

## Research Articles

- 4545 *Brian T. Anderson, James P. McNamara, Hans-Peter Marshall, and Alejandro N. Flores*  
**Insights into the physical processes controlling correlations between snow distribution and terrain properties** (doi 10.1002/2013WR013714)
- 4564 *Haruko M. Wainwright, Jinsong Chen, Douglas S. Sassen, and Susan S. Hubbard*  
**Bayesian hierarchical approach and geophysical data sets for estimation of reactive facies over plume scales** (doi 10.1002/2013WR013842)
- 4585 *Mirian Jiménez, Sonia Castanedo, Zeng Zhou, Giovanni Coco, Raúl Medina, and Ignacio Rodríguez-Iturbe*  
**Scaling properties of tidal networks** (doi 10.1002/2013WR015006)
- 4603 *John Mallard, Brian McGlynn, and Tim Covino*  
**Lateral inflows, stream-groundwater exchange, and network geometry influence stream water composition** (doi 10.1002/2013WR014944)
- 4624 *Mohammad Mortazavi-Naeini, George Kuczera, and Lijie Cui*  
**Application of multiobjective optimization to scheduling capacity expansion of urban water resource systems** (doi 10.1002/2013WR014569)
- 4643 *Garrett T. Menichino and Erich T. Hester*  
**Hydraulic and thermal effects of in-stream structure-induced hyporheic exchange across a range of hydraulic conductivities** (doi 10.1002/2013WR014758)
- 4662 *Gene-Hua Crystal Ng, David R. Bedford, and David M. Miller*  
**A mechanistic modeling and data assimilation framework for Mojave Desert ecohydrology** (doi 10.1002/2014WR015281)
- 4686 *Aneesh Goly and Ramesh S. V. Teegavarapu*  
**Individual and coupled influences of AMO and ENSO on regional precipitation characteristics and extremes** (doi 10.1002/2013WR014540)
- 4710 *Zhishuai Zhang, Behnam Jafarpour, and Lianlin Li*  
**Inference of permeability heterogeneity from joint inversion of transient flow and temperature data** (doi 10.1002/2013WR013801)
- 4726 *Tohid Erfani, Olga Binions, and Julien J. Harou*  
**Simulating water markets with transaction costs** (doi 10.1002/2013WR014493)
- 4746 *Silvia Ferrini, Marije Schaafsma, and Ian Bateman*  
**Revealed and stated preference valuation and transfer: A within-sample comparison of water quality improvement values** (doi 10.1002/2013WR014905)
- 4760 *Søren Jessen, Hanne D. Holmslykke, Kristine Rasmussen, Niels Richardt, and Peter E. Holm*  
**Hydrology and pore water chemistry in a permafrost wetland, Ilulissat, Greenland** (doi 10.1002/2013WR014376)
- 4775 *Jackson B. Crews and Clay A. Cooper*  
**Transient pore pressure response to confining stress excursions in Berea sandstone flooded with an aqueous solution of CO<sub>2</sub>** (doi 10.1002/2014WR015305)
- 4787 *Shmuel Assouline and Dani Or*  
**The concept of field capacity revisited: Defining intrinsic static and dynamic criteria for soil internal drainage dynamics** (doi 10.1002/2014WR015475)
- 4803 *H. J. van Meerveld, E.J. Baird, and W. C. Floyd*  
**Controls on sediment production from an unpaved resource road in a Pacific maritime watershed** (doi 10.1002/2013WR014605)
- 4821 *Georg Kaufmann, Franci Gabrovšek, and Douchko Romanov*  
**Deep conduit flow in karst aquifers revisited** (doi 10.1002/2014WR015314)

- 4837** *Alexander Graf, Heye R. Bogaen, Clemens Drüe, Horst Hardelauf, Thomas Pütz, Günther Heinemann, and Harry Vereecken*  
**Spatiotemporal relations between water budget components and soil water content in a forested tributary catchment\*** (doi 10.1002/2013WR014516)  
**\*This article is part of a Special Section—Patterns in Soil-Vegetation-Atmosphere Systems: Monitoring, Modelling and Data Assimilation**
- 4858** *A. Amoruso, L. Crescentini, S. Martino, M. Petitta, and M. Tallini*  
**Correlation between groundwater flow and deformation in the fractured carbonate Gran Sasso aquifer (INFN underground laboratories, central Italy)** (doi 10.1002/2013WR014491)
- 4877** *A. H. Sawyer, L. A. Kaplan, O. Lazareva, and H. A. Michael*  
**Hydrologic dynamics and geochemical responses within a floodplain aquifer and hyporheic zone during Hurricane Sandy** (doi 10.1002/2013WR015101)
- 4893** *Ali Behrangi, Yudong Tian, Bjorn H. Lambriksen, and Graeme L. Stephens*  
**What does CloudSat reveal about global land precipitation detection by other spaceborne sensors?** (doi 10.1002/2013WR014566)
- 4906** *Harrison B. Zeff, Joseph R. Kasprzyk, Jonathan D. Herman, Patrick M. Reed, and Gregory W. Characklis*  
**Navigating financial and supply reliability tradeoffs in regional drought management portfolios** (doi 10.1002/2013WR015126)
- 4924** *S. Ursula Salmon, Andrew W. Rate, Zed Rengel, Steven Appleyard, Henning Prommer, and Christoph Hinz*  
**Reactive transport controls on sandy acid sulfate soils and impacts on shallow groundwater quality** (doi 10.1002/2013WR014404)
- 4953** *Laurent Esnault, Tom Gleeson, Yoshihide Wada, Jens Heinke, Dieter Gerten, Elizabeth Flanary, Marc F. P. Bierkens, and Ludovicus P. H. van Beek*  
**Linking groundwater use and stress to specific crops using the groundwater footprint in the Central Valley and High Plains aquifer systems, U.S.** (doi 10.1002/2013WR014792)
- 4974** *A. J. Desbarats, C. E. M. Koenig, T. Pal, P. K. Mukherjee, and R. D. Beckie*  
**Groundwater flow dynamics and arsenic source characterization in an aquifer system of West Bengal, India** (doi 10.1002/2013WR014034)
- 5003** *Wei Gong, Dawen Yang, Hoshin V. Gupta, and Grey Nearing*  
**Estimating information entropy for hydrological data: One-dimensional case** (doi 10.1002/2014WR015874)
- 5019** *M. Heistermann, T. Francke, C. Georgi, and A. Bronstert*  
**Increasing life expectancy of water resources literature** (doi 10.1002/2014WR015674)
- 5029** *Aaron Hawdon, David McJannet, and Jim Wallace*  
**Calibration and correction procedures for cosmic-ray neutron soil moisture probes located across Australia** (doi 10.1002/2013WR015138)
- 5044** *Marie Minville, Dominique Cartier, Catherine Guay, Louis-Alexandre Leclair, Charles Audet, Sébastien Le Digabel, and James Merleau*  
**Improving process representation in conceptual hydrological model calibration using climate simulations** (doi 10.1002/2013WR013857)
- 5074** *Noriaki Ohara*  
**A practical formulation of snow surface diffusion by wind for watershed-scale applications** (doi 10.1002/2013WR014744)
- 5090** *Seth Westra, Mark Thyer, Michael Leonard, Dmitri Kavetski, and Martin Lambert*  
**A strategy for diagnosing and interpreting hydrological model nonstationarity** (doi 10.1002/2013WR014719)
- 5114** *A. Abati and C. Callari*  
**Finite element formulation of unilateral boundary conditions for unsaturated flow in porous continua** (doi 10.1002/2013WR014693)
- 5131** *R. Iestyn Woolway, Stephen C. Maberly, Ian D. Jones, and Heidrun Feuchtmayr*  
**A novel method for estimating the onset of thermal stratification in lakes from surface water measurements** (doi 10.1002/2013WR014975)
- 5141** *Thomas B. Wild and Daniel P. Loucks*  
**Managing flow, sediment, and hydropower regimes in the Sre Pok, Se San, and Se Kong Rivers of the Mekong basin** (doi 10.1002/2014WR015457)
- 5158** *G. M. Kondolf, Z. K. Rubin, and J. T. Minear*  
**Dams on the Mekong: Cumulative sediment starvation** (doi 10.1002/2013WR014651)

- 5170 *Stefano Manzoni, Gabriel Katul, and Amilcare Porporato*  
**A dynamical system perspective on plant hydraulic failure\*** (doi 10.1002/2013WR015236)  
**\*This article is part of a Special Section—Eco-hydrology of Semiarid Environments: Confronting Mathematical Models with Ecosystem Complexity**
- 5184 *Steffen Merz, Andreas Pohlmeier, Jan Vanderborght, Dagmar van Dusschoten, and Harry Vereecken*  
**Moisture profiles of the upper soil layer during evaporation monitored by NMR\***  
 (doi 10.1002/2013WR014809)  
**\*This article is part of a Special Section—Patterns in Soil-Vegetation-Atmosphere Systems: Monitoring, Modelling and Data Assimilation**
- 5196 *Jesus D. Gomez-Velez, Stefan Krause, and John L. Wilson*  
**Effect of low-permeability layers on spatial patterns of hyporheic exchange and groundwater upwelling**  
 (doi 10.1002/2013WR015054)
- 5216 *Gregory E. Maurer and David R. Bowling*  
**Seasonal snowpack characteristics influence soil temperature and water content at multiple scales in interior western U.S. mountain ecosystems** (doi 10.1002/2013WR014452)
- 5235 *David McJannet, Trenton Franz, Aaron Hawdon, Dave Boadle, Brett Baker, Auro Almeida, Richard Silberstein, Trish Lambert, and Darin Desilets*  
**Field testing of the universal calibration function for determination of soil moisture with cosmic-ray neutrons** (doi 10.1002/2014WR015513)
- 5249 *Noam Greenbaum, Tessa M. Harden, Victor R. Baker, John Weisheit, Michael L. Cline, Naomi Porat, Rafi Halevi, and John Dohrenwend*  
**A 2000 year natural record of magnitudes and frequencies for the largest Upper Colorado River floods near Moab, Utah** (doi 10.1002/2013WR014835)
- 5270 *Michael Paul Stockinger, Heye Reemt Bogena, Andreas Lücke, Bernd Diekkrüger, Markus Weiler, and Harry Vereecken*  
**Seasonal soil moisture patterns: Controlling transit time distributions in a forested headwater catchment\*** (doi 10.1002/2013WR014815)  
**\*This article is part of a Special Section—Patterns in Soil-Vegetation-Atmosphere Systems: Monitoring, Modelling and Data Assimilation**

### Technical Notes

- 5290 *Christine E. Baver, J.-Yves Parlange, Cathelijne R. Stoof, David A. DiCarlo, Rony Wallach, Deanna S. Durnford, and Tammo S. Steenhuis*  
**Capillary pressure overshoot for unstable wetting fronts is explained by Hoffman's velocity-dependent contact-angle relationship\*** (doi 10.1002/2013WR014766)  
**\*This article is part of a Special Section—Hydrologic Discovery Through Physical Analysis Honoring the Scientific Legacies of W. Brutsaert and J.-Y. Parlange**
- 5298 *Monica Riva, Xavier Sanchez-Vila, and Alberto Guadagnini*  
**Estimation of spatial covariance of log conductivity from particle size data** (doi 10.1002/2014WR015566)
- 5309 *O. Mohnke and B. Hughes*  
**Jointly deriving NMR surface relaxivity and pore size distributions by NMR relaxation experiments on partially desaturated rocks** (doi 10.1002/2014WR015282)
- 5322 *Raquel Nieto, Rodrigo Castillo, Anita Drummond, and Luis Gimeno*  
**A catalog of moisture sources for continental climatic regions\*** (doi 10.1002/2013WR013901)  
**\*This article is part of a Special Section—Oceanic Sources of Continental Precipitation**
- 5329 *Ali Arnon, John Selker, and Nadav Lensky*  
**Correcting artifacts in transition to a wound optic fiber: Example from high-resolution temperature profiling in the Dead Sea** (doi 10.1002/2013WR014910)

## Commentaries

- 5334** *Alberto Montanari*  
**Debates—The future of hydrological sciences: A (common) path forward? Introduction**  
(doi 10.1002/2014WR015714)
- 5335** *Upmanu Lall*  
**Debates—The future of hydrological sciences: A (common) path forward? One water. One world. Many climates. Many souls.** (doi 10.1002/2014WR015402)
- 5342** *Jeffrey J. McDonnell and Keith Beven*  
**Debates—The future of hydrological sciences: A (common) path forward? A call to action aimed at understanding velocities, celerities and residence time distributions of the headwater hydrograph**  
(doi 10.1002/2013WR015141)
- 5351** *Hoshin V. Gupta and Grey S. Nearing*  
**Debates—The future of hydrological sciences: A (common) path forward? Using models and data to learn: A systems theoretic perspective on the future of hydrological science** (doi 10.1002/2013WR015096)

## Comments and Replies

- 5360** *John M. Juston, William F. DeBusk, Michael J. Jerauld, and Thomas A. DeBusk*  
**Comment on “Spatial and temporal phosphorus distribution changes in a large wetland ecosystem” by X. Zapata-Rios et al.** (doi 10.1002/2013WR014462)
- 5367** *Xavier Zapata-Rios, Rosanna G. Rivero, Ghinwa M. Naja, and Pierre Goovaerts*  
**Reply to comment by John M. Juston et al. on “Spatial and temporal phosphorus distribution changes in a large wetland ecosystem”** (doi 10.1002/2013WR015033)
- 5372** *J. S. Selker, Scott Tyler, and Nick van de Giesen*  
**Comment on “Capabilities and limitations of tracing spatial temperature patterns by fiber-optic distributed temperature sensing” by Liliana Rose et al.** (doi 10.1002/2013WR014979)
- 5375** *S. Krause, L. Rose, and N. J. Cassidy*  
**Reply to comment by J. S. Selker et al. on “Capabilities and limitations of tracing spatial temperature patterns by fiber-optic distributed temperature sensing”** (doi 10.1002/2013WR015209)