

Mark Cable Rains

Education

Ph.D. (2002), Hydrologic Sciences, UC Davis, Davis, California

M.S. (1994), Forest Resources, University of Washington, Seattle, Washington

B.A. (1990), Ecology, Behavior, and Evolution, UC San Diego, San Diego, California

Additional Short Course Education

Professional Development in Higher Education Leadership Program (2015-2016), University of South Florida, Tampa, Florida (80 Hours)

State University System of Florida Department Chair's Workshop (2015), Mission Inn, Howie-in-the-Hills, Florida (24 Hours)

The Environmental Sampling Field Course (2011), The Nielsen Environmental Field School, Anchorage, Alaska (32 Hours)

Rainwater Harvesting (2010), American Rainwater Catchment Systems Association, Tampa, Florida (16 Hours)

River Morphology and Applications (1996), Wildland Hydrology, Pagosa Springs, Colorado (40 Hours)

Applied Fluvial Geomorphology (1995), Wildland Hydrology, Pagosa Springs, Colorado (40 Hours)

Professional Experience

Professor (2016-current), Associate Professor (2009-2016) & Assistant Professor (2003-2009), School of Geosciences, University of South Florida

Chief Science Officer for the State of Florida (2021-current), Florida Department of Environmental Protection

President (2005-current), Coshow Environmental, Inc., Temple Terrace, Florida

Associate Editor for Watershed and Wetland Hydrology (2015-2023) and for Aquatic Ecology (2011-2015), Journal of the American Water Resources Association

Chair and Director (2015-2021), School of Geosciences, University of South Florida

Vice Chairman, Board of Directors (2015-2018), Lumina Youth Choirs, Tampa, Florida

Chairman, Board of Directors (2013-2015), Tampa Bay Children's Chorus, Temple Terrace, Florida

Member (2013-2014), Science Advisory Board Panel for the Review of the EPA Water Body Connectivity Report, U.S. Environmental Protection Agency

Postgraduate Researcher (2002-2003), Department of Land, Air, and Water Resources, University of California, Davis

Research Assistant (1997-2002), Department of Geology, University of California, Davis

Staff Scientist (1997-2003), David Magney Environmental Consulting, Ojai, California

Research Associate (1995-1996), Smithsonian Environmental Research Center, Edgewater, Maryland

Senior Associate (1996-1997), Associate (1994-1996), & Technical Assistant (1993-

1994), L.C. Lee & Associates, Inc., Seattle, Washington

Research Assistant (1991-1993), College of Forest Resources, University of Washington, Seattle, Washington

**Awards and
Certifications**

Fellow, Society of Wetland Scientists (Inducted 2023)

Fellow, Dr. Kiran C. Patel Center for Global Solutions (Served 2008)

Level I Scientific and Technological Achievement Award, U.S. Environmental Protection Agency (2007)

Level II Scientific and Technological Achievement Award, U.S. Environmental Protection Agency (2009)

Level III Scientific and Technological Achievement Award, U.S. Environmental Protection Agency (2021)

1st Place, Natural Resources/Environment Category, 23rd Annual Future of the Region Awards, Tampa Bay Regional Planning Council (2015)

Silver Telly Award in the Category of Best Use of Animation, Telly Awards (2009)

Professional Wetland Scientist (Certification #1299)

Sigma Xi, The Scientific Research Honor Society

Xi Sigma Pi, National Forestry Honors Society

**Professional
Organizations**

American Association for the Advancement of Science

American Geophysical Union

American Water Resources Association

Association for the Sciences of Limnology and Oceanography

National Groundwater Association

Society of Wetland Scientists

U.S. National Ramsar Committee

**Teaching
Specialization**

I teach a variety of courses in the hydrologic sciences, including interdisciplinary courses which address the interactions between hydrology, geomorphology, ecology, and the human environment.

**Teaching
Accomplishments**

Undergraduate

Course Title: GLY4822C Fluid Earth 2: Hydrogeology

Course Description: Undergraduate lecture/laboratory course in hydrogeology.

Number of Credits: 4

Course Title: GLY4947 Hydrology Field Camp

Course Description: Undergraduate field/laboratory methods course, part of the 6-credit USF Geology Summer Field School.

Number of Credits: 2

Course Title: GLY4930 Hydrology Field Data Analysis Camp

Course Description: Undergraduate data analysis methods courses, part of the 6-credit USF Geology Summer Field School taught online during the pandemic of Summer 2020.

Number of Credits: 1

Course Title: GLY4780 Ecohydrology of Mexican Mangroves

Course Description: Undergraduate field course in which students design and conduct field studies on the structure and function of mangroves and the roles they may play in maintaining traditional fishing and developing ecotourism economies.

Number of Credits: 2

Course Title: GLY4780 Ecohydrology Field Studies

Course Description: Undergraduate field course in which students design and conduct ecohydrology field studies on selected topics.

Number of Credits: 2

Course Title: GLY4930 Water in Society and the Environment

Course Description: Undergraduate reading/discussion course introducing students to the complex relationships among water, society, and the environment.

Number of Credits: 2

Course Title: GLY4930 Water in Grand Canyon

Course Description: Undergraduate lecture/field course covering the effects of water resources development in the American West on the Colorado River in Grand Canyon. The course had two parts: 2 months of lecture/discussion at USF and a 6-day field trip on the Colorado River in Grand Canyon.

Number of Credits: 3

Course Title: GLY4930 Ecohydrology

Course Description: Undergraduate lecture course covering hydrological processes along the atmosphere-plant-soil continuum and the ways in which hydrological processes control ecological structure and function in all ecosystems.

Number of Credits: 3

Course Title: GLY4930 Fluvial Hydrology & Geomorphology

Course Description: Undergraduate lecture course covering the mechanics of open-channel flows, primarily to understand the potential energy available to do work, and the geomorphic responses to work, including channel initiation, sediment transport, and channel adjustment.

Number of Credits: 3

Course Title: GLY4947L Evapotranspiration

Course Description: Undergraduate field/laboratory methods course.

Number of Credits: 1

Graduate

Course Title: GLY6824 Ecohydrology

Course Description: Graduate lecture course covering hydrological processes along the atmosphere-plant-soil continuum and the ways in which hydrological processes control ecological structure and function in all ecosystems.

Number of Credits: 3

Course Title: GLY6573 Fluvial Hydrology & Geomorphology

Course Description: Graduate lecture course covering the mechanics of open-channel flows, primarily to understand the potential energy available to do work, and the geomorphic responses to work, including channel initiation, sediment transport, and channel adjustment.

Number of Credits: 3

Course Title: GLY6492 Hydrogeology Internship

Course Description: Graduate course that administers the Professional Science Master's

capstone internship project.

Number of Credits: 3

Course Title: GLY6739 Topics in Ecohydrology

Course Description: Graduate discussion course facilitating cross-discipline interactions between graduate students across the physical and biological sciences.

Number of Credits: 1

Course Title: GLY6739 Global Biogeochemistry (co-taught with Drs. Jonathan Wynn, Matt Pasek, Tom Crisman, and Kathleen Scott)

Course Description: Graduate lecture course in biogeochemistry.

Number of Credits: 4

Course Title: GLY6739 Ecohydrology of Mexican Mangroves

Course Description: Graduate field course in which students design and conduct field studies on the structure and function of mangroves and the roles they may play in maintaining traditional fishing and developing ecotourism economies.

Number of Credits: 2

Course Title: GLY6739 Water in Society and the Environment

Course Description: Graduate reading/discussion course introducing students to the complex relationships among water, society, and the environment.

Number of Credits: 2

Course Title: GLY6739 Water in Grand Canyon

Course Description: Graduate lecture/field course covering the effects of water resources development in the American West on the Colorado River in Grand Canyon. The course had two parts: 2 months of lecture/discussion at USF and a 6-day field trip on the Colorado River in Grand Canyon.

Number of Credits: 3

Course Title: GLY6739 Scientific Writing

Course Description: Graduate lecture/discussion course focused on scientific writing, especially writing successful proposals.

Number of Credits: 3

**Additional Short
Courses Taught**

Hydrogeomorphic Approach to Assessing Wetland Function (2009), Jicarilla Apache Natural Resource Department, Durango, Colorado

Hydrogeomorphic Approach to Assessing Wetland Function (2005), Jicarilla Apache Natural Resource Department, Durango, Colorado

Ecology and Management of Vernal Pool Grasslands (2003), UC Davis Extension, Davis, California

Understanding Riparian Processes (2002), UC Davis Extension, Davis, California

The Hydrogeomorphic Approach to Assessment of Functions of Waters of the U.S., Including Wetlands, in the Kenai River Watershed (1997), National Wetland Science Training Cooperative, Soldatna, Alaska

The Hydrogeomorphic Approach to Assessment of Functions of Waters of the U.S., Including Wetlands, on the Central California Coast (1996), National Wetland Science Training Cooperative, San Francisco, California

The Hydrogeomorphic Approach to Assessment of Functions of Waters of the U.S., Including Wetlands, in the Santa Margarita Watershed, California (1994), National Wetland Science Training Cooperative, Temecula, California

**Research
Specialization**

My research is focused on hydrological connectivity from ridges to reefs, especially between hillslopes, wetlands, and headwater streams; the roles that hydrological processes play in governing ecosystem structure and function; and the roles that science plays in informing water-related law, policy, and decision-making.

**Peer-Reviewed
Publications [Boldface
indicates me or
students whom I have
advised]**

Articles and Book Chapters

Balerna JA, Kramer AM, Landry SM, **Rains MC**, Lewis DB (In Review) Wetland hydrological change and recovery across three decades of shifting groundwater management. *Journal of Hydrology*

Kleindl W, Stoy P, Kerins F, **Rains M** (In Review) Integrating variance into ecological assessment: a practical application of Modern Portfolio Theory. *Ecological Applications*

Kleindl W, Church SP, **Rains MC**, Ulrich R (In Press) Choosing the right tool: a comparative study of wetland assessment approaches. *Wetlands*

Tarabih OM, Arias ME, Santos AL, Hua J, Cooper RZ, Khanal A, Dang TD, Khare YP, Charkhgard H, **Rains MC**, Zhang Q (2024) Effects of the spatial distribution of best management practices for watershed wide nutrient load reduction. *Journal of Ecological Engineering* 201:107211

Laanbroek HJ, **Rains MC**, Verhoeven JTA, Whigham DF (2024) The effect of intentional summer flooding for mosquito control on the nitrogen dynamics of impounded *Avicennia germinans* mangrove forests. *Scientific Reports* 14:2165

Lawlor S, Rains K, Landry S, **Rains M** (2023) Forensic wetland and deepwater habitat mapping for setting pre-development conditions. *Wetland Science and Practice* October 2023

Rains M, **Schmidt K**, Landry S, Kleindl W, Rains K (2023) Reorganizing the waterscape: asymmetric loss of wetlands and gain of artificial water features in a mixed-use watershed. *Wetlands* 43:91

Dang TD, Arias M, Tarabih O, Philips EJ, Ergas SJ, **Rains MC**, Zhang Q (2023) Modeling temporal and spatial variations of biogeochemical processes in a large subtropical lake: assessing alternative solutions to algal blooms in Lake Okeechobee, Florida. *Journal of Hydrology: Regional Studies* 47:101441

Guerrón-Orejuela E, Rains K, **Brigino T**, Kleindl W, Landry S, Spellman P, Walker C, **Rains M** (2023) Mapping groundwater recharge potential in high latitude landscapes using public data, remote sensing, and analytic hierarchy process. *Remote Sensing* 15:2630

Leibowitz SG, Hill RA, Creed IF, Compton JE, Golden HE, Weber MH, **Rains MC**, Jones, Jr, CE, Lee EH, Christensen JR, Bellmore RA, Lane CR (2023) National hydrologic connectivity classification links wetlands with stream water quality. *Nature Water* 1:370-380

Stepchinski LM, **Rains MC**, Lee LC, Lis RA, Nutter WL, Rains KC, Stewart SR (2023) Hydrologic connectivity and flow generation from California vernal pool, swale, and headwater stream complexes to downstream waters. *Wetlands* 43:34

Balerna J, Kramer AM, Landry SM, **Rains MC**, Lewis DB (2023) Synergistic effects of drought and groundwater extraction on freshwater wetland inundation. *Journal of Environmental Management* 337:117690

Lane CR, Creed IF, Golden HE, Leibowitz SG, Mushet DM, **Rains MC**, Wu Q, D'Amico E, Alexander LC, Ali GA, Basu NB, Bennett MG, Christensen JR, Cohen MJ, Covino TP,

DeVries B, Hill RA, Jencso K, Lang MW, McLaughlin DL, Rosenberry DO, Rover J, Vanderhoof MK. (2023) Vulnerable waters are essential to watershed resilience. *Ecosystems* 26:1-28

Chen W, Thorslund J, Nover DM, **Rains MC**, Li X, Xu B, He B, Su H, Yen H, Liu L, Yuan H, Jarsjö J, Viers JH (2022) A typological framework of non-floodplain wetlands for global collaborative research and sustainable use. *Environmental Research Letters* 17:113002

Nowicki RS, Rains MC, LaRoche JJ, Downs CM, Kruse SE (2022) The peculiar hydrology of west-central Florida's sandhill wetlands, ponds, and lakes – Part 2: hydrogeologic controls. *Wetlands* 42:1-17

Gerlach ME, Rains KC, **Guerrón-Orejuela EO**, Kleindl WJ, Downs J, Landry SM, **Rains MC** (2022) Using remote sensing and machine learning to locate groundwater discharge to salmon-bearing streams. *Remote Sensing* 14:63

Flower H, **Rains M**, **Taşcı Y**, Zhang J-Z, Trout K, Lewis DB, Das A, Dalton R (2022) Why is calcite a strong phosphorus sink in freshwater? Investigating the adsorption mechanism using batch experiments and surface complexation modeling. *Chemosphere* 286:131596

Nowicki RS, Rains MC, LaRoche JJ, Pasek MA (2021) The peculiar hydrology of west-central Florida's sandhill wetlands, ponds, and lakes – Part 1: physical & chemical evidence of connectivity to a regional water-supply aquifer. *Wetlands* 41:113

Lewis DB, Jimenez KL, Abd-Elrahman A, Andreu M, Landry SM, Northrop RJ, Campbell C, Flower H, **Rains MC**, Richards CL (2021) Total and mobile fractions of carbon and nitrogen in surface soils across a mangrove salt marsh ecotone. *Science of the Total Environment* 798:149328

Walker CM, Whigham DF, Bentz S, Argueta J, King RS, **Rains MC**, Simenstad C, Guo C, Baird SJ, Field C (2021) Linking landscape attributes to salmon and decision-making in the southern Kenai Lowlands, Alaska, USA. *Ecology and Society* 26:1

Kingsford RT, Catford JA, **Rains MC**, Robson B, Keith DA (2020). TF1.3 Permanent marshes. In: Keith DA, Ferrer-Paris JR, Nicholson E, Kingsford RT (eds.). *The IUCN Global Ecosystem Typology 2.0: Descriptive profiles for biomes and ecosystem functional groups*. IUCN, Gland, Switzerland

Keith DA, Kingsford RT, Mac Nally R, Robson B, Catford JA, **Rains MC**, Irvine K, Rodriguez-Clark KM, Etter A (2020). TF1.4 Seasonal floodplain marshes. In: Keith DA, Ferrer-Paris JR, Nicholson E, Kingsford RT (eds.). *The IUCN Global Ecosystem Typology 2.0: Descriptive profiles for biomes and ecosystem functional groups*. IUCN, Gland, Switzerland

Kingsford RT, Mac Nally R, Giller PS, **Rains MC**, Kelly-Quinn M, Arthington AH, Keith DA (2020). F1.1 Permanent upland streams. In: Keith DA, Ferrer-Paris JR, Nicholson E, Kingsford RT (eds.). *The IUCN Global Ecosystem Typology 2.0: Descriptive profiles for biomes and ecosystem functional groups*. IUCN, Gland, Switzerland

Kingsford RT, Mac Nally R, Giller PS, **Rains MC**, Arthington AH, Keith DA (2020). F1.2 Permanent lowland rivers. In: Keith DA, Ferrer-Paris JR, Nicholson E, Kingsford RT (eds.). *The IUCN Global Ecosystem Typology 2.0: Descriptive profiles for biomes and ecosystem functional groups*. IUCN, Gland, Switzerland

Kingsford RT, Mac Nally R, **Rains MC**, Robson B, Irvine K, Keith DA (2020). F2.3 Seasonal freshwater lakes. In: Keith DA, Ferrer-Paris JR, Nicholson E, Kingsford RT (eds.). *The IUCN Global Ecosystem Typology 2.0: Descriptive profiles for biomes and ecosystem functional groups*. IUCN, Gland, Switzerland

Sullivan SMP, **Rains M**, Rodewald AD, Buzbee WW, Rosemond AD (2020) Distorting science, putting water at risk. *Science* 369:766-768

Mihelcic JR, **Rains M** (2020) Where's the science? Recent changes to Clean Water Act threaten wetlands and thousands of miles of our Nation's rivers and streams. *Environmental Engineering Science* 37:173-177

Neff BP, Rosenberry DO, Leibowitz SG, Mushet DM, Golden HE, **Rains MC**, Brooks JR, Lane CR (2020) A hydrologic landscapes perspective on groundwater connectivity of depressional wetlands. *Water* doi:10.3390/w12010050

Flower H, **Rains M**, Fitz HC, Orem W, Obeysekera J, Newman S, Reddy KR, Osborne TZ (2019) Shifting ground: Landscape-scale modeling of soil biogeochemistry under climate change in the Florida Everglades. *Environmental Management* 64:416-435

Sullivan SMP, **Rains M**, Rodewald AD (2019) The proposed change to the definition of "waters of the United States" flouts sound science. *Proceeding of the National Academy of Sciences* 116:11558-11561

Powell KM, Wynn JG, **Rains MC**, Stewart MT, and Emery S (2018) Soil indicators of hydrologic health and resilience in cypress domes of west-central Florida. *Ecological Indicators* 97:269-279

Thorslund J, Cohen MJ, Jawitz JW, Destouni G, Creed IF, **Rains MC**, Badiou P, and Jarsjö J (2018) Solute evidence for hydrological connectivity of geographically isolated wetlands. *Land Degradation and Development* 29:3954-3962

Creed IF, Lane CL, Alexander L, Basu NB, Calhoun A, Cohen MJ, Craft C, D'Amico E, DeKeyser E, Fowler L, Golden HE, Jawitz JW, Kalla P, Kirkman LK, Lang M, Leibowitz SG, Lewis DB, Marton J, McLaughlin DL, Raanan-Kiperwas H, **Rains MC**, Rains KC, Smith L, Serran JN (2017) Enhancing protections for vulnerable waters. *Nature Geoscience* 10:809-815

Flower H, **Rains M**, Fitz C (2017) Visioning the Future: Scenarios modeling of the Florida Coastal Everglades. *Environmental Management* 60:989-1009

Golden, HE, Creed IF, Ali G, Basu NB, Neff BP, **Rains MC**, McLaughlin DL, Alexander LC, Ameli AA, Christensen JR, Evenson GR, Jones CN, Lane CR, Lang M (2017) Integrating geographically isolated wetlands into land management decisions. *Frontiers in Ecology and the Environment* 15:319-327

Hiatt DL, Robbins CJ, Back JA, Kostka PK, Doyle RD, Walker CM, **Rains MC**, Whigham DF, King RS (2017) Catchment scale alder cover controls nitrogen fixation in boreal headwater streams. *Freshwater Science* 36:523-532

Rains MC, Cohen MJ, Golden HE, Rains KC (2017) Connecting the dots: hydrologic connectivity between wetlands and other wetlands and waterbodies. *Water Resources IMPACT* 19:9-10

Flower HD, **Rains MC**, Lewis DB, Zhang J-Z (2017) Rapid and intense phosphate desorption kinetics when saltwater intrudes into carbonate rock. *Estuaries and Coasts* 40:1301-1313

Calhoun ALK, Mushet DM, Alexander LC, DeKeyser ES, Fowler L, Lane CR, Lang MW, **Rains MC**, Richter SC, Walls SC (2017) The significant surface-water connectivity of "geographically isolated wetlands". *Wetlands* 37:801-806

Callahan MK, Whigham DF, **Rains MC**, Rains KC, King RS, Walker CM, Maurer J, Baird SJ (2017) Nitrogen subsidies from hillslope alder stands to streamside wetlands and headwater streams, Kenai Peninsula, Alaska. *Journal of the American Water Resources*

Association 53:478-492

Flower H, Rains M, Lewis D, Zhang J-Z, Price R (2017) Saltwater intrusion as potential driver of phosphorus release from limestone bedrock in a coastal aquifer. *Estuarine, Coastal and Shelf Science* 184:166–176

Cohen MJ, Creed IF, Alexander L, Basu N, Calhoun A, Craft C, D'Amico E, DeKeyser E, Fowler L, Golden HE, Jawitz JW, Kalla P, Kirkman LK, Lane CR, Lang M, Leibowitz SG, Lewis DB, Marton J, McLaughlin DL, Mushet D, Raanan-Kiperwas H, **Rains MC**, Smith L, Walls S (2016) Do geographically isolated wetlands impact landscape functions? *Proceedings of the National Academy of Sciences* 113:1978–1986

Flower H, Rains MC, Lewis DB, Zhang J-Z, Price R (2016) Control of phosphorus concentration through adsorption and desorption in shallow groundwater of subtropical carbonate estuary. *Estuarine, Coastal and Shelf Science* 169:238–247

Rains MC, Leibowitz SG, Cohen MJ, Creed IF, Golden HE, Jawitz JW, Kalla P, Lane CR, Lang MW, McLaughlin DL (2016) Geographically isolated wetlands are part of the hydrological landscape. *Hydrological Processes* 30:153–160

Kleindl WJ, Rains MC, Marshall L, Hauer FR (2015) Fire and flood expand the floodplain Shifting Habitat Mosaic concept. *Freshwater Science* 34:1366–1382

Mushet DM, Calhoun AJK, Alexander LC, Cohen MJ, DeKeyser ES, Fowler L, Lane CR, Lang MW, **Rains MC**, Walls SC (2015) Geographically isolated wetlands: rethinking a misnomer. *Wetlands* 35:423–431

Callahan MK, Rains MC, Bellino JC, Walker CM, Baird SJ, Whigham DF, King RS (2015) Controls on temperature in salmonid-bearing headwater streams in two common hydrogeologic settings, Kenai Peninsula, Alaska. *Journal of the American Water Resources Association* 51:84–98

Ross M, Stewart M, Trout K, **Rains M** (2014) Hydrology of a Clay Settling Area. Publication No. 03-150-251. Florida Industrial and Phosphate Research Institute, Bartow, Florida

Verhoeven JTA, Laanbroek HJ, **Rains MC**, Whigham DF (2014) Effects of increased summer flooding on nitrogen dynamics in impounded mangroves. *Environmental Management* 139:217–226

Rains MC, Landry S, Rains KC, Seidel V, Crisman TL (2013) Using net wetland loss, current wetland condition, and planned future watershed condition for wetland conservation planning and prioritization, Tampa Bay Watershed, Florida. *Wetlands* 33:949–963

Nilsson KA, **Rains MC**, Lewis DB, Trout KE (2013) Hydrologic characterization of 56 geographically isolated wetlands in west-central Florida using a probabilistic method. *Wetland Ecology and Management* 21:1–14

Vacher HL, Juster T, McIlrath J, **Rains M** (2012) Geology of National Parks Modules for the Spreadsheets Across the Curriculum Library. In Weber, S. (Ed.), *Proceedings of the 2011 George Wright Society Conference on Parks, Protected Areas, and Cultural Sites*. The George Wright Society, Hancock, Michigan

Rains MC (2011) Water sources and hydrodynamics of closed-basin depressions, Cook Inlet Region, Alaska. *Wetlands* 31:377–387

Hammersmark CT, Dobrowski S, **Rains MC**, Mount JF (2010) Simulated effects of stream restoration on the distribution of wet-meadow vegetation. *Restoration Ecology* 18:882–893

- Kleindl W, **Rains MC**, Hauer FR (2010) HGM is a rapid assessment: Clearing the confusion. *Wetland Science and Practice* 27:17–22
- Stringer CE, Rains MC**, Kruse S, Whigham D (2010) Controls on water levels and salinity in a barrier island mangrove, Indian River Lagoon, Florida. *Wetlands* 30:725–734
- Exner-Kittridge MG, Rains MC** (2010) A case study on the accuracy and cost/effectiveness in simulating reference evapotranspiration in west-central Florida. *Journal of Hydrologic Engineering* 15:696–703
- Kish GR, **Stringer CE**, Stewart MT, **Rains MC**, Torres AE (2010) A Geochemical Mass-Balance Method for Base-Flow Separation, Upper Hillsborough River Watershed, West-Central Florida, 2003-2005 and 2009. U.S. Geological Survey Scientific Investigations Report 2010–5092. US Government Printing Office, Washington, DC
- Stein ED, Brinson M, **Rains MC**, Kleindl W, Hauer FR (2010) A response to Tom Hruby. (Response to “A reply by Tom Hruby” to “Wetland assessment alphabet soup: How to choose (or not choose) the right assessment method”, *Wetland Science and Practice* 26:20–24.) *Wetland Science and Practice* 27:8–9
- Stein ED, Brinson M, **Rains MC**, Kleindl W, Hauer FR (2009) Wetland assessment alphabet soup: How to choose (or not choose) the right assessment method. *Wetland Science and Practice* 26:20–24
- Hammersmark CT, Rains MC**, Wickland AC, Mount JF (2009) Vegetation – water-table relationships in a hydrologically-restored riparian meadow. *Wetlands* 29:785–797
- Atkinson R, Brooks R, Cole A, Craft C, Brinson B, Mitsch WJ, Perry JE, **Rains M**, Rickerl DH, Shannon R, Teal J, Wardrop D, Warner B (2008) Why Become a Certified SWS-Professional Wetland Scientist: a perspective from the academic world. *Wetlands* 28:1104-1105
- Murphy KE, Rains MC, Kittridge MG**, Stewart M, Ross MA (2008) Hydrological connectivity between clay settling areas and surrounding hydrological landscapes in the phosphate mining district, peninsular Florida, USA. *Journal of the American Water Resources Association* 44:980–995
- Rains MC**, Dahlgren RA, Williamson RJ, Fogg GE, Harter T (2008) Geological control of physical and chemical hydrology in vernal pools, Central Valley, California. *Wetlands* 28:347–362
- Hammersmark CT, Rains MC**, Mount JF (2008) Quantifying the hydrologic effects of stream restoration in a montane meadow environment. *River Research and Applications* 24:735–753
- Leibowitz SG, Wigington, Jr. PJ, **Rains MC**, Downing DM (2008) Non-navigable streams and adjacent wetlands: addressing science needs following the Supreme Court's Rapanos decision. *Frontiers in Ecology and Environment* 6:364–371
- Nadeau T-L, **Rains MC** (2007) Contribution of headwaters to downstream integrity: Introduction to the JAWRA special issue. *Journal of the American Water Resources Association* 43:1–4
- Nadeau T-L, **Rains MC** (2007) Hydrological connectivity between headwater streams and downstream waters: how science can inform policy. *Journal of the American Water Resources Association* 43:118–133
- Rains MC**, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2006) Geological control of physical and chemical hydrology in vernal pool wetlands, Central Valley, California. In Kovar, K, Z. Hrkal, and J. Bruthans (Eds.), *Hydrology and Ecology: The Groundwater/Ecology Connection*, 25-28. Czech Association of Hydrogeologists,

Prague, Czech Republic

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2006) The role of perched aquifers in hydrological connectivity and biogeochemical processes in vernal pool landscapes, Central Valley, California. *Hydrological Processes* 20:1157–1175

Rains MC, Mount JF, Larsen EW (2004) Local shallow groundwater drawdown and baseflow cessation due to regional groundwater pumping. In Lowrance, R. (Ed.), *Riparian Ecosystems and Buffers: Multi-Scale Structure, Function, and Management*. American Water Resources Association, Middleburg, Virginia, TPS-04-2, CD-ROM

Rains MC, Mount JF, Larsen EW (2004) Simulated changes in shallow groundwater and vegetation distributions under different reservoir operations scenarios. *Ecological Applications* 14:192–207

Rains MC (2003) Hydrogeologic principles useful in predicting the effects of stream flow alterations on shallow groundwater and associated riparian vegetation. *Stream Notes* July:3–6

Rains MC (2003) The role of groundwater in resource conservation efforts. *Conservation Biology* 17:933–934

Rains MC, Mount JF (2002) Origin of shallow ground water in an alluvial aquifer as determined by isotopic and chemical procedures. *Ground Water* 40:552–563

Rains MC (2000) Avoiding an Ozymandian fate. *Conservation Biology* 14:587–588

Whigham DF, Lee LC, Brinson MM, Rheinhardt RD, **Rains MC**, Mason JA, Kahn H, Ruhlman MB, Nutter WB (1999) Hydrogeomorphic (HGM) assessment - a test of user consistency. *Wetlands* 19:560–569

Edited Volumes

Nadeau T-L, **Rains MC** (Eds.) (2007) Featured Collection: Headwaters Hydrology. *Journal of the American Water Resources Association* 43

Theses and Dissertations

Rains MC (2002) Surface and Ground-Water Origins and Interactions and Vegetation Distributions in Riverine and Reservoir-Fringe Systems: A Case Study in Support of Reservoir Management Efforts. Ph.D. Dissertation, University of California, Davis, California

Rains MC (1994) Plant Community Structure Along Environmental Gradients Defined by Hydrology, Redox Potential, and Shade in Pacific Northwest Palustrine Wetlands. M.S. Thesis, College of Forest Resources, University of Washington, Seattle, Washington

**Peer-Reviewed
Published Teaching
Materials [Boldface
indicates me or
students whom I have
advised]**

Rains MC, Vacher L (2012) What is the Discharge of the Congaree River at Congaree National Park? Spreadsheets Across the Curriculum, Module SSACgnp.GB.MCR1.4. Tampa: University of South Florida Libraries

Vacher L, **Rains MC**, Norris M (2011) Nitrate levels in the Rock Creek Park Watershed, Washington, DC, 2: Variability. Spreadsheets Across the Curriculum, Module SSACgnp.TD367.LV1.10. Tampa: University of South Florida Libraries

Rains MC, Vacher L, Norris M (2011) Nitrate levels in the Rock Creek Park Watershed, Washington, DC, 1: Measures of Central Tendency. Spreadsheets Across the Curriculum, Module SSACgnp.TD367.MCR1.5. Tampa: University of South Florida Libraries

Rains MC (2010) Salmon use of geomorphically restored streams at Point Reyes

National Seashore. Spreadsheets Across the Curriculum, Module SSACgnp.GB661.MCR1.3. Tampa: University of South Florida Libraries

Rains MC (2010) Comparing stream discharge in two watersheds in Glacier National Park. Spreadsheets Across the Curriculum, Module SSACgnp.GB661.MCR1.2. Tampa: University of South Florida Libraries

Rains MC, Shelley DC, Vacher L (2009) Flood days and good canoeing days at Congaree National Park. Spreadsheets Across the Curriculum, Module SSACgnp.GB.MCR1.1. Tampa: University of South Florida Libraries

**Non-Peer-Reviewed
Technical Reports
[Boldface indicates
me or students whom
I have advised]**

Brigino T, Guerrón-Orejuela E, Rains K, Bentz S, **Rains M** (2023) City of Homer Reservoir Project: Groundwater Study. Ecohydrology Research Group Report # 2023-01/Final Report Agreement # 069687242. University of South Florida, Tampa, FL.

Amici Curiae, Brief for Aquatic Scientists and Scientific Societies as *Amici Curiae* in Support of Respondents, *County of Maui, Petitioner, v. Hawai'i Wildlife Fund; Sierra Club-Maui Group; Surfrider Foundation; West Maui Preservation Association, Respondents* (2020)

Lee LC, Lis RA, Nutter WL, **Rains MC**, Stewart SR (2018) U.S. Expert Team Report for the Tehama North Site, Tehama County, California. US Department of Justice, Washington, DC

University of South Florida School of Geosciences (2016) Assistance to Develop Methods for the Ecohydrologic Classification and Assessment of Northern Tampa Bay and Northern District Sandhill and Xeric Wetland and Lake Types. University of South Florida, School of Geosciences, Tampa, Florida

Lee LC, Lis RA, Nutter WL, **Rains MC**, Stewart SR, Hurst WC (2015) U.S. Department of Justice Expert Team Report, US Army Corps of Engineers/United States v. Duarte Nursery, Inc. et al. US Department of Justice, Washington, DC

Rains KC, **Rains MC** (2015) Mangrove and Mangrove-Fringe Wetlands in Ostional, Nicaragua: Current Conditions and Pathways Forward. University of South Florida, School of Geosciences, Tampa, Florida

Lee LC, Lis RA, Nutter WL, **Rains MC**, Stewart SR, Hurst WC (2015) US Department of Justice Expert Team Report: Duarte Nursery, Inc. et al US Army Corps of Engineers/United States v. Duarte Nursery, Inc. et al. Prepared for the Environment and Natural Resource Defense Section, U.S. Department of Justice, Washington, DC

Rodewald AD, Aldous A, Ali G, Allan JD, Benda L, Bernhardt ES, Brooks RP, Fausch K, Fennessy S, Gooseff M, Harvey J, Hawkins C, Johnson LB, Josselyn M (Resigned prior to publication), Kalin L, Kolm K, Meyer JL, Murphy M, Patten D, **Rains M**, Reddy R, Rosi-Marshall E, Stanford J, Sullivan M, Tank J, Valett M, Wohl E (2014). SAB Review of the Draft EPA Report Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence. Prepared for the U.S. Environmental Protection Agency, Washington, DC

Rains MC, Landry S, Crisman T, Seidel V (2012) Prioritizing Habitat Restoration Goals in the Tampa Bay Watershed. Technical Publication #10-12 of the Tampa Bay Estuary, St. Petersburg, Florida

Rains MC, Rains KC, Kleindl WJ, Landry S, Crisman TL, Brown A, van Maurik L (2011) Wetland Inventory and Evaluation, St. Lucie County, Florida. Prepared for St. Lucie County, Fort Pierce, Florida

Three Parameters Plus and Coshow Environmental (2010) Baseline Physical Habitat

Conditions of Wetlands in Snake Valley, Utah. Final Report: Volume 1. Prepared for the Utah Department of Natural Resources, Salt Lake City, Utah

Three Parameters Plus and Coshow Environmental (2010) Baseline Physical Habitat Conditions of Wetlands in Snake Valley, Utah. Final Report: Volume 2. Prepared for the Utah Department of Natural Resources, Salt Lake City, Utah

Bauder ET, Bohonak AJ, Hecht B, Simovich MA, Shaw D, Jenkins DG, **Rains M** (2009) A Draft Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetland Functions of Vernal Pool Depressional Wetlands in Southern California. San Diego State University, San Diego, California

Walker C, King R, **Rains MC**, Whigham D, Baird S, **Bellino J** (2009) Headwater Stream Wetland Settings and Shallow Ground Water Influence: Relationships to Juvenile Salmon Habitat on the Kenai Peninsula, Alaska. U.S. EPA Region 10 Wetland Program Development Program Final Report

Rains MC (2009) Preliminary Report on Water Levels in Various Habitats in Barrier Island Mangroves, Indian River Lagoon, Florida. Prepared for the Smithsonian Environmental Research Center, Edgewater, Maryland

Rains MC (2008) Preliminary Report on Water Levels in Various Habitats in Barrier Island Mangroves, Indian River Lagoon, Florida. Prepared for the Smithsonian Environmental Research Center, Edgewater, Maryland

Kleindl WJ, **Rains MC**, Hauer FR, Doskocil J, White J (2008) Jicarilla Rapid Assessment of Functions (JRAF): A Protocol for the Rapid Assessment of Functions on Riverine Floodplains in the San Juan River System. Prepared for the Jicarilla Apache Nation, Dulce, New Mexico

Ross M, Stewart M, Trout K, **Rains M** (2008) Hydrology of a Clay Settling Area: Interim Report (FIPR Project No. 03-03-150S). Prepared for the Florida Institute of Phosphate Research, Bartow, Florida

Rains MC (2008) Preliminary Report on the Chemical Hydrology of Surface Water and Groundwater in Barrier Island Mangroves, Indian River Lagoon, Florida. Prepared for the Smithsonian Environmental Research Center, Edgewater, Maryland

Rains MC (2007) Preliminary Report on the Surface-Water and Groundwater Interactions in Small Pools on the Pebble Property, South-Central Alaska. Prepared for Three Parameters Plus, Inc., Palmer, Alaska

Rains MC (2007) Surface and Shallow Subsurface Hydrogeology of Four Sites at the Donlin Creek Gold Project, Interior Alaska. Prepared for Three Parameters Plus, Inc., Palmer, Alaska

Larsen EW, **Rains MC** (2006) Meander Migration Model Assessment for the 50- And 100-Year Storms, Whitman Property, San Antonio Creek, Ventura County, California. Prepared for Mr. John Whitman, Ojai, California

Larsen EW, **Rains MC** (2006) Meander Migration Model Assessment for the January 2005 Storm, Whitman Property, San Antonio Creek, Ventura County, California. Prepared for Mr. John Whitman, Ojai, California

Williamson RJ, Fogg GE, **Rains MC**, Harter T (2005) Hydrology of Vernal Pools at Three Sites, Southern Sacramento Valley (FHWA/CA/IR-2004/08). Prepared for the California Department of Transportation. Sacramento, California

Lee LC, Fiedler PL, Stewart SR, Partridge DJ, Mason JA, Inlander EM, **Rains MC** (2004) Draft Operational Guidebook for Assessment of the Functions of Riverine Waters/Wetlands in the Santa Margarita Watershed, Riverside & San Diego Counties,

California. San Diego Regional Water Quality Control Board, Technical Publication. San Diego, California

David Magney Environmental Consulting (2002) Bankfull Discharge, Slope, and Bed-Material Particle Size on a Sand-Bed Stream in a Semi-Arid Region: Conejo Creek at Winding Brook Farm, Camarillo, California. (PN 00-0161). Prepared for the California State Coastal Conservancy, Oakland, California

David Magney Environmental Consulting with Parametrix (2001) Surface and Ground Water Interactions Between the Jemez River, Jemez Canyon Reservoir, and the Shallow Alluvial Aquifer. (PN 01-0211). Prepared for the Pueblo of Santa Ana, Bernalillo, New Mexico

David Magney Environmental Consulting (2001) General Geology, Hydrology, and Soils of the Ojai Meadows Preserve, Ojai, California. (PN 00-0031). Prepared for the Ojai Valley Land Conservancy, Ojai, California

David Magney Environmental Consulting with GeoInsight International, Secor International, and Wildlands (2000) Calleguas Creek Watershed Restoration and Preservation Plan. (PN 97-0141). Prepared for the California Coastal Conservancy, Oakland, California and U.S. Environmental Protection Agency (Region IX), San Francisco, California

David Magney Environmental Consulting (2000) Wetland Restoration Plan and Monitoring Program for the Reinke Property, Rolling Oaks Drive, Thousand Oaks, California. (PN 00-0132). Prepared for the U.S. Army Corps of Engineers, Ventura, California and the California Department of Fish and Game, Ventura, California

David Magney Environmental Consulting (1999) Revegetation and Monitoring Plan: Ventura River at State Route 150. (PN-98-0171). Prepared for the Ojai Valley Sanitary District, Ojai, California

David Magney Environmental Consulting (1999) Harrison Property Bank Stabilization Assessment on San Antonio Creek, Ojai Valley, California. (PN 99-0081). Prepared for the U.S. Army Corps of Engineers, Ventura, California

Lee LC, **Rains MC**, Cassin JL, Stewart SR, Post R, Brinson M, Clark M, Hall J, Hollands G, LaPlant D, Nutter W, Powell J, Rockwell T, Whigham D (1999) Operational Draft Guidebook for Reference Based Functional Assessment of the Functions of Precipitation-Driven Wetlands on Discontinuous Permafrost in Interior Alaska. State of Alaska Department of Environmental Conservation/U.S. Army Corps of Engineers Waterways Experiment Station Technical Report Number WRP-DE-____, Juneau, Alaska

Lee LC, Butterwick ML, Cassin JL, Leidy RA, Mason JA, **Rains MC**, Shaw LE, White EG (1997) A Report on Assessment of the Functions of Waters of the United States, Including Wetlands, on the Borden Ranch, Sacramento and San Joaquin Counties, California. Prepared for the U.S. Environmental Protection Agency (Region IX), San Francisco, California

Lee LC, Butterwick ML, Cassin JL, Leidy RA, Mason JA, **Rains MC**, Shaw LE, White EG (1997) A Draft Guidebook for Assessment of the Functions of Waters of the U.S., Including Wetlands, on the Borden Ranch, Sacramento and San Joaquin Counties, California. Prepared for the U.S. Environmental Protection Agency (Region IX), San Francisco, California

Lee LC, Brinson MM, DeWald D, Gilbert M, Kleindl WJ, Nutter WL, **Rains MC**, Whigham DF, Whited M (1997) Operational Draft Guidebook to HGM Functional Assessments in Temporary and Seasonal Depressional Waters/Wetlands in the Northern Prairie Pothole Region. Prepared for the Natural Resources Conservation Service, Washington, DC

L.C. Lee & Associates (1997) 1996 Monitoring Report: International Paper, Ticonderoga, New York. Prepared for International Paper, Ticonderoga, New York

Lee LC, **Rains MC**, Mason JA, Kleindl WJ (1996) Draft Guidebook to HGM Functional Assessments in 3rd and 4th Order Riverine Waters/Wetlands of the Central California Coast. Prepared for the U.S. Environmental Protection Agency (Region IX), San Francisco, California

L.C. Lee & Associates (1996) Final Mitigation and Monitoring Plan: University of Washington-Bothell/Cascadia Community College Collocated Campus. Prepared for the Washington State Higher Education Coordinating Board, Olympia, Washington

L.C. Lee & Associates (1996) 1995 Monitoring Report: International Paper, Ticonderoga, New York. Prepared for International Paper, Ticonderoga, New York

L.C. Lee & Associates (1995) An Analysis of the Distribution and Jurisdictional Status of Waters of the United States, Including Wetlands, at the Proposed University of Washington-Bothell/Cascadia Community College Collocated Campus Site. Prepared for the Washington State Higher Education Coordinating Board, Olympia, Washington

L.C. Lee & Associates (1995) 1994 Monitoring Report: International Paper, Ticonderoga, New York. Prepared for International Paper, Ticonderoga, New York

Lee LC, Brinson MM, Nutter WL, **Rains MC**, Olsen EA, MacLeod NA (1994) A Preliminary Framework for Assessing the Waters of the U.S., Including Wetlands, in the Santa Margarita Watershed, Riverside and San Diego Counties, California. Prepared for the U.S. Environmental Protection Agency (Region IX), San Francisco, California

Presentations and Posters [Boldface indicates me or students whom I have advised]

National and International Meetings

Rains M, Schmidt K, Landry S, Kleindl W, Rains K (2023) Reorganizing the Waterscape: Asymmetric Loss of Wetlands and Gain of Artificial Water Features in a Mixed-Use Watershed. American Geophysical Union Annual Meeting, San Francisco, California

Brigino T, Rains K, **Rains M**, **Guerrón-Orejuela E**, Bentz S, Walker C (2023) Groundwater Support in Streamflow and Stream Temperature in Non-Glacial, Salmon-Bearing Streams in South-Central Alaska. American Geophysical Union Annual Meeting, San Francisco, California

Guerrón-Orejuela EJ, Rains KC, **Brigino TM**, Kleindl WJ, Landry SM, Spellman P, Walker CM, **Rains MC** (2023) Mapping Groundwater Recharge Potential in High Latitude Landscapes Using Public Data, Remote Sensing, and Analytic Hierarchy Process. American Geophysical Union Annual Meeting, San Francisco, California

Lee E, Rains M, Rains K, **Brigino T**, Sutton L (2023) Forecasting Groundwater Temperature Using Historical and Projected Data in The Kenai Peninsula Lowlands, Alaska. American Geophysical Union Annual Meeting, San Francisco, California

Arias M, Dang T, Tarabih O, Philips E, Ergas S, **Rains M**, Zhang Q (2023) Assessing Nutrient Management Alternatives to Algal Blooms in Lake Okeechobee Through Complex Hydrodynamic and Biogeochemical Modeling. American Geophysical Union Annual Meeting, San Francisco, California

Rains M (2023) PLENARY: Landscape Support for Salmonids: Transforming Science into Outcomes in Alaska. Society of Wetland Scientists 2023 Annual Meeting, Spokane, Washington

Rains M, Fransbergen S, Rains K, Fouad G (2023) The Flow-Pulse Concept: Spatial and Temporal Variability in Connectivity in Stream-Wetland Flow Networks. Society of

Wetland Scientists 2023 Annual Meeting, Spokane, Washington

Stepchinski LM, Spellman P, **Rains M** (2023) Influence of Topology on the Hydrologic Connectivity and Natural Flow Regimes of Archetypal Headwater Wetlandscapes. Society of Wetland Scientists 2023 Annual Meeting, Spokane, Washington

Brigino T, Rains K, **Rains M**, **Guerron-Orejuela E**, **Intveld A**, Bentz S, Walker C. (2023) From Mountains to Streams, Wetlands Are Key: Groundwater and Salmon-Bearing Stream Connectivity in South-Central Alaska. Society of Wetland Scientists 2023 Annual Meeting, Spokane, Washington

Rains M (2023) PLENARY: It's an Engineering Problem. American Ecological Engineering Society 23rd Annual Meeting, Tampa, Florida

Rains M, **Fransbergen S**, Rains K, Fouad G (2022) Expansion-Contraction: Spatial and Temporal Variability in Connectivity in a Stream-Wetland Flow Network. American Geophysical Union Annual Meeting, Chicago, Illinois

Brigino T, Rains K, **Rains M**, **Intveld A**, Bentz S, Walker C (2022) No Groundwater, No Fish: the Crucial Role of Groundwater in Supporting Streamflow in Non-Glacial, Salmon-Bearing Streams in South-Central Alaska. American Geophysical Union Annual Meeting, Chicago, Illinois

Stepchinski LM, Spellman P, **Rains M** (2022) Influence of Hydrologic Connectivity on the Natural Flow Regimes of Archetypal Headwater Wetlandscapes. American Geophysical Union Annual Meeting, Chicago, Illinois

Rains KC, **Gerlach ME**, **Guerrón-Orejuela EJ**, Kleindl WJ, Downs J, Landry SM, Walker C, Benz S, **Rains M** (2022) Using Remote Sensing and Machine Learning to Locate Groundwater Discharge to Salmon-Bearing Streams. American Geophysical Union Annual Meeting, Chicago, Illinois

Lane CR, Creed IF, Golden HE, Leibowitz SG, Mushet DM, **Rains MC**, Wu Q, D'Amico E, Alexander LC, Ali GA, Basu NB, Bennett MG, Christensen JR, Cohen MJ, Covino TP, DeVries B, Hill RA, Jencso K, Lang MW, McLaughlin DL, Rosenberry DO, Rover J, Vanderhoof MK (2022) Vulnerable Waters – Headwater Streams and Non-Floodplain Wetlands - are Essential to Watershed Resilience. American Geophysical Union Annual Meeting, Chicago, Illinois

Intveld A, **Brigino T**, **Guerron-Orejuela E**, Rains K, **Rains M**, Walker C (2022) Understanding Hydrochemical Data Through a Geological Context in the Anchor River Watershed, Kenai Peninsula Lowlands, Alaska. American Geophysical Union Annual Meeting, Chicago, Illinois

Lora Santos A, Tarabih O, Arias M, **Rains M**, Zhang Q (2022) Modeling the Effects of Future Land Use Change on Water Flows and Nutrients Loads in the Lake Okeechobee Watershed, Florida. American Geophysical Union Annual Meeting, Chicago, Illinois

Flower H, **Rains M**, Zhang J-Z, Lewis D (2022) Saltwater Intrusion and Phosphorus Desorption: The First Geochemical Model of Seawater-Induced Phosphorus Release from Calcite. Geological Society of America Annual Meeting, Denver, Colorado

Lewis DB, Lane T, Ergas S, Johnson W, Mihelcic J, Prevost L, **Rains M**, Trotz M (2022) Graduate Student Scholarships to Advance Community Engaged Solutions to the Grand Challenge of Managing Nitrogen. Ecological Society of America Annual Meeting, Montréal, Quebec, Canada

Guerrón-Orejuela EJ, Rains K, Bentz S, Church S, Kleindl W, Landry S, Walker C, **Rains M** (2022) Groundwater Risk and Resilience in Social-Hydrological Systems. Joint Aquatic Sciences Meeting, Grand Rapids, Michigan

Rains KC, **Gerlach ME**, **Guerrón-Orejuela EJ**, Kleindl WJ, Downs J, Landry SM, Walker C, Benz S, **Rains M** (2022) Using Remote Sensing and Machine Learning to Locate Groundwater Discharge to Salmon-Bearing Streams. Joint Aquatic Sciences Meeting, Grand Rapids, Michigan

Stepchinski LM, **Rains MC**, Lee LC, Lis R, Nutter W, Rains K, Stewart S (2022) Headwater Wetlands or Headwater Streams? Hydrologic Connectivity and Flow Generation from California Vernal Depressions to Downstream Waters. Joint Aquatic Sciences Meeting, Grand Rapids, Michigan

Rains M, Bentz S, **Brigino T**, **Gerlach ME**, **Guerrón-Orejuela EJ**, Kleindl K, Rains K, Walker C (2022) Groundwater Flows Support the Integrity of Riparian Wetlands and Salmon-Bearing Streams, Alaska. Joint Aquatic Sciences Meeting, Grand Rapids, Michigan

Kleindl WJ, Kerins, Jr. FJ, **Rains M**, Stoy PC (2022) Understanding Dynamic Floodplain Wetlands in Socioecological Systems: Insights from Portfolio Theory. Joint Aquatic Sciences Meeting, Grand Rapids, Michigan

Rains MC (2022) Meeting Florida's Blue-Green Algae Challenge. Interagency Freshwater HAB R&D Workshop, Clewiston, Florida

Rains MC (2022) PLENARY: Partnerships for Meeting the Water Quality Challenges of Today. 7th Bay Area Scientific Information Symposium-Association of National Estuary Programs Annual Meeting, St. Petersburg, Florida

Leibowitz SG, Hill RA, Creed IF, Compton J, Golden HE, Weber M, **Rains MC**, Jones Jr. C, Lee EH, Christensen J, Bellmore RA, Lane C (2021) Connections Matter: National Classification Links Wetlands and Water Quality. American Geophysical Union Fall Meeting, New Orleans, Louisiana

Stepchinski LM, **Rains MC**, Lee LC, Lis R, Nutter W, Rains K, Stewart S (2021) Headwater Wetlands or Headwater Streams? Hydrologic Connectivity and Flow Generation from California Vernal Depressions to Downstream Waters. American Geophysical Union Fall Meeting, New Orleans, Louisiana

Zhang Q, Arias ME, Charkhgard H, Ergas SJ, Mihelcic, J, Nachabe M, **Rains MC**, Dang TD, Jiayi Hua J, Cooper R, Tarabih O, Mahmoodian V (2021) Temporal and Spatial Optimization of Existing and Emerging Nutrient Management Technologies and Practices for Control of Harmful Algal Blooms in Lake Okeechobee. American Geophysical Union Fall Meeting, New Orleans, Louisiana

Lawlor S, **Flannagan C**, Rains K, **Rains M**, Landry S (2021) A novel approach to quantifying change in wetland distribution and drainage (1850s-2004) for conservation planning in mixed-use landscapes. Society of Wetland Scientists 2021 Annual Meeting [Virtual]

Frasbergen S, Fouad G, Rains K, **Rains M** (2021) Field validation of the National Hydrography Dataset and a Regional Hydrography Dataset in Tampa Bay, Florida, USA. Society of Wetland Scientists 2021 Annual Meeting [Virtual]

Nowicki R, **Rains M** (2021) The peculiar nature of Florida's sandhill wetlands, ponds & lakes and their relationship with the regional aquifer. Society of Wetland Scientists 2021 Annual Meeting [Virtual]

Hill RA, Leibowitz SG, Weber MH, Compton JE, **Rains MC**, Creed IF, Jones, Jr. CE, Christensen JR, Bellmore RA, Lee EH, Golden HE, Lane CR (2021) Punching above their weight: Wetlands moderate nutrient delivery to streams despite comprising just 5% of the conterminous US land area. Society for Freshwater Sciences Annual Meeting

[Virtual]

Walker C, **Rains M** (Co-Presenters) (2021) Promoting Resilient Groundwater and Holistic Watershed Management in Alaska's Kenai Lowlands. NOAA Collaborative Science for Estuaries Webinar Series [Virtual]

Rains M, Bellino J, Bentz S, Callahan M, **Gerlach M**, **Guerron E**, Kleindl W, Rains K, Walker C (2019) Groundwater subsidies to salmon-bearing streams: A 10+ year retrospective from south-central Alaska. American Geophysical Union Fall Meeting, San Francisco, California

Nocita B, **Rains M**, Ryan J. INVITED. (2019). Career awareness and preparation for the workforce: USF Geosciences programs and partnerships, and lessons learned. Geological Society of America 2019 Annual Conference, Phoenix, Arizona

Kleindl W, **Rains M**, Stoy P (2019) Floodplain ecological assessment across temporal and spatial scales: Does the portfolio effect apply to rapid assessment tools? Society of Wetland Scientists annual Meeting, Baltimore, Maryland

Lawlor S, Rains K, **Rains M**, Landry S, **Flannagan C** (2019) Fewer wetlands, more connectivity: implications of land use/land cover change in an agricultural landscape. Society of Wetland Scientists annual Meeting, Baltimore, Maryland

Hernandez A, Garfield N, Walker C, **Rains M** (2019) Visualizing groundwater resources to promote source water protection in the Kenai Lowlands. 2019 SACNAS. Honolulu, Hawai'i

Flower H, **Rains M**, Fitz HC, Orem W, Newman S, Osborne TZ, Reddy KR, Obeysekera J (2018) Shifting ground: landscape-scale modeling of soil biogeochemistry under climate change in the Florida Everglades, 12th International Symposium of the Biogeochemistry of Wetlands, Coral Springs, Florida

Flower H, **Rains M**, Fitz C (2017) Can the Everglades Survive Climate Change? Envisioning the Everglades Under Climate Change and Sea Level Rise. Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico

Lotero L, **Rains M**, Rains K (2017) The role of headwater wetlands in the Colombia Andes in streamflow generation. Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico

Schmidt K, **Rains M**, Landry S, Rains K (2017) Wetland loss and artificial water feature gain in the Tampa Bay watershed, 1950-2007. Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico

Leibowitz S, **Rains M**, Creed I, Hill R, Weber M, Jones C, Aldred D (2017) National mapping of wetland connectivity. Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico

Kleindl W, **Rains M**, Ready R, Stein E (2017) Assessing no net loss of ecosystem services: Are perceived conflicts with functions an artifact of our assessment paradigm? Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico

Rains M (2017) INVITED: Critical Needs at the Intersection of Science and Policy: How Research on Hydrological Connectivity Can Affect Policy Outcomes. Association for the Sciences of Limnology and Oceanography 2017, Honolulu, Hawai'i

Golden HE, Creed IF, Ali G, Basu NB, Neff B, **Rains MC**, McLaughlin DL, Alexander LC, Ameli AA, Christensen JR, Evenson GR, Jones CN, Lane CR, Lang M (2017) INVITED: Quantifying geographically isolated wetland connectivity: Insights on modeling approaches. American Water Resources Association 2017 Spring Specialty Conference,

Connecting the Dots: The Emerging Science of Aquatic Connectivity, Snowbird, Utah

Leibowitz SG, **Rains MC**, Creed IF, Hill RA, Weber MH, Jones CE, Aldred D, Christensen J (2017) INVITED: Wetland hydrological connectivity: A classification approach and North American assessment. American Water Resources Association 2017 Spring Specialty Conference, Connecting the Dots: The Emerging Science of Aquatic Connectivity, Snowbird, Utah

Rains MC, Leibowitz SG, Cohen M, Creed IF, Golden HE, Jawitz JW, Kalla P, Lane CR, Lang MW, McLaughlin DL (2017) INVITED: Connecting the dots: Hydrological connectivity between geographically isolated wetlands and downgradient waters. American Water Resources Association 2017 Spring Specialty Conference, Connecting the Dots: The Emerging Science of Aquatic Connectivity, Snowbird, Utah

Lane C, Golden HE, Kirkman K, Leibowitz SG, Mushet D, **Rains MC**, Smith L (2017) INVITED: Putting connectivity in context: Overview on geographically isolated wetland research. American Water Resources Association 2017 Spring Specialty Conference, Connecting the Dots: The Emerging Science of Aquatic Connectivity, Snowbird, Utah

Cohen M, Thorslund J, Jawitz JW, Jarso J, **Rains MC** (2017) INVITED: Quantifying wetland connectivity at the catchment scale using a chemical tracer. American Water Resources Association 2017 Spring Specialty Conference, Connecting the Dots: The Emerging Science of Aquatic Connectivity, Snowbird, Utah

Rains M, Schmidt K, Rains K, Landry S, Seidel V, Crisman T (2017) INVITED: Wetland and waterbody change and condition for wetland conservation planning and prioritization, Tampa Bay Watershed, Florida. Meeting of the Interagency Coastal Wetlands Workgroup [Virtual]

Golden HE, Creed IF, Ali G, Basu NB, **Rains MC**, Alexander LC, Ameli A, Christensen J, Evenson GR, Jones CN, Lane C, Lang MW, McLaughlin DL, Neff BP (2016) Integrating wetland connectivity into models for watershed-scale analyses: Current and future approaches. 2016 American Geophysical Union Fall Meeting, San Francisco, California

Nocita B, Connor C, Herbert G, **Rains M**, Rodriguez E, Ryan J, and Vacher HL (2016) How a geology alumni society and professional community contribute to the preparation of graduate students for a geoscience career at the University of South Florida. Geological Society of America 2016 Annual Meeting, Denver, Colorado

Leibowitz SG, **Rains MC**, Creed IF, Hill RA, Weber MH, Aldred D, Jones CE, Christensen JR (2016) INVITED: Wetland hydrological connectivity: A classification approach and North American assessment. 10th INTECOL International Wetlands Meeting, Changshu, China

Rains MC (2016) INVITED: Geographically isolated wetlands are part of the hydrologic landscape. 10th INTECOL International Wetlands Meeting, Changshu, China

Rains MC (2016) INVITED: On classification and similarity: How much do we really know? Society of Wetland Scientists Annual Meeting, Corpus Christi, Texas

Leibowitz SG, **Rains MC (Presenter)** (2016) INVITED: Wetland connectivity: Introduction and relevance to Texas coastal plain depressional wetlands. Society of Wetland Scientists Annual Meeting, Corpus Christi, Texas

Thorslund J, Cohen MJ, Jarsjo J, Jawitz JW, **Rains MC** (2015) Exploring wetland connectivity at the catchment scale: a coupled hydro-chemical modeling approach. 2015 American Geophysical Union Fall Meeting, San Francisco, California

Flower H, **Rains MC**, Lewis DB, Zhang J-Z, Price R (2015) Control of phosphorus concentration through adsorption and desorption in shallow groundwater of a carbonate

estuary. Society of Wetland Scientists 36th Annual Meeting, Providence, Rhode Island

Cohen MJ, Creed IF, Basu NB, Jawitz JW, McLaughlin DL, **Rains MC** (2014) A continuum of connectivity: Geographically isolated wetlands and the conservation of landscape functions. American Geophysical Union Fall Meeting, San Francisco, California

Silvestri S, Oostdijk M, Laanbroek HJ, **Rains M**, Verhoeven JTA, Whigham DF (2014) Using remote sensing to study mangroves spatial dynamics under increased nitrogen availability and lower salinity conditions. American Geophysical Union Fall Meeting, San Francisco, California

Rains MC, McLaughlin DL, Cohen MJ, Golden HE, Jawitz JW, Kalla P, Lang M, Leibowitz SG, Raanan Kiperwas H (2014) Geographically isolated wetlands as part of the hydrologic landscape. Joint Aquatic Sciences Meeting 2014, Portland, Oregon

Callahan MK, Whigham DF, **Rains MC**, King RS, Walker CM, Maurer JR, Baird SJ (2014) Nitrogen subsidies from hillslope alder stands to streamside wetlands and headwater streams, Kenai Peninsula, Alaska. Joint Aquatic Sciences Meeting 2014, Portland, Oregon

Rains KC, **Rains MC**, Landry SM, Seidel V, Crisman TL (2014) Using net wetland loss, current wetland condition, and planned future watershed condition for wetland conservation prioritization, Tampa Bay watershed, Florida. Joint Aquatic Sciences Meeting 2014, Portland, Oregon

Kleindl WJ, **Rains MC**, Hauer FR, Marshall L (2014) Hydrologic, geomorphic, and anthropogenic drivers of floodplain/riparian patch diversity. Joint Aquatic Sciences Meeting 2014, Portland, Oregon

Laanbroek HJ, Verhoeven JT, Whigham DF, **Rains MC** (2014) Seasonal flooding of a mangrove dominated impoundment – effects on N cycling. Joint Aquatic Sciences Meeting 2014, Portland, Oregon

Leibowitz SG, **Rains MC** (2013) INVITED: A conceptual model for evaluating hydrologic connectivity in geographically isolated wetlands. American Geophysical Union 2013 Fall Meeting, San Francisco, California

Rains MC (2013) INVITED: Hydrologic complexity and connectivity in geographically isolated wetland systems. Society of Wetland Scientists 34th Annual Meeting, Duluth, Minnesota

Rains MC, **Murphy K**, **Pechenik N**, **Kittridge M**, Stewart M, Trout K, Ross M (2012) INVITED: Hydrology of clay settling areas and surrounding landscapes in the phosphate mining district, peninsular Florida. 9th INTECOL International Wetlands Conference, Orlando, Florida

Akiwumi FA, Lewis DB, Landry SM, Zarger RK, **Rains MC**, Nilsson KA, Adjei CO, Feit SJ, Larson GM, Perkerson RB, Thurman PE, Crisman TL, Bell SS, Trettin CC (2012) Urban development, power relations, and water redistribution as drivers of wetland change in the Tampa Bay Region Socioecosystem. American Association of Geographers Annual Meeting, New York, New York

Verhoeven JTA, Laanbroek R, **Rains M**, Whigham DF (2011) Effects of enhanced water level fluctuations on nitrogen dynamics of impounded mangroves. Joint Meeting of the Society of Wetland Scientists, WEPOL, and Wetland Biogeochemistry Symposium, Prague, Czech Republic

Lewis DB, Zarger RK, Landry SM, Akiwumi FA, **Rains MC**, Crisman TL, Bell SS, Trettin C (2011) Urban development, power relations, and water redistribution as drivers of

wetland change in the Tampa Bay Region Socioecosystem. 2011 US Regional Association of the International Association of Landscape Ecologists Symposium, Portland, Oregon

Lewis DB, Zarger RK, Landry SM, Akiwumi FA, **Rains MC**, Nilsson KA, Adjei CO, Feit SJ, Larsen GM, Perkerson RB, Thurman PE, Crisman TL, Bell SS, Trettin CC (2011) Urban development, power relations, and water redistribution as drivers of wetland change in the Tampa Bay Region Socioecosystem. Ecological Society of America 96th Annual Meeting, Austin, Texas

Vacher HL, McIlrath J, Juster T, **Rains M**, Iverson E (Presentation: **M. Rains**, Poster design: **A. Fishinger** and J. McIlrath) (2011) University Of South Florida, Geology of National Parks: Spreadsheets, quantitative literacy, and natural resources. 2011 CCLI/TUES Principal Investigators Conference, Washington, DC

Callahan MK, Bellino J, Rains MC (2010) Trends and controls on summer surface-water temperatures in salmonid-bearing headwater streams in two common geomorphic settings, Kenai Peninsula, Alaska. American Geophysical Union 2010 Fall Meeting, San Francisco, California

McIlrath J, Juster T, **Rains M**, Vacher HL (2010) Spreadsheets across the curriculum modules to infuse quantitative literacy and environmental-geologic content into an online geology of national parks course. Geological Society of America 2010 Annual Meeting, Denver, Colorado

Rains MC (2009) Water sources and hydrodynamics of closed-basin depressions, south-central Alaska. Society of Wetland Scientists 2009 Annual Meeting, Madison, Wisconsin

McCarten N, Rains MC, Harter T (2009) Ecohydrology of vernal pool wetland ecosystems. HydroEco2009, International Multidisciplinary Conference on Hydrology and Ecology: Ecosystems Interfacing with Groundwater and Surface Water, Vienna, Austria

Stringer CE, Rains MC, Kruse S, Whigham D, Verhoeven JTA, Laanbroek R (2008) Linkages between surface and subsurface hydrology and ecological functioning of mangrove systems in Ft. Pierce, Florida. American Geophysical Union 2008 Fall Meeting, San Francisco, California

McCarten N, Rains MC, Harter T (2008) Seasonal, variably saturated flows in a vernal pool wetland ecosystem. American Geophysical Union 2008 Fall Meeting, San Francisco, California

Whigham DF, Baird SJ, Field C, Walker C, King RS, Back JA, **Rains MC, Bellino J** (2008) Headwater wetlands of the Kenai Lowlands, Alaska. Society of Wetland Scientists 29th Annual Meeting, Washington, DC

Murphy KE, Rains MC, Kittridge MG, Stewart MT, Ross MA (2007) Hydrological connectivity between clay settling areas and surrounding hydrological landscapes, peninsular Florida, USA. American Water Resources Association 2007 Annual Conference, Albuquerque, New Mexico

Kittridge MG, Rains MC (2007) Cost/effectiveness analysis of obtaining operational estimates of reference evapotranspiration, peninsular Florida, USA. American Water Resources Association 2007 Annual Conference, Albuquerque, New Mexico

Whigham DF, Feller I, **Stringer C, Rains M**, Verhoeven JTA, van der Ven P, Baas P (2007) INVITED: Linkages between surface hydrology and ecological functioning of mangrove ecosystems in Ft. Pierce, Florida. International Association of Landscape Ecologists 2007 World Congress, Wageningen, The Netherlands

Rains MC, Dahlgren RA, Fogg GE, Harter T, Williamson RJ (2007) INVITED: Geological

control of physical and chemical hydrology in vernal pool wetlands, Central Valley, California. Society of Wetland Scientists 28th Annual Meeting, Sacramento, California

Leibowitz SG, Wigington PJ, **Rains MC**, Downing DM (2007) A conceptual framework for addressing information needs following the US Supreme Court's Rapanos and Carabell decisions. Society of Wetland Scientists 28th Annual Meeting, Sacramento, California

Hammersmark CT, Rains MC, Mount JF (2007) Hydrologic effects of a pond and plug stream restoration in a mountain meadow. Society of Wetland Scientists 28th Annual Meeting, Sacramento, California

Stringer CE, Rains MC, Whigham D, Feller I, Verhoeven JTA (2007) Controls on the chemical hydrology and associated ecological structure and function in mangroves, Indian River Lagoon, Florida. Society of Wetland Scientists 28th Annual Meeting, Sacramento, California

Stringer CE, Rains MC, Whigham D, Feller I, Verhoeven JTA (2006) INVITED: Linkages between surface and subsurface hydrology and ecological functioning of mangrove ecosystems in Ft. Pierce, Florida. Geological Society of America Annual Meeting and Exposition, Philadelphia, Pennsylvania

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2006) INVITED: Perched aquifer control of hydrogeological and biogeochemical processes in vernal pool landscapes, Central Valley, California. Geological Society of America Annual Meeting and Exposition, Philadelphia, Pennsylvania

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2006) Geological control of physical and chemical hydrology in vernal pool wetlands, Central Valley, California. HydroEco2006, International Conference on Hydrology and Ecology: The Groundwater/Ecology Connection, Karlovy Vary, Czech Republic

Nadeau T-L, **Rains MC** (2005) INVITED: How science can inform Clean Water Act jurisdiction and policy after SWANCC: Hydrological and ecological connectivity. American Water Resources Association 2005 Annual Meeting, Seattle, Washington

Rains MC, Dahlgren RA, Fogg GE, Harter T, Williamson RJ (2005) INVITED: Hydrologic-soil interactions in vernal pool wetlands with claypans versus duripans. American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America International Annual Meeting, Salt Lake City, Utah

Rains MC, Williamson RJ, Fogg GE, Harter T, Dahlgren RA (2005) Geological control of physical and chemical hydrology in vernal pools, Central Valley, California. Society of Wetland Scientists 26th Annual Meeting, Charleston, South Carolina

Suwannee River Watershed Hydrologic Observatory Design Team (2004) INVITED: The Suwannee River Hydrologic Observatory: A subtropical coastal plain watershed in transition. American Geophysical Union 2004 Fall Meeting, San Francisco, California

Rains MC, Williamson RJ, Fogg GE, Harter T, Dahlgren RA (2004) Geological control of physical and chemical hydrology in vernal pools, Central Valley, California. American Geophysical Union 2004 Fall Meeting, San Francisco, California

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2004) Hydrological and biogeochemical connectivity between uplands, vernal pools, and streams, Great Central Valley, California. Society of Wetland Scientists 25th Annual Meeting, Seattle, Washington

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2003) Hydrological and biogeochemical connectivity between uplands, vernal pools, and streams, Great Central Valley, California. American Geophysical Union 2003 Fall Meeting, San Francisco,

California

Rains MC, Mount JF, Larsen EW (2003) Simulated changes in shallow groundwater and vegetation distributions under different reservoir operations scenarios. Society of Wetland Scientists 24th Annual Meeting, New Orleans, Louisiana

Rains MC, Mount JF (2001) Origin of shallow ground water supporting regionally-unique riparian plant and wildlife habitats as determined by isotopic and chemical procedures. American Geophysical Union 2001 Fall Meeting, San Francisco, California

Rains MC (2001) Regional ground water discharge as the dominant source of late season shallow ground water in riverine and reservoir fringe wetlands. Society of Wetland Scientists 22nd Annual Meeting, Chicago, Illinois

Rains MC (1999) Surface and ground water interactions between a stream, a reservoir, and a shallow alluvial aquifer: implications for restoration and management. Society of Wetland Scientists 20th Annual Meeting, Norfolk, Virginia

Rains MC, Lee LC, Butterwick M, Stein E, Mason JA, Kleindl WJ (1997) Development of a draft guidebook to HGM functional assessments in riverine waters/wetlands of the Santa Margarita watershed. Society of Wetland Scientists 18th Annual Meeting, Bozeman, Montana

Rains MC, Lee LC, Fiedler PL, Kleindl WJ, Mason JA (1997) Development of a draft guidebook to HGM functional assessments in riverine waters/wetlands of the central California coast. Society of Wetland Scientists 18th Annual Meeting, Bozeman, Montana

Rains MC (1997) INVITED: Examples and experiences in building reference: When the rubber hits the road. Association of State Wetland Managers National Workshop and Symposium on the Future of Wetland Assessment: Applying Science Through the Hydrogeomorphic Assessment Approach and Other Approaches, Annapolis, Maryland

Rains MC, Lee LC, Butterwick M, Stein E, Mason JA, Kleindl WJ (1997) Development of a draft guidebook to HGM functional assessments in riverine waters/wetlands of the Santa Margarita watershed. National Workshop and Symposium on the Future of Wetland Assessment: Applying Science Through the Hydrogeomorphic Assessment Approach and Other Approaches, Annapolis, Maryland

Rains MC, Brinson MM, Clark M, Coshow KA, Hall J, Hollands G, Kleindl WJ, LaPlant D, Lee LC, Nutter WL, Post R, Powell J, Rockwell T, Whigham D (1997) Development of a draft guidebook to HGM functional assessments in precipitation-driven wetlands on discontinuous permafrost in interior Alaska. Association of State Wetland Managers National Workshop and Symposium on the Future of Wetland Assessment: Applying Science Through the Hydrogeomorphic Assessment Approach and Other Approaches, Annapolis, Maryland

Rains MC, Lee LC, Mason JA (1997) Development and use of a reference system in restoration of riverine and depressional waters/wetlands in the Puget Sound Lowlands. Association of State Wetland Managers National Workshop and Symposium on the Future of Wetland Assessment: Applying Science Through the Hydrogeomorphic Assessment Approach and Other Approaches, Annapolis, Maryland

Rains MC, Lee LC, Braatne JH, Mason JA (1995) An evaluation of the hydrogeomorphic approach for assessing forested wetland functions in the Puget Sound Lowlands. Society for Ecological Restoration 1995 International Conference, Seattle, Washington

Rains MC (1995) Vegetation zonation along hydrologic gradients in beaver pond wetlands. Society of Wetland Scientists 16th Annual Meeting, Boston, Massachusetts

Regional Meetings, Seminars, and Colloquia

Thurman PE, **Rains MC** (2024) Transboundary flows facilitated by the Gulf Intracoastal Waterway System. GOMCON 2024, Tampa, Florida

Rains MC (2024) Introduction and Welcome, Day 2. University of Florida Water Institute Symposium, Gainesville, Florida

Brigino T, Rains K, Bentz S, Argueta J, **Rains M** (2024) Groundwater Sustains Salmon Streams: Support to Stream Flow and Temperature in South-Central Alaska. University of Florida Water Institute Symposium, Gainesville, Florida

Lawlor S, Rains K, Landry S, **Rains M** (2024) Forensic Wetland and Deepwater Habitat Mapping for Setting Pre-Development Conditions. University of Florida Water Institute Symposium, Gainesville, Florida

Rains K, **Guerron E**, Lawlor S, Landry S, **Rains M** (2024) Tool for Wetland and Water Project Prioritization in the Indian River Lagoon Watershed. University of Florida Water Institute Symposium, Gainesville, Florida

Guerron-Orejuela E, Rains K, Okonkwo M, **Rains M** (2024) Pilot Scale Septic-to-Sewer Conversion Prioritization Map Using Analytic Hierarchy Process. University of Florida Water Institute Symposium, Gainesville, Florida

Rains M, Fransbergen S, Rains K, Fouad G (2024) Spatial and Temporal Variability in Hydrological Connectivity in Stream-Wetland Flow Networks. University of Florida Water Institute Symposium, Gainesville, Florida

Rains M (2024) PLENARY: We've Never Solved a Problem We Didn't First Understand. Florida Sea Grant's 2024 Symposium, Gainesville, Florida

Rains M (2023) PLENARY: Replacing Lost Natural Capital and Resilience through Conservation, Restoration, and Engineering. Florida Ocean Alliance, Tampa, Florida

Rains M (2023) PLENARY: Florida Blue-Green Algae Task Force. Florida Blue-Green Algae State of the Science Symposium II, Maitland, Florida

Rains M (2023) PLENARY: Science Meets Policy and Practice: Florida's Evolving Response to Water-Quality Challenges. Marine Technology Society TechSurge, Fort Pierce, Florida

Rains M (2022) Science Meets Policy and Practice: Florida's Evolving Response to Water-Quality Challenges. University of Central Florida, Orlando, Florida [Virtual]

Booeshaghi T, Lynch M, Koerner J, **Rains M**, Reed A (2022) PANEL: FDEP Regulatory and Policy Update. 36th Annual Environmental Permitting Summer School, Marco Island, Florida

Rains M, Bentz S, **Brigino T**, **Gerlach ME**, **Guerrón-Orejuela EJ**, Kleindl W, Rains K, Walker C (2022) Groundwater Flows Support the Integrity of Riparian Wetlands and Salmon-Bearing Streams, Alaska. Alaska Maritime National Wildlife Refuge Visitor Center, Homer, Alaska

Rains M (2022) PLENARY: Science Meets Policy and Practice: Florida's Evolving Response to Water-Quality Challenges. Florida Stormwater Association, Marco Island, Florida

Rains M (2022) Groundwater Subsidies to Salmonid Streams: Fifteen Years of Collaborative Science and Outcomes in Alaska. Florida State University, Tallahassee, Florida

Rains M (2022) Science Meets Policy and Practice: Florida's Evolving Response to Water-Quality Challenges. University of South Florida, Tampa, Florida [Virtual]

Lewis B, Maran C, Pettit C, **Rains M**, von Meding J (2022) PANEL: Climate Resilience in a Ground Zero State. University of Florida Water Institute Symposium, Gainesville, Florida

Brigino T, Rains M, Rains K (2022) Groundwater Support in Streamflow in Salmon-Bearing Streams. University of Florida Water Institute Symposium, Gainesville, Florida

Stepchinski L, Spellman P, **Rains M**, Rains K (2022) Influence of hydrologic connectivity on the natural flow regime of archetypal wetland complexes. University of Florida Water Institute Symposium, Gainesville, Florida

Guerrón-Orejuela EJ, Rains K, Bentz S, Church S, Kleindl W, Landry S, Walker C, **Rains M** (2022) University of Florida Water Institute Symposium, Gainesville, Florida

Rains K, **Rains M**, **Lawlor S**, **Schmidt K**, Landry S (2022) Forensic Mapping of the Stunning Transformation of Florida's Coastal Watersheds Over 150+ Years. University of Florida Water Institute Symposium, Gainesville, Florida

Aumen N, Dunn A, Glenn L, Naja M, **Rains MC** (2022) PANEL: Science Leadership Beyond CERP. The National Academies of Sciences, Engineering, and Medicine Committee on Independent Scientific Review of Everglades Restoration Progress [Virtual]

Rains MC (2021) PLENARY: The State of Florida's Response to the Water Quality Challenges of Today. Florida Association of Water Quality Control, Naples, Florida

Hutton R, **Rains MC**, Torres E, Tracy A (2021) PANEL: Implementation of the 2020 Clean Waterways Act. Associated Industries of Florida, Florida Water Forum, Orlando, Florida

Rains MC (2021) Kachemak Bay National Estuarine Research Reserve: Partnerships to Inform Local Decision-Making. Kenai Peninsula Borough, Soldotna, Alaska

Rains MC (2021) Groundwater Subsidies to Salmonid Streams: A Decade+ of Collaborative Science and Outcomes in Alaska. Biological Sciences Seminar, University of Alaska, Anchorage, Alaska [Virtual]

Espy J, **Rains MC**, Spratt J, Sweeney P (2021) PANEL: Blue Green Algae Task Force and the 2020 Clean Waterways Act (Part 1 of 2). 35th Annual Environmental Permitting Summer School, Marco Island, Florida

Flower H, **Rains MC**, Fitz C (2021) INVITED: Visioning the Future: Scenarios Modeling of the Florida Coastal Everglades. Greater Everglades Ecosystem Restoration Conference [Virtual]

Rains M, Bellino J, Bentz S, Callahan M, **Gerlach M**, **Guerron E**, Kleindl W, Rains K, Walker C (2021) Groundwater subsidies to salmon-bearing streams: A 10+ year retrospective from south-central Alaska. 2021 Kachemak Bay Science Conference, Homer, Alaska [Virtual]

Rains M, Kaplan D (Co-Presenters) (2020) Scientists and Civic Engagement: Closing the 'Groundwater Loophole' in the Clean Water Act. The Edward and Bonnie Foreman Biodiversity Lecture Series – Webinar, Stetson University College of Law, St. Petersburg, Florida [Virtual]

Rains M (2020) Groundwater Subsidies to Salmonid Streams: A Decade+ of Collaborative Science and Outcomes in Alaska. University of South Florida, Tampa, Florida [Virtual]

Rains M (2020) Groundwater Subsidies to Salmonid Streams: A Decade of Collaborative Science and Outcomes in Alaska. Rough Cut Seminar Series, Montana Institute on

Ecosystems, Montana State University, Bozeman, Montana

Rains M, Flower H, Fitz, C (2020) Visioning the Future: Scenarios Modeling of the Florida Coastal Everglades. 7th Biennial UF Water Institute Symposium, Gainesville, Florida

Flower H, **Rains M**, Fitz C (2020) Shifting Ground: Landscape-Scale Modeling of Biogeochemical Processes Under Climate Change in The Florida Everglades. 7th Biennial UF Water Institute Symposium, Gainesville, Florida

Rains M, Bellino J, Callahan M, **Gerlach M**, **Guerron E**, Kleindl W, Rains K (2019) Groundwater Connectivity from Ridge-to-Reef and Between Families-and-Fish. Kachemak Bay National Estuarine Research Reserve, Homer, Alaska

Fitz C, **Rains M**, Flower H, Gaiser E (2019). Tortoise or Hare? Landscape Hydro-Ecological Interactions from Presses (Sea Level Rise) and Pulses (Freshwater Flows) in the Coastal Everglades. Greater Everglades Ecosystem Restoration 2019, Coral Springs, Florida

Rains M (2018) Connecting the Dots: Hydrological Connectivity Between Vernal Pools and Downstream Waters. UC Merced, Merced, California

Flower H, **Rains M**, Fitz C (2018) Can the Everglades Survive Climate Change? Envisioning the Everglades Under Climate Change and Sea Level Rise. Florida Gulf Coast University, Everglades Wetland Research Park, Naples, Florida

Flower H, **Rains MC**, Lewis DB, Zhang J-Z (2017) INVITED: Rapid and Intense Phosphate Desorption Kinetics When Saltwater Intrudes into Carbonate Rock. Greater Everglades Ecosystem Restoration Conference, Coral Springs, Florida

Flower H, **Rains M**, Fitz C (2017) Can the Everglades Survive Climate Change? Envisioning the Everglades Under Climate Change and Sea Level Rise. Greater Everglades Ecosystem Restoration Conference, Coral Springs, Florida

Flower H, **Rains MC**, Lewis DB, Zhang J-Z, Price R (2015) Control of phosphorus concentration through adsorption and desorption in shallow groundwater of a carbonate estuary. Greater Everglades Ecosystem Restoration Conference, Coral Springs, Florida

Rains MC, McNutt SR (2015) The Pebble Mine, Alaska: hydrology and hazards. University of South Florida, Tampa, Florida

Rains MC (2015) Water sources and hydrodynamics of closed-basin depressions, Cook Inlet Region, Alaska. University of Maryland-Baltimore County, Catonsville, Maryland

Rains MC (2014) Water sources and hydrodynamics of closed-basin depressions, Cook Inlet Region, Alaska. Joseph E. Jones Ecological Research Center, Ichauway, Georgia

Rains MC, Landry S, Rains KC, Seidel V, Crisman TL (2013) Net wetland loss (1950s-2007) and current wetland condition (2007), Tampa Bay Watershed, Florida. Joint Scientific Meeting of the Society of Wetland Scientists South Atlantic Chapter, Florida Association of Environmental Soil Scientists, and Southwest Chapter of the Florida Association of Environmental Professionals, Tampa, Florida

Rains KC, **Rains MC**, Landry S, Seidel V, Crisman TL (2013) Using wetland loss, current wetland condition, and planned future condition for wetland conservation planning and prioritization, Tampa Bay Watershed, Florida. Joint Scientific Meeting of the Society of Wetland Scientists South Atlantic Chapter, Florida Association of Environmental Soil Scientists, and Southwest Chapter of the Florida Association of Environmental Professionals, Tampa, Florida

Rains MC (2013) INVITED PANELIST: Jobs, jobs, jobs. Joint Scientific Meeting of the

Society of Wetland Scientists South Atlantic Chapter, Florida Association of Environmental Soil Scientists, and Southwest Chapter of the Florida Association of Environmental Professionals, Tampa, Florida

Rains MC, Landry S, Rains KC, Seidel V, Crisman TL (2013) Using wetland loss, current wetland condition, and planned future condition for wetland conservation planning and prioritization, Tampa Bay Watershed, Florida. Environmental Research Interdisciplinary Colloquium, University of South Florida, Tampa, Florida

Rains MC, Stringer CE, Fishinger A, Vacher HL (2011) Breakout Session—Teaching with Spreadsheet Modules: Geology of National Parks, Parts I and II. 2011 Appalachian College Association Summit, Asheville, North Carolina

Rains MC (2011) Geological control of physical and chemical hydrology in vernal pools, Central Valley, California. University of Central Florida, Orlando, Florida

Rains MC (2011) Water sources and hydrodynamics of closed-basin depressions, Cook Inlet Region, Alaska. Florida Atlantic University, Boca Raton, Florida

Rains MC, Murphy K, Pechenik N, Exner-Kittridge M, Stewart M (2010) Hydrology of clay settling areas and surrounding landscapes in the phosphate mining district, peninsular Florida. 2010 Water Institute Symposium, Gainesville, Florida

Brewer LD, Stringer CE, Voytenko D, Kruse S, Rains MC (2010) Terrain conductivity and spatial variability in a mangrove under two different hydrologic conditions, Indian River Lagoon, Florida. Northeastern Section (45th Annual) and Southeastern Section (59th Annual) Joint Meeting, Baltimore, Maryland

Rains MC (2009) Balancing water resources between human and natural users in coastal environments. Workshop ANID, Paso Pacifico, and International Institute of Tropical Forestry, Managua, Nicaragua

Rains MC (2009) Water sources and hydrodynamics of closed-basin depressions, southcentral Alaska. East Carolina University, Greenville, North Carolina

Rains MC (2009) Water sources and hydrodynamics of closed-basin depressions, southcentral Alaska. University of South Florida, Tampa, Florida

Rains MC (2008) Water sources and hydrodynamics of closed-basin depressions, southcentral Alaska. University of Florida, Gainesville, Florida

Rains MC (2008) Balancing limited water resources in coupled human-natural systems: A case study on the Costa Alegre, Mexico. United Nations Association of the USA Tampa Bay Chapter, Tampa, Florida

Stringer CE, Rains MC, Kruse S, Whigham D, Verhoeven JTA, Laanbroek R (2008) Controls on the chemical hydrology and associated ecological structure and function of mangroves, Indian River Lagoon, Florida. 2008 Water Institute Symposium, Gainesville, Florida

Rains MC (2008) Conservation of coupled human-mangrove systems: Research, teaching, and capacity building on the Costa Alegre, Mexico. Meeting of the Friends of the Patel Center for Global Solutions, Tampa, Florida

Rains MC (2007) Ecohydrology of Mexican mangroves: Research, teaching, and community outreach on the Costa Alegre, Mexico. University of South Florida, Tampa, Florida

Rains MC (2006) INVITED PANELIST: A review of the state of the science. Regional Science Workshop on Headwaters and Associated Wetlands in the Mid-Atlantic Highlands Region, U.S. Environmental Protection Agency Region 3, Philadelphia,

Pennsylvania

Rains MC (2006) INVITED PANELIST Too much, too little, just right: Optimum hydrologic regimes for the natural system. The Everglades Coalition 21st Annual Conference, Hutchinson Island, Florida

Rains MC, Williamson RJ, Fogg GE, Harter T, Dahlgren RA (2006) Geological control of physical and chemical hydrology in vernal pools, Central Valley, California. University of Florida, Gainesville, Florida

Rains MC, Williamson RJ, Fogg GE, Harter T, Dahlgren RA (2006) Geological control of physical and chemical hydrology in vernal pools, Central Valley, California. University of Nevada, Reno, Nevada

Rains MC, Mount JF, Larsen EW (2005) The effects of reservoir operations on shallow groundwater and vegetation distributions in reservoir-fringe ecosystems. University of South Florida, Tampa, Florida

Rains MC, Stringer C, Whigham D, Feller I, Megonigal P, Verhoven J (2005) Hydrological controls on ecological functions in mangrove systems, Indian River Lagoon, Florida. SFWMD/USGS Cooperative Program - Coastal (Northern) Issues Meeting, West Palm, Florida

Rains MC, Mount JF, Larsen EW (2004) The effects of reservoir operations on shallow groundwater and vegetation distributions in reservoir-fringe ecosystems. Wetlands Hydrology Workshop, Tampa Bay Water, Clearwater, Florida

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2004) What is ecohydrology? A definition and case study. 2004 University of South Florida Geology Alumni Society & Geology Department Internship Symposium, Tampa, Florida

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2004) Geological control of hydrological, biogeochemical, and biological processes in vernal pool landscapes, Central Valley, California. University of South Florida, Tampa, Florida

Rains MC, Fogg GE, Harter T, Dahlgren RA, Williamson RJ (2003) Geological control of ecological structure and function in vernal pool wetlands, Central Valley, California. University of South Florida, Tampa, Florida

Rains MC, Mount JF, Larsen EW (2003) The effects of reservoir operations on shallow groundwater and vegetation distributions in reservoir-fringe ecosystems. University of South Florida, Tampa, Florida

Rains MC, Mount JF, Larsen EW (2003) The effects of reservoir operations on shallow groundwater and vegetation distributions in reservoir-fringe ecosystems. New Mexico Tech, Socorro, New Mexico

Rains MC, Mount JF, Larsen EW (2003) The effects of reservoir operations on shallow groundwater and vegetation distributions in reservoir-fringe ecosystems. UC Davis, Davis, California

Rains MC, Ewing KE (1994) Plant community structure along environmental gradients defined by hydrology, redox potential, and shade in Pacific Northwest palustrine wetlands. University of Washington, Seattle, Washington

Recent Academic Funding

Title: Utilizing Beavers to Mitigate Climate Drying of Peatlands: A Subcontract for Hydrologic Analyses

Source of Funding: Wildlife Conservation Society

Investigators: PI – K.C. Rains; co-PI – **M.C. Rains**

Total Amount of Funding: \$144,000

Date Submitted: June 2023-May 2026

Title: Memorandum of Agreement Between Florida Department of Environmental Protection and University of South Florida Board of Trustees Dep Agreement No. 202101
Source of Funding: Florida State Department of Environmental Protection
Investigators: PI – **M. Rains**
Total Amount of Funding: \$702,000
Project Start and End Dates: April 2021-March 2025

Title: Graduate Scholarships to Advance Community Engaged Solutions to the Grand Challenge of Managing Nitrogen
Source of Funding: National Science Foundation
Investigators: PI – D. Lewis; co-PIs – S. Ergas, T. Lane, **M. Rains**, and M. Trotz
Total Amount of Funding: \$1,000,000
Project Start and End Dates: January 2020-December 2024

Title: Wetlands and Water Quality: A Multimetric Tool for Restoration Prioritization in the Indian River Lagoon Watershed
Source of Funding: US Environmental protection Agency
Investigators: PI –K. Rains; co-PIs – **M. Rains**, S. Landry
Total Amount of Funding: \$ 230,000
Project Start and End Dates: October 2021-September 2023

Title: Temporal and Spatial Optimization of Existing and Emerging Nutrient Management Technologies and Practices for Control of Harmful Algal Blooms
Source of Funding: Environmental Protection Agency
Investigators: PI – Q. Zhang; co-PIs – J. Mihelcic, S. Ergas, M. Arias, **M. Rains**, H. Charkgard
Total Amount of Funding: \$1,000,000
Project Start and End Dates: August 2020-July 2023

Title: Bridge Creek Reservoir Study
Source of Funding: City of Homer
Investigators: PI –M. Rains; co-PIs – K. Rains
Total Amount of Funding: \$35,000
Project Start and End Dates: August 2022-July 2023

Title: Groundwater Vulnerability in Coupled Human-Natural Systems
Source of Funding: National Oceanographic and Atmospheric Administration
Investigators: PI – **M. Rains**; co-PIs – K. Rains
Total Amount of Funding: \$119,000
Project Start and End Dates: August 2020-July 2022

Title: Academic Agreement with Florida Gulf Coast University (General agreement covering many joint projects homed at Florida Gulf Coast University)
Source of Funding: Florida Gulf Coast University
Investigators: PI – **M. Rains**
Total Amount of Funding: \$192,000
Project Start and End Dates: July 2016-June 2022

Title: Wetland Vulnerability and Resiliency Study, Phase III
Source of Funding: St. Lucie County
Investigators: PI – K. Rains; co-PIs – **M. Rains**, S. Landry
Total Amount of Funding: \$29,000
Project Start and End Dates: August 2020-September 2020

Title: Landscape restoration of vernal pool and grassland habitats on the Merced Natural Reserve

Source of Funding: UC Merced

Investigators: PI – **M.C. Rains**

Total Amount of Funding: \$13,000

Project Start and End Dates: September 2017-August 2018

Title: Rapid Assessment of Shallow Groundwater Recharge-Discharge in Salmon-Bearing Watersheds, Kenai Lowlands, Alaska

Source of Funding: National Estuarine Research Reserve System Science Collaborative

Investigators: PI – **M.C. Rains**; co-PI – K.C. Rains

Total Amount of Funding: \$159,000

Project Start and End Dates: November 2017-October 2019

Title: Kenai Lowlands Salmon Research Synthesis and Design of Tools for Integrated Watershed Management

Source of Funding: National Center for Ecological Analysis and Synthesis

Investigators: PI – C. Walker (Kachemak Bay National Estuarine Research Reserve); co-PIs – **M.C. Rains**, D. Whigham (Smithsonian Environmental Research Center), R. King (Baylor University), C. Simenstad (University of Washington)

Total Amount of Funding: \$182,000

Project Start and End Dates: January 2017-June 2018

Title: Co-Leading and Participating in the Scenarios and Modeling Cross-Cutting Theme of the Florida Coastal Everglades Long-Term Ecological Research Program (Subcontract to FCE LTER III: Coastal Oligotrophic Ecosystems Research, \$3,360,000)

Source of Funding: National Science Foundation

Investigators: PI – **M.C. Rains**

Total Amount of Funding: \$355,000

Project Start and End Dates: December 2012-November 2018

Title: Assistance to Develop Methods for the Ecohydrologic Classification and Assessment of Northern Tampa Bay and Northern District Sandhill and Xeric Wetland and Lake Types

Source of Funding: Southwest Florida Water Management District

Investigators: PI – **M.C. Rains**; co-PI – S. Kruse

Total Amount of Funding: \$32,000

Project Start and End Dates: January 2015-December 2016

Title: North American Analysis and Synthesis on the Connectivity of “Geographically Isolated Wetlands” to Downstream Waters

Source of Funding: US Geological Survey/National Science Foundation

Investigators: PI – D. Mushet (USGS), C. Lane (EPA), **M.C. Rains**, and S. Leibowitz (EPA)

Total Amount of Funding: \$43,000

Project Start and End Dates: October 2014-September 2016

Title: Development of a System for Measuring Baseline and Past Conditions of a Mangrove Wetland

Source of Funding: Paso Pacifico

Investigators: PI – **M.C. Rains**; co-PI – K. Rains

Total Amount of Funding: \$9,000

Project Start and End Dates: July 2015-December 2015

Title: RAPID: Climate Change Vulnerability in the Tampa Bay Region Socioecosystem
Source of Funding: National Science Foundation
Investigators: PI – R.K. Zarger; co-PIs – D. Lewis, **M.C. Rains**, S. Landry, F.A. Akiwumi, and S. Bell
Total Amount of Funding: \$89,000
Project Start and End Dates: September 2012-August 2013

Title: ULTRA-Ex: Urban Development, Power Relations, and Water Redistribution as Drivers of Wetland Change in the Tampa Bay Urban Ecosystem
Source of Funding: National Science Foundation
Investigators: PI – D.B. Lewis; co-PIs – F.A. Akiwumi, T.L. Crisman, **M.C. Rains**, R.K. Zarger
Total Amount of Funding: \$289,000
Project Start and End Dates: January 2010-June 2013

Title: Characterization of Microhabitat Complexity of Juvenile Coho Overwintering Habitats in the Kenai Peninsula, Alaska
Source of Funding: Alaska Department of Fish & Game
Investigators: PI – **M.C. Rains**
Total Amount of Funding: \$26,000
Project Start and End Dates: June 2012-May 2013

Title: Sustainable Water Resources Development, Miches, Dominican Republic
Source of Funding: The Rotary Clubs of San Pedro de Macoris, Clearwater, and Dunedin North; Rotary District 6950; and The Rotary International Foundation
Investigators: PIs – **M.C. Rains**, T. Crisman
Total Amount of Funding: \$61,000
Project Start and End Dates: September 2011-Completion

Title: Groundwater Discharge to Salmon-Bearing Headwater Streams, Kenai Peninsula, Alaska II (Subcontract to Headwater Stream Rearing Habitat, \$303,000)
Source of Funding: Alaska Sustainable Salmon Fund
Investigators: PI – **M.C. Rains**
Total Amount of Funding: \$26,000
Project Start and End Dates: May 2010-September 2012

Title: Wetland Inventory and Evaluation Study
Source of Funding: St. Lucie County, Florida
Investigators: PI – **M.C. Rains**; co-PI – T. Crisman
Total Amount of Funding: \$85,000
Project Start and End Dates: April 2010-November 2013

Title: Water-Quality Sampling, Training, and Capacity Building on the North-East Coast of the Dominican Republic
Source of Funding: USF Institute for the Study of Latin America and the Caribbean
Investigators: PIs – **M.C. Rains**, T. Crisman
Total Amount of Funding: \$6,000
Project Start and End Dates: January 2010-December 2010

Title: Changes in Groundwater Discharge to the Oligotrophic Ecotone (Subcontract to FCE LTER II: Coastal Oligotrophic Ecosystems Research, \$1,744,000)
Source of Funding: National Science Foundation
Investigators: PI – **M.C. Rains**
Total Amount of Funding: \$30,000
Project Start and End Dates: November 2009-October 2010

Title: Development of a Coordinated Watershed Approach for Linking Compensatory Mitigation and Tampa Bay Habitat Restoration Goals
Source of Funding: Tampa Bay Estuary Program
Investigators: PI – T. Crisman; co-PIs – S. Bell, S. Landry, **M.C. Rains**, and M. Stewart
Total Amount of Funding: \$95,000
Project Start and End Dates: July 2009-March 2012

Title: Geology of National Parks: Spreadsheets, Quantitative Literacy, and Natural Resources
Source of Funding: National Science Foundation
Investigators: PI – H.L. Vacher; co-PIs – **M.C. Rains**, J. Harden, and T. Juster
Total Amount of Funding Requested: \$197,000
Project Start and End Dates: January 2009-December 2010

Title: FCE LTER II – Supplement for International Collaboration with the Ecosistemas Arrecifales del Pacifico Program of the Mexican ILTER Network (Supplemental to FCE LTER II: Coastal Oligotrophic Ecosystems Research, \$1,744,000)
Source of Funding: National Science Foundation
Investigators: PI – **M.C. Rains**; Sr. Personnel – Francisco de Asís Silva Bátiz, Enrique Godínez Domínguez (Universidad de Guadalajara)
Total Amount of Funding: \$6,000
Project Start and End Dates: July 2008-November 2009

Title: Groundwater Discharge to Salmon-Bearing Headwater Streams, Kenai Peninsula, Alaska (Subcontract to Headwater Stream Wetland Settings and Shallow Ground Water Influence: Relationships to Juvenile Salmon Habitat on the Kenai Peninsula, Alaska, \$185,000)
Source of Funding: Environmental Protection Agency
Investigators: PI – **M.C. Rains**
Total Amount of Funding: \$26,000
Project Start and End Dates: June 2007-May 2009

Title: Investigating a Harm Standard Based Upon Chapter 40D-2.301 FAC
Source of Funding: Southwest Florida Water Management District
Investigators: PIs – D. Martin, S. Emery; co-PIs – **M.C. Rains**, M. Stewart
Total Amount of Funding: \$150,000
Project Start and End Dates: October 2006-April 2008

Title: Investigating Environmental Impacts and Climate Change of Creating a Lake in the Hyperarid Sahara Desert
Source of Funding: National Science Foundation
Investigators: PIs – A. Said, M.A. Ross; Sr. Personnel – **M.C. Rains**, M. Stewart, K. Trout, and H. Fuelberg (Florida State University)
Total Amount of Funding: \$30,000
Project Start and End Dates: September 2006-April 2007

Title: Linkages Between Surface and Subsurface Hydrology and Ecological Functioning of Mangrove Ecosystems
Source of Funding: Smithsonian Institution
Investigators: PI – D.F. Whigham (Smithsonian Environmental Research Center); co-PIs – **M.C. Rains**, I. Feller (Smithsonian Environmental Research Center), J. Verhoeven (Utrecht University), R. Laanbroek (Utrecht University), W. Rodriguez (University of Rhode Island)
Total Amount of Funding: \$60,000
Project Start and End Dates: October 2004-September 2009

Title: Hydrology of Clay Settling Areas

Source of Funding: Florida Institute for Phosphate Research
Investigators: PI – M.A. Ross; co-PIs – **M.C. Rains**, M. Stewart, and K. Trout
Total Amount of Funding: \$1,189,000
Project Start and End Dates: March 2005-June 2010

Title: USF GeoPark and Botanical Gardens – Linked Resources for Community Education in Hydrogeology

Source of Funding: Southwest Florida Water Management District
Investigators: PI – H.L. Vacher; co-PIs – **M.C. Rains** and M. Stewart

Total Amount of Funding: \$5,000

Project Start and End Dates: January 2004-June 2004 (no-cost extension to March 2005)

Workshops Attended

North American Analysis and Synthesis on the Connectivity of “Geographically Isolated Wetlands” to Downstream Waters, Part II (2016), John Wesley Powell Center for Analysis and Synthesis, Ft. Collins, Colorado.

North American Analysis and Synthesis on the Connectivity of “Geographically Isolated Wetlands” to Downstream Waters, Special Session on Hydrologic Modeling (2016), John Wesley Powell Center for Analysis and Synthesis, Ft. Collins, Colorado.

North American Analysis and Synthesis on the Connectivity of “Geographically Isolated Wetlands” to Downstream Waters, Part 1 (2015), John Wesley Powell Center for Analysis and Synthesis, Ft. Collins, Colorado.

Isolated Wetlands Research Workshop (2013), Joseph W. Jones Ecological Research Center, Newton, Georgia

Quantitative Literacy and Geology in the National Parks, Workshop 524 (2012), Geological Society of America Annual Meeting, Charlotte, NC

ULTRA-Climate Workshop: Developing and Coordinating Research on Urban Vulnerability to Climate Change (2012), US Environmental Protection Agency, Washington, DC

Transforming Undergraduate Education in STEM: Making and Measuring Impacts (2011), National Science Foundation, Washington, DC

Regional Science Workshop on Headwaters and Associated Wetlands in the Mid-Atlantic Highlands Region (2006), US Environmental Protection Agency, Philadelphia, Pennsylvania

Designing Hydrologic Observatories as a Community Resource: A CUAHSI National Workshop (2004), Utah State University, Logan, Utah

Wetlands Hydrology Workshop (2004), Tampa Bay Water, Clearwater, Florida

Streamside Vegetation-Hydrologic Interactions Workshop (2003), US Forest Service, Tucson, Arizona.

Workshop on the Hydrogeomorphic Approach to Assessment of Functions of Waters of the U.S., Including Wetlands, in the Santa Margarita Watershed (1997), National Wetland Science Training Cooperative, Fallbrook, California.

Workshop on the Hydrogeomorphic Approach to Assessment of Functions of Precipitation-Driven Wetlands on Discontinuous Permafrost in Interior Alaska (1997), National Wetland Science Training Cooperative, Fairbanks, Alaska.

National Workshop and Symposium on the Future of Wetland Assessment: Applying

Science Through the Hydrogeomorphic Assessment Approach and Other Approaches (1997), Association of State Wetland Managers, Annapolis, Maryland.

Workshop on the Hydrogeomorphic Approach to Assessment of Functions of Waters of the U.S., Including Wetlands, in the Northern Prairie Region (1995), National Wetland Science Training Cooperative, Jamestown, North Dakota.

Legal Support

Amici Curiae, Brief for Aquatic Scientists and Scientific Societies as *Amici Curiae* in Support of Respondents, *County of Maui, Petitioner, v. Hawai'i Wildlife Fund; Sierra Club-Maui Group; Surfrider Foundation; West Maui Preservation Association, Respondents* (2020)

Expert testimony on behalf of plaintiff, *United States of America, Plaintiff, v. Roger J. Lapant, Jr.; J&J Farms; Good Pond Ag, Inc.; and Farmland Management Services, Defendants* (2016-2019)

Expert testimony on behalf of the defendant, *Duarte Nursery, Inc., a California Corporation; and John Duarte, an individual, Plaintiffs, v. United States Army Corps of Engineers, Defendant* (2014-2017)

Expert testimony on behalf of plaintiff, *United States of America, Plaintiff, v. Matthew R. Anchordoguy, Anchordoguy and Company Limited Partnership, and John M. Barlow, Defendants* (2012-2014)

Expert testimony on behalf of plaintiff, *Jacqueline Lane, Friends of Perdido Bay, and James Lane v. International Paper and Department of Environmental Protection* (2010)

Declaration on behalf of the plaintiff (*pro bono*), *Clayton Colson and Citizens for Sanity, Inc. v. Southwest Florida Water Management District* (2009)

Expert testimony on behalf of the plaintiff (*pro bono*), *Octavio Blanco v. Win-Suncoast, Ltd. and Southwest Florida Water Management District* (2008)

Expert testimony on behalf of the plaintiff (*pro bono*), *Octavio Blanco v. Westfield Homes of Florida and Southwest Florida Waters Management District* (2006)

Technical support for defendant, *Borden Ranch Partnership and Angelo K. Tsakopoulos, Petitioners v. United States Army Corps of Engineers and Environmental Protection Agency*, 537 U.S. 99 (2002)