

## **Puneet Srivastava**

Associate Professor, Ecological Engineering  
Graduate Program Coordinator  
Biosystems Engineering Department  
Auburn University, Auburn, Alabama  
(334) 844-7426; srivapu@auburn.edu

### **Professional Experience**

Auburn University, Biosystems Engineering Department  
Associate Professor of Ecological Engineering (2009 – present)  
Graduate Program Coordinator (2011 – present)  
Assistant Professor of Ecological Engineering (2004 – 2009)  
Academy of Natural Sciences of Philadelphia, Patrick Center for Environmental Research  
Assistant Curator (2001 – 2004)  
Arkansas Department of Environmental Quality  
Senior Engineer (1999 – 2001)  
Southwest Florida Research and Extension Center, University of Florida  
Water Quality Specialist (1997 – 1998)

### **Education**

Ph.D. (1999) Agricultural and Biological Engineering (Minor: Computer Science and Engineering), Pennsylvania State University, University Park, PA  
M.S. (1995) Biological and Agricultural Engineering, Univ. of Arkansas, Fayetteville, AR  
B.S. (1992) Agricultural Engineering, University of Allahabad, Allahabad, India

### **Honors, Awards and Recognitions (Selected)**

2010 Director's Grantsmanship Award. Awarded by the Dean of College of Agriculture and Director of Alabama Agricultural Experiment Station.

2008 Director's Junior Faculty Research Award. Awarded by the Dean of College of Agriculture and Director of Alabama Agricultural Experiment Station.

2003 – Pre Research featured several times, among others, in NIDIS Newsletter, USEPA Section 319 Success Stories, USEPA Non-point Source News Notes, Pennsylvania Department of Environmental Protection Newsletter, Auburn Engineering, Auburn University Ag Illustrated, and Alabama Agricultural Experiment Station Impacts.

2006 – Pre Associate Editor. Soil and Water Division Associate Editor for the journals Transactions of the American Society of Agricultural and Biological Engineers (ASABE) and Applied Engineering in Agriculture.

- 2002-2004 Scientific and Technical Advisory Committee (STAC), Chesapeake Bay Program
- 2002 – 2003 Analytical Tools Panel, Chesapeake Research Consortium
- 1999 Sigma Xi, Scientific Research Society
- 1999 Gamma Sigma Delta, The Honor Society of Agriculture
- 1995 Alpha Epsilon, Agricultural Engineering Honor Society

**Research Interest**

Effect of climate variability and change on hydrology and water quality; monitoring and modeling of hydrologic and nonpoint pollutant transport and transformation processes at various scales; fate and transport of nutrients, pesticides, antimicrobials, endocrine disrupting compounds, and pathogens; application of geographic information, global positioning, remote sensing, and neural network systems for natural resources management; and animal waste management.

**Research Funding Support (Total > \$15 million)**

Funding support for numerous research projects received from USDA-NRICGP (now AFRI), USDA-NIFA, USEPA, NOAA, USGS, Mississippi-Alabama Sea Grant Consortium (MASGC), State of Pennsylvania, State of Alabama, Alabama Agricultural Experiment Station Foundation, William Penn Foundation, and Academy of Natural Sciences of Philadelphia.

**Current Funding Support**

- 2010 – 2012 Reducing Drought Risks in the Southeast USA: Quantification of Drought Information Value, Development of Drought Indices, and Communication of Drought Information (\$275,000 funded by NOAA; Srivastava, PI)
- 2010 – 2015 SECC-RISA: Science and partnerships for adaptation and resilience to climate change and climate variability (\$4 million funded by NOAA; Jones, PI)
- 2010 – 2012 Economic, Engineering and Extension Applications of Improved Climate Forecasting (\$195,000 funded by USDA-NIFA; Srivastava, PI)
- 2010 – 2012 Identifying Flood Generating Areas in 8-Mile Creek Watershed through a Novel Approach (\$150,000 funded by MS-AL Sea Grant Program; Kalin, PI)
- 2010 - Modeling Climate and Land Use Change Impact on Hydrology and Water Quality Characteristics across an Urban-Rural Gradient (\$105,000 funded by Center for Forest Sustainability; Srivastava, PI)
- 2010 – 2013 Next generation biological engineering research through renovation of laboratories at Auburn University (\$4.6 million funded by NSF: Taylor, PI)

## **Publications**

(\* denotes graduate students and/or post-docs)

*Provisional Patent (1); Book Chapters (2); Peer-reviewed Publications (34 published + 9 in review); Non-refereed Publications with Presentation at Professional Meetings (18); Published Abstract with Presentation at Professional Meetings (41); Research Reports (12); Papers and Posters Presented at Professional Meetings without Published Abstract or Paper (39); Invited Seminars (22); Outreach Publications (4).*

## **Patents and Inventions**

1. **Srivastava, P.** 2009. Method for the Optimal Management and Utilization of Industrial by-products. U.S. Provisional Patent.

## **Book Chapters**

1. **Srivastava, P.** and L. Kalin. 2009. Geographic Information System-Based Watershed Modeling Systems. Biosystems Engineering (Edited by A. Nag). McGraw Hill Publishers. Invited.
2. Kalin, L. and **P. Srivastava.** 2009. Soil and Water Conservation. Biosystems Engineering (Edited by A. Nag). McGraw Hill Publishers. Invited.

## **Peer-Reviewed Articles**

1. Sharma\*, S., S. Isik, **P. Srivastava,** and L. Kalin. 2012. Deriving past NEXRAD Precipitation Data Using Artificial Neural Network and Multi-Linear Regression Models. Journal of Hydrologic Engineering. (In Press).
2. Sen\*, S., **P. Srivastava,** P.A. Vadas, and L. Kalin. 2012. Watershed-level Comparison of Predictability and Sensitivity of Two Phosphorus Models. Journal of Environmental Quality. (Accepted).
3. Sharda\*, V., **P. Srivastava,** K. Ingram, M. Chelliah, and L. Kalin. 2012. Quantification of El Niño Southern Oscillation (ENSO) Impact on Precipitation and Stream flows for Improved Management of Water Resources in Alabama. Journal of Soil and Water Conservation. (In Press).
4. Niraula\*, R., L. Kalin, R. Wang\*, **P. Srivastava.** 2012. Determining Nutrient and Sediment Critical Source Areas with SWAT Model: Effect of Lumped Calibration. Transactions of the ASABE, 55(1):1-11.
5. Sen\*, S., **P. Srivastava,** T.P. Clement, J.H. Dane, and H. Meng. 2011. Simulating pasture hillslope hydrologic response using HIRO2 model. Journal of Soil and Water Conservation, 66(6):411-422.
6. Way, T., J. Lamba\*, and **P. Srivastava.** 2011. A method for installing zero-tension pan and wick lysimeters in soil. Applied Engineering in Agriculture, 27(5): 747-755.

7. Elias\*, E., M. Dougherty, **P. Srivastava**, and D. Laband. 2011. The impact of forest to urban land conversion on water quality and drinking water treatment cost, Converse Reservoir, Southern Alabama, USA. Urban Ecosystems DOI 10.1007/s11252-011-0198-z.
8. Mondal\*, P., **P. Srivastava**, L. Kalin, and S.N. Panda. 2011. Ecologically-sustainable surface water withdrawal for cropland irrigation through incorporation of climate variability. *J. Soil and Water Conservation* 66(4):221-232; doi:10.2489/jswc.66.4.221.
9. Singh\*, H.V., L. Kalin, and **P. Srivastava**. 2011. Effect of soil data resolution on identification of critical source areas of sediment. *Journal of Hydrologic Engineering* doi:10.1061/(ASCE)HE.1943-5584.0000318.
10. Campbell, C., J. Fulton, T. McDonald, W. Wood, W. Zech, and **P. Srivastava**. 2010. Spinner-disc technology to enhance the application of litter. *Applied Engineering in Agriculture*, 26(5): 759-767.
11. **Srivastava, P.**, A.K. Gupta\*, and L. Kalin. 2010. An ecologically-sustainable surface water withdrawal framework for cropland irrigation - a case study in Alabama. *Environmental Management*, 46(2): 302-313.
12. Sen\*, S., **P. Srivastava**, J. Dane, K. Yoo, and J. Shaw. 2010. Spatial-temporal variability and hydrologic connectivity of runoff generation areas in a North Alabama pasture - implications for phosphorus transport. *Hydrological Processes*, 24(3): 342-356.
13. **Srivastava, P.**, S. Sanders\*, J.H. Dane, Y. Feng, J. Basile, and M.O. Barnett. 2009. Miscible displacement column studies to evaluate the sorption and mobility of sulfadimethoxine and ormetoprim in soil. *Vadose Zone Journal*, 8(1):32-41.
14. Sen\*, S., **P. Srivastava**, K. Yoo, J. Dane, J. Shaw, and M.S. Kang\*. 2008. Runoff Generation Mechanisms in Pastures of the Appalachian Plateau Region of Alabama – A Field Investigation. *Hydrological Processes* 22(21):4222-4232.
15. Sanders\*, S., **P. Srivastava**, Y. Feng, J.H. Dane, J. Basile, and M.O. Barnett. 2008. Sorption of veterinary antimicrobials sulfadimethoxine and ormetoprim in soil. *Journal of Environmental Quality*, 37(4): 1510-1518.
16. Kang\*, M.S., **P. Srivastava**, T. Tyson, J. Fulton, K. Yoo, and W.F. Owsley. 2008. GIS-based decision support system for poultry litter management. *Computers and Electronics in Agriculture* (In Press).
17. Bhattarai\*, G., **P. Srivastava**, L. Marzen, D. Hite, and L. Hatch. 2008. Assessment of economic and water quality impacts of land use change using a simple bioeconomic model. *Journal of Environmental Management*. *Environmental Management*, 42(1): 122-131.
18. Johnson, T.E., J.N. McNair, **P. Srivastava**, and D.D. Hart. 2007. Stream ecosystem responses to spatially variable land cover: A model with implications for riparian restoration. *Freshwater Biology* 52(4): 680-695.
19. **Srivastava, P.**, K.W. Migliaccio, and J. Šimunek. 2007. Landscape models for simulating water quality at point, field, and watershed scales. Invited Manuscript for Centennial Issue of Transactions of the ASABE 50(5): 1683-1693.
20. Migliaccio, K.W. and **P. Srivastava**. 2007. Hydrologic components of watershed-scale models. Invited Manuscript for Centennial Issue of Transactions of the ASABE 50(5): 1695-1703.
21. Butler\*, G.A. and **P. Srivastava**. 2007. An Alabama BMP database for evaluating water quality impacts of alternative management practices. *Applied Engineering in Agriculture* 23(6): 727-736.

22. **Srivastava, P.**, J.N. McNair, and T.E. Johnson. 2006. Comparison of mechanistic and neural network approaches for stream flow modeling in an agricultural watershed. *Journal of the American Water Resources Association (JAWRA)* 42(2):545-563.
23. Yagow, G., B. Wilson, **P. Srivastava**, and C. Obropta. 2006. Use of biological indicators for TMDL development and implementation. *Transactions of the ASABE* 49(4): 1023–1032.
24. Kang\*, M.S., **P. Srivastava**, J. Fulton, T. Tyson, F. Owsley, and K.H. Yoo. 2006. Optimal Poultry Litter Management through GIS-based Transportation Analysis System. *Journal of the Korean Society of Agricultural Engineers (JKSAE)* 48(7): 73-86. (In English)
25. Khalequzzaman, M., **P. Srivastava**, and F.S. Faruque. 2004. The Indian river-linking project: a geologic, hydrologic, ecologic, and socio-economic perspective. In *Proceedings of the International Conference on Regional Cooperation on Transboundary Rivers: Impact of the Indian River-linking Project*. December 17-19, 2004, Dhaka, Bangladesh. (Peer-reviewed proceeding).
26. **Srivastava, P.**, J.M. Hamlett, and P.D. Robillard. 2003. Watershed Optimization of Agricultural Best Management Practices: Continuous Simulation vs. Design Storms. *Journal of American Water Resources Association*, 39(5): 1043-1054.
27. **Srivastava, P.**, J.M. Hamlett, P.D. Robillard, and R.L. Day. 2002. Watershed optimization of best management practices using AnnAGNPS and a genetic algorithm. *Water Resources Research*, 38(3): 1-14.
28. **Srivastava, P.**, R.L. Day, P.D. Robillard, and J.M. Hamlett. 2001. AnnGIS: Integration of GIS and a continuous simulation model for non-point source pollution assessment. *Transactions in GIS* 5(3): 221-234.
29. Chaubey, I., **P. Srivastava**, L. Han, S.N. Addy and X. Yin. 2000. Using GIS, remote sensing and water quality modeling to estimate animal waste pollution potential. P.K. Bollich (ed.). In *Proc. Agricultural Water Quality and Quantity: Issues for the 21<sup>st</sup> Century* 136-143. (Peer-reviewed proceeding).
30. **Srivastava, P.**, T.A. Costello, D.R. Edwards, and J.A. Ferguson. 1998. Validating a vegetative filter strip performance model. *Transactions of the ASAE*. 41(1): 89-95.
31. Edwards, D.R., P.A. Moore, Jr., T.C. Daniel, **P. Srivastava**, and D.J. Nichols. 1997. Vegetative filter strip removal of metals in runoff from poultry litter-amended fescue grass plots. *Transactions of the ASAE*. 40(1): 121-127.
32. **Srivastava, P.**, T.A. Costello, and D.R. Edwards. 1996. A direct, approximate solution to the modified Green-Ampt infiltration equation. *Transactions of the ASAE*. 39(4): 1411-1413.
33. **Srivastava P.**, D.R. Edwards, T.C. Daniel, P.A. Moore Jr. and T.A. Costello. 1996. Performance of vegetative filter strips with varying pollutant source and filter strip lengths. *Transactions of the ASAE*. 39(6): 2231-2239.
34. Edwards D.R., P.A. Moore, Jr., T.C. Daniel, and **P. Srivastava**. 1996. Poultry litter treated effects on quality of runoff from fescue plots. *Transactions of the ASAE*. 39(1): 105-110.

### Invited Lectures

1. **Srivastava, P.**, K. Ingram, L. Kalin, P. Knox, D. Stooksbury, M. Chelliah, and M. Dunn. 2011. Community Water Deficit Index (CWDI) - A Tool for Forecasting Drought in the

- Southeastern U.S. Presented at the NIDIS Climate Outlook Forum and Pilot Review Meeting. Lake Lanier Islands Resort, Buford, GA. December 1-2, 2011.
2. Bolson, J., Martinez, C., **Srivastava, P.**, Breuer, N., Knox, P. 2011. Assessing water managers' needs for, perceptions of, and capacity to integrate climate information into decision making. Presented at the NIDIS Climate Outlook Forum and Pilot Review Meeting. Lake Lanier Islands Resort, Buford, GA. December 1-2, 2011.
  3. **Srivastava P.** 2011. A Comprehensive WebGIS-based Poultry Litter Management System for Nutrient Management Planning and Litter Transportation. Biological and Agricultural Engineering Department, University of Georgia, Athens, GA. November 10, 2011.
  4. **Srivastava, P.** 2010. Why understanding fundamental hydrologic and nutrient transport processes so important for nonpoint source pollution control? Indian Institute of Technology, Kharagpur, India. January 2010.
  5. **Srivastava, P.** 2009. Climate variability and change impacts on water resources of the Southeastern USA. NOAA Climate Prediction Center, Silver Springs, MD. August 2009.
  6. **Srivastava, P. 2009.** A webGIS-based poultry litter decision support system (PLDSS) for nutrient management planning and optimal utilization of litter. Arkansas Cooperative Extension System, Little Rock, AR. July 2009.
  7. **Srivastava, P. 2009.** Reservoir resiliency under changing climate: Best management practices and watershed management. Dust Bowl to Mud Bowl Conference. Soil and Water Conservation Society. Kansas City, MO. September 2009.
  8. **Srivastava, P. 2009.** Ecologically-Sustainable Surface Water Withdrawal for Cropland Irrigation through Incorporation of Climate Variability. The Thirteenth International Conference on Diffuse Pollution and Integrated Watershed Management, DIPCON 2009, International Water Association, Seoul, South Korea. October 2009.
  9. **Srivastava, P.** 2009. Measuring and modeling hydrologic response of a pasture hillslope. Seoul National University, Seoul, South Korea. October 2009.
  10. **Srivastava, P.** 2008. A presentation entitled "Ecologically-sustainable surface water withdrawal for cropland irrigation in Alabama: How much water can we withdraw?" was given at the Certified Crop Advisor training on December 16, 2008.
  11. **Srivastava, P.** 2007. Hydrologic and nutrient transport processes and GIS-based decision support system for poultry litter management. Soil and Water Conservation Society Tri-State Meeting (Alabama, Florida, and Georgia), May 17-19, 2007, Quincy, Florida
  12. **Srivastava, P.** 2006. Ecological Engineering: What it is and why is it needed? Biosystems Engineering Department, Auburn University, Auburn, AL. October 2006.
  13. Hart, D.D., T.E. Johnson, J. N. McNair, and **P. Srivastava.** 2004. Stream ecosystem responses to spatially variable landcover: linking theoretical and empirical approaches to set riparian restoration priorities. 2<sup>nd</sup> International Symposium on Riverine Landscapes. The scientific basis of restoring watercourses in landscapes. August 15-21, Bredsel, Älvsbyn, Sweden.
  14. **Srivastava, P.** 2004. Monitoring and Modeling Investigations to Control Nutrient and Sediment Non-Point Source Pollution. Biosystems Engineering Department, Auburn University, Auburn, AL. May.
  15. **Srivastava, P.** 2003. How Integrated Modeling Systems Can Help Improve Watershed Management Decisions? University of Pennsylvania, Philadelphia, PA. March 6<sup>th</sup>.

16. Carr\*, J. and **P. Srivastava**. 2003. A Compilation and Evaluation of Stream Restoration Projects: Learning from Past Projects to Improve Future Success. Schuylkill Watershed Congress. Pennsylvania State University Reading Campus, Reading, PA, March. (\*research staff supervised by Dr. Srivastava)
17. Carr\*, J. and **P. Srivastava**. 2003. A Compilation and Evaluation of Stream Restoration Projects: Learning from Past Projects to Improve Future Success. Keystone Stream Team Meeting. Harrisburg, PA, April. (\*research staff supervised by Dr. Srivastava)
18. **Srivastava, P.** 2002. Watershed optimization of agricultural BMPs using AnnAGNPS and a genetic algorithm integrated system. Community Modeling Workshop, Chesapeake Bay Research Consortium, Annapolis, MD, June.
19. **Srivastava, P.** 2002. Optimization of agricultural BMPs at a watershed-scale using genetic algorithm-GIS-AnnAGNPS integrated system. Smithsonian Environmental Research Center, Edgewater, MD. March 21<sup>st</sup>.
20. Sandi Formica, M. Anderson, M. Van Eps, T. Morris and **P. Srivastava**. 2002. Community Approach to Handling and Utilizing Dairy Manure. The 2002 Annual Arkansas Water Resources Center Conference: "Adequate Quality Water Supplies to Meet Our Public Perspectives." Fayetteville, AR. April 23-24.
21. **Srivastava, P.** 2001. Watershed Optimization of Best Management Practices Using AnnAGNPS, GIS and a Genetic Algorithm. School of Environmental Science, Engineering, and Policy, Drexel University, Philadelphia, PA. October.
22. **Srivastava, P.** 2001. Watershed Optimization of Best Management Practices Using AnnAGNPS, GIS and a Genetic Algorithm. Patrick Center for Environmental Research. Academy of Natural Sciences, Philadelphia, PA. October.
23. **Srivastava, P.**, S. J. Formica, and M. Van Eps. 2001. A Watershed Approach to Assess the West Fork of the White River. The 2001 Arkansas Water Resources Center Annual Conference: "TMDL and Related Water Quality Issues." Fayetteville, AR. April 3-4.
24. **Srivastava, P.** 2000. Modeling and Monitoring Investigations to Assess Non-Point Source Pollution. Patrick Center for Environmental Research, The Academy of Natural Sciences of Philadelphia, October.
25. **Srivastava, P.** 1999. A GIS, Genetic Algorithm, and AnnAGNPS Integrated System for NPS Pollution Assessment. Arkansas Department of Environmental Quality, Little Rock, AR. March.

## **Outreach Publications**

### **Extension Timely Information Sheets**

1. Sharda, V., B. Ortiz, and **P. Srivastava**. 2010. Impact of El Niño Southern Oscillation on Precipitation in Alabama. (August 2010).
2. Sen, S., **P. Srivastava**, K. Yoo, M. Kent Stanford. 2010. Pasture Hillslope Hydrology of the Sand Mountain Region in North Alabama. (September 2010).
3. Sen, S., T. Way, **P. Srivastava**, J. Lamba, and M. Kent Stanford. 2010. Water Quality Benefits of Subsurface-Banded Poultry Litter. (September 2010).
4. Brantley, E. and **P. Srivastava**. 2010. Surface water withdrawal for sustainable irrigation. ACES Timely Information Sheet. (December 2010).

