

Chloe S. Faehndrich

Ph.D. Student

Environmental Science, Policy, and Management at the University of California, Berkeley

chloe_faehndrich@berkeley.edu • <https://www.linkedin.com/in/chloe-faehndrich-714514219/> • +1 (607) 351-0059**EDUCATION**

University of California, Berkeley, Berkeley, California **2028**

GPA: 4.0

Ph.D. Student in the Department of Environmental Science, Policy, and Management

Skidmore College, Saratoga Springs, New York **May 2023**

Summa Cum Laude, GPA: 3.96

Bachelor of Arts with Honors, Environmental Science

Bachelor of Arts with Honors, Spanish

Semester study abroad in Madrid, Spain, with the Tufts-Skidmore Spain Program (2021)

Semester study abroad in Ecuador, with the Galápagos Islands Direct Enrollment Program (2022)

PUBLICATIONS

PUBLISHED

- Pilla, R. M., **Faehndrich, C. S.**, Fortner, A. M., Jett, R. T., Jones, M. W., Jones, N. J., ... & Griffiths, N. A. (2024). Shifts in carbon emissions versus sequestration from hydropower reservoirs in the southeastern United States. *Journal of Geophysical Research: Biogeosciences*, 129(7), e2023JG007580.
- Wang, N., Mark, N., Launer, N., Hirtler, A., Weston, C., Cleckner, L., **Faehndrich, C.**, LaGorga, L., Xia, L., Pyrek, D., Penningroth, S.M., and Richardson, R. E. (2024). Harmful algal blooms in Cayuga lake, NY: From microbiome analysis to eDNA monitoring. *Journal of Environmental Management*, 354, 120128.
- Jensen, K., **Faehndrich, C.**, Colzani, E., McClure, M., Covey, K. (2023). Rapid soil harvesting using a novel soil auger system for farm-scale soil carbon estimates. *Soil Science Society of America Journal*.
- Pilla, R. M., **Faehndrich, C. S.**, Fortner, A. M., Jett, R. T., Jones, M. W., Jones, N. J., Phillips, J. R., Hansen, C. H., Iftikhar, B., Jager, H. I., Matson, P. G., & Griffiths, N. A. (2023). Data from: Rates and drivers of carbon emissions from hydropower reservoirs in the southeastern United States [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7915527>

IN REVIEW

- Wang, N., Mark, N., Launier, N., Hirtler, A., Cleckner, L., **Faehndrich, C.S.**, LaGorga, L., Xia, L., Pyrek, D., Penningroth, S., and Richardson, R.E. Harmful Algal Blooms in Cayuga Lake, NY: Development of Mobile qPCR Assay for Onsite Screening. In review at *Science of the Total Environment*.

REPORTS

- **Faehndrich, C.S.** and Pilla, R.M. (2022). Hydropower reservoirs: an important source of greenhouse gas emissions to the atmosphere. *Oak Ridge National Laboratory*, 1-11.

IN PREPARATION

- **Faehndrich, C.S.**, Karl, P., Kellogg, K.A. A systematic literature review and survey of offshore barriers to wind implementation in the US. In preparation for *Renewable Energy*.

HONORS AND RESEARCH GRANTS

2024	USGS – The Bromery Internship (1 year, up to \$74,000)
2023	Phi Beta Kappa
2023	Sigma Delta Pi
2023	Skidmore College Spanish Departmental Award (\$100)
2019-2023	Porter Wachenheim Presidential Scholar in Science and Mathematics (4 years of merit-based aid, \$60,000)
2019-2023	Skidmore College Dean’s List
2020-2022	Skidmore College Periclean Honors Forum
2022	Skidmore Opportunity Fund, Senior Capstone Project Support (\$500)
2022	Skidmore Opportunity Fund, Travel to Present Award (\$694)
2022	US Department of Energy, Office of Science, Science Undergraduate Laboratory Internships (SULI) recipient (1 summer of funding, \$8,400)
2022	MIGRAMAR Translation Grant recipient (\$500)
2021	US Department of Energy, Office of Science, Visiting Faculty Program (VFP) recipient (1 summer of funding, \$8,400)
2020	Skidmore Summer Experience Fund Recipient (1 summer of funding, \$4,000)

PRESENTATIONS

2024	Faehndrich, C.S. , Sim, L., Avouris, D., Kudela, R., Senn, D., Bouma-Gregson, K., Bergamaschi B. “Merging satellite and field-based chlorophyll and phytoplankton data for improved harmful algal bloom monitoring in the Delta” (Oct. 2024). Oral presentation at the Bay-Delta Science Conference in the session “Harmful Algal Blooms and Invasive Species”.
2022	Pilla, R.M., Griffiths, N.A., Faehndrich, C.S. , Fortner, A.M., Jett, T., Jones, M.W., Jones, N., Phillips, J.R. “Trends & Drivers of Greenhouse Gas Fluxes from Hydropower Reservoirs in the Southeastern US” (Dec. 2022). Oral presentation at American Geophysical Union 2022 Fall Meeting, in the session “Toward an Understanding of Methane Fluxes on Response to Environmental Change”.
2022	Faehndrich, C.S. and Pilla, R.M. “Hydropower reservoirs: an important source of greenhouse gas emissions to the atmosphere” (Oct. 2022). Poster presentation at the Global Lake Ecological Observatory Network (GLEON) 2022 All Hands’ Meeting, Lake George, New York.
2022	Faehndrich, C.S. and Pilla, R.M. “Hydropower reservoirs: an important source of greenhouse gas emissions to the atmosphere” (Aug. 2022). Poster presentation at the Oak Ridge National Laboratory Undergraduate Intern Poster Symposium, Oak Ridge, Tennessee.
2022	Faehndrich, C.S. and Pilla, R.M. “Hydropower reservoirs: an important source of greenhouse gas emissions to the atmosphere” (July 2022). Oral presentation for the Department of Energy, Office of Science, 2022 Inaugural Ignite Off Competition, Oak Ridge, Tennessee.
2021	Faehndrich, C.S. and Kellogg, K.A. “A systematic literature review and survey of barriers to onshore wind energy implementation in the US” (Aug. 2021). Poster presentation at the National Renewable Energy Laboratory Undergraduate Intern Poster Symposium, Golden, Colorado.
2021	Faehndrich, C.S. , Karl, P., Kellogg, K.A. “A systematic literature review and survey of barriers to wind energy implementation in the US” (Aug. 2021). Poster presentation at the Skidmore College Summer Research Symposium, Saratoga Springs, New York.

RESEARCH EXPERIENCE

2024	Bromery Fellow, U.S. Geological Survey, Sacramento, California (supervisors: Dr. Keith Bouma-Gregson, Dr. Dulcinea Avouris) <ul style="list-style-type: none"> Integrate satellite remote sensing into USGS longstanding harmful algal bloom (HAB) monitoring programs in the San Francisco Bay and Sacramento-San Joaquin Delta
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- Conduct hyperspectral in situ data collection to validate a Sentinel-2 chlorophyll-a algorithm developed for the Delta
 - Process hyperspectral field data, multispectral satellite data, and high resolution in situ chlorophyll-a measurements
 - Compare and analyze results to assess algorithm effectiveness
- 2024 **Graduate Research Assistant**, University of California, Berkeley, Berkeley, California (supervisor: Dr. Maggi Kelly)
- Geospatial analyst with the Agriculture and Natural Resources Statewide Program in Informatics and Geographic Information Systems
 - Compute agroclimate metrics in R and create eBook with example code
 - Maintain Airtables database for Farm to School Program
- 2023 **Graduate Research Assistant**, University of California, Berkeley, Berkeley, California (advisor: Dr. Paolo D'Odorico and Dr. Manuela Girotto)
- Reviewed literature on irrigation climate impacts to inform representation of different irrigation schemes in GEOS-5 AOGCM, one of NASA's Earth Systems Models
 - Began literature review on greenhouse gas emissions from irrigated lands
- 2022 **Research Intern**, Science Undergraduate Laboratory Internships program at the US Department of Energy's Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee (advisor: Dr. Rachel Pilla)
- Aimed to better understand greenhouse gas emissions from hydropower reservoirs to assess reservoir contributions to the greenhouse gas budget in the atmosphere
 - Carried out background research, field data collection, and data analysis both in the lab and using statistical methods (i.e., RStudio)
 - Used various types of sampling methods including surface chambers, funnel traps, and water chemistry samples to quantify and understand emissions
 - Processed samples using gas chromatography and chlorophyll fluorescence
 - Prepared a final report, oral presentation, and poster
 - Presented at two poster symposiums: GLEON conference and ORNL
 - Currently contributing to manuscript
- 2022 **Translator**, MIGRAMAR, Ecuador (advisor: Dr. Cesar Peñaherrera-Palma)
- Translated 20 pages of information on marine wildlife research from Spanish to English
- 2022 **Undergraduate Student Researcher**, Galápagos Islands Direct Enrollment Program, Ecuador
- Underwater data collection - fish population surveys, macrophyte identification using transects, percent cover of substrates
 - Conducted research on damselfish territory preferences with regard to algal functional groups
 - Conducted research on damselfish territorial responses to living and nonliving intruders
- 2021 - **Research Intern**, Visiting Faculty Program at the US Department of Energy's National Renewable Energy Lab (NREL), Golden, Colorado (advisor: Dr. Karen Kellogg)
- Performed a literature review and created a nationwide survey to identify the most common barriers to wind energy implementation in the US
 - Presented at two poster symposiums: NREL and Skidmore College
 - Completed a final internship report
 - Currently preparing the manuscript for publication
- 2021 **Research Intern**, Alianza por la Solidaridad, Madrid, Spain

- Compiled energy use data to determine the organization's total energy consumption in 2019
- Worked at their fair-trade store conducting research on fair-trade; used both English and Spanish sources and compiled findings into a report written in Spanish
- Used Microsoft Excel and PowerPoint to create an annual report of the store's sales
- Translated and transcribed emails into English to send to our partners in the US

2020 **Research Intern**, Cornell University's Richardson Lab of Applied Microbiology, Ithaca, New York (advisor: Dr. Ruth Richardson)

- Collected and catalogued water samples from Cayuga Lake on a bi-weekly basis for bloom monitoring
- Performed microscopy on water and bloom samples to look for the presence of Microcystis
- Ran Biomeme Franklin to collect Real-Time PCR data to assess swimming area water quality and wrote a report on the findings
- Created graphs using MS Excel to analyze Biomeme data and designed maps using QGIS and ArcGIS online to show patterns in toxicity over harmful algal blooms seasons
- Wrote sections of manuscript including sampling and microscopy methods
- Presented my progress at weekly research team meetings

2020 **Undergraduate Student Researcher**, Skidmore College, Saratoga Springs, New York (advisor: Dr. Kristofer Covey)

- Conducted research to quantify methane emissions from trees in Skidmore College's North Woods as an independent study
- Used gas flux chambers and methane extraction to quantify methane emissions; analyzed extracted methane samples using a gas chromatograph
- Read primary literature on tree methane emissions and compiled findings in a reference table

2020 **Undergraduate Student Researcher**, Tropical Field Ecology Travel Seminar, Skidmore College and Monteverde Institute, Monteverde, Costa Rica (advisors: Dr. Monica Raveret Richter and Senior Lecturer Anne Gallagher Ernst)

- Designed and carried out a field-based research project on the impact of disturbance on arthropod biodiversity and presented findings
- Collected data on tree height and health in reforestation plots in Three-Wattled Bellbird Biological Corridor to support Monteverde Institute's conservation efforts
- Attended presentations on local history, wildlife, and conservation efforts
- Performed multiple forest characterizations to compare different forest types
- Learned how to identify a variety of tropical species and kept a field journal
- Researched the two-toed sloth using peer reviewed sources and presented findings
- Wrote and illustrated a Spanish children's book on biodiversity in Costa Rica

2019 **Research Technician**, Skidmore College, Dome Island, Lake George, New York (advisor: Dr. Kristofer Covey)

- Joined a team of researchers on a sampling trip to Dome Island to assess soil carbon sequestration capacity
- Used Quick Carbon sampling and recorded sampling locations on Avanza maps

LEADERSHIP, TEACHING & VOLUNTEERING EXPERIENCE

2020 - **Admissions Ambassador**, Skidmore College, Saratoga Springs, New York
2021

- Led regular tours to show prospective students Skidmore College's campus
- Presented information about student life and academics during panels and high school visits

- Hosted virtual meetings with prospective students to provide information about Skidmore and answer questions

2020 **Research Intern**, Cornell University's Richardson Lab of Applied Microbiology, Ithaca, New York (advisor: Dr. Ruth Richardson)

- Created and co-led microscopy session for youth in remote *Sciencenter* camp
- Created recruiting and training videos and presentations to engage volunteers in lake sampling and bloom identification to expand monitoring efforts
- Led weekly "open hours" to answer questions from volunteers

MEMBERSHIP

Global Lake Ecological Observatory Network (GLEON)

TECHNICAL SKILLS

LANGUAGES

- English (native)
- Spanish (fluent)

COMPUTATIONAL

- RStudio
- Geographic Information Systems (GIS) – QGIS, ArcGIS Pro, ArcGIS online
- Python
- ENVI
- Google Earth Engine (GEE)
- Microsoft Excel

LABORATORY

- Gas chromatography, chlorophyll extractions using fluorometers, titrations, quantitative polymerase chain reaction (qPCR) for microcystin harmful algal bloom synthase genes and fecal indicator bacteria
- Experience using microscopes, scales, pipettes, pH meters, centrifuges, microplate readers, microwave digesters, and atomic absorption spectrometers

CERTIFICATIONS

- Advanced Open Water Diver (issuer: PADI)