# Erica L. McCormick

Stanford University | School of Earth, Energy & Environmental Sciences
https://ericamccormick.com
(972) 567-0107 ericamcc@stanford.edu

## EDUCATION

**Stanford University** | Ph.D. Earth System Science — Expected 2027

**University of Texas at Austin** | B.S. Environmental Science, Geology — 2016-2020

**Phillips Exeter Academy**, NH | High School (boarding) — 2012-2016

**Milton Mountain School**, VT | High School (semester) — Fall 2014

## RESEARCH EXPERIENCE & PROFESSIONAL POSITIONS

**ORISE Research Fellow**, Oak Ridge Natl Lab — June-Aug 2022
*Dr. David Dralle*, US Forest Service
- Worked on project relating hydrologic risk to recreational desirability in S. CA forests.
- Assisted with proposal and data collection/processing.
- Acquired and processed remote sensing data products for use in modeling efforts.

**Research Engineering/Scientist Assistant (Full Time)**, UT Austin — 2021-2022
*Dr. Daniella Rempe*, Vadose Zone Hydrology Lab
- Design and lead high-impact research projects with an international team of collaborators
- Develop instructional material for courses and workshops with a focus on Google Earth Engine and Python
- Assist in writing grant proposals and science communication articles which highlight recent results
- Conduct field measurements of rock moisture using NMR (nuclear magnetic resonance) and neutron probe

**Undergraduate Researcher**, Jackson School of Geosciences, UT Austin — 2019-2020
*Dr. Daniella Rempe*, Vadose Zone Hydrology Lab
- Compiled literature review of rooting into bedrock
- Measured rock moisture in the field using NMR (nuclear magnetic resonance) and neutron probe
- Assisted graduate student in conducting lab experiments for novel applications of NMR to hydrology

**Summer Research Intern**, U.S. Forest Service, Pacific Southwest Research Station — 2020
*Dr. David Dralle*
- Compiled literature review of rooting into bedrock
- Wrote report on impact of root depth distributions on forest and watershed management

**Undergraduate Researcher**, Jackson School of Geosciences, UT Austin — 2018-2020
*Dr. Ashley Matheny, Ecohydrology Lab*
- Conducted large scale data analysis and ecohydrologic modeling using Matlab and ArcGIS
- Designed and built sensors for use in urban vegetation and climate monitoring
- Installed sapflow sensors and conducted fieldwork at University of Michigan Biological Station

**Undergraduate Research Assistant**, Department of Geography, UT Austin — 2017-2020
*Dr. Timothy Beach and Sara Eshleman, Geoarchaeology & Soil Lab*
- Performed soil chemical analyses including organic carbon, nitrogen, phosphorous, grain size, and magnetic susceptibility measurements
- Designed and implemented research project and literature review to compare organic carbon measurement techniques on under-represented Belizean lowland and Peruvian highland soils
- Conducted one month of field work in remote Belizean rainforest involving exploratory caving, soil sampling, and archaeological and vegetation mapping

## HONORS & AWARDS

National Science Foundation Graduate Research Fellowship, *NSF* 2022
GCA Zone VI Fellowship in Urban Forestry, Garden Club of America, *Garden Club of America* 2019
Plan II Skaaren Climate Fellowship, *College of Liberal Arts, UT Austin* 2019
Plan II Travel Grant for Research *College of Liberal Arts, UT Austin* 2018
Undergraduate Research Grant, *College of Liberal Arts, UT Austin* 2018
Dean's Honor List (Magna cum laude), *UT Austin* 2018-2020

## PUBLICATIONS

**Google Scholar** https://scholar.google.com/citations?user=XnvaTh4AAAAJhl=en
**Orcid ID:** 0000-0002-7160-398X

6. W.J. Hahm, D.A. Lapides, D.M. Rempe, **E.L. McCormick**, D.N. Dralle (in-review). The age of evapotranspiration: continental-scale lower-bound constraints from distributed water fluxes. *Water Resources Research*. https://www.essoar.org/doi/10.1002/essoar.10511550.1.

5. D.M. Rempe*, **E.L. McCormick***, W.J. Hahm, G.G. Persad, C. Cummins, D.A. Lapides, K.D. Chadwick, D.N. Dralle (In Review). Resilience of woody ecosystems to precipitation variability. https://eartharxiv.org/repository/view/3356/.*co-first authors.

4. **E.L. McCormick**, D. Dralle, W.J. Hahm, A. Tune, L. Schmidt, K.D. Chadwick, D.M. Rempe. (2021) Evidence for widespread woody plant use of water stored in bedrock. *Nature*. https://doi.org/10.1038/s41586-021-03761-3.

3. D. Dralle, W.J. Hahm, K.D. Chadwick, **E.L. McCormick**, D. M. Rempe. (2021) Technical note: Accounting for snow in the estimation of root-zone water storage capacity from precipitation and evapotranspiration fluxes. *Hydrology and Earth System Sciences*. https://doi.org/10.5194/hess-25-2861-2021.

2. Matheny, A.M., P. Marchetto, J. Powell, A. Rechner, J.-Y. Chuah, **E. L. McCormick**, S. Pierce (2019) LEAF: Logger for Ecological and Atmospheric Factors. *HardwareX*. https://doi.org/10.1016/j.ohx.2019.e00079.

1. Mursinna, A.R., **E. L. McCormick**, K. Van Horn, L. Sartin, A.M. Matheny (2018) Plant hydraulic trait covariation: a global meta-analysis to reduce degrees of freedom in trait-based hydrologic models. *Forests*. https://doi.org/10.3390/f9080446. **Cover Article.**

## PUBLISHED DATASETS AND CODE

**E.L. McCormick**, D. Dralle, W.J. Hahm, A. Tune, L. Schmidt, K.D. Chadwick, D.M. Rempe (2021). Dataset for "Evidence for widespread woody plant use of water stored in bedrock." *CUAHSI HydroShare*. https://doi.org/10.4211/hs.a2f0d5fd10f14cd189a3465f72cba6f3.

**E.L. McCormick**, D. Dralle, W.J. Hahm, A. Tune, L. Schmidt, K.D. Chadwick, D.M. Rempe. Code for manuscript: "Evidence for widespread woody plant use of water stored in bedrock." (v1.0.0). *Zenodo*. https://doi.org/10.5281/zenodo.4904037.

## INVITED PRESENTATIONS

*American Geophysical Union Meeting* (Upcoming) "Weathered bedrock commonly supplies water to woody plants"

*University of Wisconsin, Madison* (2021) "Widespread woody plant use of bedrock water storage"

*UT Austin "Water, Climate, and Energy Seminar"* (2021) "Widespread woody plant use of bedrock water storage"

## CONFERENCE ABSTRACTS

Gary, M., Applied Karst Hydrogeology Team (2019). Surface Water - Groundwater Interaction and Background Water Quality of Honey Creek and the Middle Trinity Aquifer in Comal County, Texas. Presentation, South Central Texas Water Research Interest Group, San Antonio, TX.

Rechner, A., He, C., Cabraal, S., Baiocchi, J., Demir, C., Denham, A., Edgington, A., Ferrari, B., Fisher, C., Goldfarb, E., Jones, B., Manlove, H., **McCormick, E. L.**, Pedrazas, M., Restrepo Acavedo, A.M., Roumelis, C., Smith-Salgado, C., Trcka, J., Beal, L., Southard, P., Ferencz, S., Li, L., Perkins, G., Roback, R., O'Connor, M., Matheny, M. (2019) Groundwater and surface water interactions in the Valles Caldera Watershed, New Mexico: An evaluation of water chemistry sensitivity to precipitation variability. Poster Presentation, American Geophysical Union, San Francisco, CA.

Rutherford, T., Gorjian, V., Paulsen, T., Granucci, N., Blackwell, J., Jenkins, K., **McCormick, E. L.**, Rosseau, B. (2014) Color-Magnitude Relationships Among Quasars and Type 1 Seyfert Galaxies, American Astronomical Society, Seattle, WA.

## PRESS

| | |
|---|---|
| Science & Vie Magazine (France): Les Arbres Boivent De L'eau Dans Les Roches | Dec 2021 |
| Scientific American: "Trees Drill into Deep Bedrock for Water Surprisingly Often" by By Tess Joosse | Dec 2021 |
| AGU Ecohydrology: "Meet A Leaf" blog profile | Nov 2021 |
| Eos: "Thirsty Plants Pull Water from Bedrock" by Katherine Kornei | Oct 2021 |
| UT News: "Water in Bedrock is Sustaining Trees Across Country" by Monica Kortsha | 2021 |
| Simon Fraser News: "Could the Water in Bedrock Save our Forest Ecosystems from Climate Change?" | 2021 |

## TEACHING EXPERIENCE

University of Texas at Austin

**GEO 371/391 Vadose Zone Hydrology** (Web Based) Undergraduate/Graduate
Teaching Assistant S2021; Professor: Dr. Daniella Rempe; Enrollment: 18 students (9 grad, 9 undergrad)

- Assisted with office hours and preparation of instructional material
- Prepared and conducted lecture covering Hydrus 1D software and Google Earth Engine

**TC 358 Law and Ethics of Climate Change** (Web Based) Undergraduate
Teaching Assistant F2020; Professor: Amon Burton; Enrollment: 18 students

- Designed new course content focusing on hydrology and climate change
- Prepared and conducted lecture on hydrogeology issues of central TX
- Managed student meetings, visiting speakers, field trips, and grading

## COURSEWORK

$^{\circ}$ Short course, $^{*}$ Field course

**2020** Spatial Data Analytics and Geostatistics | Mathematical Methods in Geophysics | Python for Geoscience | Research Design, Data Analysis, and Visualization | Intro to Field and Stratigraphic Methods$^{*}$ | UT Summer Statistics Institute: Bayesian Statistics$^{\circ}$

**2019** Field Methods in Groundwater Hydrology$^{*}$ | Groundwater Hydrogeology | Applied Karst Hydrogeology$^{*}$ | Water Resources of Latin America | Vadose Zone Hydrology (Soil Physics)

**2018** Field Seminar in Sustainability$^{*}$ | Research Methods for Environmental Science | Ecohydrology and Biometeorology | Environmental Geographic Information Systems | Physical Hydrology

## COMPUTER SKILLS

Basic: Shell-scripting, Julia
Proficient: R, Matlab, Hydrus 1D, Adobe Illustrator, ArcGIS, HTML, CSS
Advanced: Python, Google Earth Engine, GitHub, QGIS, LaTeX

## COMMUNITY SERVICE

Events Volunteer: Esquina Tango, *(Austin, TX)* 2021 - Present
Volunteer: Yellow Bike Project, *(Austin, TX)* Aug 2020 - Present
Volunteer: Helping Hand Home for Children, *(Austin, TX)* Oct 2017 - June 2018
Gardener & caretaker for special needs adults *(Camphill Callan & Ballytobin, Ireland)* Jan 2016 - March 2016

## SIGNIFICANT EXTRACURRICULAR ACTIVITIES

Triathlete (4th place in age group at Kerrville Tri, 2021) 2020-Present
Bluegrass and folk musician 2013 - 2020

- Guitar, banjo, vocals, and songwriter with "Three Quarter Moon."
- Work includes a full-length album ("Southbound", 2016) and EP ("Boiling Blue", 2017).

Certified Wilderness First Responder (WFR) and Rock Climbing Instructor