

Barbara Elaine Wortham

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EDUCATION

- Ph.D.** University of California, Davis. Earth and Planetary Science. 2021
Advisor: Distinguished Prof. Isabel P. Montañez
- M. Science.** Boston College. Earth and Environmental Sciences 2016
Advisor: Asst. Prof. Corinne I. Wong
- B. Science** University of Texas, Austin. Jackson School of Geology 2013

PUBLICATIONS

- Wortham, B.E.,** Montañez, I.P., Bowman, K.C., Kuta, D.J., Brumage, E., Pang, A., Soto, N., Vasquez, A., Diaz, E. *In prep.* Monitoring and modeling the modern cave environment: a case study of Lilburn Cave, Sequoia National Park. *Geochemistry, Geophysics, Geosystems.*
- Wortham, B.E.,** Montañez, I.P., Swart, P., Vonhoff, H. *In prep.* Record of $\delta^{18}\text{O}$ and $\delta^2\text{H}$ of included water from a central Sierra Nevada stalagmite reveals precipitation history during the last deglaciation.
- Tabor, C., Lofverstrom, M., Oster, J., **Wortham, B.E.,** de Wet, C., Montañez, I., Rhoades, A., Zarzycki, C., He, C., Liu, Z. *submitted.* A Mechanistic Understanding of Oxygen Isotopic Changes in the Western United States at the Last Glacial Maximum. *Quaternary Science Reviews.*
- Wortham, B.E.,** Mukhopadhyay, S., Montañez, I.P., Middleton, J., Tyra, A. *In revision.* Western Sierra Nevada Temperature During the Last Glacial Maximum from stalagmite noble gas concentrations. *Earth and Planetary Science Letters.*
- Sekhon, N., Novello, V., F. Cruz, F.W., **Wortham, B.E.,** Brecker, D.O. 2020. Diurnal to seasonal ventilation in Brazilian Caves. *Global Planetary Change.*
<https://doi.org/10.1016/j.gloplacha.2020.103378>
- Wortham, B.E.,** Montañez, I.P., Rowland, D.J., Lerche, M., Browning, A. 2019. Mapping fluid-filled inclusions in stalagmites using coupled X-ray and neutron computed tomography: potential as a water-excess proxy. *Geochemistry, Geophysics, Geosystems.* 20(6): 2647-2656.
- Vermeij, G.J., Banker, R., Capece, L.R., Hernandez, E.S., Salley, S.O., Vriesman, V.P., **Wortham, B.E.** 2018. The coastal North Pacific: Origins and history of a dominant marine biota. *Journal of Biogeography.* 46(1): 1-15.
- Montañez, I.P., Osleger, D.J., Chen, J., **Wortham, B.E.,** Stamm, R.G., Nemyrovska, T.I., Griffin, J.M., Poletaev, V.I., Wardlaw, B.R. 2018. Carboniferous climate teleconnections archived in coupled bioapatite $\delta^{18}\text{O}_{\text{PO}_4}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ records from the epicontinental Donets Basin, Ukraine. *Earth and Planetary Science Letters.* 492: 89-101.
- Wortham, B.E.,** C. Wong, L.C.R. Silva, I.P. Montanez, D. McGee, T. E. Rasbury, K. M. Cooper, W. D. Sharp, J. G. Glessner, and R. Santos. 2017. Assessing response of local moisture conditions in central Brazil to regional variability in monsoon intensity using speleothem $^{87}\text{Sr}/^{86}\text{Sr}$ values. *Earth and Planetary Science Letters.* 463: 310 – 322

Database and Working Group Publications

Astawanunt, K. et al. and **SISAL Working Group Members**. 2018. The SISAL database: a global resource to document oxygen and carbon isotope records from speleothems. *Earth Syst. Sci. Data Discuss.* 10: 1687-1713.

Non-peer reviewed publications

Wortham, B.E. 2017. Cave monitoring in the western Sierra Nevada: A key to California's past climate. *Cave Research Foundation Annual Report 2016-2017*. pp. 136-137.

SCHOLARSHIPS, FELLOWSHIPS, AWARDS

2021-2023. NOAA Climate & Global Change Fellowship.
2020. Travel Grant, Karst Record IX Conference
2017-2020. Durrell Research Grant, *UC Davis*
2018-2019. Professors for the Future Fellow, *UC Davis*
2018. Graduate Student Association Travel Award, *UC Davis*
2017. UC Davis Graduate Travel Award
2017. Cave Research Foundation, Graduate Fellowship
2017. Geologic Society of America, Graduate Research Grant
2016-2017. Ernest E. Hill Fellow, *UC Davis*

CONFERENCE PRESENTATIONS AND SESSIONS

Conference Presentations

*indicates talk

**indicates student advised by B. Wortham

Tabor, C.R., Lofverstrom, M., Oster, J., **Wortham, B.E.**, de Wet, C., Montanez, I.: Storminess and Isotopic Changes in the Western United States at the Last Glacial Maximum, Annual CESM Workshop, 2021.

Bowman, K., **Wortham, B.E., Montañez, I.P. 2020. Climatic Influences on California Rainwater and Cave Dripwaters. American Geophysical Union Connects. Abstract ID: PP046-001

***Wortham, B.E.**, Mukhopadhyay, S., Montañez, I.P., Middleton, J., Tyra, A. 2020. A two-step approach to quantitative temperature estimates in the Sierra Nevada. Geologic Society of America National Conference. Abstract ID: 351483

Tabor, C. R., Lofverstrom, M., **Wortham, B. E.**, Montanez, I. P., Oster, J. L., de Wet, C. B., He, C., Liu, Z., Lora, J. M., Skinner, C. B. 2019. High-Resolution Simulations for Understanding the Climate of Southwest North America at the Last Glacial Maximum. American Geophysical Union National Conference. San Francisco, CA. Abstract ID: #PP23B-03

Oster, J. L., Tabor, C. R., Lofverstrom, M., Montanez, I. P., **Wortham, B. E.**, de Wet, C. B., He, C., Liu, Z. 2019. Comparing Precipitation Seasonality During the Last Deglaciation

- from Speleothem Records and Isotope-enabled Model Simulations. American Geophysical Union National Conference. San Francisco, CA. Abstract ID: #PP23B-02
- ***Wortham, B.E.**, I.P. Montañez, P.K. Swart. 2019. Last Glacial Maximum to Younger Dryas precipitation variability in the western Sierra Nevada. Geologic Society of America National Conference. Phoenix, AZ. Abstract ID: 340415.
- ***Wortham, B.E.**, I.P. Montañez, P.K. Swart. 2019. Fossilized Drip-Water from a Sierra Nevada Cave Reveals Stadial vs. Interstadial Variability in Precipitation Stable Isotopes. Goldschmidt International Conference. Barcelona, Spain. 2019 – 3710.
- **Bowman, K., **Brumage, E., **Diaz, E., **Kuta, D.J., **B.E. Wortham**, I.P. Montañez. 2019. Monitoring a Cave Environment in the Sierra Nevada - implications for interpreting stalagmite records from a semi-arid climate. Geologic Society of America National Conference. Phoenix, AZ. Abstract ID: 337408.
- ***Wortham, B.E.**, I.P. Montañez, P.K. Swart, C. Tabor. 2018. Fossilized drip-water from a Sierra Nevada Cave reveals variability in precipitation sources and atmospheric dynamics over the last deglaciation. American Geophysical Union Annual Conference. Washington, D.C. Abstract ID: PP12B-07.
- ***Wortham, B.E.**, I.P. Montañez, J. Tinsley. 2018. Cave monitoring at Lilburn Cave: a lens to view climatic history. Sequoia and Kings Canyon Science Symposium. Three Rivers, CA.
- Wortham, B.E.**, I.P. Montañez, P.K. Swart, S. Mukhopadhyay, C. Tabor. 2018. A multi-proxy approach to understanding hydroclimate in the American Southwest. Goldschmidt International Conference, Boston, MA. Abstract ID: 2018004175
- ***Wortham, B.E.**, I.P. Montañez, D. Rowland, M. Lerche. 2017. Demonstrating the potential of coupled x-ray and neutron computed tomography in speleothem based paleoclimate. Karst Record VIII, Austin, TX.
- ***Wortham, B.E.**, I.P. Montañez, D. Rowland, M. Lerche. 2017. NCT scanning and fluid inclusion stable isotopes: novel approaches applied to a western Sierra Nevada stalagmite. PACLIM, Monterey Bay, CA.
- ***Wortham, B.E.**, C. Wong, I. Montañez, L.C.R. Silva, T. E. Rasbury, J.J. Glessner. 2016. Comparison of laser-ablation and solution-mode ICP-MS techniques for measuring speleothem $^{87}\text{Sr}/^{86}\text{Sr}$ values. American Geophysical Union National Conference, San Francisco, CA. Abstract ID: 74690
- Wong, C.I., **Wortham, B.E.**, McGee, D., Cruz, F.W., Silva, L.C.R., Montanez, I.P., 2016. Investigating past climate-biosphere links: Speleothem-based climate reconstructions to constrain controls on Late Holocene forest expansion in South America, invited submission to session titled, “Recent Advances in Paleoclimate Studies Using Marine Carbonates and Speleothems” at the 2016 Goldschmidt Meeting in Yokohama, Japan, June 30, 2016.
- Wong, C.I., **Wortham, B.E.**, McGee, D., Cruz, F.W., Silva, L.C.R., Montanez, I.P., 2016. Investigating past climate-biosphere links: Speleothem-based climate reconstructions to constrain controls on Late Holocene forest expansion in South America, keynote for session titled, “Isotope applications in paleoclimatology” at the 2016 South American Symposium on Isotope Geology in Puerto Vallarta, Mexico, May 23, 2016.
- Wortham, B.E.**, J. Banner, E. James, R.C. Casteel, and S.L. Loewy. 2013a. Variability in initial $^{230}\text{Th}/^{232}\text{Th}$ ratios in central Texas speleothems is used for more accurate age determination. South central Geological Society of America Section Meeting. Austin, TX. Abstract ID: 217718.

Wortham, B.E., J. Banner, E. James, and S.L. Loewy. 2013b. Direct measurement of initial $^{230}\text{Th}/^{232}\text{Th}$ ratios in central Texas speleothems for more accurate age determination. American Geophysical Union annual meeting. San Francisco, CA. Abstract ID: V13A-2595.

Conference Sessions

2021. Co-convener and co-chair. KROnline January 21, 2021. Open Topics.

2020. Convener, Chair, OSPA Representative. PP046. PP048. PP049. Development and Application of Quantitative Proxies of Terrestrial Climate Variability. American Geophysical Union Fall Meeting. Co-conveners: Isabel Montañez and Peter Swart.

2020. Co-convener, co-chair. PP002. Marine-terrestrial Connections between the Pacific and the Americas. American Geophysical Union Fall Meeting. Convener: Hannah Palmer. Other co-conveners: Daniel Ibarra and Summer Praetorius.

INVITED TALKS

2020. UC Davis. Friday Lunch Talks.

2020. Southern California Grotto.

2020. California State University, Sacramento. Dept. Seminar.

2020. UC Berkeley. Isotope Geochemistry Seminar.

2020. Ohio Wesleyan University. Upper Division Undergraduate Field Trip, Death Valley, NP.

TEACHING EXPERIENCE

Independently developed courses

2019-2020. Seminar for undergraduate research. GEL 199. University of California, Davis.

2018-2019. Seminar for undergraduate research. GEL 199. University of California, Davis.

Guest Lectures

2021. Geology 108 – Paleoclimates

UC Davis – Professor of Record: Prof. Sujoy Mukhopadhyay

2019. Geology 228 - Paleoceanography

UC Davis - Professor of Record: Prof. Howard Spero

2019. Geology 10 - Climate Change

UC Davis - Professor of Record: Prof. Isabel P. Montañez

Teaching Assistant Appointments

2021; Paleoclimates, GEL 108 (instructor: Prof. Sujoy Mukhopadhyay)

2020; Paleoclimates, GEL 108 (instructor: Prof. Howard Spero)

2019; Paleoclimates, GEL 108 (instructor: Prof. Howard Spero)

2018; Environmental Geochemistry, GEL 198 (instructor: Prof. Sujoy Mukhopadhyay)

2018; Paleoclimates, GEL 108 (instructor: Prof. Howard Spero)

2017; Geobiology, GEL 198 (instructor: Prof. Dawn Sumner)

2016; Introduction to Geology, Lab, GEL 50 (instructor: Prof. Magali Billen)
2014 – 2015; Teaching Assistant, Earth and Environmental Science, Boston College

SERVICE

Publication Service

2020: Reviewer. Environmental Modeling and Software
2020: Reviewer. AGU Advances
2019: Reviewer. PNAS
2019: Reviewer. Geophysical Research Letters
2018. Reviewer. Palaeogeography, Palaeoclimatology, Palaeoecology

Service, Committee's, and Public Engagement

2020- present. Wortham, B.E. Undergraduate Mentoring... the Blog. barbarawortham.com/blog
2016- present. Co-founder, organizer, committee chair. Association for Women Geoscientists, University of California, Davis.
- 2021. Gear Exchange Committee.
- 2020. Volunteer for AWG Graduate School Application Writing Workshop
- 2018 - 2021. Volunteer for AWG Mentoring Program.
- 2017 - 2019. Organizer for AWG "Coffee with the Faculty" Seminar Series.
2021. Graduate Student Member. Anti-Racism Action Committee. UC Davis Earth and Planetary Science Dept.
2020. Oskin, B. Crystalized Climate. UC Davis College of Letters and Science. <https://lettersandscience.ucdavis.edu/crystallized-climate>
2020. Organizer. Professional Development Summer Seminar Series. University of California, Davis.
2018-2019. Graduate Student Association Representative. University of California, Davis.
2018-present. Undergraduate Mentoring Program Mentor. Association for Women Geoscientists, University of California, Davis.
2018-2019. Department Seminar Series Coordinator. Earth and Planetary Sciences, University of California, Davis.
2018-2019. Graduate Student Representative to Faculty. Earth and Planetary Science, University of California Davis.
2018. University of Texas Sustainability. Caves, Climate, and Cycling: UT Alumna Barbara Wortham. <https://sustainability.utexas.edu/news/caves-climate-and-cycling-ut-alumna-barbara-wortham>
2018. Climate Science Day Participant, Geologic Society of America Representative, Capitol Hill Washington, D.C.
2015-2016. Founder and organizer. WomenInSTEM seminar series, Boston College.
2014. Buchelle, M. For Clues to Texas' Climate Future, Scientist Look Deep Underground. <https://stateimpact.npr.org/texas/2014/02/06/scientists-look-deep-underground-for-clues-to-texas-climate-future/>
2011-2013. Volunteer. Hot Science Cool Talks GK-12 education program.

