

QUALIFICATIONS

Teaching experience in civil, environmental, and humanitarian engineering; hydrology; geology; and physical activity at community college, undergraduate, and graduate levels. Research and coursework experience in sustainable engineering design; marine and terrestrial subsurface hydrogeology; environmental chemistry; microbial ecology; subsurface bioremediation; contaminants of emerging concern; geomicrobiology; reactive transport modeling; inverse problems.

EDUCATION

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| Sept. 2010 – Dec. 2015 | Ph.D., Colorado School of Mines, Golden, CO
Hydrologic Science and Engineering |
| Sept. 2007 – June 2010 | M.S., University of California, Davis, CA
Civil & Environmental Engineering |
| Sept. 2002 – June 2007 | B.S., Cal Poly State University, San Luis Obispo, CA
Civil Engineering |

RESEARCH EXPERIENCE

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| June 2016 – Present | Postdoctoral Fellow, UC Santa Cruz, Santa Cruz, CA |
| | <ul style="list-style-type: none">• Used finite element codes such as Finite Element Heat and Mass (FEHM) to simulate three-dimensional reactive transport• Integrated microbiology and geochemistry into sub-seafloor hydrologic models• Science crew member for 30-day expedition to North Pond in the Mid-Atlantic• Participated in field research for managed aquifer recharge pilot scale experimentation• Provided guidance to Ph.D. students regarding microbial sampling, archival, molecular techniques, and bioinformatics• Attended research conferences and meetings and prepared publications for peer-review |
| Jan. 2016 – May 2016 | Postdoctoral Fellow, Colorado School of Mines, Golden, CO |
| | <ul style="list-style-type: none">• Assessed shifts in microbial ecology as a result of perfluoroalkyl acid exposure• Explored the transport of perfluoroalkyl acids in active bioremediation settings• Analyzed and modeled results from batch and flow-through experiments using Stanmod Suite and Hydrus1d• Prepared documents for peer-reviewed publication and project reporting |

RESEARCH EXPERIENCE, CONT.

- May 2011 – Dec. 2015 Research Assistant, Colorado School of Mines, Golden, CO
- Performed interdisciplinary bench-scale studies integrating hydrology, microbiology, and analytical chemistry
 - Attended collaborator and national meetings to present original research material
 - Developed and articulated skills such as sterile technique, microbial culturing, genetic sequencing, Reverse Transcriptase Quantitative Polymerase Chain Reactions (RT-qPCR), Gas Chromatography-Flame Ionization Detection (GC-FID), Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)
 - Supervised four undergraduate students; one of whom received an Undergraduate Research Fellowship for \$2000 under my tutelage; another received the Junior Year Program Exchange fellowship to study at Tohoku University in Japan
- Jan. 2008 – June 2010 Research Assistant, UC Davis, Davis, CA
- Completed thesis titled *Modeling of Ureolytic Calcite Precipitation for the Bioremediation of Strontium-90 Using a Variable Velocity Streamtube Ensemble*
 - Created a mathematical model to simulate reactive groundwater transport of a novel bioremediation technique
 - Conducted literature reviews for multiple reactive transport topics including mercury cycling and strontium immobilization
 - Utilized PHREEQC, UCODE, MathCAD, TOUGHREACT, MINEQL+, and Geochemist's Workbench to model biogeochemical systems

TEACHING EXPERIENCE

- July 2016 – Aug. 2016 Instructor of Record, Colorado School of Mines, Golden, CO
- *EGGN 497B: Biochar Water Filtration Systems - UTEC*. The continuation of Projects for People including a trip to a field site in rural Peru to conduct social surveys, interviews, and water quality testing. Course includes laboratory sessions at the Universidad de Ingeniería y Tecnología (UTEC) in Lima, Peru
 - Created the course to provide Mines and UTEC students an opportunity to implement an engineering project and appreciate the necessity of human-centered design
 - Collaborated with international professors and professionals to ensure community acceptance and access to laboratory facilities and supplies
 - Maintained a budget of \$20,000 including international travel for four Mines affiliates
 - Prepared final reports for funding agencies and national conferences
- May 2015, May 2016 Teaching Assistant, Colorado School of Mines, Golden, CO
- *CEEN 330: Environmental Engineering Field Session*. Introduction to laboratory and field skills for the analysis of an environmental engineering problem. Students receive instruction on measurement of water quality parameters (chemical, physical, and biological) in the laboratory and field, collect field data, and analyze a given environmental engineering problem
 - Provided hands-on instruction during field visits for a class of 40 students including soil sampling, GPS analysis, water sample archival, pH, Eh, conductivity, and alkalinity/acidity measurements

TEACHING EXPERIENCE, CONT.

- Aug. 2015 – May 2016 Instructor of Record, Colorado School of Mines, Golden, CO
- *CEEN 301: Fundamentals of Environmental Science Engineering I.* Topics include history of environmental laws and regulations, sources and concerns of water pollution, water quality parameters and measurement, material balance, water chemistry, microbiology, aquatic toxicity and risk assessment
 - Taught two semesters of over 35 undergraduate students an overview of environmental engineering concepts
 - Interpreted and redesigned previous lecture material to address diverse learning styles and preferences
 - Created assignments including review groups, searching and sharing of news articles, traditional homework, and developed quizzes and exams to evaluate understanding
 - *EGGN 401: Projects for People.* An integration of lecture and lab focused on human centered design principles aiming at developing engineering solutions to real people and problems, potential for capstone design project
 - Supervised four Peruvian exchange students from the Universidad de Ingeniería y Tecnología (UTEC) during their stay at Colorado School of Mines
 - Guided collaboration between Mines and UTEC students to research and design a small scale drinking water treatment system
 - Traveled to Peru to oversee development and implementation of a pilot scale drinking water system using locally sourced materials by Mines and UTEC students
- Jan. 2015 – May 2015 Instructor of Record, Colorado School of Mines, Golden, CO
- *CEEN 598F: Microbial Applications in Hydrology.* Interdisciplinary assessment of prevalence and utility of microbiology in hydrology including surface water exploration, groundwater bioremediation, and treatment of mining and industrial waste
 - Developed curriculum and scope for the new course
 - Lectured, lead discussions, and encouraged multidisciplinary exploration of hydrology with a class of graduate students
- Aug. 2010 – May 2011 Teaching Assistant, Colorado School of Mines, Golden, CO
- *GEGN 467: Groundwater Engineering.* Designed hydrology laboratory sessions for 25 students to teach groundwater engineering topics including water budgets, water chemistry, properties of porous media, solutions to hydraulic flow problems, analytical and digital models, and hydrogeologic interpretation.
 - *GEGN 351: Geologic Fluid Mechanics.* Created and taught lectures for 40 undergraduate fluid mechanics students to teach properties of fluids; Bernoulli's energy equation, the momentum and mass equations; laminar and turbulent flow in pipes, channels, machinery, and earth materials; subcritical and supercritical flow in channels; Darcy's Law; and sediment transport.
 - *GEGN 470: Groundwater Engineering Design.* Troubleshoot Modflow and MathCAD computing algorithms with 20 students
 - Maintained weekly office hours and provided student assessments

TEACHING EXPERIENCE, CONT.

- Each Dec. 2002 – 2009 Instructor, College of the Siskiyous, Weed, CA
- *PEAC 36: Snowboard Racing*. On-slope slalom and giant slalom techniques for advanced snowboarders; video analysis; equipment maintenance.
 - Managed eight Instructor's Assistants, delegated daily tasks and set schedules
 - Utilized personal knowledge to coach and encourage over 100 high school students for competitive snowboard racing
- Sept. 2007 – June 2008 Teaching Assistant, UC Davis, Davis, CA
- *ENG 35: Engineering Statics*. Organized discussion sessions for an engineering statics course of 20 students per quarter on topics such as force systems and equilibrium conditions with an emphasis on engineered problems.
 - *ECI 141L: Engineering Hydraulics Laboratory*. Planned lectures and ensured student safety during laboratory sessions regarding flow measurement, sluice gates, hydraulic jump, flow characteristics, and centrifugal pumps.
 - Administered weekly office hours, evaluated and maintained grades for a class of 100
- Sept. 2004 – June 2005 Math Workshop Facilitator, Cal Poly, San Luis Obispo, CA
- Designed and lead Calculus 2 and 3 workshops for 8-20 undergraduate students
 - Created original worksheets and practice exams and attended the co-requisite class
 - Scheduled one-on-one meetings with students and adjusted teaching style and material delivery according to feedback

PUBLICATIONS

- Weathers, T.S.; Harding-Marjanovic, K.; Alvarez-Cohen, L.; Sharp, J.O. Perfluoroalkyl acids inhibit reductive dechlorination of trichloroethene by repressing *Dehalococcoides*. *Environmental Science and Technology*. **2016**, 50 (1), 240-248.
- Harding-Marjanovic, K.; Yi, S.; Weathers, T.S.; Sharp, J.O.; Sedlak, D.L.; Alvarez-Cohen, L. Effects of aqueous film-forming foams (AFFFs) on trichloroethene (TCE) dechlorination by a *Dehalococcoides mccartyi*-containing microbial community. *Environmental Science and Technology*. 2016, 50 (7), 3352-3361.
- Weathers, T.S.; Higgins, C.P.; Sharp, J.O. Enhanced biofilm production by a toluene-degrading *Rhodococcus* observed after exposure to perfluoroalkyl acids. *Environmental Science and Technology*. **2015**, 49 (9), 5458-5466.
- Weathers, T.S.; Higgins, C.P.; Sharp, J.O. Preferential sorption of perfluoroalkyl acids to microbial biomass. Planned submission to *Environmental Science and Technology Letters*. In Preparation.
- Barkouki, T.H.; Martinez, B.C.; Mortensen, B.M.; Weathers, T.S.; DeJong, J.D.; Ginn, T.R.; Spycher, N.F.; Smith, R.W.; Fujita, Y. Forward and inverse bio-geochemical modeling of microbially induced calcite precipitation in half-meter column experiments. *Transport in Porous Media*. **2011**, 90, 23-29.
- Massoudieh, A.; Žagar, D.; Green, P.G.; Cabrera-Toledo, C.; Horvat, M.; Ginn, T.R.; Barkouki, T.H.; Weathers, T.S.; Bombardelli, F.A. Modeling mercury fate and transport in aquatic systems. *Advances in Environmental Fluid Mechanics*. **2011**. World Scientific, London, New York, Singapore.

SCIENTIFIC OUTREACH AND VOLUNTEER EXPERIENCE

- October 2017 Adopt-A-Microbe with Girl Scouts of Maine
- Participated in a ship-to-shore education program while aboard R/V Atlantis
 - Developed weekly multimedia content about careers on a scientific research vessel
- May 2017 UCSC Graduate Research Symposium, Santa Cruz, CA
- Volunteer judge for poster presentations in history and mathematics
 - Engaged with 5 student presenters and provided constructive feedback
- September 2014, 2015 Mitchell Elementary Math and Science Night, Golden, CO
- Planned hands-on activities as a representative of the Hydrologic Science and Engineering Program at CSM
 - Supervised and explained microscopy tools and techniques to 250-300 students between kindergarten and sixth grade
- July 2015 Rocky Mountain Dyslexic Camp, Indian Hills, CO
- Developed microbiology and hydrology activities for the science portion of a summer day camp for 40 students aged 6 to 13
 - Encouraged a passion for science by incorporating writing, drawing, building, and hands-on activities into lessons
 - Demonstrated to students that science and engineering is tangible and enjoyable regardless of their dyslexia by providing a positive and engaging environment
- August 2012 – May 2013 Environmental Engineering and Science Seminar Committee,
Colorado School of Mines, Golden, CO
- Invited scientists and engineers to speak with members of the Mines community
 - Hosted and organized meetings between 24 guest speakers and graduate students
 - Planned and executed a career panel for graduate students with professionals representing academia, industry, and government
- Jan. 2012 – May 2013 Earth Explorers, Trail Ridge Middle School, Longmont, CO
- Helped middle school students create 10-12 minute science documentaries
 - Encouraged 13 at-risk and minority students to consider careers in STEM fields
 - Collaborated with scientists at the Laboratory for Atmospheric and Space Physics (LASP), National Oceanic and Atmospheric Administration (NOAA), and the University Corporation for Atmospheric Research (UCAR)
 - Acted as liaison between middle school students and professional scientists
 - Planned and performed interactive groundwater experiments with four sixth graders
- April 2005 – Sept. 2007 Week of Welcome Transfer Orientation Leader and Team
Member, Cal Poly, San Luis Obispo, CA
- Trained orientation leaders for the largest volunteer-run new student orientation program in the country
 - Attended a 10 week training program focused on integrating transfer students into the Cal Poly community
 - Introduced a group of 12 new transfer students to campus resources, promoted community awareness, and created a safe space to make personal connections during a week-long orientation session

CONFERENCE PROCEEDINGS

- 2017 Weathers, et al., *Interfacing hydrology and microbiology: Combining hydrologic tools with microbiological methods to study subsurface ecosystems*, AGU Fall Meeting, New Orleans, LA; Session Chair (Accepted)
- Weathers, et al., *Exploring microbial processes with thermal-hydrological models of the eastern flank of the Juan de Fuca ridge*, AGU Fall Meeting, New Orleans, LA; Poster (Accepted)
- Weathers, et al. *Water, heat, and solutes in the ocean crust: Exploring microbial processes in a 3-D world*, C-DEBI Annual Meeting, Marina, CA; Oral (Accepted)
- Weathers, et al. *Integrating reactive transport with thermal-hydrological flow on the eastern flank of the Juan de Fuca ridge*, Goldschmidt, Paris, France; Poster
- Beganskas, S.; Weathers, T.; Fisher, A.; Gorski, G.; Saltikov, C.; Weir, W.; Harmon, R. *Carbon-rich amendments stimulate nitrate removal in pilot infiltration studies*, Rocky Mountain Geobiology Symposium, Golden, CO; Poster
- 2016 Weathers, et al. *Perfluoroalkyl acids shift microbial community structure across experimental scales*, AGU Fall Meeting, San Francisco, CA; Oral (H23M-02)
- Weathers, et al. *Projects for People: An international exchange focused on drinking water quality in rural Peru*, AGU Fall Meeting, San Francisco, CA; Oral (PA41d-01)
- Beganskas, S.; Gorski, G.; Fisher, A.; Weir, W.; Harmon, R.; Weathers, T.; Schmidt, C.; Saltikov, C.; Stoneburner, B.; Hernandez, J. *Investigating controls on denitrification during managed aquifer recharge: Field studies of infiltration*, AGU Fall Meeting, San Francisco, CA; Poster (H33F-1606)
- Weathers, et al. *Integrating geochemistry and microbiology with hydrologic flow of the Juan de Fuca Ridge: Where do you want to go?*, C-DEBI Annual Meeting, Marina, CA; Poster
- Marjanovic, K.; Houtz, E.; Weathers, T.; Alvarez-Cohen, L. *Biotransformation of fluorotelomer thioether amido sulfonate (Lodyne) in AFFF*, 251st American Chemical Society National Meeting, San Diego, CO; Oral (ENVR 232)
- 2016 Fujita, Y.; Smith, R.W.; Ginn, T.R.; Weathers, T.; Bastani, M. *Controlling the distribution of microbially induced calcite precipitation in the subsurface*, Goldschmidt, Yokohama, Japan; Oral
- 2015 Weathers, et al. *A tale of two bacteria: Diverse effects of perfluoroalkyl acids on bioremediation of hydrocarbons and chlorinated solvents*, Conference on Earth and Energy Research, Golden, CO; Oral
- Weathers, et al. *Perfluoroalkyl acid exposure elicits diverse responses from subsurface microorganisms associated with chlorinated solvent biodegradation*, RemTEC Summit, Westminster, CO; Poster

CONFERENCE PROCEEDINGS, CONT.

- 2015 Weathers, et al. *Perfluoroalkyl acids inhibit TCE dechlorination by repressing Dehalococcoides growth*, 249th American Chemical Society National Meeting, Denver, CO; Oral (2134655)
- 2014 Weathers, et al. *Impact of Microbial Growth on Subsurface Transport of Perfluoroalkyl Acids*, AGU Fall Meeting, San Francisco, CA; Oral (H23R-03)
- 2013 Weathers, et al. *Implications for Subsurface Transport During Co-contaminant Bioremediation in the Presence of Perfluoroalkyl Substances*, RemTEC Summit, Westminster, CO; Poster
- Weathers, et al. *Exploring the Relationships Between a Common Soil Microbe and Perfluoroalkyl Substances in Batch Systems: Implications for Bioremediation and Contaminant Transport*, Conference on Earth and Energy Research, Golden, CO; Oral
- Weathers, et al. *Emerging Contaminants from the Microscopic Perspective: The Effects of Perfluoroalkyl Substances on a Common Soil Microbe*, ASM General Meeting, Denver, CO; Poster (Q-211-2554)
- 2011 Fujita, Y.; Taylor, J.L.; Henriksen, J.R.; Delwiche, M.; Gebrehiwet, T.; Hubbard, S.S.; Spycher, N.; Weathers, T.S.; Ginn, T.R.; Piffner, S.M.; Smith, R.W. *Probing Microbial Activity in a Perched Water Body Located in a Deep Vadose Zone*, AGU Fall Meeting, San Francisco, CA; (H24A-06)
- 2010 Weathers, et al. *Modeling of Microbially Mediated Ureolytic Calcite Precipitation for the Remediation of Sr-90 Using a Variable Velocity Streamtube Ensemble*, National Groundwater Association Groundwater Summit, Denver, CO; Oral
- 2009 Barkouki, T.; Martinez, B.; Mortensen, B.; DeJong, J.; Weathers, T.S.; Spycher, N.; Ginn, T.R.; Fujita, Y.; Smith, R.W. *Forward and Inverse Bio-Geochemical Modeling of Microbially Induced Precipitation in 0.5m Columnar Experiments*, AGU Fall Meeting, San Francisco, CA; Poster (H31E-0827)
- DeJong, J.T; Martinez, B.C.; Mortensen, B.M.; Nelson, D.C.; Waller, J.T.; Weil, M.H.; Ginn, T.R.; Weathers, T.; Barkouki, T.; Fujitay, Y.; Redden, G.; Hunt, C. *Upscaling of Bio-mediated Soil Improvement*, 17th International Conference on Soil Mechanics and Geotechnical Engineering, Alexandria, Egypt
- Weathers, et al. *Modeling of Ureolytic Calcite Precipitation for the Remediation of Sr-90 Using a Variable Velocity Streamtube Ensemble*, AGU Fall Meeting, San Francisco, CA; Poster (H41D-0933)

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (AGU, 2008-2017)
- Geochemical Society (2017)
- American Chemical Society (ACS, 2015)
- American Society for Microbiology (ASM, 2013)
- National Groundwater Association (NGWA, 2010)
- American Society of Civil Engineers (ASCE, 2002-2007)
- Chi Epsilon Civil Engineering Honor Society

AWARDS AND LICENSURE

- Engineer in Training (CA, #125074)
- USA Snowboard Association (USASA) Member since 2007 (#7460)
- 2nd Place Colorado School of Mines Civil and Environmental Engineering Outstanding Student Paper Contest, May 2015
- 2nd Place Geosyntec Student Paper Contest, April 2015
- 2nd Place Student Poster Competition, RemTEC Summit, Westminster, CO, Feb. 2015
- College Reading and Learning Association Certified Tutor
1st Place Oral Presentation in Hydrology, Conference on Earth and Energy Research, Golden, CO, Feb. 2013

INVITED LECTURES

- “Thermal-Hydrologic Modeling of Subseafloor Systems,” Bigelow Laboratory for Ocean Sciences, East Boothbay, ME, July 2017
- “Perfluoroalkyl Acids and Microorganisms: Implications for Groundwater Transport and Microbial Processes,” *Whole Earth Seminar*, University of California, Santa Cruz, CA, September 2016
- “Biofilms in the Environment,” *General Microbiology*, University of Colorado, Boulder, CO, June 2014, June 2015.
- “Organic Contaminants,” *Subsurface Contaminant Transport*, Colorado School of Mines, Golden, CO, April 2013.
- “Microbe-Mineral Tools,” *Geomicrobiology*, Colorado School of Mines, Golden, CO, March 2012.
- “Water Properties,” *Introduction to Environmental Engineering*, Colorado School of Mines, Golden, CO, September 2011.
- “Inverse Methods for Ureolytic Calcite Precipitation Modeling,” University of Idaho, Idaho Falls, ID, February 2010.