

David Dralle

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Education

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| Ph.D. Environmental Engineering - UC Berkeley | 2013 – 2016 |
| <ul style="list-style-type: none">• Advisor: Sally Thompson• Hydrology of seasonally dry ecosystems, hillslope hydrology, stochastic ecohydrology, mathematical methods in ecohydrology. | |
| M.S. Applied Mathematics - Columbia University | 2010 - 2011 |
| <ul style="list-style-type: none">• Passed doctoral qualifying exam | |
| B.S. Electrical Engineering - University of Illinois | 2003 - 2007 |
| <ul style="list-style-type: none">• Summa cum laude | |

Publications

(* undergraduate or masters student)

D. N. Dralle, W J Hahm, D M Rempe, N J Karst, W E Dietrich, Using ecosystem productivity variability to estimate the subsurface water storage capacity of landscapes, *Science Advances*, in prep.

Hahm W J, **D. N. Dralle**, D M Rempe, W E Dietrich, Water storage limitation limits plant sensitivity to rainfall variability, *Science*, in prep.

Rempe, D M, **D. N. Dralle**, W J Hahm, W E Dietrich, The role of dynamic storage in weathered bedrock on runoff generation, *Water Resources Research*, submitted.

Karst, N J, **D. N. Dralle**, M Müller, Capturing inter-annual streamflow variability to improve annual flow duration curves, *Water Resources Research*, in review.

Chung, M., **D. N. Dralle**, G. Greer, J-P Ore, J. Higgins, C. Detweiler, S.E. Thompson, Advantages and challenges of measuring stream temperatures with an unmanned aerial system, *Ecohydrology*, in review.

Dralle, D. N., D. Rempe, W. Jesse Hahm, N. J. Karst, W. E. Dietrich, S. E. Thompson, Identifying the dynamic storage that does not drive runoff, *Hydrological Processes*, accepted (2018).

Dralle, D. N., N. J. Karst, M. Müller, G. Vico, and S. E. Thompson, Stochastic modelling of inter-annual variation of hydrologic variables, *Geophysical Research Letters* (2017).

Vico, G., **D. N. Dralle**, X. Feng,, S. E. Thompson, S. Manzoni, How competitive is drought deciduousness in tropical forests? A combined eco-hydrological and eco-evolutionary approach, *Environmental Research Letters* (2017).

D. N. Dralle, N. J. Karst, Charalampous, K.*, A. Veenstra, S. E. Thompson, Event scale power law recession analysis: Quantifying methodological uncertainty, *Hydrology Earth System Sciences* (2017).

Dralle, D. N., Nathaniel J. Karst, and Sally E. Thompson. Dry season streamflow persistence in seasonal climates, *Water Resources Research* (2016).

Dralle, David N., and Sally E. Thompson. A minimal probabilistic model for soil moisture in seasonally dry climates, *Water Resources Research* (2016).

Karst, N. J., **D. N. Dralle**, S. E. Thompson (2016), Spiral and rotor patterns produced by fairy ring fungi, *PLoS One*.

Dralle, D. N., N. J. Karst, S. E. Thompson (2015), a, b careful: The challenge of scale invariance for comparative analyses in power law models of the streamflow recession, *Geophysical Research Letters*, doi: 10.1002/2015GL066007.

Jennifer K. Carah, Jeanette K. Howard, Sally E. Thompson, Anne G. Short Gianotti, Scott D. Bauer, Stephanie M. Carlson, **David N. Dralle**, Mourad W. Gabriel, Lisa L. Hulette, Brian J. Johnson, Curtis A. Knight, Sarah J. Kupferberg, Stefanie L. Martin, Rosamond L. Naylor and Mary E. Power (2015), High time for conservation: Adding the environment to the debate on marijuana liberalization, *BioScience*.

Dralle, D.N., G.F.S. Boisrame, and S.E. Thompson (2014), Spatially variable groundwater recharge and the hillslope hydrologic response: Analytical solutions to the linearized hillslope Boussinesq equation, *Water Resources Research*, doi: 10.1002/2013WR015144.

Müller, M. F., **D. N. Dralle**, and S. E. Thompson (2014), Analytical model for flow duration curves in seasonally dry climates, *Water Resources Research*, 50, doi: 10.1002/2014WR015301.

C. J. Choi, I. D. Block, B. Bole, **D. Dralle**, and B. T. Cunningham, "Label-Free Photonic Crystal Biosensor Integrated Microfluidic Chip for Determination of Kinetic Reaction Rate Constants," *IEEE Sensors Journal*, vol. 9, pp. 1697-1704, 2009.

Grants and fellowships

National Science Foundation CZO/SAVI International Scholar – \$8k	2018
National Science Foundation Graduate Research Fellowship	Used: 2013 – 2016 Awarded: 2011
Nature Conservancy Field Research Grant – \$5k	2014
Jules Falzer Memorial Scholarship - \$3k	2006

Work and teaching experience

Postdoctoral Researcher at UC Berkeley <ul style="list-style-type: none">• Advisor: Bill Dietrich and Sally Thompson• Lead developer of a semi-distributed, coupled ecohydrologic-stream temperature model for the South Fork Eel River watershed• Extensions of stochastic hydrologic methods to quantify ecologic risk in Northern California watersheds• Applications of power law models of the streamflow recession	2016 - Present
Visiting Researcher, Helmholtz German Research Center for Geosciences- University of Potsdam, Germany <ul style="list-style-type: none">• Investigating the origins of power-law streamflow recession behavior	Summer 2017
Physics Deep Dive Instructor (concurrent appointment with postdoc) - Engineering Student Services at UC Berkeley <ul style="list-style-type: none">• Supplementary physics instruction targeting students who are members of a group historically under-represented in engineering	2016 – 2017
Graduate Student Instructor at UC Berkeley <ul style="list-style-type: none">• Surface hydrology (graduate course)• Introduction to computer programming for scientists and engineers (undergraduate course – Spring 2016)	2015 – 2016
Mathematics Lecturer for the Pre-Engineering Program, UC Berkeley.	2014, 2015

- Lectured a summer Calculus course targeting incoming engineering students who are members of a group historically under-represented in engineering
- Developed curriculum, assignments, exams, and lectures.

Assistant Professor of Mathematics at Central Oregon Community College, Bend, OR 2011 – 2012

- Student academic advisor
- Taught for one academic year: 3 quarters, 4 courses per quarter (two preps per quarter)

Teaching Assistant at Columbia University 2010 - 2011

- Nonlinear dynamical systems – Fall 2010; Introduction to applied mathematics – Spring 2011

Teen Programs Coordinator at the Santa Barbara Zoo, Santa Barbara, CA 2009 - 2010

- Developed and implemented programming for dedicated teen volunteers from around Ventura County

Counselor in Training Coordinator, Environmental Educator, and Adventure Trips Leader at Frost Valley YMCA, Claryville, NY 2007 - 2009

- Trained, coordinated, supervised, and mentored teen to college aged camp counselors for Frost Valley's Summer Camp
- Taught short environmental science courses for K-12 and college students

Teaching Assistant at the University of Illinois 2007

- Calculus I

Recognition

Outstanding Graduate Student Instructor Award – CE203 Surface Hydrology, UC Berkeley 2016

Outstanding Student Presentation – AGU Fall Meeting 2015

Featured Student and Early Career Scientist – American Geophysical Union 2015

**“Best Engineered Award”, Senior Design Project,
Department of Electrical and Computer Engineering,
University of Illinois**

2007

Research talks

Using hydrological signals to understand critical zone controls
on ecosystem productivity and water cycling in California
watersheds

Spring 2018

UC Santa Cruz, Santa Cruz, CA

Hillslope water storage that does not drive streamflow: a novel
mass-balance recession technique for quantifying
hydraulically decoupled storage

Winter 2017

AGU Fall Meeting 2017, New Orleans, LA

Identifying the dynamic storage that does not drive runoff

Fall 2017

Geology Seminar Humboldt State University, Arcata, CA

Critical Zone attributes drive patterns in streamflow recession
data

Summer 2017

*Environmental Resource Engineering Seminar, Humboldt State
University, Arcata, CA*

Streamflow as Critical Zone effluent: Challenges and
opportunities for hydrologic modelling

Spring 2017

*Environmental Engineering Seminar, University of Texas,
Austin, TX*

Inter-annual variability of integrated hydrologic variables.

Fall 2016

*Presentation to the California State Water Resources Control
Board*

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Spring 2016

UC Berkeley Environmental Engineering Seminar Series

Using Statistical Mechanics and Entropy Principles to Interpret
Variability in Power Law Models of the Streamflow Recession

Fall 2015

AGU Fall Meeting 2015, San Francisco, CA

Yosemite's Illilouette Creek Basin: Seeing the Forest Without the Trees <i>AGU Fall Meeting 2014</i>	Fall 2014
Seasonal variability in the streamflow recession: consequences and an unexpected pattern <i>UC Berkeley Environmental Fluid Mechanics meeting</i>	Fall 2014
Does the spatial distribution of vegetation affect baseflow response? <i>AGU Fall Meeting 2013, San Francisco, CA</i>	Fall 2013

Science outreach and advising

Research advisor at UC Berkeley	2014 – present
<ul style="list-style-type: none"> • Masters research advisor, Gabriella De Sa Queen, UC Berkeley • Undergraduate research advisor, Andy Nguyen, UC Berkeley • Undergraduate research advisor, Andrew Veenstra, UC Berkeley • Undergraduate research co-advisor, Kyriakos Charalampous, UC Berkeley • Masters research co-advisor, George Greer, UC Berkeley 	
AP Environmental Science Speaker , Castro Valley High School, CA	Spring 2015
Volunteer , Bay Area Scientists in Schools (BASIS)	2013 - 2014

Professional affiliations and service

Organizer – UC Berkeley Earth and Planetary Science – Catchment transit time distributions, reading group	2017
Convener – AGU Fall Meeting – Stochastic modeling of the hydrosphere and biosphere	2017
Convener and Session Chair – AGU Fall Meeting – Drought, Groundwater Management, Recharge, Baseflow, and Sustainability: Assessment, Monitoring, Modeling, Planning, and Policy	2016
Member of the American Geophysical Union	2012 – Present
Reviewer for <i>Water Resources Research</i>	2014 – Present

Reviewer for *Geophysical Research Letters*

2016 – Present

UC Berkeley Environmental Engineering Seminar Organizer

2013