

SANKARASUBRAMANIAN ARUMUGAM

Assistant Professor

2501 Stinson Drive, Campus Box 7908,
Department of Civil, Construction, and Environmental Engineering,

North Carolina State University

Raleigh, NC 27695-7908 USA

Phone: (919)515-7700; Fax: (919)515-7908

E-mail : sankar_arumugam@ncsu.edu;

Web site: <http://www.ce.ncsu.edu/research/hydroclimatology/people/sankar/>

1. Education

- PhD in Water Resources Engineering, 2001, Tufts University, Medford, MA.
Dissertation Title: Annual Hydroclimatology of the Continental United States.
Advisor: Richard M. Vogel
- M.S. in Water Resources Engineering, 1996, Indian Institute of Technology, Madras, India.
Thesis Title: Regional Flood Frequency Analyses using L-Moments.
Advisor: K. Srinivasan
- B.E (Agricultural Engineering), 1991, Tamilnadu Agricultural University, Coimbatore, India.
Project Title: Design of 3-Dimensional Solar Ranger.

2. Professional Experience

- Assistant Professor, Department of Civil, Construction and Environmental Engineering, NC State University, Aug 2005 – present.
- Adjunct Associate Research Scientist, International Research Institute for Climate and Society, Columbia University, NY, Nov 2005- present.
- Associate Research Scientist, International Research Institute for Climate Prediction, Columbia University, NY, Feb 2004 – July 2005.
- Postdoctoral Research Scientist, International Research Institute for Climate Prediction (Advisor: Upmanu Lall), Columbia University, NY, Dec 2001 – Jan 2004.
- Instructor, Boston University, Boston, MA, Jan 2001- May 2001.
- Consultant, South Asia Social and Environmental Section, World Bank, Washington DC, Aug 2000-Dec 2000.
- Research Assistant, Department of Civil and Environmental Engineering, Tufts University, MA, August 1997- Sep 2000.
- Senior Project Officer, Indian Institute of Technology Madras, India, Nov 1995- Jul 1997.
- Research Scholar, Department of Civil Engineering, Indian Institute of Technology Madras, India, Jan 1993-Oct 1995.
- Intern, Department of Agricultural Engineering, Coimbatore, Jan 1992-Dec 1992.

3. Scholarly and Professional Honors

- Early Career Award by NC Sea Grant and NC Water Resources Research Institute, 2009.
- Authored an expert opinion paper on climate change and water from NCSU to the UNC system, 2008.
- Indian Union Ministry of Water Resources-Department of Irrigation Medal for Best Paper, Jan 1998.
- Palriwala Foundation Award for Outstanding Indian Student at Tufts, Jan 1998.
- National Graduate Scholarship in IIT, Madras, Jan 1993-Dec 1995.

4. Peer Reviewed Journal Articles

Published and in Press

1. Sankarasubramanian, A., U.Lall, F.D.Souza Filho, A.Sharma (2009), Improved Water Allocation utilizing Probabilistic Climate Forecasts: Short Term Water Contracts in a Risk Management Framework, *Water Resources Research*, in press.
2. Sankarasubramanian, A., U. Lall, and S. Espunevea (2009), Utility of Operational Streamflow Forecasts in Improving within-season Reservoir Operation, *Journal of Applied Climatology & Meteorology*, 48(7), 1464–1482.
3. Vankalaya, P., A. Sankarasubramanian, S.R.Ranjithan, and G.Mahinthakumar (2009), Contaminant Source Identification in Water Distribution Networks under the conditions of Uncertainty, *Environmental Forensics*, 10(3), 253-263.
4. Golembesky, K., A. Sankarasubramanian, and N. Devineni (2009), Improved Drought Management of Falls Lake Reservoir:Role of Multimodel Streamflow Forecasts in Setting up Restrictions, *Journal of Water Resources Planning and Management*, 135(3), 188-197.
5. Choudhury, P. and A. Sankarasubramanian (2009), Flood Forecasting in River Networks using Muskingum Equivalent Inflow, *Journal of Hydrologic Engineering*, 14(7), 745-751.
6. Devineni, N., A. Sankarasubramanian, and S. Ghosh (2008), Multi-model Ensembling of Probabilistic Streamflow Forecasts: Role of Predictor State Space in Skill Evaluation, *Water Resources Research*, 44, W09404, doi:10.1029/2006WR005855.
7. Sankarasubramanian, A., U. Lall, and S. Espuneva(2008), Role of Retrospective Forecasts of GCMs Forced with Persisted SST anomalies in Operational Streamflow Forecasts Development, *Journal of Hydrometeorology*, 9(2), 212-227.
8. Broad, K., A. Pfaff, R. Taddei, A. Sankarasubramanian and U. Lall (2007), Climate, Streamflow Prediction and Water Management in North East Brazil, *Climatic Change*, 84(2), DOI 10.1007/s10584-007-9257-0.
9. Matalas, N.C., and A. Sankarasubramanian (2003), Effect of Persistence on Trend Detection via Regression, *Water Resources Research*, 39(12), art.no.1342.
10. Vogel, R.M., and A. Sankarasubramanian (2003), The Validation of a Watershed Model without Calibration, *Water Resources Research*, 39(10), art.no.1292.
11. Sankarasubramanian, A. and U. Lall (2003), Flood Quantiles and Changing Climate: Seasonal Forecasts and Causal Relations, *Water Resources Research*, 39 (5), art.no.1134.

12. Sankarasubramanian, A. and R. M. Vogel (2003), Hydroclimatology of the Continental U.S., *Geophysical Research Letters*, 30(7), art. no. 1363.
13. Sankarasubramanian, A. and R. M. Vogel (2002), Comment on the Paper: “Basin Hydrologic Response Relations to Distributed Physiographic Descriptors and Climate”, *Journal of Hydrology*, 263,257-261.
14. Sankarasubramanian, A. and R. M. Vogel (2002), Annual Hydroclimatology of the United States, *Water Resources Research*, 38(6), art. no. 1083.
15. Sankarasubramanian, A., R. M. Vogel, and J. F. Limbrunner (2001), Climate Elasticity of Streamflow in the United States, *Water Resources Research*, 37(6), 1771-1781.
16. Vogel, R.M. and A. Sankarasubramanian (2000), Scaling Properties of Annual Streamflow in the Continental United States, *Journal of Hydrological Sciences*, 45, 465-476.
17. Fernandez, W., R. M. Vogel, and A. Sankarasubramanian (2000), Regional Calibration of a Watershed Model, *Journal of Hydrological Sciences*, 45, 689-707.
18. Sankarasubramanian, A., and K. Srinivasan (1999), Investigation and Comparison of Sampling Properties of L-moments and Conventional Moments, *Journal of Hydrology*, 218, 13-34.
19. Srinivasan, K. and A. Sankarasubramanian (1996), Flood Frequency Models for Indian Catchments– A Relook, *Institution of Engineers Vol. 77*, 41-46.

Under Review

1. Devineni, N., and A. Sankarasubramanian, Predictability of U.S. Winter Precipitation: Role of ENSO state in Developing Multimodel Combinations, *Monthly Weather Review*, 2009.
2. Oh, J., and A. Sankarasubramanian, Climate, Streamflow and Water Quality Interactions over the Southeastern US, *Environmental Science and Technology*, 2009.

5. Book Chapters, Published Datasets and Research Reports

- Brown, C., E. Conrad, A.Sankarasubramanian, S.Someshwar (2009), The use of seasonal climate forecasts within a shared reservoir system: The case of Angat reservoir, Philippines. In *Climate Change Adaptation in the Water Sector* eds. Ludwig et al., Earthscan, London, 274 pp.
- Vogel, R. M., and A.Sankarasubramanian, [USGS Hydro-Climatic Data Network \(HCDN\): Monthly Climate Database, 1951-1990](#). Data set. Available [on-line](#) from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A.
- Sankarasubramanian, A., N.Devineni and S.Ghosh, Multi-model Ensembling of Probabilistic Streamflow Forecasts: Role of Predictor State Space in skill evaluation, *Institute of Statistics Mimeo Series*, Art No, 2595, North Carolina State University, 2006.

6. Refereed Conference Articles

1. Ward, M.N., A. Sankarasubramanian, J. Hansen, M. Indeje, and C. Mutter, To What Extent can Climate Information Contribute to Solving Problems, *Clivar Exchanges*, 9(2), 5-8, 2004.

2. Sankarasubramanian, A. and U. Lall, Dynamic Water Allocation Framework for Multiple uses: Utility of Climate Forecasts towards Short-term Water Management, *International conference "Climate Change: A Challenge or a Threat for Water Management"*, September 27-29 2004. Amsterdam.
3. Sankarasubramanian, A., U. Lall, A. Sharma, and J. Lucas: Utility of Climate Information Based Reservoir Inflow Forecasts in Annual Water Allocation: Ceara Case Study, *Workshop on Climate Adaption - Insights and Tools for Adaptation: Learning from Climate Variability*, Washington, November 18-20, 2003.
4. Sankarasubramanian, A., A. Sharma, and U. Lall, Water Allocation for Multiple Uses based on Probabilistic Reservoir Inflow Forecasts, *Proceedings of the IAHS-IUGG Meeting*, Soppore, Japan, June 2003.
5. Sankarasubramanian, A. and U. Lall, Flood Quantiles and Climate Variability: Seasonal Forecasts and Reconstruction of Past Flood Records, *Proceedings of the EWRI- ASCE Conference*, Philadelphia, June 2003.
6. Sankarasubramanian, A. and R.M. Vogel, Annual Hydroclimatology of the United States, *Proceedings of the 27th Annual WRPM Conference*, ASCE, Minneapolis, Minnesota, July 30 - August 2, 2000.
7. Vogel, R.M., A. Sankarasubramanian, J. F. Limbrunner, and I. Wilson, Comparison of Climate Elasticity of Streamflow in the United States, *Proceedings of the 26th Annual WRPM Conference*, ASCE, Tempe, Arizona June 6-9. 1999.
8. Vogel, R.M., and A. Sankarasubramanian, On the Validation of a Watershed Model, *Poster Presentation at IUGG*, University of Buckingham, August 1999.
9. Sankarasubramanian, A. and K. Srinivasan, Evaluation of Sampling Properties of General Extreme Value (GEV) Distribution-L-Moments Vs Conventional Moments, *Proceedings of the 24th Annual WRPM conference*, ASCE, Anaheim, 1996.

7. Conference Abstracts

1. Arumugam, S. and W.Li, The Role of Multimodel Combinations in improving Streamflow Prediction, American Geophysical Union, Fall Conference, San Francisco, 2008.
2. Devineni, N. and S. Arumugam, Improved Drought Management of Falls Lake Reservoir: Role of Multimodel Streamflow Forecasts in Setting up Restrictions, Annual NC WRII Conference, Raleigh, October 2008.
3. Oh, J. and S. Arumugam, Role of Streamflow Seasonality in Influencing Water Quality Variability in the Southeastern US, Annual NC WRII Conference, Raleigh, October 2008.
4. Li, W., and A. Sankarasubramanian, Improving Hydrological Predictions through better representation of Model Uncertainty, Annual NC WRII Conference, Raleigh, October 2008.
5. Arumugam, S. and N. Devineni, Predictability of U.S. Winter Precipitation: Role of ENSO state in Developing Multimodel Combinations, American Geophysical Union, Fall Conference, San Francisco, Dec 10-14, 2007.
6. Devineni, N., and S. Arumugam, Multimodel Ensembles of Streamflow Forecasts: Role of Predictor State in Developing Optimal Combinations, American Geophysical Union, Fall

Conference, San Francisco, Dec 10-14, 2007. (*#- Awarded Outstanding Student Paper Award for Devineni in Fall-2007 AGU conference*).

7. Devineni, N., S. Arumugam, and S. Ghosh, Multi-model Ensembling of Probabilistic Streamflow Forecasts: Role of Predictor State Space in Skill Evaluation, Annual NC WRII conference, Raleigh, March 2007.
8. Golembesky, K., S. Arumugam, and N. Devineni, Improved Management of Falls Lake Reservoir during the Summer Season using Climate Information based Monthly Streamflow Forecasts: Role of Restrictions in Water supply and Water quality management, Annual NC WRII Conference, Raleigh, March 2007.
9. Arumugam, S., and U. Lall, Climate Forecasts and Reservoir Management – Possibilities and Challenges, 21st Conference on Hydrology, AMS, San Antonio, January 07.
10. Arumugam, S., N. Devineni, and S. Ghosh, Multi-model Ensembling of Probabilistic Streamflow Forecasts: Role of Predictor State Space in Skill Evaluation, AGU Fall Conference, San Francisco, December 2006.
11. Arumugam, S., and U. Lall, Improved Operation of Reservoir Systems – Utility of Seasonal and Monthly Updated Climate Forecasts, 18th Conference on Climate Variability and Change, AMS, Atlanta, January 06.
12. Brown, A., U. Lall, and S. Arumugam, Climate-informed Decision Tools for the Water and Energy Sector (*Invited Presentation*), 18th Conference on Climate Variability and Change, AMS, Atlanta, January 06.
13. Arumugam, S., and U. Lall, Use of Operational Climate Forecasts in Reservoir Management and Operation, AGU Fall Conference, San Francisco, December 2005.
14. Arumugam, S., and U. Lall, Climate Forecasts and Reservoir Management – Possibilities and Challenges (*Selected Presentation*), Climate Change Science Program Workshop, November 14-16, 2005.
15. Ward, N.M., J. W. Hansen, S. Arumugam, D. Osgood, L. Zubair, C. Brown, and A. Mishra, Decision Systems Research and Tool Development at the IRI, Climate Change Science Program Workshop, November 14-16, 2005.
16. Arumugam, S., and U. Lall, Operational Streamflow Forecasts Development Using GCM Predicted Precipitation Fields, AGU Fall Conference, San Francisco, December 12-17, 2004.
17. Arumugam, S., U. Lall, and A. W. Robertson, Multimodel Probabilistic Hydroclimatic Ensemble Forecasts, AGU Spring Conference, Montreal, May 17-21, 2004.
18. Lall, U., A. Sharma, A. Sankarasubramanian, and F. Souza Filho, From Interannual Streamflow Forecasts to New Water Management Strategies for Ceara, North East Brazil, AGU Fall Conference, San Francisco, Dec 12-16, 2002.

7. Research Grants

- Climate Information based Water and Energy Management in the Greater Horn of Africa (GHA): PI, Co-PIs: Fred Semazzi and Upton Hatch, National Oceanic and Atmospheric Administration (NOAA), \$299,445.

- Improving Water Resources Sustainability utilizing Multi-time Scale Streamflow Forecasts, PI, Co-PI: Ranji Ranjithan, National Science Foundation, 03/15/08 -03/14/11, \$299,964.
- Seasonal Streamflow Forecasts for the Hydrologic Unit Code (HUC-8) Basins in North Carolina utilizing Multimodel Climate Forecasts, PI, Co-PI: Ryan Boyles (State Climate Office of NC), NC Water Resources Research Institute, 03/01/09-02/28/10, \$47,987.
- Vulnerability of Coastal Watersheds in North Carolina to Climate Change and Variability, PI, **Early CAREER Award**, NC Sea Grant and NC Water Resources Research Institute, \$20,611.
- Improved Drought Management Strategies for the Triangle Area utilizing Climate-Information based Probabilistic Streamflow Forecasts, PI, NC-Water Resources Research Institute (NC-WRRI), 03/01/08-12/31/09, \$35,000.
- Improved Water Management Strategies for the Neuse Basin utilizing Climate-Information based Probabilistic Streamflow Forecasts, PI, NC Water Resources Research Institute, 03/01/06 – 02/28/07, \$49,054 .

8. Research and Graduate Students Advising

Graduate Students – Completed

Naresh Devineni^{\$}, MS in Civil Engineering, 2007

Thesis Title: Multi-model Ensembles of Streamflow forecasts: Role of Predictor State in Developing Optimal Combinations.

\$ – Received “**Outstanding Student Paper Award**” for the presentation based on his Master’s thesis research at Fall-2007 AGU conference under Hydrology Section. Outstanding student paper awards were awarded for top 5% out of a total of 650 student papers presented in the Hydrology Section.

Weihua Li, Masters in Civil Engineering, 2007

Project Title: The Role of Multimodel Combinations in improving Streamflow Prediction

Kurt Golembesky, Masters in Civil Engineering, 2006

Project Title: Improved Drought Management of Falls Lake Reservoir: Role of Multimodel Streamflow Forecasts in Setting up Restrictions

Graduate Students – Current

Naresh Devineni, PhD in Civil Engineering, Expected in Spring 2010

Topic: Role of Multimodel Combination in improving Hydroclimatic Forecasts over the US.

Jeseung Oh, PhD in Civil Engineering, Expected in Spring 2011

Topic: Utilizing Climate Forecasts for Improving Water Quality Management

Hui Wang, PhD in Civil Engineering, Expected 2011

Topic: Adaptive Water Management utilizing Multi-time Scale Streamflow Forecasts

Weihua Li, PhD in Civil Engineering, Expected 2011

Topic: Effective Integration of Data Assimilation and Multimodel Combination for Improving Hydrologic Predictions

Naser Almanaseer, PhD in Civil Engineering, Expected 2011

Topic: Climate, Streamflow and Groundwater Variability over the Southeastern US

Aimee Bella, Masters in Civil Engineering, Expected Fall 2009.

Undergraduate Students – Research Advising

Andrew McNamara, Senior in Civil Engineering

Topic: Developing Streamflow forecasts for the Hydrologic Unit Code (HUC-8) Basins in NC

Harminder Singh, Senior in Civil Engineering

Topic: Vulnerability of NC Coastal Watersheds under Climate Change

Master's and Doctoral Committees at North Carolina State University

PhD Committees (Current) : 6

Masters Committees (Current) : 1

PhD Committees (Completed) : 3

Masters Committees (Completed) : 5

External Examiner

PhD Dissertation – Shahadat Hussian – University of New South Wales, Australia, 2009.

9. Invited Talks and Presentations

- Climate-Informed Water Management – An Integrated, Proactive Approach for Ensuring Water Resources Sustainability, Keynote Speaker in US-Korea Conference, Raleigh, July 19, 2009.
- Climate Forecasts and Water Management: Need for Risk Management Framework, India Water Conference, Columbia University, New York, April 15-18, 2009.
- Role of Climate Forecasts in Meeting NC Future Water Supply Challenges, NC Society of Engineers, January 19, 2008.
- Climate Informed Water Management, Summer Ventures Program in Math and Science for High School Juniors and seniors, North Carolina Central University, July 2007.
- Climate Forecasts and Reservoir Management – Possibilities and Challenges, Central North Carolina AMS, October 19, 2006.
- Climate Forecasts and Reservoir Management – Possibilities and Challenges, Nicholas School of the Environment and Earth Sciences, Duke University, March 2, 2006.
- Climate Forecasts and Reservoir Management – Possibilities and Challenges, U.S. Climate Change Science Program Workshop: Climate Science in Support of Decision making*, Washington DC, November 14-16, 2005. – (***Selected Presentation Out of 700 papers***).

- Climate Information based Streamflow Forecasts: Predictor Identification and Model Development, Environmental Statistics Group, Department of Statistics, NC State University, November 3, 2005.
- Improved Water Allocation using Climate Information Based Streamflow Forecasts: Decision Analyses and Possibilities, NC WRI Seminar Series, October 5, 2005.
- Improving Angat Reservoir Operation using Climate Forecasts: Decision Analyses and Possibilities, International Research Institute for Climate and Society, Columbia University, August 24, 2004.
- Improved Water Allocation using Climate Information Based Streamflow Forecasts: An Assessment from System Perspective, Tufts University, June 24, 2005.
- Improved Water Allocation using Climate Information Based Streamflow Forecasts: An Assessment from System Perspective, North Carolina State University, January 24, 2005.
- Better Management through Better Decisions – Use of Climate Forecasts, Lamont-Doherty Earth Observatory, Open House, October 4, 2004.
- Improved Water Allocation using Climate Information Based Streamflow Forecasts: An Assessment from System Perspective, University of Arizona, Tucson, April 29, 2004.
- Improved Water Allocation using Climate Information Based Streamflow Forecasts: An Assessment from System Perspective, Penn State University, March 31, 2004.
- Utility of Climate Information Based Streamflow Forecasts towards Annual Water Allocation in Jaguaribe-Metropolitan Hydro (JMH) System, Ceara, NE Brazil, International Research Institute for Climate and Society, Columbia University, March 4, 2004.
- Utility of Climate Forecasts in Improving Reservoir Management, University of Tennessee, Knoxville, February, 2003.
- Hydroclimatology of the United States, International Research Institute for Climate and Society, Columbia University, May 2002.
- Role of Environmental Assessments and Environmental Management Plans in enhancing the Development Effectiveness – A Review on Water and Agriculture Projects in the South Asia Region, *Brown Bag Seminar* in the South Asia Social and Environmental Section, *World Bank*, Washington D.C., December 20, 2000.

10. Graduate and Undergraduate Teaching

North Carolina State University – Graduate Courses

Developed one graduate (CE 586) and two advanced graduate courses (CE 796 in alternate years) for the water and environmental engineering curriculum. I am also offering one undergraduate course (CE 383) every year in the spring.

CE 586: Engineering Hydrology

The course has been given a broad base with emphasis on hydrologic processes including teleconnection and linkage to climate and Sea Surface Temperature indices. Perspectives on

modeling these processes have also been addressed based on conservation of mass and energy. Simple Water balance models and approaches to calibration are discussed in the context of watershed modeling.

CE 796A: Stochastic Methods in Water and Environmental Engineering

A new course has been developed focusing on stochastic modeling and its applications to water and environmental engineering. The course is primarily projects-based with topics on (a) Predictor identification (b) Dimension Reduction (c) Fourier/Spectral Analyses (d) Model Development and Multi-Model combination.

CE 796A: Hydroclimatology

An advanced course on hydroclimatology has been offered in Spring 2007 for the first time underpinning the linkages between climate and weather on hydrological process and its forecasting. More specifically, the course discusses four topics: (a) Overview of Global Climate and Hydrology (b) Climate and Weather Forecasting and their Verification Measures (c) Modeling Evapotranspiration (d) Climate, Surface Water and Ground Water Interaction.

North Carolina State University - Undergraduate Teaching

CE 383: Hydrology and Urban Water Systems

The course has been revised to include mini-projects (2007 - Hurricane Katrina; 2008 – Drought Impacts in NC, 2009 – Water Quality Issues in NC) emphasizing the importance of understanding real world water problems.

Columbia University – Graduate Teaching

- Management and Development of Water Systems – Co-taught with Upmanu Lall and Alef Pfaff, 2004.

BOSTON UNIVERSITY – Undergraduate Teaching

- Introduction to Hydrogeology and Water Chemistry

11. Professional Service

- Technical Committee Membership:
 - Surface Water Committee, AGU, 2004- present.
 - Precipitation Committee, AGU, 2005- present.
- Program Committee, 18th Conference on Climate Variability and Change, AMS Atlanta, Jan 2006.
- Chairing Technical Sessions, AGU
 - Chair, Multi-Model Ensemble Forecasts for Climate and Streamflow, Dec 2007.
 - Chair, Hydroclimatic Prediction and Water Management, San Francisco, Dec 2005.
 - Chair, Surface Water Hydrology and Water Resources (Student Poster), Dec 2005.
 - Co-Chair, Methods and Applications of Ensemble Prediction for Hydrometeorology, Dec 2004.

- Co-Chair, Surface Water Hydrology and Water Resources (Student Poster), Dec 2004.
- Co-Coordinator, Outstanding Student Paper Award, AGU New Orleans, Spring 2005.
- Professional Memberships:
 - American Geophysical Union (AGU), 1997 – present.
 - American Society of Civil Engineers, 1997 – present.
 - American Meteorological Society (AMS), 2006 – present.
 - American Society of Engineering Education, 2006 – 2008.

Panels in National Committees and Proposal Review for Federal Funding Agencies

- Panelist, National Science Foundation, Cyber-enabled Data Discovery Program, 2008, 2009.
- Proposal review for NSF: Atmospheric Sciences, 2007; Hydrology Program, 2006, 2009.
- Proposal review for National Institute of Water Resources, 2006, 2009.
- Proposal review for NOAA, 2006.

Reviewer for

- Water Resources Research, AGU, 2001 – present.
- Journal of Applied Climatology and Meteorology, AMS, 2007
- Geophysical Research Letters, AGU, 2007.
- Bulletin of American Meteorological Society, AMS, 2007.
- Journal of American Water Resources Association, AWRA, 2007.
- Journal of Hydrologic Engineering, ASCE, 2006, 2007, 2008.
- Journal of Hydrometeorology, AMS, 2002, 2003, 2006,2008
- Journal of American Statistical Association, American Statistical Association, 2005.
- Journal of Hydrology, Elsevier Publications, 2005.
- Journal of Computing, ASCE, 2005.
- Nonlinear Processes in Geophysics, European Geophysical Union, 2004.
- Journal of Climate, AMS, 2002.
- Journal of Hydrological Sciences, International Association of Hydrologic Sciences, 2002.
- Journal of Water Resources Planning and Management, 2008.