

MICHAEL ANTHONY POHLMANN

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EDUCATION

Ph.D.	The University of Arizona, Tucson Environmental Science	2022
M.S.	The University of Arizona, Tucson Environmental Science	2015
B.S.	Northern Illinois University, Dekalb Geology and Environmental Geosciences, Chemistry minor	2002

RESEARCH INTERESTS

Critical Zone Science, soil and environmental chemistry, post-fire soil chemistry, fate of soil nutrients and carbon after disturbance.

PROFESSIONAL APPOINTMENTS

University of Arizona (UArizona) - Department of Environmental Science (ENVS)

October 2022 to present
Global Professor

August 2021 to January 2022
Lead Graduate Instructor

August 2019 to January 2020 and August 2020 to May 2021
Graduate Associate Research Assistant

August 2018 to January 2019
Lead Graduate Instructor

January 2018 to May 2018
Graduate Associate Research Assistant

August 2017 to December 2017
Graduate Associate Teaching Assistant - Instruction

August 2015 to May 2016 and August 2016 to May 2017
Graduate Associate Research Assistant

August 2014 to May 2015
Graduate Associate Teaching Assistant - Instruction
TEACHING EXPERIENCE

UArizona ENVS

Instructor

ENVS 430/530: Environmental Monitoring and Remediation and Lab, cross-listed undergrad capstone/Grad course, *course development*: curriculum, syllabus, and lecture, Fall 2021

ENVS 210: Introduction to Environmental Science, undergraduate core course (online), *course development*: curriculum, syllabus, and lecture, Fall 2018

Teaching Assistant

ENVS 210: Introduction to Environmental Science, undergraduate core course (online), teaching team, student correspondence, for A. Haverland, Fall 2021

ENVS 401/501: Sustainable Management of Arid Lands and Salt Affected Soils, cross-listed undergrad/Grad course, *lecturer, lab instructor*, unofficial audit, for J. Walworth, Fall 2017

ENVS 431/531: Soil Genesis and Classification, cross-listed undergraduate/Graduate course, logistics and *lab instructor*, for C. Rasmussen, Fall 2017

ENVS 210: Introduction to Environmental Science, undergraduate core course, *guest lecture*, teaching team, student correspondence, unofficial audit, for J. Curry, Fall 2014

Guest Lecture

ENVS 430/530: Environmental Monitoring and Remediation cross listed undergraduate capstone/Graduate course (online), Fundamentals of QGIS, for J. Artiola, Fall 2020

Course Development

ENVS 474/574 Aquatic Plants and the Environment, cross-listed undergraduate/Graduate course, transition to online instruction, for D. Walker, Summer 2020

Teaching Award

Outstanding Graduate Teaching Associate Award, College of Agriculture and Life Sciences ENVS, UArizona, Spring 2022

UArizona, Flandreau Science Center & Planetarium

Lead instructor and program development

Critical Zone Discovery program, Critical Zone (CZ) science instruction for the benefit of visiting Primary School students, Spring 2016

WORK EXPERIENCE

Committee and Volunteer Positions

UArizona School of Earth and Environmental Sciences

Graduate Committee Chair - ENVIS, planned and lead conference for ENVIS & School of Earth and Environmental Sciences EarthWeek conference, Spring 2017, Co-Chair Spring 2012-2014

International

Environmental Volunteer, US Peace Corps, Ghana, West Africa, supported non-governmental organizations in service to communities with environmental and natural resources concerns. Cultural exchange, coordinated with local stakeholders (i.e., community officials, small business owners) to implement best practices in small scale agriculture, land stewardship, and income generation (e.g., nurseries and animal husbandry), teamed with public health volunteers in Guinea worm eradication campaigns, 2003-2004

PUBLICATIONS

Dissertation Title

Tracking the Pulse of Pyrogenic Carbon and Lithogenic Solutes through Surface Soil of a Western Forest Headwater Catchment Immediately Following Wildfire. (2022) Committee: Jon Chorover, Jen McIntosh, Craig Rasmussen, and Katerina Dontsova.

Refereed Journal Articles

Pohlmann, M., Swetnam, T., Perdrial, J., & Chorover, J. (2022). Post-fire surface soil chemistry linked to pre-fire above ground biomass in a mixed conifer headwater catchment. NSF EAR-1331408 Catalina-Jemez Critical Zone Observatory (CZO), *In prep for submission to Biogeochemistry*

Pohlmann, M., Rasmussen C., & Chorover, J. (2022). Wildfire effects on soil carbon in a forested catchment during the earliest post-fire period, NSF EAR-1331408 Catalina-Jemez CZO, *In prep for submission to Geoderma*

Pohlmann, M., Schaap, M.G., & Chorover, J. (2022). Fate of solute pulse released to surface soils following wildfire, NSF EAR-1331408 Catalina-Jemez CZO, *In prep for submission to Geochemistry, Geophysics, Geosystems*

Pohlmann, M., Dontsova, K., Root, R., Ruiz, J., Troch, P., & Chorover, J. (2016). Pore water chemistry reveals gradients in mineral transformation across a model basaltic hillslope.

Geochemistry, Geophysics, Geosystems, 17(6), 2054-2069, Landscape Evolution Observatory, <https://doi.org/10.1002/2016gc006270>

Trostle, K. D., Runyon, J. R., Pohlmann, M. A., Redfield, S. E., Pelletier, J., McIntosh, J., & Chorover, J. (2016). Colloids and organic matter complexation control trace metal concentration-discharge relationships in Marshall Gulch stream waters. *Water Resources Research*, 52(10), 7931-7944, NSF EAR-1331408 Catalina-Jemez CZO, <https://doi.org/10.1002/2016wr019072>

Book Chapter

Volkman, T. H. M., Sengupta, A., Pangle, L. A., Dontsova, K., Barron-Gafford, G. A., Harman, C. J., Niu, G.-Y., Meredith, L. K., Abramson, N., Neto, A. A. M., Wang, Y., Adams, J. R., Breshears, D. D., Bugaj, A., Chorover, J., Cueva, A., DeLong, S. B., Durcik, M., Ferre, T. P. A., Hunt, E. A., Huxman, T. E., Kim, M., Maier, R. M., Monson, R. K., Pelletier, J. D., Pohlmann, M., Rasmussen, C., Ruiz, J., Saleska, S. R., Schaap, M. G., Sibayan, M., Tuller, M., Haren, J. L. M. v., Zeng, X., & Troch, P. A. (2018). Controlled experiments of Hillslope Coevolution at the Biosphere 2 Landscape Evolution Observatory: Toward Prediction of Coupled Hydrological, Biogeochemical, and Ecological Change. In *Hydrology of Artificial and Controlled Experiments*. <https://doi.org/10.5772/intechopen.72325>

PRESENTATIONS AND MEDIA INTERVIEWS

Invited Presentations

Pohlmann, Michael A. Tracking seasonal change in soil: real-time sensors and chemical analysis. LEO presentation at 'What if?' Presentation Series: UArizona Biosphere 2. Oracle, AZ, 2017

Refereed Presentations

International Conferences

Pohlmann, M. et al., Catchment-scale redistribution of solutes and black carbon over three years following wildfire in the Jemez Mountains, New Mexico, USA. CZO poster presented at the American Geophysical Union Fall Meeting. New Orleans, LA. December 2017

Pohlmann, M. et al., Resolving dissolved versus colloidal and particulate weathering products across a storm hydrograph. CZO poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA, December 2012

Graduate Student Conferences

Pohlmann, M. & Jon Chorover. Fate of rapidly deposited carbon lithogenic solutes onto surface soils within a mixed conifer catchment severely burned by wildfire. Symposium presented at UArizona EarthWeek Conference, Tucson, AZ, April 2017

Pohlmann, M. et al., Pyrogenic carbon quantification in high-elevation catchment soil following a wildfire in the semi-arid Southwest. Poster presented at UArizona, EarthWeek Conference, Tucson, AZ, April 2016

Pohlmann, M. et al., Modeled alteration products from pore water chemistry during incipient weathering of granular basalt at LEO. Symposium presented at UArizona EarthWeek Conference, Tucson, AZ, April 2015

Pohlmann, M. et al., Stream water solute behavior associated with snowmelt in the Jemez-Catalina research areas and implications for further study. Poster presented at UArizona EarthWeek Conference, Tucson, AZ, April 2012

Presentation Award

Top Graduate Presentation – SWESx Symposium (now called ENViSion), ENVS & School of Earth and Environmental Sciences EarthWeek Conference, UArizona, April 2015.

Media Guest Interviews

KXCI 91.3 Tucson's Community Radio (2020, March 12). Thesis Thursdays with Mónica Ramírez-Andreotta. <https://kxci.org/podcast/michael-pohlmann/>

Arizona Daily Star (2012, October 28). Catalinas' Rock: Life's foundation. CZ Feature. Tom Beal. https://tucson.com/news/science/catalinas-rock-lifes-foundation/article_7b8c3009-5d7f-53d0-9f0b-724de5200eb8.html

RESEARCH EXPERIENCE

Independent research

Designed and conducted independent research on fire effects on soil and water chemistry in the Jemez River Basin CZO, including method development for complex quantification and characterization of soil pyrogenic carbon using molecular markers (BPCA method), conducted complimentary soil aqueous extraction and chemical analysis on >400 soil samples, 2015-2020

Conducted the first study of pore water chemistry response to irrigation cycles in the newly constructed Landscape Evolution Observatory

Collaboration

Project Support

- Jemez River Basin – Santa Catalina Mountains CZO: Valles Caldera National Preserve, Jemez Springs, New Mexico, Coronado National Forest, Tucson, UArizona, 2011-2013 and 2015-2022
- Landscape Evolution Observatory: Biosphere 2, Oracle, UArizona, 2014-2015
- Iron King Mine Federal Superfund Site: Dewey-Humboldt, Arizona, 2013-2015

Laboratory Responsibilities

Laboratory steward, CZO and LEO research support, laboratory and instrument maintenance, field installation and sampling campaigns, chemical analysis, data management, and technical support, 2014-2021

Research supervisor, undergraduate student summer internship, designed and implemented field collections and chemical analysis, summer 2012, published in 2016

Technical Skills

Software

- OriginLab Pro, statistics, data processing and visualization
- R and R Studio, statistics, data processing and visualization
- Matlab, statistics data processing and visualization
- QGIS, geographical information system platform for viewing, processing, and analysis of geospatial data, data visualization
- HYDRUS 1D & 2D, simulating heat, water, and solute movement through media
- Microsoft Office

Instrumentation overview

Perkin Elmer Series 200 high performance liquid chromatography (HPLC) with UV-Vis and Refractive Index (RI) detection, associated software packages, sample preparation, instrument maintenance and troubleshooting, fundamental, theoretical, and working knowledge

Shimadzu TOC-V Carbon Analyzer, Solid Sample Module, and Total Nitrogen Module, associated software packages, sample preparation, instrument maintenance and troubleshooting, fundamental, theoretical, and working knowledge

DIONEX ICS-1000 Ion Chromatograph (IC), anion analysis, associated software packages, sample preparation, instrument maintenance and troubleshooting, fundamental, theoretical, and working knowledge

FluoroMax-4 Spectrofluorometer, associated software packages, sample preparation, instrument maintenance, data processing, fundamental, theoretical, and working knowledge

Perkin Elmer ELAN DRC-e ICP-MS and Agilent Series 7700 ICP-MS, associated software packages, sample and solution preparation, daily and periodic maintenance, data processing, fundamental, theoretical and working knowledge

Polarized Light and Phase Contrast Microscopy (PLM and PCM, respectively), asbestos confirmation and quantification, spore and fiber contamination, sample preparation, maintenance, theoretical and working knowledge, commercial laboratory

JEM-4000FX Transmission Electron Microscope (TEM), sample preparation, system maintenance, fundamental knowledge, commercial laboratory

ADDITIONAL TRAINING AND TEACHING

GTA Online Course Design Boot Camp, deployed skills obtained as *Course Support Specialist* in support of existing courses and development of new courses, Summer 2018 and 2020

Alan Alda Center for Science Communication Workshop, Host: The Agnese Nelms Haury Program in Environment and Social Justice, and UArizona College of Science, Spring 2018 and Spring 2020 refresher

YogaOasis Hatha Yoga 200-hour Teacher Training 2016, Tucson AZ, Yoga Alliance Certified Instructor, 2016-present

SELECT COURSEWORK

Listed pertinent degree coursework, organized by discipline

Environmental Science (14 graduate credits, 3 undergraduate credits, *special course)

Sustainable Management of Arid Lands & Salt Affected Soil (unofficial audit, J. Walworth), Environmental Microbiology (R. Maier & V. Rich, Fall), Soil Genesis and Classification (C. Rasmussen), Aquatic Plants and the Environment (E. Glen & K Fitzsimmons), Introduction to Environmental Science (unofficial audit, J. Curry)

*Critical Zone and Ecosystem Dynamics summer course, Ceresole Reale, Piedmont, Italy, Directors: A. Provenzale of National Research Council of Italy and Institute of Geosciences and Earth Resources, and T. White of Pennsylvania State University

Chemistry & Environmental Chemistry (13 graduate credits, 33 undergraduate credits)

Environmental Soil and Water Chemistry (J. Chorover), Environmental Organic Chemistry (J. Curry), Interfacial Chemistry of Biomolecules in Environmental Systems (J. Curry), Stable Isotopes in Chemistry and Biochemistry (UIC EAES transfer), Introduction to Chemistry, General Chemistry I & II with Lab, General Organic Chemistry I & II with Lab, Analytical Separation & Measurement with Lab, Geochemistry & Cosmochemistry, Geochemistry of the Earth's Surface, Environmental Geochemistry

Hydrology (12 graduate credits, 3 undergraduate credits)

Modeling Mass and Energy Flow in Soil- HYDRUS 1D and 2D (T. Ferre & M. Tuller), Fundamentals of Water Quality (J. McIntosh), Fundamentals of Subsurface Hydrology (T. Ferre), Fundamentals of Surface Hydrology (P. Troch), Hydrogeology

Geology (32 undergraduate credits)

Environment & Life Through Time, Introduction to Mineralogy with Lab, Sedimentary Environments, Structural Geology with Lab, Igneous & Metamorphic Petrology, Plate Tectonics, Global Cycles, Geologic Field Work

Physics (3 graduate credits, 8 undergraduate credits)

Soil Physics (M. Tuller), General Physics I & II

Mathematics & Computer Science (11 undergraduate credits)

Calculus I & II, Elementary Programming in C

Misc. (3 graduate credits, 6 undergraduate credits)

Science Writing for Environmental, Agriculture and Life Sciences (E. Glenn & K. Fitzsimmons), Natural Resources & Environmental Quality (NIU - Geography), American Environmental History (NIU - History)