# Education

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| **Ph.D. Environmental Engineering -** UC Berkeley   * Advisor: Sally Thompson * Hydrology of seasonally dry ecosystems, hillslope hydrology, stochastic ecohydrology, mathematical methods in ecohydrology. | 2013 – 2016 |
| **M.S. Applied Mathematics -** Columbia University   * Passed doctoral qualifying exam | 2010 - 2011 |
| **B.S. Electrical Engineering -** University of Illinois   * Summa cum laude | 2003 - 2007 |

# 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, andS. 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](http://bioscience.oxfordjournals.org/search?author1=Jennifer+K.+Carah&sortspec=date&submit=Submit), [Jeanette K. Howard](http://bioscience.oxfordjournals.org/search?author1=Jeanette+K.+Howard&sortspec=date&submit=Submit), [Sally E. Thompson](http://bioscience.oxfordjournals.org/search?author1=Sally+E.+Thompson&sortspec=date&submit=Submit), [Anne G. Short Gianotti](http://bioscience.oxfordjournals.org/search?author1=Anne+G.+Short+Gianotti&sortspec=date&submit=Submit), [Scott D. Bauer](http://bioscience.oxfordjournals.org/search?author1=Scott+D.+Bauer&sortspec=date&submit=Submit), [Stephanie M. Carlson](http://bioscience.oxfordjournals.org/search?author1=Stephanie+M.+Carlson&sortspec=date&submit=Submit), [**David N. Dralle**](http://bioscience.oxfordjournals.org/search?author1=David+N.+Dralle&sortspec=date&submit=Submit), [Mourad W. Gabriel](http://bioscience.oxfordjournals.org/search?author1=Mourad+W.+Gabriel&sortspec=date&submit=Submit), [Lisa L. Hulette](http://bioscience.oxfordjournals.org/search?author1=Lisa+L.+Hulette&sortspec=date&submit=Submit), [Brian J. Johnson](http://bioscience.oxfordjournals.org/search?author1=Brian+J.+Johnson&sortspec=date&submit=Submit), [Curtis A. Knight](http://bioscience.oxfordjournals.org/search?author1=Curtis+A.+Knight&sortspec=date&submit=Submit), [Sarah J. Kupferberg](http://bioscience.oxfordjournals.org/search?author1=Sarah+J.+Kupferberg&sortspec=date&submit=Submit), [Stefanie L. Martin](http://bioscience.oxfordjournals.org/search?author1=Stefanie+L.+Martin&sortspec=date&submit=Submit), [Rosamond L. Naylor](http://bioscience.oxfordjournals.org/search?author1=Rosamond+L.+Naylor&sortspec=date&submit=Submit) and [Mary E. Power](http://bioscience.oxfordjournals.org/search?author1=Mary+E.+Power&sortspec=date&submit=Submit) (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

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|  |  |  |
| **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

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| **Postdoctoral Researcher** at UC Berkeley   * 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   * Investigating the origins of power-law streamflow recession behavior |  | Summer 2017 |
| **Physics Deep Dive Instructor (concurrent appointment with postdoc)** - Engineering Student Servicesat UC Berkeley   * Supplementary physics instruction targeting students who are members of a group historically under-represented in engineering |  | 2016 – 2017 |
| **Graduate Student Instructor** at UC Berkeley   * 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.   * 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. |  | 2014, 2015 |
| **Assistant Professor of Mathematics** at Central Oregon Community College, Bend, OR   * Student academic advisor * Taught for one academic year: 3 quarters, 4 courses per quarter (two preps per quarter) |  | 2011 – 2012 |
| **Teaching Assistant** at Columbia University   * Nonlinear dynamical systems – Fall 2010; Introduction to applied mathematics – Spring 2011 |  | 2010 - 2011 |
| **Teen Programs Coordinator** at the Santa Barbara Zoo, Santa Barbara, CA   * Developed and implemented programming for dedicated teen volunteers from around Ventura County |  | 2009 - 2010 |
| **Counselor in Training Coordinator, Environmental Educator, and Adventure Trips Leader** at Frost Valley YMCA, Claryville, NY   * 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 |  | 2007 - 2009 |
| **Teaching Assistant** at the University of Illinois   * Calculus I |  | 2007 |

# Recognition

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| --- | --- | --- |
| **Outstanding Graduate Student Instructor Award – CE203 Surface**  **Hydrology, UC Berkeley** |  | 2016 |
| **Outstanding Student Presentation – AGU Fall Meeting**  **Featured Student and Early Career Scientist – American Geophysical Union** |  | 2015  2015 |
| **“Best Engineered Award”, Senior Design Project, Department of Electrical and Computer Engineering, University of Illinois** |  | 2007 |

# Research talks

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| Using hydrological signals to understand critical zone controls on ecosystem productivity and water cycling in California watersheds  *UC Santa Cruz, Santa Cruz, CA* |  | Spring 2018 |
| Hillslope water storage that does not drive streamflow: a novel mass-balance recession technique for quantifying hydraulically decoupled storage  *AGU Fall Meeting 2017, New Orleans, LA* |  | Winter 2017 |
| Identifying the dynamic storage that does not drive runoff  *Geology Seminar Humboldt State University, Arcata, CA* |  | Fall 2017 |
| Critical Zone attributes drive patterns in streamflow recession data  *Environmental Resource Engineering Seminar, Humboldt State University, Arcata, CA* |  | Summer 2017 |
| Streamflow as Critical Zone effluent: Challenges and opportunities for hydrologic modelling  *Environmental Engineering Seminar, University of Texas, Austin, TX* |  | Spring 2017 |
| Inter-annual variability of integrated hydrologic variables.  *Presentation to the California State Water Resources Control Board* |  | Fall 2016 |
| a, b careful!  *UC Berkeley Environmental Engineering Seminar Series* |  | Spring 2016 |
| Using Statistical Mechanics and Entropy Principles to Interpret Variability in Power Law Models of the Streamflow Recession  *AGU Fall Meeting 2015, San Francisco, CA*  Yosemite’s Illilouette Creek Basin: Seeing the Forest Without the Trees  *AGU Fall Meeting 2014*  Seasonal variability in the streamflow recession: consequences and an unexpected pattern  *UC Berkeley Environmental Fluid Mechanics meeting*  Does the spatial distribution of vegetation affect baseflow response? *AGU Fall Meeting 2013, San Francisco, CA* |  | Fall 2015  Fall 2014  Fall 2014  Fall 2013 |

# Science outreach and advising

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| **Research advisor** at UC Berkeley   * 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 |  | 2014 – present |
| **AP Environmental Science Speaker,** Castro Valley High School, CA  **Volunteer,** Bay Area Scientists in Schools (BASIS) |  | Spring 2015  2013 - 2014 |

# Professional affiliations and service

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| **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 *Water Resources Research*** |  | 2014 – Present |
| **Reviewer for *Geophysical Research Letters*** |  | 2016 – Present |
| **UC Berkeley Environmental Engineering Seminar Organizer** |  | 2013 |