Model over Mountainous Terrain. Paper presented at the Association of American Geographers Annual Meeting, San Francisco, March 30th, 1994.

Band, L.E., R.B. Lammers and C. Tague (1994) Scaling Water and Carbon Budgets to Regional Extents: Simulation Approach. Paper presented at the scaling workshop in Swansea, Wales, April, 1994.

D.S Mackay and L.E. Band 1994. Extraction and representation of watershed structure including lakes and wetlands from digital terrain and remote sensing information. Invited paper given at the Spring Meetings of the American Geophysical Union.

Lammers, R.B., L.E. Band, R.G. Kremer and J.S. Baron (1995) Scaling Behaviour of Variables in a Hydro-Ecological Model over Heterogeneous Topography Paper presented at the American Geophysical Union Spring Meeting, Baltimore. May 31, 1995.

Band, L.E., R.B. Lammers and A. Perera (1995) Extrapolation of Simulated Forest Productivity and Hydrology over the Province of Ontario. Paper presented at the 7th International Conference on Geomatics June 14, 1995, Ottawa, Ontario.

Band, L.E., F. Csillag and I.F. Creed 1995. Application of RHESys to a northern hardwood experimental watershed. Hubbard Brook Ecosystem Study: Annual Cooperators Meeting, July 6-7, West Thornton, NH.

October 27-30, 2003. U.S. Department of Agriculture, Agricultural Research Service.

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b. Books and/or Chapters in Books

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- 2004-2011 "Human settlements as ecosystems: Metropolitan Baltimore from 1790-2100," NSF Long Term Biology, LTER Network, one of 13 principal investigators, \$7,200,000.
- 2005-2008 "Biocomplexity/Coupled Natural Human Systems: Feedbacks Between Complex Ecological and Social Models: Urban Landscape Structure, Nitrogen Flux, Vegetation Management, and Adoption of Design Scenarios," co-principal investigator, \$1,499,000 (UNC portion \$150,000).
- 2005-2006 "Vulnerability of North Carolina watersheds to drought," principal investigator, \$67,000, North Carolina Urban Water Consortium.
- 2006-2007 "Landslide hazard modeling in Western North Carolina," principal investigator, \$74,999, USFS.

C. SCHOLARLY AND PROFESSIONAL WORK

7. Refereed Publications

a. Journal Articles

1. L.E. Band, O.E. Elfes, J.T. Hayes, L.O. Mearns, P.A. O'Rourke, B.J. Stevenson, W.H. Terjung and P.E. Todhunter, 1981), "Application of a photosynthesis model to an agricultural region of varied climates: California", Agricultural Meteorology, vol. 24, 1981, pp. 201-217.
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3. L.E. Band, "Topographic partition of watersheds with digital elevation models", Water Resources Research, vol. 22, no. 1, 1986, pp. 15-24.
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7. L.E. Band, "A terrain based, watershed information system", Hydrological Processes, 1989, v.3, p.151-162.
8. L.E. Band, "Scale dependence of hillslope complexity," Geographical Analysis, 1989, v.21, p.279-293.
9. S.W. Running, R.R. Nemani, D.L. Peterson, L.E. Band, D.F. Potts and L.L. Pierce, "Mapping regional forest evapotranspiration and photosynthesis by coupling satellite data with ecosystems simulation," Ecology, 1989, v.70, p.1090-1101.

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- 1993 -1996 "Boreal Ecosystem-Atmosphere Study: Boreal Forest Carbon and Water Budget Simulation: Scaling from Local to Regional Extent", Collaborative Research Program, NSERC, co-principal investigator, (\$120,000)
- 1993 -1994 "Dynamic land surface/atmospheric parameterization at different spatial scales for the South Platte river drainage," principal investigator, NOAA subcontract through Colorado State University, (US\$24,100/yr.)
- 1994 -1997 "Multi-scale evaluation of RHESys over different biomes," principal investigator, NASA subcontract through University of Montana, (US\$84,000/yr.)
- 1995-1998 "An integrated watershed impact assessment system," principal investigator, NSERC (\$55,600)
- 1997-2000 "Impact of social systems on ecology and hydrology in urban-rural watersheds: Integration for restoration", NSF/EPA Water and Watersheds Program, one of 8 principal investigators, (\$999,932)
- 1997-2004 "Human settlements as ecosystems: Metropolitan Baltimore from 1790-2100," NSF Long Term Biology, LTER Network, one of 11 principal investigators, \$4,900,000.
- 2000-2002 "Modeling land surface nitrogen transformation and transport within Piedmont and Coastal Plain watersheds," principal investigator, UCAR, \$96,000.
- 2001-2003 "Hydroecological organization and dynamics in urbanizing watersheds," principal investigator, NSF, \$276,307.
- 2001-2002 "Drought impact assessment system," principal investigator, Water Resources Research Institute of North Carolina, \$40,000.
- 2002-2005 "Forested and Agricultural Watershed Nitrogen Attenuation (FAWNA)", co-principal investigator, EPA, \$555,000.
- 2002-2007 "Hydroecology of the Ohio Hills," principal investigator, US Forest Service, \$119,000
- 2003 "Drought vulnerability in the Catawba River Basin," principal investigator, Duke Energy Foundation, \$100,000.
- 2003-2004 "Sources, transport and fate of sediment and nutrients from a redeveloping watershed: Hydrology of the central UNC Campus," principal investigator, Water Resources Research Institute of North Carolina, \$20,000.

Member:

Association of American Geographers
American Geophysical Union

B. ACADEMIC HISTORY

6. Research Awards

1984 - 1985 NASA-AMES University Consortium, "Algorithm development for efficient interrogation of a distributed land data pilot information system", collaborator, (\$14,985)

1984 - 1985 PSC-CUNY Research Award Program, "Extraction of topographic networks from digital elevation models", principal investigator, (\$4,800)

1985 NASA University Applications Program, "Center for Expertise in Spatial Modeling and its Application to Remote Sensing", co-principal investigator, (\$69,980)

1986 NASA-Ames Research Center, "Automated construction of a spatial framework to integrate remotely sensed data with a distributed, process-based ecosystem model", principal investigator, (\$15,575)

1986 NYC Department of Parks, "Hydrology of Alley Pond Park", principal investigator, (\$4,800)

1984 - 1987 Cold Regions Research and Engineering Laboratory, United States Army Corps of Engineers, "Potential application of SPOT high-resolution digital imagery for military and civil works objectives of the Army Corps of Engineers", principal investigator, (\$74,051)

1986 - 1987 "Estimation of topographic parameters for distributed hydrologic models from digital elevation data", Professional Staff Congress of the City University of New York, principal investigator, (\$6,000)

1986 - 1989 "Extrapolation of process models of evapotranspiration and net primary production of coniferous forests to large spatial scales", NASA, principal investigator, (\$131,571)

1988 - 1989 "Construction of a watershed information system," University of Toronto, Connaught Research Award, (\$10,000)

1990 - 1993 "Inference of soil properties using a GIS for hydroecological modelling", NSERC, principal investigator, (\$20,000/yr.)

1990 -1994 "Extrapolation of Ecosystem Processes to Regional Scales: Development of RESSys (Regional Ecosystem Simulation System), principal investigator, NASA subcontract through University of Montana, (US\$279,206)