

ASSISTANT TEACHING PROFESSOR  
MASTER OF THE ENVIRONMENT PROGRAM  
UNIVERSITY OF COLORADO  
BOULDER, CO 80303

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## **EDUCATION**

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**University of Denver**, Department of Geography & the Environment, Denver, CO

Doctor of Philosophy (2023)

DISSERTATION TITLE: *Water Literacy in Drought-Prone Cities: Case Studies from Aurora, Colorado, USA and Cape Town, Western Cape, South Africa*

COMMITTEE: Dr. Michael Kerwin and Dr. Hillary Hamann (co-advisors); Dr. Eric Boschmann; Dr. Hanson Nyantakyi-Frimpong; Dr. Thomas LaVanchy

**University of Queensland**, Department of Engineering, Architecture & IT, Brisbane, Australia

Masters of Integrated Water Management (2016)

THESIS TITLE: *The Heart of the Community: Examining the Impacts and Perceptions of the Gold King Mine Spill within Two Local Communities along the Animas River, Colorado, USA*

ADVISOR: Dr. Helen Johnson

**University of Colorado**, Department of Environmental Studies, Boulder, CO

Bachelor of Arts (2012)

CERTIFICATE: Hydrology & Water Resources

MINORS: Geography & Mathematics

**Research specializations & interests:** Water Literacy, Water Security, Water Sustainability, Climate Change, Political Ecology, Mixed-Methods Research (including surveys, GIS, interviews, focus groups, photovoice), International Research (including Australia & South Africa)

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## **ACADEMIC EXPERIENCE**

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**Assistant Teaching Professor;** Master of the Environment, University of Colorado, Boulder, CO (2023 – *present*)

*Courses Taught as Lead Professor:*

ENVM 6100-010: Communicating for Sustainability & Impact

ENVM 6100-012: GIS for Sustainability Professionals

ENVM 5018: Scientific Basis for Environmental Change

ENVM 5013: Environmental Governance – Actors & Institutions

**Adjunct Professor;** Department of Geography & the Environment, University of Denver, Denver, CO (2021 – 2023)

*Courses Taught as Lead Professor or Co-Instructor:*

GEOG 2701: Special Topics in Geography - Integrated Water Management

GEOG 3750: Human-Environment Interactions – Sustainability in South Florida (travel class)

GEOG 3750: Health & Environment through the Ages in England (travel class)

GEOG 3880: Geographies of South Africa (travel class)

**Urban Sustainability Community Engaged Fellow;** Center for Community Engagement to Advance Scholarship & Learning, Denver, CO (2019 – 2022)

**Graduate Teaching Assistant;** Department of Geography & the Environment, University of Denver, Denver, CO (2018 – 2022)

*Courses Taught as GTA:*

GEOG 1201: Environmental Systems – Weather & Climate

GEOG 1202: Environmental Systems – Hydrology

GEOG 1203: Environmental Systems – Landforms

GEOG 2000: Geographic Statistics

GEOG 2401: Human Population (GIS-based)

GEOG 3120: Environmental Modeling (GIS-based)

GEOG 3200: Remote Sensing

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## **PROFESSIONAL EXPERIENCE**

**Water Conservation Specialist;** Aurora Water, Aurora, CO (2016-2018)

RESPONSIBILITIES: Provide customer service and education about water conservation; manage rebate and incentive programs; manage summer irrigation interns

**Water Treatment Technician;** Denver Water, Denver, CO (2013-2014)

RESPONSIBILITIES: Monitor and control plant operations; analyze water quality to ensure proper treatment

**Watershed Science Intern;** Charles River Watershed Association, Boston, MA (2012)

RESPONSIBILITIES: Monitor water quality and update public tracking system with current pollution levels; engage in public outreach and education on urban water quality

**Water Quality Intern;** U.S. Environmental Protection Agency, Golden, CO (2010)

RESPONSIBILITIES: Monitor water quality of rivers, streams, lakes, and abandoned mine discharge; data entry and management; research invasive species

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## **PUBLICATIONS**

*Peer-Reviewed Articles:*

- 2024 **McCarroll, M.J.**, LaVanchy, G.T., Kerwin, M.W. Tourism resilience to drought and climate shocks: The role of tourist water literacy in hotel management. *Annals of Tourism Research Empirical Insights* 2024, 5, 2. <https://doi.org/10.1016/j.annale.2024.100147>
- 2021 LaVanchy, G.T., Kerwin, M.W., Kerwin, G.J., & **McCarroll, M.** The optics of ‘Day Zero’ and the role of the state in water security for a township in Cape Town (South Africa). *Water International* 2021. <https://doi.org/10.1080/02508060.2021.1946763>
- 2020 **McCarroll, M.** & Hamann, H. What We Know about Water: A Water Literacy Review. *Water* 2020, 12, 2803. <https://doi.org/10.3390/w1210280>

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## **AWARDS and GRANTS**

- 2024 **Public and Community-Engaged Scholarships (PACES) Tier 2 Grant** – funding for public and community-engaged scholarship that connects research, teaching, and creative

- work with partners in Colorado communities, awarded by CU Boulder Division of Continuing Education. Award amount: \$5,220
- 2022 **Graduate Education Doctoral Fellowship for Inclusive Engagement** – assistance to highly qualified doctoral candidates who embody the university’s mission of inclusive excellence and demonstrate leadership in fostering the values and principles of inclusive excellence, awarded by the Office of Research and Graduate Education, University of Denver. Award amount: \$9,000
- 2022 **Graduate Education Dissertation Fellowship** – assistance for outstanding doctoral students who demonstrate the greatest academic potential and produce high caliber research and writing, awarded by the Office of Research and Graduate Education, University of Denver. Award amount: \$2,500
- 2022 **Dr. Robert D. Rudd Memorial Award** – recognition of Graduate Scholarship, Research, and/or Exceptional Departmental Service in Geography, awarded by Department of Geography & the Environment, University of Denver.
- 2022 **AWG Outstanding Student Award** – nominated by faculty members to recognize outstanding academic achievements and leadership within the field of geosciences, awarded by the Association of Women Geoscientists (AWG).
- 2022 **AWG Laramide Chapter Scholarship** – provides financial support and recognition to one geoscience student identifying as a woman, gender-fluid, and/or non-binary person to support their goal of pursuing a career in the geosciences, awarded by the Association of Women Geoscientists (AWG). Award amount: \$1,000
- 2022 **Olen Paul Matthews & Kathleen A. Dwyer Fund for Water Resources Award** – supports the dissemination of water research that addresses critical challenges and barriers to successful implementation of water policy research, awarded by Water Resources Specialty Group of Association of American Geographers AAG. Award amount: \$800
- 2022 **Advancing Community-Engaged (ACE) Student Scholars Grants** – supports community-engaged research and creative work projects that are co-developed with community partners, awarded by the Center for Community Engagement to Advance Scholarship & Learning (CCESL), University of Denver. Award amount: \$1,556
- 2022 **Advancing Community-Engaged (ACE) Student Scholars Grant** – supports community-engaged research and creative work projects that are co-developed with community partners, awarded by the Center for Community Engagement to Advance Scholarship & Learning (CCESL), University of Denver. Award amount: \$600
- 2021 **Student Service of the Year** – recognition of a community-engaged fellow for outstanding service provided to University of Denver and surrounding community, awarded by the Center for Community Engagement to Advance Scholarship & Learning (CCESL), University of Denver.
- 2020 **Laurence C. Herold Memorial Field Research Award** – graduate student grant offered to support field research, awarded by Department of Geography & the Environment, University of Denver. Award amount: \$1,000
- 2020 **Laurence C. Herold Student Teaching Award** – recognition of outstanding teaching provided by a graduate teaching assistant, awarded by Department of Geography & the Environment, University of Denver. Award Amount: \$50

- 2020 **Outstanding Graduate Student Service Award** – recognition of outstanding service provided by a graduate student to University of Denver and surrounding community, awarded by Division of Natural Sciences & Mathematics, University of Denver. Award amount: \$300
- 2020 **Student Research Grant** – support for graduate student research in geological sciences, awarded by Geological Society of America. Award amount: \$1,250
- 2019 **Laurence C. Herold Memorial Field Research Award** – graduate student grant offered to support field research, awarded by Department of Geography & the Environment, University of Denver. Award amount: \$1,000
- 2019 **Graduate Student Research Proposal Award** – support for original graduate student research proposal that contributes to any geographic perspective on water resources, awarded by Water Resources Specialty Group of Association of American Geographers AAG. Award amount: \$200

## **FIELD and RESEARCH EXPERIENCE**

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**Principal Investigator:** *Understanding the impacts of photovoice on water literacy of college students*  
Colorado, USA. Qualitative research to understand how photovoice contributes to our understanding of water literacy of college students. (active since Mar 2021).

**Principal Investigator:** *Water Literacy in Aurora, Colorado*  
Colorado, USA. Mixed-methods research using surveys and focus groups to understand water security within the Aurora community. (active since Dec 2020)

**Investigator:** *Understanding the impacts of photovoice in neighborhood planning initiatives*  
Colorado, USA. Qualitative research to understand how photovoice contributes to the creation of neighborhood planning initiatives. (active since Aug 2019).

**Investigator:** *Geographies of Day Zero: water security in Cape Town, South Africa*  
Cape Town, South Africa. Mixed-methods research using surveys and focus groups to understand water security surrounding the Day Zero crisis. (active since June 2019).

**Principal Investigator:** *Tourism Water Literacy of Day Zero: The impacts of knowledge of drought in the tourism industry on water use and behaviors*  
Cape Town, South Africa. Qualitative research using interviews to understand water literacy of tourism industry surrounding Day Zero crisis. (active since May 2019)

**Principal Investigator:** *The Heart of the Community: Examining the Impacts and Perceptions of the Gold King Mine Spill*  
Colorado, USA. Qualitative research using interviews to understand impacts, both perceived and tangible, of the Gold King Mine Spill within Silverton and Durango communities. (Jan – June 2016).

## **PROFESSIONAL ACTIVITIES**

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- Oct 2024 Co-Speaker for “Boosting Community Water Stewardship through Water Literacy: A Case Study from Aurora, Colorado” 30-minute presentation at Sustaining Colorado Watersheds Conference
- June 2022 Co-Convener for “Wicked Water: Addressing Water Security, Equity, Sustainability,

- and Environmental Justice through Research, Education, and Engagement” paper session at American Geophysical Union (AGU) Frontiers in Hydrology Meeting
- April 2021 Co-Chair for “What we know and the optics of what we know about water sustainability and security” paper session at Association of American Geographers (AAG) Annual Meeting
- 2019 – 2020 Acting Graduate Student Representation for the Department of Geography & the Environment

## **INVITED LECTURES and COLLOQUIA**

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- Oct 2023 *Water Literacy: A Tool for Sustainable Water Management*  
GEOG 331: Water, People & Politics in the Anthropocene; Mount Holyoke College
- The Heart of the River: Perceptions of the Gold King Mine Spill*  
FSEM 1111: Colorado’s Rivers; University of Denver
- Oct 2022 *The Heart of the River: Perceptions of the Gold King Mine Spill*  
FSEM 1111: Colorado’s Rivers; University of Denver
- Photovoice: Lessons from the Field*  
GEOG 3350: Qualitative Methods in Geography
- Feb 2022 *The Heart of the River: Perceptions of the Gold King Mine Spill*  
GEOG 3720: Mountain Environments & Sustainability; University of Denver
- Jan 2022 *Drought in Cape Town: The Day Zero Crisis*  
GEOG 3825: International Development in Africa; University of Denver
- Dec 2021 *Water quality issues in South Florida*  
GEOG 3750: Human-Environment Interactions – Sustainability in South Florida; University of Denver
- Nov 2021 *Lessons from Cape Town’s Day Zero crisis*  
GEOG 210: Society & Environmental Issues; University of Illinois Urbana-Champaign
- Nov 2021 *Can a City be Sustainable?*  
GEOG 2401: Human Population; University of Denver
- Oct 2021 *The Heart of the River: Perceptions of the Gold King Mine Spill*  
FSEM 1111: Colorado’s Rivers; University of Denver
- Feb 2021 *Water Resource Management: A Wicked Problem in the Anthropocene*  
GEOG 3840: Water Resource Analysis; University of Denver
- Feb 2020 *The Heart of the River: Perceptions of the Gold King Mine Spill*  
GEOG 3720: Mountain Environments & Sustainability; University of Denver
- Oct 2019 *Mining Impacts on Colorado’s Rivers & the Gold King Mine Spill*  
FSEM 1111: Colorado’s Rivers; University of Denver
- Oct 2019 *Adiabatic Process & Cloud Formation*  
Geography 1201: Environmental Systems – Weather & Climate; University of

Denver

- Sept 2019 *Drought: What Can Denver Learn from Cape Town's "Day Zero?"*  
Enrichment Program; University of Denver
- June 2019 *Tourism during the Day Zero Crisis*  
GEOG 2880/4880: Geographies of South Africa; University of Denver (travel class in South Africa)
- April 2019 *Drought in Cape Town: The Day Zero Crisis*  
GEO 112: Physical Geography – Weather & Climate Community College of Aurora, Aurora, CO
- Dec 2018 *The Hydrosocial Cycle & Cape Town's Water System*  
GEOG 2880/4880: Geographies of South Africa; University of Denver (travel class in South Africa)
- Oct 2018 *The Heart of the River: Perceptions of the Gold King Mine Spill*  
FSEM 1111: Colorado's Rivers; University of Denver
- 2017 – 2018 *Water-wise Landscaping & Outdoor Water Conservation*  
Adult Conservation Classes; Aurora Water Conservation
- 2016 *Watershed Health and Monitoring*  
Adult & Youth Watershed Classes; Charles River Watershed Association

## **PRESENTATIONS**

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- June 2021 *What We Know About Water*  
Invited Session Host for EE Forward Summit, virtual conference
- April 2021 *Tourism Water Literacy & the International Optics of Cape Town's Day Zero*  
Paper Presentation at AAG Annual Meeting, virtual conference
- July 2020 *Applications of Photovoice: From Community Planning Initiatives to Water Literacy Studies*  
Poster Presentation at Earth Educators Rendezvous, virtual conference
- April 2019 *Water Literacy of 'Day Zero': Learning from a South African water crisis*  
Poster Presentation at AAG Annual Meeting, Washington DC

## **PROFESSIONAL AFFILIATIONS**

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- National Association of Geoscience Teachers (NAGT) – since 2020  
American Association of Geographers (AAG) – since 2018  
American Water Resources Association (AWRA) – since 2018  
International WaterCentre Alumni Network (IWCAN) – since 2016