

Bio

Pasadena-based scientist; my specialities are water used by plants and surface water biogeochemistry. I normalize science to the communities I serve, whether it's discussing animal behavior with members of the public at the animal shelter or mentoring high school students as part of the USC Young Researchers Program. I'm excited to tackle real-world problems and use my data analysis and design skills to communicate results effectively to target audiences.

Contact

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Education

2022 – PhD, University of Southern California

Dissertation: Ages, origins and biogeochemical role of water across a tropical mountain to floodplain transition

2015 – B.S.
(Environmental Geology) &
B.A (Spanish),
University of Pittsburgh

Technical skills

Matlab (intermediate)
Python (beginner)
MODFLOW (beginner)
Water transit time theory
& calculations (advanced)
Microsoft Excel (advanced)
Adobe Illustrator (advanced)

Professional Appointments

2022– Postdoctoral Fellow, Chapman University: Seasonal origins of water used by plants, from Peru to Switzerland
2022 Research Assistant, USC Plasma Lab
2015–2022 Research & Teaching Assistant, University of Southern California
2012-2015 Research Assistant, University of Pittsburgh: Geochemistry of waters produced from hydraulic fracturing

Project Involvement

2023 **Sources of water used by trees in the Swiss Alps**

- Collaborative effort to understand how forests in Switzerland respond to climate change
- I manage/construct soil water database and analyze data using Matlab
- Leading soil water sampling in Switzerland in July 2023.

2015–2022 **Hydrochemistry of the Amazon watershed, Peru**

- Led 8 water sampling campaigns in Peru, including 2 field courses for undergraduate students
- Coordinated travel for collaborators and students (in Spanish)
- Analyzed > 1,500 water samples for cation & anion concentrations, stable isotopes of water and subset of samples for sulfate isotopes
- Project has resulted in 1 peer-reviewed publication, 2 publications in review, 2 public datasets and numerous conference presentations

Publications

2023

E.I. Burt, D.H.C. Rimachi, A.J.C. Quispe, A. Atwood, A.J. West, “Hydroclimate and bedrock permeability determine young water fractions in streamflow across the tropical Andes mountains and Amazon floodplain” **in review**, Hydrology and Earth Systems Science. <https://doi.org/10.5194/hess-2022-188>.

E.I. Burt, G.R. Goldsmith, R.M. Cruz-de Hoyos, A.J.C. Quispe, A.J. West, “The seasonal origins and ages of water provisioning streams and trees in a tropical montane cloud forest” **preprint pending review**, Hydrology and Earth Systems Science. <https://doi.org/10.5194/hess-2023-75>

2021

E.I. Burt, M. Bill, M.E. Conrad, A.J.C. Quispe, J.N. Christensen, R.G. Hilton, M. Dellinger, A.J. West “Conservative transport of dissolved sulfate across the Madre de Dios floodplain in Peru” *Geology* (2021) 49 (9): 1064–1068. <https://doi.org/10.1130/G48997.1>

Datasets

2023

E.I. Burt, G.R. Goldsmith, R.M. Cruz-de Hoyos, A.J.C. Quispe, A.J. West (2023). Stable isotopes of water and seasonal origin indices of precipitation, stream, lysimeter and plant xylem waters, HydroShare, <http://www.hydroshare.org/resource/fdfdddbc35494e21ad2dda279f81832b>

E.I. Burt, D.H.C. Rimachi, A.J.C. Quispe, A.J. West (2023). Oxygen and hydrogen isotopes in streams and precipitation and young water fractions across the Andes mountains and Amazon floodplain, HydroShare, <http://www.hydroshare.org/resource/c01ef51ca2b3495785d0f24c62142e23>

Relevant coursework

Courses taken: Groundwater geology (undergraduate), Hydrogeology (graduate), Geochemistry (graduate), Isotope geochemistry (graduate)

Teaching assistant for: Environmental hydrogeology, Hydrology field course (Peru), Environmental Issues in Society, Climate Change, Energy Systems

Community Engagement

2023 North Central Animal Shelter – Dog Walker and Adoption Counselor

2020 & 2021 Conference Session Co-Convener, American Geophysical Union Annual Conference: Earth Surface Processes and the Global Carbon Cycle

USC Young Researchers Program – 2016 – Event coordinator and mentor; 2017–2019 – Program director

2016–2020 Mentored undergraduate students conducting research at USC: Francis Mel de Fontenay, Yanet Ibarra & Jesse Fang

References

Dr. Gregory Goldsmith Dr. Joshua West
goldsmi@chapman.edu joshwest@usc.edu

Dr. Emily Cooperdock
cooperdo@usc.edu

Awards

2019 DOE Office of Science Graduate Student Research Fellowship, Lawrence Berkeley National Lab

2017 USC Research Enhancement Fellowship

2017 Honorable Mention: NSF Graduate Research Fellowship

2017 USC Department of Earth Sciences Teaching Assistant Award

Languages

Spanish (professional working proficiency)

English (native)