CHRISTINA M. RICHARDSON

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PROFESSIONAL PREPARATION

2016-2020	Ph.D., Earth Sciences, University of California at Santa Cruz
2014-2016	M.S., Geology and Geophysics, University of Hawai'i at Manoa
2010-2012	B.S., Marine Biology, University of California at Santa Cruz

APPOINTMENTS

2022-current	Postdoctoral Researcher, University of California at Santa Cruz
2020-2022	Postdoctoral Fellow, University of California at Santa Cruz
2016-2020	Graduate Research Assistant, University of California at Santa Cruz
2014-2016	Graduate Research Assistant, University of Hawai'i at Manoa
2012-2014	Junior Research Technician, United States Geological Survey
2011-2012	Undergraduate Researcher, University of California at Santa Cruz

PEER-REVIEWED PUBLICATIONS

(10) Richardson, C., M. Young, and A. Paytan. Long-term datasets as records of change: decadal declines in particulate organic matter quantity and quality across the San Francisco Bay and Sacramento-San Joaquin Delta in central California. In prep. for submission to Limnology and Oceanography.

(9) Remple, K. Goldberg, S., Richardson, C., Dulai, H., and C. Nelson. Submarine groundwater discharge influences reef planktonic microbial communities both directly and indirectly. Submitted to Environmental Microbiology.

(8) Richardson, C., Fackrell, J.., Kraus, T., Kendall, C., and A. Paytan. 2022. Nutrient and trace metal contributions from drained islands in the Sacramento-San Joaquin Delta, California. San Francisco Estuary and Watershed Sciences.

(7) Pensky, J., Richardson, C., Serrano, A., Gorski, G., Price, A., and M. Zimmer. 2021. Disrupt and demystify the unwritten rules of graduate school. Nature Geoscience. https://doi.org/10.1038/s41561-021-00799-w

(6) Richardson, C., Fackrell, J., Kraus, T., and A. Paytan. 2020. Lateral carbon exports from drained peatlands: an understudied carbon loss pathway in the Sacramento-San Joaquin Delta, California. Journal of Geophysical Research: Biogeosciences. https://doi.org/10.1029/2020JG005883

(5) Richardson, C., Zimmer, M., Fackrell, J., and A. Paytan. 2020. Geologic controls on source water drive baseflow generation and carbon geochemistry: evidence of nonstationary baseflow sources across multiple subwatersheds. Water Resources Research. https://doi.org/10.1029/2019WR026577

(4) Richardson, C., Dulai, H., Popp, B., Ruttenberg, K., and J. Fackrell. 2017. Submarine groundwater discharge drives biogeochemistry in two Hawaiian reefs. Limnology and Oceanography, http://dx.doi.org/10.1002/lno.10654

(3) Richardson, C., Dulaiova, H., and R. Whittier. 2015. Sources and spatial variability of groundwater-delivered nutrients in Maunalua Bay, Oahu, Hawai'i. Journal of Hydrology: Regional Studies, http://dx.doi.org/10.1016/j.ejrh.2015.11.006

(2) Nelson, C., Donahue, M., Dulaiova, H., Goldberg, S., La Valle, F., Lubarsky, K., Richardson, C., Silbiger, N., and F. Thomas. 2015. Fluorescent dissolved organic matter as a multivariate biogeochemical tracer of submarine groundwater discharge in coral reef ecosystems. Marine Chemistry, http://dx.doi.org/10.1016/j.marchem.2015.06.026

(1) Johnson, C., Swarzenski, P., Richardson, C., Smith, C., Kroeger, K., and P. Ganguli. 2013. Ground-truthing electrical resistivity methods in support of submarine groundwater discharge studies: Examples from Hawai'i, Washington, and California. Journal of Environmental and Engineering Geophysics, http://dx.doi.org/10.2113/jeeg20.1.81

REPORTS

2022 Invited author on climate change impacts on coastal groundwater nutrients, United Nations GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) Working Group 45 on "*Climate Change and Greenhouse Gases Related Impacts on Contaminants in the Ocean*"

HONORS, AWARDS, and GRANTS (~$1.8 million in funding to support research)

2021 Proposition 1 State-Funded Project, California Department of Fish and Wildlife
2020 NSF RAPID Research Grant, National Science Foundation
2020 California Sea Grant Delta Science Postdoctoral Fellowship
2018 2nd Place, Student Poster Presentation, 2018 Bay-Delta Conference
2018 Student Research Grant, International Association of Geochemistry
2018 Student Research Grant, Geological Society of America
2018 Future Leaders in Coastal Science Award, University of California at Santa Cruz
2017 Robert L. Wiegel Scholarship for Coastal Studies, San Diego Foundation
2017 Early Career Award, National Geographic Society
2017 J. Casey Moore Award, University of California at Santa Cruz
2017 Myers Oceanographic and Marine Biology Trust Award
2017 Hydrogeology Division Specialized Award, Geological Society of America
2015 Harold T. Stearns Grant, University of Hawai'i at Manoa
2014 Graduate Research Fellowship Program, National Science Foundation
2011 Research Experience for Undergraduates, National Science Foundation

MENTORING ACTIVITIES

Research Mentor – Maya Montalvo (UCSC), Michael Redmond (UCSC), Carolyn Brady (UCSC), Kaylee Glenney (UCSC), Sai Kambampati (UCSC), Elizabeth Lagesse (UCSC)

RECENT PUBLIC SERVICE ACTIVITIES

2021 AGU Thriving Earth Exchange, contributing scientist with expertise in coastal hydrology working to support community goals.

2020 (ongoing) Co-founder of Geosciences Education and Mentorship Support (GEMS), a free virtual mentorship platform for underserved students interested in attending graduate school, have matched over 250 students with mentors

2020 Invited speaker on federal grant writing webinar with over 700 registered attendees through the American Geosciences Institute

2019 (+2013, 2018) Santa Cruz County Science Fair Judge, Santa Cruz, CA

2018 (+2016, 2017) Led hands-on STEM activities for K-12 students at Expanding Your Horizons, Salinas, CA

SELECT PRESENTATIONS AND CONFERENCE PROCEEDINGS (*mentee)

*Redmond, M., Richardson, C., Montalvo, M., Paytan. A., and M. Zimmer. Trace element dynamics in five fire-impacted coastal California watersheds. AGU Fall Meeting (ED35A-0604). Dec. 13-17, 2021.

Richardson, C., Young, M., and A. Paytan. Long-term shifts in particulate organic matter dynamics evident throughout the San Francisco Bay-Delta system. AGU Fall Meeting (B35M-1579). Dec. 13-17, 2021.

*Montalvo, M., Richardson, C., Montalvo, M., Barton, R., Wagner, S., Paytan. A., and M. Zimmer. Impacts of Wildfire on Carbon and Nitrogen Dynamics in Small Coastal Watersheds. AGU Fall Meeting (H55W-0999). Dec. 13-17, 2021.

Richardson, C., Montalvo, M., Paytan. A., and M. Zimmer. The impact of headwater wildfire burns on the export of material to the coast. Invited Speaker. Japan Geosciences Union. June 2021.

Richardson, C., Young, M. Fackrell, J., and A. Paytan. Using stable isotopes to understand multi-scale changes in aquatic biogeochemistry in the SF Bay and Delta. AGU Fall Meeting. Dec. 2020.

Richardson, C., Zimmer, M., Fackrell, J., and A. Paytan. Geologic controls on source water drive baseflow generation and geochemistry across watershed scales. AGU Fall Meeting. Dec. 9-13, 2019.

Richardson, C., Fackrell, J., and A. Paytan. Sources and magnitude of lateral C losses from drained peatlands. ASLO 2019. Feb. 24-28, 2019.

Fackrell, J., Richardson, C., A. Paytan, C. Kendall, and T. Kraus. Stable isotope values of C, N, P, and S compounds in treated wastewater effluent from facilities of varying capacities and treatment practices. ASLO 2019. Feb. 24-28, 2019.

Serrano, A., Richardson, C., and A. Fisher. Leaching of redox sensitive elements from vadose zone sediments. UC Water Conference. Oct. 24-27, 2018.

*Brady, C., Richardson, C., Fackrell, J., and A. Paytan. Dissolved N species concentrations in agricultural drainage in the Sacramento-San Joaquin Delta. Biennial Bay-Delta Science Conference, Sept. 9-12, 2018.

*Glenney, K., Richardson, C., Fackrell, J., and A. Paytan. Variability in dissolved inorganic and organic C concentrations in agricultural drainage in the Sacramento-San Joaquin Delta. Biennial Bay-Delta Science Conference, Sept. 9-12, 2018.

Richardson, C., Fackrell, J., and A. Paytan. Characterization of redox sensitive elements in agricultural drainage in the Sacramento-San Joaquin Delta. Biennial Bay-Delta Science Conference, Sept. 9-12, 2018.

Richardson, C., Dulai, H., and R. Whittier. A multi-proxy approach for determining the sources and spatial variability of groundwater-delivered nutrients. AGU Fall Meeting (H11F-1414). Dec. 14-18, 2015.

Nelson, C., Donahue, M., Dulaiova, H., Goldberg, S., La Valle, F., Lubarsky, K., Miyano, J., Richardson, C., Silbiger, N., Thomas, F. Developing fDOM as an efficient method of tracking contaminated groundwater in coastal reef ecosystems. 2015 Pacific Islands Climate Science Symposium. Feb. 26 – 27, 2015.

Ganguli, P., Swarzenski, P., Dimova, N., Merckling, J., Kehrline, N., Hohn, R., Richardson, C., Johnson, C., Fisher, A., Lamborg, C., and R. Flegal. The dynamics of mercury speciation and transport at a central California coastal lagoon. AGU Fall Meeting (OS51F-06). Dec. 15-19, 2014.

Richardson, C., Swarzenski, P., and C. Johnson. Quantifying groundwater exchange rates in a beach barrier lagoon using a radioisotopic tracer and geophysical methods. AGU Fall Meeting (H41F-1308). Dec. 9-13, 2013.

Lurz, I., Ganguli, P., Swarzenski, P., Richardson, C., Merckling, J., Johnson C., Hibdon, S., and R. Flegal. Assessing geochemical controls on mercury transformations and transport at a coastal lagoon site. SACNAS, Strengthening the Nation Through Diversity. Oct. 3-6, 2013.

Richardson, C., and P. Swarzenski. On the physics of groundwater exchange in a beach barrier lagoon system: Younger Lagoon, Santa Cruz, CA. NIWR Annual Conference: Sustaining Water Resources and Ecological Functions in Changing Environments. June 11-14, 2013.

NEWS AND OTHER MEDIA

2022 UCSC Science Notes: "Swimming Upstream"

2018 National Geographic Explorer

2018 State of Hawai'i, Department of Health, "Report to the 29th Legislature Relating to Cesspools and Prioritization for Replacement"

2016 University of Hawai'i Sea Grant, Ka Pili Kai, "Wastewater's influence on coastal groundwater quality and the health of coral reefs in Maunalua Bay, O'ahu"

2015 Honolulu Civil Beat and Environment Hawai'i, "DOH, UH studies find growing evidence of cesspool impacts to coast, potable wells"

2015 State of Hawai'i, Department of Health, Presentation on "Proposed Amendments to Chapter 11-62 Wastewater Systems Rules"

2014 National Science Foundation Graduate Research Fellowship Program, "From source to sea: my pathway to graduate school"

CERTIFICATIONS

- Emergency Medical Technician, National Registry of EMTs (#E3137569)
- Basic Life Support for Healthcare Professionals, AHA
- River Rescue Certification (Sierra Rescue International)
- Open Water Diver (Professional Association of Diving Instructors