

Judson Harvey

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National Research Program

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RESEARCH INTERESTS

Groundwater-surface water interactions

Hyporheic flow and chemical reactions and cumulative influence on river water quality

Fine sediment transport and fate in rivers and wetlands

Hydrologic alteration of rivers and wetlands and effectiveness of restoration practices

BIO SKETCH

Dr. Judson Harvey investigates hydrologic transport at the interface between groundwater and surface water and effects on contaminants and aquatic ecosystems from the mountains to the sea. Jud has served on editorial boards for *Water Resources Research* and *Wetlands*, and on committees of the National Research Council, EPA's Science Advisory Board, the National Science Foundation, the National Center for Ecological Analysis and Synthesis, the Canadian Government's Science Review Board, and standing committees of the American Geophysical Union and the American Society of Limnology and Oceanography. Jud has lectured widely, and delivered plenary talks at meetings such as the IAH in Lisbon, the Sustainable Watersheds meeting in Beijing, and the Gordon Research Conference on Catchment Science in Plymouth. He has taught "Groundwater-Surface Water Relationships" for twenty-four years at the USGS and he has supervised numerous graduate theses and postdoctoral fellows. Jud is author of over 100 peer-reviewed articles, including a paper reprinted in "*Benchmark Papers in Hydrology: Groundwater*", the first chapter of the widely used textbook *Streams and Ground Waters* and its recent revision *Streams in a Changing Environment*, a National Academies book entitled *Riparian Areas*, and a popular USGS circular "*Groundwater and Surface Water: A Single Resource*" with 44,000 copies in print. For ground-breaking research Jud was elected as a Fellow of the *American Geophysical Union* (2016) and the *Geological Society of America* (2010).

PROFESSIONAL PREPARATION

University of Virginia, Charlottesville, VA

Hydrology, Ph.D. 1990

University of Virginia, Charlottesville, VA

Hydrology, M.S. 1986

New College, Sarasota, FL

Environmental Sciences, B.A. 1979

PROFESSIONAL APPOINTMENTS

2009 – present. Research Hydrology Team Leader, National Research Program, USGS, Reston

2003 – 2009. Research Hydrologist and Advisor to Research Chief, USGS, Reston

1998 – 2009. Research Hydrologist and Project Chief, USGS, Reston

1995 – 1998. Research Hydrologist, USGS National Research Program, Reston

1992 – 1995. Hydrologist. USGS Arizona Water Science Center, Tucson

1990 – 1992. National Research Council Postdoctoral Fellow, USGS, Menlo Park

HONORS

2016 Fellow of the *American Geophysical Union*

2010 Fellow of the *Geological Society of America*

2002 Superior Service Award, U.S. Geological Survey

1995, 2000, 2007, 2008, 2012, 2014 STAR (Science to Achieve Results) Award, U.S. Geological Survey
1989 Maury Research Award, University of Virginia, Charlottesville, VA
1987 Governor's Fellowship, University of Virginia, Charlottesville, VA

RECENT MEDIA COVERAGE

“**Groundwater focus**”, Nature Geoscience, “Simulations of the Mississippi River network suggest that denitrification due to flow through small-scale river bedforms exceeds that along channel banks.” <http://www.nature.com/ngeo/focus/groundwater>, and
“**Uncovering Mississippi’s Natural Potential for Denitrification**”, [\[link to press release about Nature Geoscience paper\]](#)

“**Shallow Streambed Chemistry Filters Nitrate from Water**”, Environmental Monitor, December 30, 2013
<http://www.fondriest.com/news/usgs-hyporheic-flow-filters-stream-nitrates.htm>, and “**Thin Ecological Skin beneath Streams Can Power Large Improvements in Water Quality**”, USGS Press Release, December 11, 2013 http://www.usgs.gov/newsroom/article.asp?ID=3748#_VMJD0CvF9PM

SELECTED PUBLICATIONS (106 total publications, Web of Knowledge **Researcher ID = L-2047-2013** analyzes 76 publications with **3758 citations**, an average of **50 citations per publication**, and an **h-index of 33**, accessed March 7, 2016)

Harvey, J.W., 2016, Hydrologic exchange flows and their ecological consequences in streams and rivers, Chapter 1 in *Streams in a Changing Environment*, Jay Jones and Emily Stanley (eds.), Academic Press, London.

Zlotnik V.A., A. Ward, J.W. Harvey, L.K. Lautz, D.O. Rosenberry, and P. Brunner, 2016, Handbook of Groundwater Engineering, 3rd Edition, Chapter 9: Groundwater-surface Water Interactions, Cushman, J. and Tartakovsky (eds.), CRC Press. ISBN 9781498703048.

Gomez-Velez, J.D., J.W. Harvey, M.B. Cardenas, and B. Kiel, 2015, Denitrification in the Mississippi river network controlled by flow through river bedforms, *Nature Geoscience*, doi: 10.1038/ngeo2567. [\[get publication\]](#) <http://www.usgs.gov/newsroom>

Harvey, J. and M. Gooseff, 2015, River corridor science: Hydrologic exchange and ecological consequences from bed forms to basins. *Water Resources Research*, Vol: 51(9), 50th Anniversary Issue, pages: 6893–6922, doi: 10.1002/2015WR017617. [get pdf](#)

Larsen, L., Harvey, J., Skalak, K., and M. Goodman, 2015, Fluorescence-based source tracking of organic sediment in restored and unrestored urban streams. *Limnology and Oceanography*, doi:10.1002/lno.10108. [\[get publication\]](#)

Briggs, M.A., Day-Lewis, F.D., Zarnetske, J.P., and J.W. Harvey, 2015, A mechanistic explanation for the development of hyporheic redox microzones. *Geophysical Research Letters*, 42, doi:10.1002/2015GL064200. [\[get publication\]](#)

Boano, F., Harvey, J.W., Marion, A., Packman, A.I., Revelli, R., Ridolfi, L., and A Wörman, 2014 Hyporheic flow and transport processes: Mechanisms, models, and biogeochemical implications. *Reviews of Geophysics*. DOI: 10.1002/2012RG000417. [\[get publication\]](#)

Gomez-Velez, J.D. and J.W. Harvey, 2014, A hydrogeomorphic river network model predicts where and why hyporheic exchange is important in large basins. *Geophysical Research Letters*, DOI 10.1002/2014GL061099. [\[get publication\]](#)