Leilani A. Arthurs
Curriculum Vitae
Department of Geological Sciences, University of Colorado at Boulder

PROFESSIONAL APPOINTMENTS / EMPLOYMENT

2021-pres.	Associate Professor of Geological Sciences Department of Geological Sciences University of Colorado at Boulder
2018-2021	Assistant Professor of Geological Sciences Department of Geological Sciences University of Colorado at Boulder
2011-2017	Assistant Professor of Earth and Atmospheric Sciences Department of Earth and Atmospheric Sciences University of Nebraska-Lincoln
2010-2011	Assistant Professor of Geology Department of Geology and Geography Georgia Southern University
2007-2010	Science Teaching Fellow Department of Geological Sciences, Science Education Initiative University of Colorado at Boulder
2006-2007	Instructor Center for Social Concerns University of Notre Dame
2002	Instructor of Geology Department of Geology University of Hawai`i at Hilo

EDUCATION

2007	PhD: Civil Engineering and Geological Sciences; Specialty: Environmental Aqueous Geochemistry; University of Notre Dame
2007, 2005, 2004, 2003	Certificates: Excellence in Teaching; University of Notre Dame
2002	B.S.: Geology; with High Honors; University of Hawai`i at Hilo
1997	B.A.: Peace and Conflict Studies; Emphasis: Conflict & Conflict Resolution, with special interest in Environmental Justice; University of California at Berkeley
1996	Certificate: Japan in Today's World; Kyushu University in Japan

SELECTED PUBLICATIONS

Note: *undergraduate student, **graduate student, ***postdoc/researcher

Peer-Reviewed Publications

2024a Fortener**, H. I. & **Arthurs**, **L. A.** "A Multiple Case Study of Teaching-Focused Professional Development Programs Offered at Three Different Types of US Institutions of Higher Education," *Higher Education Studies*, 14(3), 170-188.

2023b Bonner[**], H., **Arthurs**, **L. A.** Roth, Ellen K., & Hagadorn, James W. "Paleogeographic Maps: Audience Insights on Portrayal of Ancient Terrain and Climate," *GSA Today*, v. 33, p. 4–10, https://doi.org/10.1130/GSATG544A

2023a Baumann[**], S. & **Arthurs**, **L. A.** "Augmented reality technology used for developing topographic map-reading skills in Earth Science course," *Journal of Science Education and Technology*

2022a **Arthurs, L. A.** & Kowalski[***], C. (2022). "Engaging students' prior knowledge during instruction improves their learning of groundwater and aquifers," *Journal of Geoscience Education*. 70(1), 114-129. https://doi.org/10.1080/10899995.2021.2004536

2021c **Arthurs**, **L. A.**, Bauman[**], S., Rice[*], J. & Litton[*], S. (2021). "The development of individuals' map-reading skill: What research and theory tell us," *International Journal of Cartography*. 1-26. 10.1080/23729333.2021.1950318

2021b **Arthurs**. (2021). "Bringing the field to students during COVID-19 and beyond," *GSA Today*, 31, 28-29. https://doi.org/10.1130/GSATG478GW.1

2021a **Arthurs, L.A.**, Elwonger, J., & Kowalski[*], C. M. (2021). "Facilitating conceptual change by engaging students' preconceptions during college science classroom instruction," *Journal of College Science Teaching*, Jan/Feb 2021, 50(3), 28-35. https://www.jstor.org/stable/27133096

2020 **Arthurs, L. A.**, Kowalski[*], C. M., & Elwonger[*], J. M. (2020). "Drawing as a method to facilitate conceptual change in Earth Sciences education," *Journal of Astronomy and Earth Sciences Education*, 7(1), 1-23. https://doi.org/10.19030/jaese.v7i1.10354

2019 **Arthurs**, **L. A.** (2019). "Undergraduate geoscience education research: Evolution of an emerging field of discipline-based education research," *Journal of Research in Science Teaching*, 56(2), 118-140. https://doi.org/10.1002/tea.21471

2018 **Arthurs, L. A.** & Elwonger[*], J. M. (2018). "Mental models of groundwater residence: A deeper understanding of students' preconceptions as a resource for teaching and learning about groundwater and aquifers," *Journal of Astronomy and Earth Science Education*, 5(1), 53-66. https://doi.org/10.19030/jaese.v5i1.10192

2017 **Arthurs, L. A.** & Kreager, B.[**] (2017). "An integrative review of in-class activities that enable active learning in college science classroom settings," *International Journal of Science Education*, 39(15), 2073-2091. https://doi.org/10.1080/09500693.2017.1363925

2016 **Arthurs, L. A.** & Van Den Broeke, M. (2016). "Novice explanations of hurricane formation offer insights into scientific literacy and the development of expert-like conceptions," *Journal of Astronomy and Earth Sciences Education*, 3(1), 1-26. https://doi.org/10.19030/jaese.v3i1.9686

2015 **Arthurs, L.**, Hsia[**], J. & Schweinle, W. (2015). "The oceanography concept inventory: A semi-customizable assessment for measuring student understanding of oceanography," *Journal of Geoscience Education*, 63(4), 310-322. https://doi.org/10.5408/14-061.1

SELECTED AWARDS & GRANTS

01/01/24 – 12/31/45. Sabbatical; University of Colorado at Boulder.

01/01/25 – 12/31/25. PI, University of Colorado at Boulder's Office for Public and Community-Engaged Scholarship (PACES) Seed Grant; $5,000; University of Colorado at Boulder. (0.0-mo salary/year)

02/15/23 – 07/31/25. PI, Planning Grant: Connecting Our Unit through Relationships and Allyships in Geoscience (COURAGE). NSF-CTGC; $271,731.00; University of Colorado at Boulder. (1-mo salary/year)

09/01/22 – 08/31/27. Co-PI., Collaborative Research: Human Infrastructure for a National Geochronology Consortium: Growing a community and enabling grassroots ideas for inclusive and collaborative science.

NSF-FRES; $528,702.00; University of Colorado at Boulder. Rebecca Flowers (PI), University of Colorado at Boulder. (1 month at 25% summer in years 1 and 5, and 1 month at 10% in years 2, 3, and 4)

10/01/18 – 09/30/23. PI, Promoting Research-based Instructional Methods for Enhancing and Reforming STEM Education (PRIMERS). NSF-IUSE; $2,364,890; University of Colorado at Boulder (2-mo salary/year) NCE1 10/01/23 – 09/30/24

SELECTED INVITED TALKS AND WORKSHOPS

2024 **L. Arthurs** "Active Learning: Personalizing a learner-centered pedagogy to enhance student learning outcomes," Loras College; remote, IA 2024-10-30 (workshop)

2023 **L. Arthurs** "Promote Student Learning Using Class Assessments," Department of Mathematics, University of Colorado at Boulder; CO 2023-10-17 (workshop)

2022 **L. Arthurs** "Students' preconceptions about groundwater are tools for teaching and learning about aquifers," Northern Illinois University; remote, IN 2022-09-16 (talk)

2021 **L. Arthurs** "Engaging students' preconceptions about groundwater facilitates their learning about aquifers," Purdue University; remote, IN 2021-11-04 (talk)

2021 **L. Arthurs**, C.-L. Cheng, C. Flaagan, P. Lu, and P. Shabram, "Pedagogical professional development for STEM faculty: From individual change to community empowerment," AAAS-IUSE Initiative; remote, FL 2021-06-15to16 (day 1 workshop, day 2 working session)

2021 **L. Arthurs** "Drawing on student misconceptions to improve STEM education," Florida International University; remote, FL 2021-03-23 (talk)

SELECTED CONFERENCE PRESENTATIONS

Note: *undergraduate, **graduate, ***postdoc/researcher

2024 **L. A. Arthurs**, "Early Career STEM Instructors' Experiences with Unwelcome Student Behaviors in the Classroom and How It Impacts their Instructional Decision Making," AGU Abstracts, AGU Fall Meeting; Washington, D.C.; 2024-12-11

2024 **L. A. Arthurs**, D. Duncan, and J. Keller, "Using Natural Events to Encourage Public Understanding of Science: The 2023-2024 Solar Eclipses," AGU Abstracts, AGU Fall Meeting; Washington, D.C.; 2024-12-09

2024 H. Fortener** and **L. A. Arthurs**, "Impact of an Innovative Teaching-Focused Professional Development Program on STEM Instructors' Views and Teaching Practices at a Research-Intensive Institution," GSA Abstracts with Programs Vol. 56, No. 5, doi: 10.1130/abs/2024AM-405329, GSA Fall Meeting; Anaheim, CA, and online everywhere; 2023-09-25

2024 Shabram, P., **Arthurs, L. A.**, Cheng, Chu-Lin, Lu, Pierre, Flaagan, Carly, Plaza-Torres, Stephanie. "Promoting Research-based Instructional Methods for Enhancing and Reforming STEM Education (PRIMERS)." Improving Undergraduate STEM Education (IUSE) Summit, Washington, DC.

SELECTED COURSES TAUGHT

Undergraduate Lower-Division: Physical Geology; Environmental Justice and Human Rights in the Aftermath of Hurricane Katrina; Global Change; Environmental Geology; Exploring Earth for Scientists; Water, Energy, and the Environment

Undergraduate Upper-Division: Water-Rock Interactions, Chemistry of Natural Waters, Teaching and Learning Earth Science

Graduate Level: Water-Rock Interactions, Teaching and Learning in Post-secondary STEM Education, Communicating Earth Science with the Public

SELECTED AWARDS & RECOGNITIONS

2021	Iris Moreno Totten Award, GSA Geoscience Education Division
2015	Certificate of Recognition for Contributions to Students, the Parents Association and the Teaching Council of the University of Nebraska-Lincoln