

# **Anne Steinemann**

## **Educational History**

Ph.D., 1993, Stanford University, Civil and Environmental Engineering  
M.S., 1985, U.C.L.A., Civil and Environmental Engineering  
B.S., 1984, U.C. Irvine, Civil and Environmental Engineering, Magna cum Laude

## **Employment History**

Professor of Civil Engineering Chair of Sustainable Cities Department of Infrastructure Engineering Melbourne School of Engineering The University of Melbourne Melbourne, Australia	2015-present
Program Manager Scripps Institution of Oceanography Climate, Atmospheric Sciences, and Physical Oceanography University of California, San Diego	2012-2015
Senior Research Scientist National Integrated Drought Information System (NIDIS) Leader, California NIDIS-Drought Preparedness Program Cooperative Institute for Research in Environmental Sciences	2013-2015
Professor of Civil and Environmental Engineering Professor of Public Affairs University of Washington	2004-2013
Director, The Water Center University of Washington	2004-2008
Visiting Professor Civil and Environmental Engineering Stanford University	2010-2011
Research Associate Climate Research Division Scripps Institution of Oceanography University of California, San Diego	2004-2012

Associate Professor	2000-2004
Assistant Professor	1995-2000
City and Regional Planning Program	
College of Architecture	
Georgia Institute of Technology	
Adjunct Professor	1998-2004
School of Public Policy	
Georgia Institute of Technology	
Adjunct Professor	2001-2004
Marine and Environmental Systems	
Florida Institute of Technology	
Postdoctoral Scholar	1993-1995
Dept. of Civil and Environmental Engineering	
Stanford University	
Associate Director	1990-1992
Center for Teaching and Learning	
Stanford University	
Visiting Faculty	1988-1989
Department of Computer Science	
Linköping University, Sweden	
Engineering Hydrologist	1985-1988
U.S. Geological Survey	
Menlo Park and San Diego, California	

## **Awards and Honors**

Awarded, Climate Science Service Award, State of California, Department of Water Resources, for developing "useful science" on drought and climate, to effectively "bridge the academic research community and water resources management practitioners," 2014

Honored, "Engineer of the New Millennium," for drought management research, by the U.S. National Science Foundation

Appointed, Mayor's Green Ribbon Commission  
Developed Climate Action Plan, adopted by more than 1,000 mayors in the U.S., and resulting in "Most Livable City" award for Seattle

Appointed, Indoor Air Quality Advisor to the "World's Greenest Commercial Building," the Bullitt Center in Seattle, WA, 2013

American Water Resources Association, Outstanding Chapter of the Year, 2006  
Faculty adviser to AWRA student chapter

Appointed, Special Adviser to Governor of the State of Georgia on drought, 1998-2004

Appointed, Special Adviser to the States of Florida, Georgia, and Alabama on drought and water allocation, 1998-2004

Appointed, President's National Drought Policy Commission, workgroups, 2000

Hesburgh Award (Highest national honor for university teaching programs), 1999

Junior Faculty Teacher of the Year (Highest University Award), Georgia Tech, 1997

Outstanding Teacher of the Year (Highest College Award), Georgia Tech, 1996

National Science Foundation CAREER Award, 1998

American Association of University Women Scholar, 1993

Rotary Foundation International Scholar, 1998

University of California Regents Scholar, 1985

University of California Chancellor's Scholar, 1984

Female Engineer of the Year, University of California, Irvine, 1984

Civil Engineer of the Year, University of California, Irvine, 1984

Tau Beta Pi, Engineering Honor Society

## Publications

### Refereed archival journal publications

Steinemann, A., Iacobellis, S.F., Cayan, D.R. "Developing and Evaluating Drought Indicators for Decision-Making" *Journal of Hydrometeorology* (in review).

Steinemann, A. "Volatile Emissions from Common Consumer Products" *Air Quality, Atmosphere, & Health* (accepted), 2015.

Steinemann, A. "Drought Information for Improving Preparedness," *Bulletin of the American Meteorological Society* 95(6): 843–847, 2014.

Rosenberg, E.A., Wood, A.W., Steinemann, A.C., "Informing hydrometric network design for statistical seasonal streamflow forecasts." *Journal of Hydrometeorology* 14(5):1587-1604, 2013.

Steinemann, A., Corsi, R. "Climate Change and Indoor Air Pollution: Exploring the Connections." *Atmospheric Environment* (in revision).

Steinemann, A.C., Gallagher, L.G., Davis, A.L., MacGregor, I.C. "Chemical Emissions from Residential Dryer Vents During Use of Fragranced Laundry Products." *Air Quality, Atmosphere & Health*, 6(1): 151-156, 2013.

Rosenberg, E.A., Clark, E.A., Steinemann, A.C., and Lettenmaier, D.P. "On the contribution of groundwater storage to interannual streamflow anomalies in the Colorado River Basin." *Hydrology and Earth System Sciences* 9: 13191-13230, 2012.

Fontaine, M.M., Steinemann, A.C., Hayes, M.J. "State Drought Programs and Plans: Survey of the Western United States." *ASCE Natural Hazards Review* 9, 2012.

Steinemann, A.C., MacGregor, I.C., Gordon, S.M., Gallagher, L.G., Davis, A.L., Ribeiro, D.S., Wallace, L.A. "Fragranced Consumer Products: Chemicals Emitted, Ingredients Unlisted." *Environmental Impact Assessment Review* 31(3): 328–333, 2011.

Rosenberg, E.A., Wood, A.W., Steinemann, A.C. "Statistical Applications of Physically Based Hydrologic Models to Seasonal Streamflow Forecasts." *Water Resources Research* 47, 2011.

Shukla, S., Steinemann, A.C., Lettenmaier, D.P. "Drought Monitoring System for Washington State: Indicators and Applications." *Journal of Hydrometeorology* 12(1): 66-83, 2011.

Rosenberg, E.A., Keys, P.W., Booth, D.B., Hartley, D., Burkey, J., Steinemann, A.C., Lettenmaier, D.P. "Precipitation Extremes and the Impacts of Climate Change on Stormwater Infrastructure in Washington State." *Climatic Change* 102(1-2): 319-349, 2010.

Visitacion, B., Booth, D.B., Steinemann, A.C. "Costs and Benefits of Stormwater Management: Case Study of the Puget Sound Region." *ASCE Journal of Urban Planning and Development* 135(4): 150-158, 2009.

- Caress, S.M., Steinemann, A.C. "Prevalence of Fragrance Sensitivity in the American Population." *Journal of Environmental Health* 71(7): 46-50, 2009.
- Caress, S.M., Steinemann, A.C. "Asthma and Chemical Hypersensitivity: Prevalence, Etiology, and Age of Onset." *Toxicology and Industrial Health* 25: 71-78, 2009.
- Steinemann, A.C. "Fragranced Consumer Products and Undisclosed Ingredients." *Environmental Impact Assessment Review* 29: 32-38, 2009.
- Fontaine, M., Steinemann, A.C. "Assessing Vulnerability to Natural Hazards: Impact-Based Method and Application to Drought in Washington State." *Natural Hazards Review* 10(1): 11-18, 2009.
- Padgett, J.P., Steinemann, A.C., Clarke, J.H., Vandenberg, M.P. "A Comparison of Carbon Calculators." *Environmental Impact Assessment Review* 28: 106-115, 2008.
- Vandenberg, M.P., Steinemann, A.C. "The Carbon-Neutral Individual." *New York University Law Review* 82(6): 1673-1745, 2007.
- Steinemann, A. "Using Climate Forecasts for Drought Management." *Journal of Applied Meteorology and Climatology* 45(10): 1353-1361, 2006.
- Steinemann, A., Cavalcanti, L. "Developing Multiple Indicators and Triggers for Drought Plans." *ASCE Journal of Water Resources Planning and Management* 132(3): 164-174, 2006.
- Alfaro, E., Pierce, D., Steinemann, A., Gershunov, A. "Relationships Between the Irrigation-Pumping Electrical Loads and the Local Climate in Climate Division 9, Idaho." *Journal of Applied Meteorology* 44(12): 1972-1978, 2005.
- Caress, S., Steinemann, A. "National Prevalence of Asthma and Chemical Hypersensitivity: An Examination of Potential Overlap." *Journal of Occupational and Environmental Medicine* 47(5):518-522, 2005.
- Alfaro, E., Gershunov, A., Cayan, D., Steinemann, A., Pierce, D., Barnett, T. "A Method for Prediction of California Summer Air Surface Temperatures." *EOS, Transactions American Geophysical Union* 85: 553, 557-558, 2004.
- Caress, S., Steinemann, A. "A National Population Study of the Prevalence of Multiple Chemical Sensitivity." *Archives of Environmental Health* 59(6): 300-305, 2004.
- Steinemann, A. "Human Exposure, Health Hazards, and Environmental Regulations." *Environmental Impact Assessment Review* 24(7/8): 695-710, 2004.
- Caress, S., Steinemann, A. "Prevalence of Multiple Chemical Sensitivities: A population-based study in the Southeastern United States." *American Journal of Public Health* 94(5): 746-747, 2004.
- Steinemann, A. "Drought Indicators and Triggers: A Stochastic Approach to Evaluation." *Journal of the American Water Resources Association* 39(5): 1217-1234, 2003.
- Steinemann, A. "Implementing Sustainable Development through Problem-Based Learning: Pedagogy and Practice." *ASCE Journal of Professional Issues in Education and Practice* 129(4): 216-224, 2003.

Beck, M.B., Fath B.D., Parker A.K., Osidele O.O., Cowie G.M., Rasmussen T.C., Patten B.C., Norton B.G., Steinemann A., Borrett S.R. "Developing a Concept of Adaptive Community Learning: Case Study of a Rapidly Urbanizing Watershed." *Integrated Assessment* 3(4): 299-307, 2003.

Caress, S., Steinemann, A. "A Review of a Two-Phase Population Study of Multiple Chemical Sensitivities." *Environmental Health Perspectives* 111(12): 1490-1497, 2003.

Steinemann, A. "Improving Alternatives for Environmental Impact Assessment." *Environmental Impact Assessment Review* 21: 3-21, 2001. "Most Downloaded Article" of Journal.

Keysar, E., Steinemann, A. "Integrating Environmental Impact Assessment with Master Planning: Lessons From the U.S. Army." *Environmental Impact Assessment Review* 22(6): 583-609, 2002.

Caress, S., Steinemann, A., Waddick, C. "Symptomatology and Etiology of Multiple Chemical Sensitivities in the Southeastern United States." *Archives of Environmental Health: An International Journal* 57(5): 429-436, 2002.

Steinemann, A. "Rethinking Human Health Impact Assessment." *Environmental Impact Assessment Review* 20: 627-645, 2000.

Norton, B., Steinemann, A. "Environmental Values and Adaptive Management." *Environmental Values* 10(4): 473-506, 2001.

Gilbreath, J., Steinemann, A. "Hazardous Pesticides in Developing Countries: A Case Study of Zambia, Africa." *Environmental Practice* 2: 311-317, 2000.

Simon, K., Steinemann, A. "Soil Bioengineering: Challenges for Planning and Engineering." *ASCE Journal of Urban Planning and Development* 126(2): 89-102, 2000.

Cosgriff, B., Steinemann, A. "Industrial Ecology for Sustainable Communities." *Journal of Environmental Planning and Management* 41(6): 661-672, 1998.

Shepherd (Steinemann), A. "Drought Contingency Planning: Evaluating the Effectiveness of Plans." *ASCE Journal of Water Resources Planning and Management* 124(5): 246-251, 1998.

Shepherd (Steinemann), A., Cosgriff, B. "Problem-Based Learning: A Bridge Between Planning Education and Planning Practice." *Journal of Planning Education and Research* 17(4): 348-357, 1998.

Coffin, S., Shepherd (Steinemann), A. "Barriers to Brownfield Reevaluation: Lessons Learned From Two Great Lakes States." *Journal of Public Works Management and Policy* 2(3): 258-266, 1998.

Shepherd (Steinemann), A. "Knowledge-Based Expert Systems: Critiquing versus Conventional Approaches." *International Journal of Expert Systems with Applications* 433-441, 1998.

Shepherd (Steinemann), A., Bowler, C. "Beyond the Requirements: Improving Public Participation in EIA." *Journal of Environmental Planning and Management* 40(6): 725-738, 1997.

Shepherd (Steinemann), A. "Interactive Implementation: Promoting Acceptance of Expert Systems." *Computers, Environment, and Urban Systems* 21(5): 317-333, 1997.

Shepherd (Steinemann), A., Ortolano, L. "Organizational Change and Environmental Impact Assessment at the Electricity Generating Authority of Thailand." *Environmental Impact Assessment Review* 17: 329-356, 1997.

Shepherd (Steinemann), A., Ortolano, L. "Strategic Environmental Assessment for Sustainable Urban Development." *Environmental Impact Assessment Review* 16: 321-335, 1996.

Shepherd (Steinemann), A., Ortolano, L. "Water Supply System Operations: Critiquing Expert System Approach." *ASCE Journal of Water Resources Planning and Management* 122(5): 348-355, 1996.

Ortolano, L., Shepherd (Steinemann), A. "Environmental Impact Assessment: Challenges and Opportunities." *Impact Assessment* 13(1): 3-30, 1995.

Shepherd (Steinemann), A., Ortolano, L. "Critiquing Expert Systems for Planning and Management." *Computers, Environment, and Urban Systems* 18(5): 305-314, 1994.

Waern, Y., Hägglund, S., Löwgren, J., Rankin, I., Sokolnicki, T., Steinemann, A., "Communication Knowledge for Knowledge Communication." *International Journal of Man-Machine Studies* 37: 215-239, 1992.

Ortolano, L., Steinemann, A. "New Expert Systems in Environmental Engineering." *ASCE Journal of Computing in Civil Engineering* 1(4): 298-302, 1987.

### **Refereed monographs**

Steinemann, A. "Evaluation of Nonpotable Ground Water in the Desert Area of Southeastern California for Powerplant Cooling." *U.S. Geological Survey Water Supply Paper* no. 2343, 1989.

Farrar, C.D., Sorey, M.L., Rojstaczer, S.A., Steinemann, A., Clark, M.D. "Hydrologic and Geochemical Monitoring in Long Valley Caldera, Mono County, California." *U.S. Geological Survey Open File Report* 80-4033, 1989.

### **Articles in professional journals**

Shepherd (Steinemann), A., Hausser, W. "Project XL: Reinventing Environmental Regulation by Building New Partnerships." *National Association of Environmental Professionals News* 22(1):10-11, 1997.

Shepherd (Steinemann), A., Simm, S. "The Integration of Environmental Impact Assessment with Major Investment Studies for Highway Planning." *Environmental Planning Quarterly* 14(2): 3-10, 1997.

### **Books**

Steinemann, A.C., *Microeconomics for Public Decisions*. Menlo Park, CA: Askmar Publishing, 2011.

Ott, W., Steinemann, A., Wallace, L., eds. *Exposure Analysis*. Boca Raton, FL: CRC Press, 2007.

Steinemann, A.C., Apgar, W.C., Brown, H.J. *Microeconomics for Public Decisions*. Cincinnati, OH: South-Western, 2005.

## Chapters in books

Steinemann, A., Walsh, N. "Environmental Laws and Exposure Analysis." In *Exposure Analysis*, ed. Ott, W., Steinemann, A., Wallace, L. Boca Raton, FL: CRC Press, pp. 487-513, 2007.

Steinemann, A., Hayes, M., Cavalcanti, L. "Drought Indicators and Triggers." In *Drought and Water Crises: Science, Technology, and Management Issues*, ed. Wilhite, D. Boca Raton, FL: CRC Press, pp. 71-92, 2005.

Norton, B., Steinemann, A. "Environmental Values and Adaptive Management." In *Searching for Sustainability*, ed. Norton, B. Cambridge, U.K: Cambridge University Press, pp. 514-547, 2002.

Shepherd (Steinemann), A. "Post Project Monitoring and Impact Assessment." In *Environmental Methods Review: Retooling Impact Assessment for the New Century*, ed. Fittipaldi, J. and Porter, A. Washington, D.C.: Army Environmental Policy Institute, 1998.

Ortolano, L., Shepherd (Steinemann), A. "Environmental Impact Assessment." In *Social and Environmental Impact Assessment*, ed. Vanclay, F. Chichester, U.K: John Wiley & Sons, pp. 3-30, 1995.



## Research Activities

### Funded Research

Sponsor: The National Environmental Science Programme, Australia  
Title: Clean Air and Urban Landscapes Hub  
Amount: \$8,880,000  
Position: Investigator (led by Peter Rayner)  
Dates: 2015-2020  
Purpose: To support livability and environmental quality in urban areas.

Sponsor: National Oceanic and Atmospheric Administration  
Title: National Integrated Drought Information System (NIDIS) for California  
Amount: \$309,918  
Position: Principal Investigator  
Dates: 2010-2015  
Purpose: To develop and implement a drought early warning system to reduce drought impacts, working with agencies, industries, tribes, and other stakeholders.

Sponsor: National Oceanic and Atmospheric Administration  
Title: Developing and Evaluating Drought Indicators  
Amount: \$199,379  
Position: Principal Investigator  
Dates: 2013-2015  
Purpose: To develop indicators to assess and forecast drought, and to evaluate their effectiveness for providing early warning and reducing impacts.

Sponsor: National Oceanic and Atmospheric Administration  
Title: Drought Assessment, Prediction, and Decision-Making  
Amount: \$95,000  
Position: Principal Investigator  
Dates: 2011-2016  
Purpose: To analyze drought indicators, and the use of climate and hydrologic information for drought decision-making.

Sponsor: National Oceanic and Atmospheric Administration  
Title: Southern California NIDIS: Drought Monitoring and Forecasting  
Amount: \$55,000  
Position: Principal Investigator  
Dates: 2011-2012  
Purpose: To develop an experimental drought monitoring system and forecast indicators for the Southern California region, working with stakeholders.

Sponsor: National Oceanic and Atmospheric Administration  
Title: Hydrologic Analysis for California and Nevada Droughts  
Amount: \$30,516  
Position: Principal Investigator  
Dates: 2010-2011  
Purpose: To examine historical droughts in California and Nevada, compare physically based drought indicators with impacts, and incorporate results into drought plans.

Sponsor: National Oceanic and Atmospheric Administration—SeaGrant  
Title: SoundCitizen: Students and Citizens Working Together to Evaluate Sources and Fates of Emerging Pollutants in Puget Sound  
Amount: \$220,000  
Position: Co-Principal Investigator  
Dates: 2010-2011  
Purpose: To trace emerging pollutants from households, to stormwater, surface water, and wastewater, and into Puget Sound and other water bodies.

Sponsor: National Oceanic and Atmospheric Administration  
Title: State Drought Planning in the Western U.S.  
Amount: \$98,248  
Position: Principal Investigator  
Dates: September 15, 2009 - September 14, 2010  
Purpose: To develop and communicate drought monitoring and forecast information for improved drought planning and response in the Western U.S.

Sponsor: Seattle Public Utilities  
Title: Toxic Chemicals from Household Consumer Products in Stormwater, Wastewater, and Puget Sound  
Amount: \$219,626  
Position: Principal Investigator  
Dates: April 1, 2008 - December 31, 2010  
Purpose: To investigate the relationships among chemicals in household consumer products, their presence in water systems and water bodies, and impacts.

Sponsor: State of Washington, Center for Trade and Economic Development  
Title: Climate Impacts, Vulnerability, and Adaptations: Infrastructure Systems in Washington State  
Amount: \$110,000  
Position: Principal Investigator  
Dates: July 16, 2007 - June 30, 2009  
Purpose: To assess projected impacts of climate change on infrastructure systems, identify vulnerable regions and sectors, and develop adaptations.

Sponsor: U.S. Geological Survey  
Title: West-Wide Drought Forecasting System: A Scientific Foundation for NIDIS  
Amount: \$250,000  
Position: Principal Investigator  
Dates: September 1, 2006 - August 31, 2011  
Purpose: To develop a drought forecast and nowcast system for the Western U.S., and to provide early warning capabilities and science-based indicators for NIDIS.

Sponsor: National Oceanic and Atmospheric Administration (NOAA)  
Title: Using NOAA Climate Forecasts with Hydrologic Assessment to Reduce Drought Vulnerability and Improve Water Management in Washington State  
Amount: \$293,283  
Position: Principal Investigator  
Dates: June 1, 2006-May 31, 2011  
Purpose: To develop and implement climate and hydrologic forecasts for water management, and to assess the net economic benefits of this forecast information.

Sponsor: National Aeronautics and Space Administration (NASA)  
Title: Improving Water Resources Management in the Western U.S. Through Use of Remote Sensing Data and Seasonal Climate Forecasts  
Amount: \$1,200,000  
Position: Co-Principal Investigator  
Dates: 2006-2009  
Purpose: To develop hydrologic and climate prediction models for use by three operational water management agencies: the Natural Resources Conservation Service, the U.S. Bureau of Reclamation, and the California Department of Water Resources.

Sponsor: State of Washington, Center for Trade and Economic Development  
Title: Drought Impact Assessment and Mitigation  
Amount: \$100,000  
Position: Principal Investigator  
Dates: September 1, 2005 - August 31, 2006  
Purpose: To assess the impacts from recent droughts, identify vulnerable areas and sectors, and develop indicators to monitor and forecast drought conditions.

Sponsor: The Russell Family Foundation  
Title: Shelf to Sound: Educational Outreach  
Amount: \$40,000  
Position: Co-Principal Investigator  
Dates: 2010-2011  
Purpose: To develop an educational outreach program, using results from the Shelf to Sound research project, and provide guidance on less-toxic products.

Sponsor: State of Washington, Department of Ecology  
Title: State Drought Plan  
Amount: \$80,000  
Position: Principal Investigator  
Dates: September 1, 2006 - August 31, 2007  
Purpose: To evaluate and improve the State of Washington Drought Plan, including indicators and triggers, responses, and climate change adaptations.

Sponsor: National Oceanic and Atmospheric Administration (NOAA)  
Title: Climate Forecasts for Improving Management of Energy and Hydropower Resources in the Western U.S.  
Amount: \$200,000  
Position: Co-Principal Investigator  
Dates: August 2005-August 2008  
Purpose: Predict variations in water and energy supplies and demands across the Western U.S. on seasonal time scales, in order to improve joint management of resources.

Sponsor: Seattle Public Utilities  
Title: Analysis of Endocrine Disrupting Chemicals from Consumer Products in Stormwater and Wastewater in an Urban, Residential Seattle Watershed  
Amount: \$120,000  
Position: Principal Investigator  
Dates: January 2006 - June 2006  
Purpose: To analyze the presence and sources of endocrine disrupting chemicals (EDCs) in surface waters and wastewaters of a residential watershed in Seattle.

Sponsor: Puget Sound Action Team  
Title: The Environmental, Economic, and Societal Costs of Stormwater Runoff in the Puget Sound Region  
Amount: \$36,000  
Position: Principal Investigator  
Dates: January 2006 - August 2006  
Purpose: To identify, analyze, and quantify the costs of stormwater runoff in the Puget Sound region, and the benefits of stormwater management.

Sponsor: Puget Sound Regional County Agencies  
Title: Water and Watersheds Research Consortium  
Amount: \$150,000  
Position: Principal Investigator  
Dates: January 2005-December 2008  
Purpose: To address water issues in the region, such as low-impact development, drought, stormwater management, instream flows, and sustainability.

Sponsor: National Oceanic and Atmospheric Administration (NOAA)  
Title: The Economic Benefit of Incorporating Weather and Climate Forecasts into Western Energy Production  
Amount: \$1,938,100  
Position: Co-Principal Investigator (with Timothy P. Barnett)  
Dates: April 2003-August 2004  
Purpose: Develop weather and climate forecasts for energy and water management in California, work with agencies and utilities to integrate forecasts into operations, and estimate the economic value of improved forecast information.

Sponsor: National Science Foundation, CAREER Award  
Civil and Mechanical Systems, Hazard Reduction Program  
Title: Reducing Drought Hazards by Improving Drought Plans  
Position: Principal Investigator  
Amount: \$410,000  
Dates: April 1, 1999-September 30, 2006  
Purpose: Develop methods to analyze and mitigate risks of drought hazards.

Sponsor: National Science Foundation, Civil and Mechanical Systems  
Title: Interstate Drought Hazard Mitigation  
Position: Principal Investigator  
Amount: \$100,000  
Dates: April 2004-March 2006  
Purpose: Determine drought indicators for the ACT-ACF basin, and develop an interstate drought management plan for the states of Florida, Georgia, and Alabama.

Sponsor: Federal Highway Administration  
Title: Consideration of Environmental Factors in Transportation Systems Planning  
Position: Co-Principal Investigator  
Amount: \$250,000  
Dates: April 2001-July 2002  
Purpose: Develop methods for transportation agencies to address environmental requirements in strategic decisions and regional transportation plans.

Sponsor: Georgia Department of Natural Resources  
Title: Drought Planning for the State of Georgia  
Position: Principal Investigator  
Amount: \$50,000  
Dates: September 1999-September 2002  
Purpose: Direct the drought planning process for Georgia, working with more than 100 stakeholders throughout the state. Develop and implement first state drought plan.

Sponsor: National Science Foundation-Environmental Protection Agency  
Title: Community Values and the Long-Term Ecological Integrity of Rapidly Urbanizing Watersheds  
Position: Co-Principal Investigator (with Bruce Beck)  
Amount: \$850,000  
Dates: January 1998-July 2001  
Purpose: Develop watershed management methods for Lake Lanier, GA, integrating stakeholder objectives with scientific models.

Sponsor: National Science Foundation  
Title: Decision-Making and Valuation for Environmental Policy  
Position: Co-Principal Investigator  
Amount: \$94,997  
Dates: August 1997-August 1998  
Purpose: Design community-based methods for environmental valuation, assessing the intergenerational costs and benefits of development decisions.

Sponsor: National Science Foundation  
Civil and Mechanical Systems, Hazard Reduction Program  
Title: Evaluating the Effectiveness of Drought Response Strategies: A Knowledge-Based Approach  
Position: Principal Investigator  
Amount: \$18,000  
Dates: June 1997-December 1998  
Purpose: Design and implement knowledge-based system to improve drought planning processes and drought contingency plans.

Sponsor: Georgia Research Alliance  
Title: Center for Urban and Regional Ecology  
Position: Co-Principal Investigator (with Ron Pulliam)  
Amount: \$300,000  
Dates: June 1998-June 1999  
Purpose: Investigate the interactions between human activities, ecological changes, and tools for managing the built and natural environment.

Sponsor: Georgia Research Alliance  
Title: Environmentally Conscious Design and Construction of Infrastructure Projects  
Position: Co-Principal Investigator (with Jorge Vanegas)  
Amount: \$229,000  
Dates: June 1996-September 1996  
Purpose: Develop methods for sustainability in the planning, design, construction, and operation of urban infrastructure systems.

## **Leadership and Administrative Experience**

### **Director, The Water Center**

University of Washington

2004-2008

Served as Director and research manager for a major interdisciplinary center for research, education, and public outreach, involving schools of engineering, atmospheric sciences, oceanography, environmental sciences, public policy, public health, law, and others across campus.

Provided leadership for more than 35 academics, 25 researchers and graduate students, 25 advisory board members, 20 professional staff, and interacted with more than 1,000 external constituents from industry, agencies, organizations, and the public.

Developed and implemented a federally funded interdisciplinary research program on topics of water resources, climate science, policy, and resources management.

Promoted wide dissemination and application of research program results through publications, presentations, research symposiums (300-400 attendees each event), seminars (over 100 attendees each week), and outreach materials. Designed and produced Water Center brochures, fact sheets, website, and a quarterly research newsletter sent to over 3,000 people.

Managed a range of human resources activities, including hiring, performance evaluation, and compensation.

Individually responsible for and conducted all major aspects of financial management, budgeting, reporting, and resource allocation decisions.

Conducted significant development activities, established fellowships for faculty and students research, and more than tripled the level of donor support for the Center.

Developed and implemented the Water Center's first Strategic Plan, the result of a two-year process with more than 200 affiliates. Implemented plan over five years, and achieved all major leadership, research, education, outreach, and financial goals for Center.

Increased external research support for Center by more than 500%.

### **Research Manager and Project Director**

University of California, San Diego, Scripps Institution of Oceanography; Cooperative Institute for Research in Environmental Sciences; University of Washington; Georgia Institute of Technology  
1995-2015

Served as Principal Investigator or Co-PI on more than \$10 million in grants funded by government agencies.

Led the drought preparedness studies for the State of California, State of Washington, and State of Georgia. Results included the implementation of statewide and regional drought management plans, new approaches for analyzing drought indicators, and the translation of climate forecasts for drought management decisions.

Designed and led over 50 community-based applications of research, working with a range of stakeholders and decision-makers, including government officials, water and energy managers, industry leaders, scientists, NGOs, and tribes, together with university faculty, staff, students, and researchers from multiple disciplines.

Provided leadership, managed budgets, supervised staff, advised students and scholars, disseminated and applied research results, conducted evaluations of research applications, and collaborated with agencies, organizations, industries, researchers, staff, and the public.

Conducted over 100 media interviews in the past three years, with newspapers, magazines, radio and television programs spanning more than 20 countries across six continents.

### **Program Manager**

Scripps Institution of Oceanography, 2013-2015

Provide leadership, management, and outreach for California-Nevada Applications Program, a major research consortium funded by the NOAA Regional Integrated Sciences and Assessment (RISA) Program for bridging climate science and societal applications.

Leading and managing interdisciplinary research project teams, building consensus and collaboration among researchers, staff, and external partners.

Working directly with more than 150 constituents from government agencies, industries, organizations, tribes, university faculty, researchers, staff, students, donors, and key decision-makers in the public and private sector.

Individually designed, led, and implemented the first strategic planning process with research team, and ensuring successful accomplishment of strategic planning goals.

Predicting effects of climate on water, energy, drought, and environmental resources; developing information and systems for decision support; and providing guidance to national management.



## Teaching

Courses Taught at the University of Washington:

- Microeconomic Policy Analysis
- Sustainability: Principles and Practice
- Water Resources, interdisciplinary course
- Environmental Health, directed research

Courses Taught at Georgia Tech:

- Water Resources Planning
- Environmental Impact Assessment
- Sustainable Urban Development
- Microeconomics for Planning and Policy
- Economic Analysis in Planning

Directed and graduated more than 30 Ph.D. and Master's thesis students

Teaching Awards:

- Hesburgh Award (Highest national award for university teaching program), 1999
- Junior Faculty Teacher of the Year (Highest University Award), Georgia Tech, 1997
- Outstanding Teacher of the Year (Highest College Award), Georgia Tech, 1996

Additional Teaching Activities (selected examples):

- Director, The Water Center, an interdisciplinary university center for research and educational outreach. Guided students in service-learning projects. Generated an intercampus, interdisciplinary seminar course on water resources, with over 100 students each class.
- New Faculty Orientation and Teaching Seminars. Invited presenter, each year, at the Georgia Institute of Technology and the University of Washington. Developed sessions for faculty and Ph.D. students on topics such as balancing teaching, research, and service.
- Mentor to over 100 undergraduate and graduate students from underrepresented populations, resulting in a 100% successful retention rate in college. Also mentor to junior faculty for developing and writing successful research proposals, resulting in a 75% success rate in their obtaining competitive federal funding within one year.
- Authored the Peer Evaluation of Teaching guidelines for the Georgia Institute of Technology.
- Service-learning courses. Developed new courses and revamped existing courses at UW and Georgia Tech to incorporate service-learning and community engagement. Students designed and implemented projects, working collaboratively with members of the community, agencies, industries, and organizations. As the result of one course, student projects formed the master development plan implemented by the community.

## **Educational Outreach Activities**

### **Significant Activities and Events**

*Media Coverage (television appearances, radio presentations, newspaper interviews, etc.):*

Research covered by more than 1,000 newspapers, magazines, web publications, and radio and television stations, including the Wall Street Journal, Washington Post, National Public Radio, CBS News, ABC News, NBC News, Scientific American, USA Today, WebMD, Discovery Channel Magazine, Prevention Magazine, Daily Mail U.K., Hindustan Times, and Singapore National Radio.

International coverage spans six continents, including the countries of Canada, Australia, Vietnam, New Zealand, Germany, Singapore, Japan, United Kingdom, India, Pakistan, China, Mexico, Guyana, Philippines, Nigeria, Slovenia, Uganda, Spain, Ghana, Italy, and Indonesia.

Readership for magazines and newspapers exceeds 100 million.

Conducted more than 100 media interviews in the past three years.

*Research results used in legislation, policies, and practices:*

United States S. 1697 (2009), Household Products Labeling Act; United States. S. 696 (2013) Safe Chemicals Act; Nevada, AB 234.2 (2011), Indoor Air Quality; Vermont, 18 VSA Ch. 39 (2010) Health and Cleaning Products in Schools; Missouri, RSMo, Ch. 161.365 (2009) Green Cleaning in Schools; Georgia Drought Management Plan (2003); Arizona Drought Management Plan (2004); United States Environmental Protection Agency, Indoor Air Quality workplace guidelines (2014); United States Access Board, Fragrance-Free Policy, 7-26 (2000); Centers for Disease Control, CDC-SM-2009-01 (2009), Indoor Environmental Quality Policy.

More than fifty agencies, businesses, and schools have changed their policies and practices, based directly on my work with them, implementing research results.

*Director of Educational Outreach Activities:*

The Water Center Annual Review, 2005-2008 (300-400 attendees each year)

Environmental Health Lecture Series, 2007 (more than 300 attendees)

The Water Center Seminar Series (75-100 attendees each week)

The Watershed Review (quarterly research newsletter to more than 3,000 constituents)

Environmental Health community-based research applications (more than 50 projects)

Teaching and Learning Effectiveness Workshops (developed and led over 25 workshops)

## **Service**

(selected examples)

### **Departmental Service:**

Director, The Water Center, University of Washington, 2004-2008

Faculty Adviser, UW Student Chapter of the American Water Resources Association, 2004-2008.  
Won "Outstanding Chapter of the Year" (highest national award) in 2006.

Chair, Endowed Professorships Committee, Civil and Environmental Engineering (CEE), 2008

Chair, Committee to the College of the Environment, CEE, 2007

Chair, Edward Wenk Jr. Endowed Lectureship Committee, CEE, 2007

Faculty Adviser, UW Student Chapter of Engineers Without Borders, 2004-2007

Faculty Mentor, Hubert H. Humphrey Fellows Program, CEE, 2006

Director, Dual Master's Degree Program in Water Resources Planning - M.S. Civil and Environmental Engineering / M.S. City and Regional Planning, Georgia Tech, 1996-2004

Director, Dual Master's Degree Program in Environmental Management - M.S. Civil and Environmental Engineering / M.S. City and Regional Planning, Georgia Tech, 1996-2004

Chair, Peer Evaluation of Teaching Committee, Georgia Tech, 2002-2003

### **College and University Service:**

Faculty Mentoring Program, College of Engineering, University of Washington, 2004-2008

Steering Committee, Disability Studies Program, University of Washington 2007-2012

Chair of Civil and Environmental Engineering, Search Committee, 2007

Chair, College Awards and Scholarships Committee, Georgia Tech, 1995-2000

Chair, College Sustainability Work Group, Georgia Tech, 1998-2000

Chair, United Way Charitable Campaign, Georgia Tech, 1996-1998

Institute Student Honors Committee, Georgia Tech, 2000-2003

Director, Institute Committee for Peer Evaluation of Teaching, Georgia Tech, 2002-2004

Executive Board Member, elected position, highest level of faculty governance, Georgia Tech, 1996-1998.

Leader, Annual New Faculty Orientation, Georgia Tech, 1996-2000

Academic Senate, Georgia Tech, 1996-1998

Faculty Senate, Georgia Tech, 1996-1998

### **Government Appointments and Agency Service**

NSF International/American National Standards Institute (ANSI), Joint Committee for Health-Based Standards for Consumer Product Emissions

National Science Foundation IGERT, External Advisory Board Member, Indoor Environmental Science and Engineering, 2009-present.

Appointed to Seattle Mayor's Green Ribbon Commission, 2005.

Appointed as Special Adviser on Water Resources to Governor of Georgia, 2000.

Appointed to President's National Drought Policy Commission workgroups, 2000.

Appointed as Special Adviser on drought issues to States of Florida, Georgia, and Alabama, 2000.

Editorial Board, *Environmental Impact Assessment Review*, 2001-present

Editorial Board, *PeerJ*, 2012-present

## Pro Bono Public Service

Providing service to agencies and organizations (selected recent examples):

International	Australian Government, Department of Health and Aging Health Canada, Consumer Product Safety Bureau German Federal Institute of Risk Assessment
National	U.S. Environmental Protection Agency U.S. Food and Drug Administration U.S. Army Corps of Engineers U.S. Fish and Wildlife Service U.S. National Institutes of Health U.S. Green Building Council U.S. Department of Energy U.S. Department of Agriculture Western Governors' Association Western States Water Council
State	California Energy Commission California Department of Water Resources Arizona Department of Water Resources Colorado Division of Water Resources Florida Department of Environmental Protection Georgia Environmental Protection Division Illinois Department of Health Missouri Department of Primary and Secondary Education Nevada Division of Water Resources Oregon Department of Environmental Quality Texas Division of Emergency Management Vermont General Assembly Washington Department of Ecology Washington Department of Health Washington Department of Community, Trade, and Economic Development Wisconsin Department of Safety and Professional Services
Local	City and County of San Francisco San Diego County County of Sonoma City and County of Spokane
Organizations	Physicians for Social Responsibility Environmental Working Group American Lung Association Breast Cancer Action Sierra Club Healthy House Institute David Suzuki Foundation Silent Spring Institute Women's Voices for the Earth Campaign for Safe Cosmetics Collaborative on Health and the Environment The Bullitt Foundation