

AUTHORSHIP

- Author and co-author of more than 84 publications in refereed journals.
- Author of 9 book chapters

PROFESSIONAL AFFILIATIONS

- American Geophysical Union
- Geological Society of America
- Soil Science Society of America
- International Soil Science Society

COMMITTEE MEMBERSHIP - SERVICE

- Associate Editor for Vadose Zone Journal (2013-2015)
- Associate Editor for Advances in Water Resources (2009- 2014)
- Associate Editor for Geological Society of America Bulletin (2009-2011)
- Editor for Water Resources Research (2005-2009)
- Chairman, Hydrogeology Division, Geological Society of America (2007)
- Associate Editor for Water Resources Research (1995-2001).
- Deputy Editor for Water Resource Research (2002-2005)
- Associate Editor for Groundwater (2002-2005)
- Associate Editor for Hydrogeology Journal (2002-2005)
- AGU Unsaturated Zone Technical Committee (2007-present)
- AGU Large-Scale Field Experiment Technical Committee (2001-2006)
- Geological Society of America Nominations Committee (2008-2009, Chair 2010)
- Geological Society of America Meinzer Award Committee (2002-2004; Chair 2005)
- Soil Science Society of America Journal Guest Editor, January/February 1994 issue.
- Peer Reviewer for the following journals: Water Resources Research, Journal of Hydrology, Ground Water, Soil Science Society of America, and Soil Science Society of Canada.
- Proposal Reviewer for the National Science Foundation, U.S. Dept. of Agriculture, U.S. Environmental Protection Agency.
- National Academy of Sciences Panel member: Challenges and Opportunities in the Hydrologic Sciences. (2009-2011)
- Chair-Elect Board of Directors of the Consortium for the Advancement of Hydrologic Sciences 2013-2014.
- Consortium for the Advancement of Hydrologic Sciences (CUAHSI) Board of Directors, Member (2009-2012)
- Dept. of Energy Review Panel: Net Infiltration Modeling License Input for Yucca Mountain under Current and Future Climate Scenarios (2007-2008)
- IAEA Mission to Egypt for Intermediate Waste Management (2007-2008)
- National Science Foundation Hydrologic Sciences Peer Review Panel (2003-2005)
- National Academy of Sciences Panel member (1994-1995) to review the proposed low-level nuclear waste disposal site at Ward Valley, California.
- Co-chairman of joint ASA/SSSA Symposium entitled "Recharge in Arid and Semi-Arid Areas", 1991.
- Chairman, USDA Western Regional Research Project entitled "Characterization and Management of Soil Water and Solutes in Field Soils", 1988.

HYDROLOGIC SCIENCES ON THE EDGE: THE REVOLUTION IN SENSING AND STRATEGIES

HYDROLOGY DAYS AWARD LECTURE
COLORADO STATE UNIVERSITY
MARCH 24, 2015

SCOTT W. TYLER

Professor of Hydrogeology and Foundation Professor
Department of Geological Sciences and Engineering
MACKAY School of Earth Sciences and Engineering
University of Nevada, Reno

In recognition of outstanding contributions to hydrologic science and engineering in the fields of sub-surface contaminant transport, paleo-climate analysis and instrumentation development, and service to the hydrologic science community



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Abstract. Hydrologic sciences and engineering, along with the rest of modern society, are being transformed by the explosion of low cost and widely distributed sensors. From the wind tunnel app on your phone to real-time transmission of river water quality data from my fishing waders, we and the public can measure and report the hydrologic world around us and transform these data into products that the community can use in near real time. The sensing world is also being transformed by the growth of processing power and the realization that “big data” really can be used for prediction. In this talk, I will present a series of examples on the use of distributed fiber-optic sensing; one new technique pirated from the oil and gas industry that is allowing us to measure hydrologic processes ranging for soil moisture to Antarctic glacier melting and stability. We will then move on to the next potentially transformative (and controversial!) advance in the use of drones and autonomous vehicles (UAS) to continually monitor our world. Hydrologic sciences, along with agriculture and ecological sciences are likely to see some of the most exciting results from drones in the next decade, and we need to be out leading this charge. Finally, our advances in sensing will only be valuable if framed in the context of appropriate science and engineering questions, i.e., those of societal relevance. The expectation of a population of 10 billion by 2050 and several degrees warmer across the world will have tremendous impacts on terrestrial hydrologic systems; some of those impacts that we have already seen in the last century with the simple adoption of irrigated agriculture. Hydrologic sciences needs to rise to this challenge of prediction of change and we will close with some thoughts on how to organize and energize our community to lead the charge in quantifying and efficiently predicting human changes in the hydrologic systems.

EDUCATION

- Ph.D., Hydrology/Hydrogeology, University of Nevada, Reno, 1990
- M.S., Hydrology, New Mexico Institute of Mining and Technology, 1983
- B.S., Mechanical Engineering, University of Connecticut, 1978

POSITIONS HELD

- Director, Center for Transformative Environmental Sensing Programs, University of Nevada, Reno, 2009-Present.
- Professor, Department of Geological Sciences and Engineering, Department of Civil and Environmental Engineering (Adjunct), University of Nevada, Reno, 2006-Present.
- Visiting Professor, Pontificia Universidad Católica de Chile, Santiago, Chile and Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, 2005-2006.
- Director, Graduate Program of Hydrologic Sciences and Professor jointly appointed in the Department of Environmental and Resource Science and the Department of Geological Sciences, University of Nevada, Reno, 2000-2005.
- Professor, jointly appointed Department of Natural Resources and Environmental Sciences and the Department of Geological Sciences and Engineering, University of Nevada, Reno, 2000-2006.
- Professor, jointly appointed in the Water Resources Center, Desert Research Institute and Department of Environmental and Resource Sciences, University of Nevada, Reno, 1998 - 1999.
- Associate Professor, Desert Research Institute and Department of Environmental and Resource Sciences (UNR), 1992 – 1998
- Assistant Research Soil Scientist, Water Resources Center, Desert Research Institute, University and Community College System of Nevada, 1986 - 1992.
- Staff Hydrologist, Water Resources Center, Desert Research Institute, 1983 - 1985
- Research Engineer, Battelle Pacific Northwest Laboratory, 1982 – 1983
- Senior Sanitary Engineer, Connecticut Dept. of Health Services, 1978 – 1980

RECOGNITION AND AWARDS

- 2013 John Hem Award for Excellence in Science and Engineering, National Groundwater Association.
- 2012 University of Nevada Foundation Professor
- 2010 Geological Society of America Hydrogeology Outstanding Service Award
- 2010 Mackay School of Mines Faculty Achievement Award
- 2005 University of Nevada System Regents Outstanding Graduate Advisor
- 2003 Fellow of the Soil Science Society of America and Agronomy Society of America
- 1999 Distinguished Darcy Lecturer (National Ground Water Association)
- 1999 University and Community System of Nevada Regents Outstanding Employees and Students Award
- 1998 University and Community System of Nevada Regents Outstanding Employees and Students Award
- 1997 Fellow of the Geologic Society of America
- 1993 Antarctic Service Medal for participation in joint NSF/NASA studies during the Austral Summer of 1993 at Lake Hoare, Southern Victoria Land, Antarctica.
- 1991 Cited by the Soil Science Society of America for Excellence in Editorial Review.
- 1990 Cited by the UNS Board of Regents for outstanding achievement as a faculty member