Marie J. Kurz, Ph.D.

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Research Interests

Hydro-eco-geochemical controls on the sources and cycling of solutes in aquatic ecosystems; Reciprocal interactions between solute availability, transport & retention, and ecosystem structure & function; Groundwater-surface water interactions; Linking catchment-scale patterns in solute & ecosystem dynamics to process understanding; Restoration & management of water resources & aquatic ecosystems.

Education

PhD Geology - **University of Florida** *(Gainesville, FL)* 2013
Environmental Engineering Sciences graduate minor, Hydrologic Sciences certificate
Dissertation: Biogeochemical and hydrologic controls on solute sources and cycling in a biologically productive karst river.
Advisor: Dr. Jon Martin; *Committee*: Drs. Matt Cohen, Mark Brown, Liz Screaton & Pete Adams

BS Geology, environmental concentration - **The College of William & Mary** *(Williamsburg, VA)* 2007
Anthropology minor
Thesis: Looking for 'Landscape Knickzones' in the Virginia Piedmont: Evaluating Landscape Disequilibrium Through GIS-Based Analysis of Hillslopes and Channels.
Advisor: Dr. Gregory Hancock

Academic & Professional History

Biogeochemistry Section Leader & **Research Scientist** Since 2016
Patrick Center for Environmental Research, Academy of Natural Sciences of Drexel University, USA

Assistant Research Professor Since 2016
Department of Biodiversity, Earth & Environmental Science, Drexel University, USA

Staff Scientist/ Wissenschaftliche Mitarbeiter 2013-2016
Dept. Hydrogeology, Helmholtz Center for Environmental Research – UFZ, Germany

Alumni Fellow & **Graduate Research Assistant** 2007-2013
Dept. of Geological Sciences, University of Florida, USA

NSF IGERT (Integrated Graduate Education & Research Traineeship) Fellow 2007-2011
"Adaptive Management: Wise use of Water, Wetlands & Watersheds", University of Florida, USA

NSF REU (Research Experience for Undergraduates) Trainee 2006 (3 mo.)
University of Arkansas, USA

Sharpe Community Scholar 2003-2004
The College of William & Mary, USA

Howard Hughes Medical Institute Freshman Researcher 2003
The College of William & Mary, USA

Publications

Peer-reviewed Publications *(* Indicates student authors)*

(9) Khadka M.B., Martin J.B. & **Kurz M.J.** (2016) Synoptic estimates of diffuse groundwater seepage to a spring-fed karst river at high spatial resolution using an automated radon measurement technique. *J. Hydrology* 544: 86-96. doi.org/10.1016/j.jhydrol.2016.11.013.

(8) Vieweg M.*, **Kurz M.J.**, Trauth N., Fleckenstein J.H., Musolff A. & Schmidt C. (2016) Estimating time-variable aerobic respiration in the streambed by combining electrical conductivity and dissolved oxygen time-series, *J. Geophys. Res. Biogeosci* 121. doi:10.1002/2016JG003345.

(7) Martin J.B., **Kurz M.J.** & Khadka M.B. (2016) Climate control of decadal-scale increases in apparent ages of eogenetic karst spring water. *J. Hydrology* 540: 988-1001, doi:10.1016/j.jhydrol.2016.07.010.

(6) Schmadel N.M., Ward A.S., **Kurz M.J.**, Fleckenstein J.H., Zarnetske J.P., Hannah D.M., Blume T., Vieweg M.*, Blaen P.J., Schmidt C., Knapp J.L.A.*, Klaar M.J., Romeijn P.*, Datry T., Keller T., Folegot S.*, Marruedo A.I.* & Krause S. (2016) Stream solute tracer timescales changing with discharge and reach length confound process interpretation. *Water Resour. Res.* 52: 3227–3245, doi:10.1002/2015WR018062.

(5) **Kurz M.J.**, Martin J.B., and Cohen M.J. (2015) Diffusion and seepage-driven element fluxes from the hyporheic zone of a karst river. *Freshwater Science* 34(1), 206-221.

(4) **Kurz M.J.**, deMontety V., Martin J.B., Cohen M.J., and Foster C. (2013) Controls on diel metal cycles in a biologically productive carbonate-dominated river. *Chemical Geology* 358: 61-74.

(3) Cohen M.J., **Kurz M.J.**, Heffernan J.B., Martin J.B., Douglass R.L., Foster C.R., and Thomas R.G. (2013) Diel phosphorus variation and the stoichiometry of ecosystem metabolism in a large spring-fed river. *Ecological Monographs* 83(2), 155-176.

(2) de Montety V., Martin J.B., Cohen M.J., Foster C. and **Kurz M.J.** (2011) Influence of diel biogeochemical cycles on carbonate equilibrium in a karst river. *Chemical Geology* 283(1-2), 31-43.

(1) de Montety V., Martin J.B., **Kurz M.J.**, Cohen M.J. and Foster, C. (2010) Influence of biogeochemically induced carbonate cycles on metals content of a karst river, *in* Birkle P. & Torres-Alvarado I.S., eds., Water-Rock Interaction XIII: Taylor & Francis Group, London. ISBN 978-0-415-60426-0

Abstracts

(29) **Kurz M.J.**, Drummond J.D., Marti E., Zarnetske J.P., Lee-Cullin J., Klaar M.J., Folegot S., Keller T., Ward A.S., Fleckenstein J.H., Datry T., Hannah D.M., & Krause S. (2016) Impacts of water level on metabolism and transient storage in vegetated lowland rivers - insights from a mesocosm study. American Geophysical Union Fall Meeting, San Francisco, CA.

(28) **Kurz M.J.**, Schmidt C., Blaen P., Knapp J.L.A., Drummond J.D., Martí E., Zarnetske J.P., Ward A.S., Krause S., The Leverhulme Hyporheic Zone Network Team (2016) Attempting to link hydro-morphology, transient storage and metabolism in streams: Insights from reactive tracer experiments (*Invited*). EGU General Assembly, Vienna, Austria.

(27) **Kurz M.J.**, Cohen M.J., Martin J.B., Nifong R.L. (2016) Feedbacks between element availability, (diel) cycling and assimilatory uptake in a biologically productive spring-fed river. EGU General Assembly, Vienna, Austria.

(26) Blaen P., **Kurz M.J.**, Knapp J.L.A., Mendoza-Lera C., Lee-Cullin J., Klaar M.J., Drummond J.D., Jaeger A., Zarnetske J.P., Lewandowski J., Martí E., Ward A.S., Fleckenstein J., Datry T., Larned S., Krause S. (2016) Geomorphic and substrate controls on spatial variability in river solute transport and biogeochemical cycling. EGU General Assembly, Vienna, Austria.

(25) Blaen P., **Kurz M.J.**, Knapp J.L.A., Mendoza-Lera C., Lee-Cullin J., Klaar M.J., Drummond J.D., Jaeger A., Zarnetske J.P., Lewandowski J., Martí E., Ward A.S., Fleckenstein J., Datry T., Larned S., Krause S. (2016) Multi-scale controls on spatial variability in river biogeochemical cycling. EGU General Assembly, Vienna, Austria.

(24) Krause S., Blaen P., Hannah D., Romejn P., Gomez J., **Kurz M.J.**, Fleckenstein J., Schmidt C., Zarnetske J.P., Cullin J., Ward A.S., Marti E., Drummond J., Schmadel N., Knapp J.L.A., Klaar M.J., Mendoza-Lera C. (2016) Attempting to link hydro-morphology, transient storage and metabolism in streams: Insights from reactive tracer experiments. EGU General Assembly, Vienna, Austria.

(23) Schmadel N., Ward A.S., **Kurz M.J.**, et al. (2015) Solute tracer transport does not vary systematically with stream discharge or geomorphology. American Geophysical Union Fall Meeting, San Francisco, CA.

(22) **Kurz M.J.**, Schmidt C., Anlanger C., Risse-Buhl U., von Schiller D. (2015) Influence of stream morphology on metabolism and reactive solute transport. Goldschmidt 2015, Prague, Czech Republic.

(21) **Kurz M.J.**, Schmidt C., Fleckenstein J.H., Keller T., Krause S., Romeijn P., Blaen P., Klaar M.J., Hannah D., Knapp J., Ward A.S., Larned S., Zarnetske J.P. (2015) Spatial and temporal dynamics of hyporheic respiration under variable discharge conditions. 5th International Multidisciplinary Conference on Hydrology and Ecology (HydroEco), Vienna, Austria.

(20) Schmidt C., **Kurz M.J.**, Fleckenstein J.H. (2015) Non-parametric estimation of subreach solute travel time distribution from multiple tracer breakthrough curves. EGU General Assembly, Vienna, Austria.

(19) Cohen M.J., Nifong R.L., **Kurz M.J.**, Cropper W.P., Martin J.B. (2014) Stoichiometry, metabolism and nutrient limitation across the periodic table in natural flowing-water chemostats (Invited). American Geophysical Union Fall Meeting, San Francisco, CA.

(18) Krause S., et al. (2014) Unraveling the Drivers of Spatial and Temporal Variability in Biogeochemical Cycling at Aquifer-River Interfaces - The LEVERHULME Hyporheic Zone Research Network. American Geophysical Union Fall Meeting, San Francisco, CA.

(17) **Kurz M.J.**, et al. (2014) Spatial and temporal dynamics of hyporheic respiration under variable discharge conditions. American Geophysical Union Fall Meeting, San Francisco, CA.

(16) Cohen M.J., Nifong R.L., **Kurz M.J.**, Martin J.B., Cropper W.P., Korhnak L.V. (2014) Stoichiometry, metabolism and nutrient limitation across the periodic table in natural flowing-water chemostats. Joint Aquatic Sciences Meeting, Portland, OR.

(15) Cohen M.J., Nifong R.L., **Kurz M.J.**, Martin J.B., Cropper W.P., Korhnak L.V. (2013) Springs as model systems for aquatic ecosystems ecology: Stoichiometry, metabolism and nutrient limitation. American Geophysical Union Fall Meeting, San Francisco, CA.

(14) Khadka M.B., Martin J.B., **Kurz M.J.** (2013) Quantifying hyporheic exchange in a karst stream using 222Rn. American Geophysical Union Fall Meeting, San Francisco, CA.

(13) **Kurz M.J.**, Martin J.B., Cohen M.J., de Montety V., Nifong R.L. (2013) Elemental sources, cycling and ecological availability in rivers in carbonate terrains: An interdisciplinary perspective. American Geophysical Union Fall Meeting, San Francisco, CA.

(12) Martin J.B., **Kurz M.J.**, Khadka M.B., Cohen M.J. (2013) Time-series variations in CFC and 3H/3He ages in springs discharging from an eogenetic karst aquifer (Invited). American Geophysical Union Fall Meeting, San Francisco, CA.

(11) Martin J.B., Khadka M., **Kurz M.J.**, Ezell J., Brown, A. (2013) Karst in the global carbon cycle. Karst Waters Institute Symposia: Carbon and Boundaries in Karst, Carlsbad, NM.

(10) **Kurz M.J.**, Martin J.B. and Cohen M.J. (2012) Interactions Between Diffuse Groundwater Recharge and Hyporheic Zone Chemistry in Spring-Fed River: Implications for Metal, Nutrient & Carbonate Cycling. American Geophysical Union Fall Meeting, San Francisco, CA.

(9) **Kurz M.J.**, Martin J.B., Cohen M.J., de Montety V., Douglass R.L. (2012) Geochemical and biological controls on diel (24-hr) element cycling in a carbonate-dominated river. Geological Society of America Annual Meeting, Charlotte, NC.

(8) **Kurz M.J.**, Martin J.B., Cohen M.J., Douglass R.L., Foster C. (2012) Influence of autotrophic assimilation on diel elemental cycling in a spring-fed river. 3rd University of Florida Water Institute Symposium, Gainesville, FL.

(7) **Kurz M.J.**, Martin J.B, Cohen M.J. Douglass R.L., Foster C. (2011) Influence of autotrophic assimilation on diel cycling of major and trace elements in streams. American Geophysical Union Fall Meeting, San Francisco, CA.

(6) Ball C.E., Martin J.B., **Kurz M.J.**, Cohen M.J., Foster C.R. (2011) Dissolved Organic Carbon Impacts on Biologically Mediated Carbonate Mineral Diagenesis in Karst River Systems. Geological Society of America Annual Meeting, Minneapolis, MN.

(5) **Kurz M.J.**, Martin J.B., Cohen M.J. (2010) Pore-Water Chemistry and Hydrology in a Spring-Fed River: Implications for Hyporheic Control of Nutrient Cycling and Speleogenesis. American Geophysical Union Fall Meeting, San Francisco, CA.

(4) **Kurz M.J.**, Martin J.B., de Montety V., Cohen M.J., Foster C. (2010) Pore-water chemistry in a spring-fed river: Implications for hyporheic control of nutrient cycling and speleogenesis. 2nd University of Florida Water Institute Symposium, Gainesville, FL.

(3) **Kurz M.J.**, Martin J.B., de Montety V. (2009) Pore-water chemistry in a spring-fed river: Implications for hyporheic control of nutrient cycling and speleogenesis. Geological Society of America Annual Meeting, Portland, OR.

(2) **Kurz M.**, and Hancock G. (2007) Looking for 'Landscape Knickzones' in the Virginia Piedmont: Evaluating Landscape Disequilibrium Through GIS-Based Analysis of Hillslopes and Channels. Annual Meeting of the Southeastern Section of the Geological Society of America, Charleston, SC.

(1) **Kurz M.**, Patton J., Boss S. (2006) Comparative Geomorphic Analysis of Three Sub-Watersheds of Beaver Reservoir, Northwest Arkansas. Geological Society of America Annual Meeting, Philadelphia, PA.

Grants, Fellowships & Awards

Alumni Graduate Fellowship, *Univ. of Florida* 2007-2013
Cover feature article, *Ecological Monographs* Vol. 83, Issue 2 2013
Outstanding Graduate Student (Horn) Award, *Univ. of Florida, Dept. Geological Sciences* 2012
College of Liberal Arts & Sciences travel grants (x2), *Univ. of Florida* 2011-2012
Graduate Student Council travel grants (x4), *Univ. of Florida* 2009-2012
Office of Research travel grants (x2), *Univ. of Florida* 2011-2012
IGERT Graduate Fellowship, 'AM:W3', *National Science Foundation/Univ. of Florida* 2007-2011
REU Fellowship, *National Science Foundation/Univ. Arkansas* 2006
HHMI Freshman Research Grant, *Howard Hughes Medical Institute/W&M* 2003

Teaching

University of Florida

Florida Geology Lab *(GLY 1150L, 2 sections, 28 students)* – Instructor Sp. 2012
Designed lectures and activities, lectured, graded & maintained course website.

Groundwater Geology *(GLY 4930/5827, 30 students)* – Teaching Assistant Fall 2010
Assisted with grading, office hours, and lab instruction.

Hydro and Human Affairs *(GLY 3882, 30 students)* – Teaching Assistant Sp. 2010
Assisted with grading, office hours and lab instruction, and guest lectured.

Water, Environment and Society *(EES 4932, 8 students)* – Co-Instructor Sp. 2008
Co-designed new honors course, assisted with lecturing, grading and course evaluation.

Invited Seminars & Lectures

Univ. of Tubingen, Center of Applied Geosciences, GeoEnviron Seminar 2016
Academy of Natural Sciences of Drexel University 2016
Helmholtz-UFZ, Dept. of River Ecology (FLOEK), Departmental Seminar 2013
Univ. of Florida, Dept. Geological Sciences, Departmental Seminar 2012
Univ. of Florida, Howard T. Odum Center for Wetlands, 'Water Wetlands & Watersheds' Seminar 2011
Santa Fe College, Physical Geology Lab, Guest lecture 2011-2012
Univ. of Florida, Dept. Geological Sciences, Brown Bag Seminar 2008

Professional Development & Synergistic Activities

Professional & Stakeholder Workshops

Berkeley Catchment Science Symposium, *Berkeley Water Center* 2014-2015
International Workshop on Temporal High Resolution Water Quality Monitoring and Analysis, *Helmholtz-UFZ* 2014
NSF Research Day, *Univ. of Florida, I-Cubed Program* 2011-2012
Preparing for an Academic Career in the Geosciences Workshop, *On the Cutting Edge* 2012
Florida Springs Science Symposium, *North Florida Springs Alliance* 2012
Ichetucknee Preservation Research Workshop, *Three Rivers Trust Inc.* 2010

Professional Memberships & Affiliations

American Geophysical Union (AGU)
Geological Society of America (GSA)
European Geosciences Union (EGU)
European Association of Geochemistry (EAG)
Earth Science Women's Network (ESWN)

Outreach and Service

Community Outreach

'Can You Dig It?' outreach event, *Florida Museum of Natural History* & *UF Dept. Geological Sciences*: 2008-2013
Designed & presented an interactive exhibit on 'Florida's Groundwater'; participation >1500.

Santa Fe College (Gainesville, FL): Guest lectured for 3 sections of the Physical Geology Lab on Florida's springs. 2011-2012

UF Geosciences Day campus outreach event, *UF Dept. Geological Sciences*: Proposed, designed & organized 1st and 2nd events. Participation >400. 2011

Westwood Middle School (Gainesville, FL): Taught interactive lecture about Florida's groundwater to eight 6th Grade science classes. 2010

3rd Annual Florida Springs Celebration (Oleno State Park, FL): Exhibited a Florida's Groundwater display. 2010

Service - University of Florida

Hydrologic Sciences Academic Cluster: Faculty Committee Graduate Student Representative 2011-2012

Graduate Student Council: Department Representative 2007-2010