Caitlin Norah Callahan

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EDUCATION

Ph.D. (2013) Mallinson Institute for Science Education, Western Michigan University
Advisor: Dr. Heather Petcovic
Thesis Title: An Embodied Perspective on Expertise in Solving the Problem of Making a Geologic Map

M.S. (2005) Earth and Planetary Sciences, University of New Mexico
Advisors: Dr. Jane Selverstone, Dr. John Geissman, Dr. Adrian Brearley
Thesis Title: Magnetic Properties of Mantle Xenoliths from the Rio Puerco Volcanic Necks, New Mexico

B.A. (2000) Mount Holyoke College, Cum Laude with High Honors in Geology
Advisor: Dr. Michelle Markley
Thesis Title: Structural Characterization of the Mount Waldo Pluton, Waldo County, Maine

PROFESSIONAL EXPERIENCE

2015 – Present	**Assistant Professor**, Grand Valley State University, Geology Department
2013 – 2015	**Postdoctoral Fellow**, Michigan State University, Department of Geological Sciences and CREATE for STEM Institute for Research on Mathematics and Science Education
2011	**Teaching Assistant,** *Exploring Earth Science: Geology*, Western Michigan University, The Mallinson Institute for Science Education (Two semesters)
2009 – 2013	**Research Assistant**, Western Michigan University, The Mallinson Institute for Science Education, "Learning across the Expert-Novice Continuum: Cognition in the Geosciences"
2003 – 2008	**Research Assistant**, University of New Mexico, Department of Earth and Planetary Sciences, "Mantle and crustal xenoliths of the Puerco Volcanic Necks, New Mexico: Constraints on lithospheric evolution at the transition between the Colorado Plateau and the Rio Grande Rift" and "Exhumation of the Colorado Plateau" (Five semesters)
2003 – 2008	**Teaching Assistant**, *Igneous and Metamorphic Petrology*, *Physical Geology Lab*, University of New Mexico, Department of Earth and Planetary Sciences (Five semesters)
2000 – 2003	**Education Department Programs Assistant**, American Geosciences Institute, Alexandria, VA

PROFESSIONAL ACTIVITIES

2017– Present	**Volunteer**, Lake Michigan Academy, Grand Rapids, MI
2017– Present	**Co-Chair for 2018 and 2019 Earth Educators' Rendezvous**, NAGT

2017– Present	**Co-Leader for "Grand Sciences: Bridges to Learning" program**, GVSU College of Education and College of Liberal Arts and Sciences
2017	**Search Committee for Publisher**, Journal of Geoscience Education
2016 – 2017	**Planning Committee for 2017 Earth Educators' Rendezvous**, NAGT
2016 – 2017	**Search Committee for Editor-in-Chief**, Journal of Geoscience Education
2015 – Present	**Associate Editor**, *Journal of Geoscience Education*
2014 – 2015	**Museum Docent**, Impression 5 Science Center, Lansing, MI
2014	**Reviewer**, GSA North Central Section Undergraduate Research Grants
2013 – 2015	**Executive Counselor**, The International Association for Geoscience Diversity, Executive Committee (Term: 2013–2015)
2013 – Present	**Peer Reviewer**, *Journal of Geoscience Education*; *Solid Earth*
2012	**Session Co-Chair**, Geoscience Education Session, *Seeing through the Eyes of the Geologist: Eye Tracking, Video, and Image Analysis in Geoscience Education and Geocognition Research (Digital Posters)* Geological Society of America Annual Meeting
Summer 2002	**Science and Special Education Resource**, Access Earth, University of Southern Maine

GRANTS

2015	$481,795	The Impact of Social Capital and Mentoring in Earth System Science Workforce Development (Co-Principal Investigator), **National Science Foundation,** 1535011. *Funded.* Sub-award to Grand Valley State University, $41,304.
2014	$500	**MSU Postdoc Association Travel Fellowship**, Michigan State University
2012	$700	**Graduate College Travel Grant**, Western Michigan University

CONSULTING EXPERIENCE AS EXTERNAL REVIEWER

2018	Funded: NSF, Division of Undergraduate Education: Geo-Engineering Innovations through Undergraduate Scholarship (Award 1741971)**,** Triton College
2017	Submitted: NSF, Division of Undergraduate Education, Improving Undergraduate STEM Education, GEOPATHS-IMPACT: Engaging Underrepresented Students in Geoscience Through an Icelandic Classroom Environment (EngageUs), Grand Rapids Community College and Grand Valley State University

AWARDS and HONORS

2016	$200	**Best Paper of the Year**, Journal of Geoscience Education
2013	$250	**Best Graduate Oral Presentation Award**, GSA North Central Section Annual Meeting
2012	N/A	**Department Scholar Award**, Western Michigan University
2008	$500	**Caswell Silver Scholarship Fund**, University of New Mexico
2008	$600	**Jerry Harbour Memorial Scholarship**, University of New Mexico
2007	$900	**Geology Alumni Scholarship**, University of New Mexico
2006	$2000	**Regents Fellowship**, University of New Mexico
2006	$450	**Wengerd Traveling Scholarship**, University of New Mexico
2006	$450	**Jerry Harbour Memorial Scholarship**, University of New Mexico
2005	$950	**Geology Alumni Scholarship**, University of New Mexico
2004	$900	**Geology Alumni Scholarship**, University of New Mexico
2000	N/A	**Mary Lyon Scholar,** Mount Holyoke College

PEER-REVIEWED PUBLICATIONS

McCallum, C., Libarkin, J., Callahan, C., & Atchison, C. (2018). Mentoring, Social Capital, and Diversity in Earth System Science. *Journal of Women and Minorities in Science and Engineering*, *24*(1), 17-41.

Callahan, C.N., LaDue, N.D., Baber, L., Sexton, J., van der Hoeven Kraft, K., Zemani-Gallaher, E.M., (2017). "Theoretical Perspectives on Increasing Recruitment and Retention of Underrepresented Students in the Geosciences." *Journal of Geoscience Education, 65*(4), 563-576.

Baker, K.M., Johnson, A.C., **Callahan, C.N.**, & Petcovic, H.L. (2015). Use of cartographic images by expert and novice field geologists in planning fieldwork routes. *Cartography and Geographic Information Science*, 43 (2), DOI: 10.1080/15230406.2015.1072735.

Hambrick, D.Z., Libarkin, J.C., Petcovic, H.L., Baker, K.M., Elkins, J., **Callahan, C.N.**, Turner, S.P., Rench, T.A., & LaDue, N.D. (2012). A test of the Circumvention-of-Limits hypothesis in scientific problem solving: The case of geological bedrock mapping. *Journal of Experimental Psychology: General*, 141(3), 397-403. DOI 10.1037/a0025927

Callahan, C.N., & Markley, M.J. (2003). A record of crustal-scale stress: Igneous foliation and lineation in the Mount Waldo Pluton, Waldo County, Maine, *Journal of Structural Geology*, 25(4), 541-555.

EDITOR-REVIEWED ARTICLE

Callahan, C.N., Libarkin, J.C., McCallum, C.M. & Atchison, C. (2015). Using the lens of social capital to understand diversity in the Earth Systems Sciences workforce. *Journal of Gesocience Education*, 63 (2), 98-104. DOI: http://dx.doi.org/10.5408/15-083.1

EDITORIALS, NON-REVIEWED ARTICLES, AND OTHER WRITINGS

Riggs, E., **Callahan, C.N.**, and Brey, J. (2018). Research on Access and Success of Underrepresented Groups in the Geosciences. In St. John, K. (Ed.) (2018). A Community Framework for Geoscience Education Research. National Association of Geoscience Teachers: https://nagt.org/nagt/geoedresearch/GER_framework/theme5/index.html. (*Note: While this article did not go through traditional peer review, the manuscript was reviewed multiple times through public comment opportunities.)

Metzger, E.P., Blockstein, D.E. & **Callahan, C.N.** (2017) Interdisciplinary Teaching and Sustainability: An Introduction. *Journal of Geoscience Education*, 65(2), 81-85.

John, K. St., Petcovic, H., Stokes, A., Arthurs, L., **Callahan, C.**, Feig, A., ... & Nagy-Shadman, E. (2016). Un-packaging manuscript preparation and review guidelines for curriculum and instruction and research papers. *Journal of Geoscience Education, 64*(1), 1-4.

Callahan, C.N. (1999). Advice about being an LD student, in *Exceptional Children and Youth*, 2nd edition. Nancy Hunt and Kathleen Marshall, authors. Boston: Houghton Mifflin Co.

INVITED PRESENTATIONS

Incorporated Research Institutions for Seismology (IRIS) Internship Program, http://www.iris.edu/hq/internship/. Online presentation during orientation week. Leveraging Relationships in Your Internship Experience. June 2, 2016

Grand Valley State University Council for Exceptional Children, Student Chapter. Guest Speaker. April 4, 2016.

Geo-Needs: Stakeholder Needs Assessments for Broadening Participation in the Geoscience Workforce (https://serc.carleton.edu/geoneeds/Education_Researcher_Agenda.html). Education Research Focus Group, Guest Speaker: *Social Capital as a Framework*. August 9-11, 2015.

PROFESSIONAL PRESENTATIONS AT CONFERENCES
**** Denotes undergraduate student collaborator and presenter***

Wiley, L.* and **Callahan, C.N.** (2017). Exploring the importance of social capital for geoscientists with cognitive disabilities. *Geological Society of America Abstracts with Programs*, 49(6), doi: 10.1130/abs/2017AM-304362.

Petcovic, H.L., Baker, K.M., & **Callahan, C.N.** (2017). How do they know where to go? Expert versus novice reasoning and navigation during bedrock geologic mapping. *Geological Society of America Abstracts with Programs*, 49 (6), doi: 10.1130/abs/2017AM-305940.

LaDue, N. D., **Callahan, C. N.**, Baber, L. D., Sexton, J., van der Hoeven Kraft, K. J., & Zamani Gallaher, E. M. (2017). Applying theoretical frameworks to the recruitment and retention of underrepresented students in the geosciences (Invited Presentation). *Geological Society of America Abstracts with Programs*, 49 (6), doi: 10.1130/abs/2017AM-302667.

Callahan, C.N. (2017). Sharing the idea of adaptations with pre-service teachers: Reflections on a professional development workshop related to inclusive education. Geological Society of America Abstracts with Programs, 49(6), doi: 10.1130/abs/2017AM-307784.

Callahan, C.N. & Sparks, A. * (2017). Comparing Social Comparisons in Geoscience Courses. Earth Educators' Rendezvous: Albuquerque, NM.

Sparks, A.* & **C.N. Callahan** (2016). Measure for measure: Social comparison in introductory and advanced geoscience courses. *Geological Society of America Abstracts with Programs*, 48 (7), doi: 10.1130/abs/2016AM-287577.

Lloyd, F.* and **Callahan, C.N.** (2016b). A Snapshot of the Future: An Analysis of Catalog Descriptions for Future Earth Science Teachers. Midstates Consortium for Math and Science, *2016 Undergraduate Research Symposium in the Physical Sciences, Math, and Computer Science*. November 11-12.

Lloyd, F.* & **Callahan, C.N.** (2016a). Judging a course by its cover: An analysis of catalog descriptions of Earth Science courses for future teachers. *Geological Society of America Abstracts with Programs*, 48 (7), doi: 10.1130/abs/2016AM-282320.

Callahan, C.N., Petcovic, H., & Baker, K.M., (2016). Do actions speak louder than words? Comparing audio and video records of reasoning in the field. *Geological Society of America Abstracts with Programs*, 48 (7), doi: 10.1130/abs/2016AM-287638.

Callahan, C.N., Libarkin, J.C., McCallum, C., and Atchinson, C.L. (2015). The relationship between trust in mentor and career satisfaction in the Earth System Sciences. *Geological Society of America Abstracts with Programs, 47*(7), 685.

Callahan, **C.N.**, Petcovic, H.L., & Baker, K.M. (2015). Rock, Paper, Hammer: Where do thoughts and actions count in making a geologic map? Earth Educators' Rendezvous: Boulder, CO.

Callahan, C.N., Libarkin, J.C., Bomzer, D., & Smrecak, T.A., (2014). Jargon or Gibberish: How does science read to undergraduate students? *Geological Society of America Abstracts with Programs, 46*(6), 245.

Callahan, C.N., Petcovic, H.L., Libarkin, J.C., & Baker, K.M. (2013). What would Chamberlin think? Experts map without multiple working hypotheses. *Geological Society of America Abstracts with Programs, 45*(7), 471.

Callahan, C.N., Petcovic, H.L., & Baker, K.M. (2013). How a geologist can get led astray: A video log study examining how errors in observations and interpretations yield errors in geologic maps. *Geological Society of America Abstracts with Programs, 45*(4), 70.

Callahan, C.N. (2012). Finding a path into the geosciences as a student with special needs. *Geological Society of America Abstracts with Programs, 44*(7), 513.

Callahan, C.N., Petcovic, H.L., & Baker, K.M. (2012). Use of time and space in geologic mapping: A video log study. *Geological Society of America Abstracts with Programs, 44*(7), 115.

Petcovic, H.L., Libarkin, J.C., Hambrick, D.Z., Baker, K.M., Elkins, J.T., **Callahan, C.N.**, Turner, S., Rench, T.A., & LaDue, N.D. (2011). Novice to expert cognition during geologic bedrock mapping. *American Geophysical Union Fall Meeting,* Abstract ED13C-0837.

Callahan, C.N., & Petcovic, H.L. (2011). Using think-aloud audio recordings to understand patterns of thoughts during geologic mapping. *Geological Society of America Abstracts with Programs, 43*(5), 534.

Callahan, C.N., Hayden, T.G, Sibert, R.J, & Ewald, S.K. (2011). An inquiry-based approach to teaching about the internal structure of the Earth. *Geological Society of America Abstracts with Programs, 43*(5), 134.

Callahan, C.N., Petcovic, H.L., & Baker, K.M. (2010). Getting the inside track: Head-mounted cameras give new perspective on process of bedrock mapping. *Geological Society of America Abstracts with Programs, 42*(5), 191.

Petcovic, H.L., **Callahan, C.N.**, Libarkin, J.C., Baker, K.M., Hambrick, H.D., Elkins, J.T., & Wisniewska, M. (2010). Thinking, skills, and strategies of novice to expert geologists during bedrock mapping. *International Geoscience Education Organization Quadrennial Conference*.

Petcovic, H.L., Elkins, J.T., & **Callahan, C.N.** (2010). Do maps tell the whole story? Geologic mental models as expressed verbally and by maps. *Geological Society of America Abstracts with Programs, 42*(5), 189.

Callahan, C.N., Petcovic, H.L., Baker, K.M., & Libarkin, J.C. (2009). Tracking expert and novice geocognition during feld mapping. *Geological Society of America Abstracts with Programs, 41*(7), 250.

Callahan, C.N., Roy, M., & Condie, K. (2007). Using xenoliths to explore variations in upper mantle composition and the relation of composition to seismic velocity structure beneath the Colorado Plateau. *Geological Society of America Abstracts with Programs, 39*(6), 278.

Callahan, C.N., Roy, M., & Pederson, J. (2006). Rock uplift on the Colorado Plateau driven by erosion and flexural isostasy. *American Geophysical Union Fall Meeting,* Abstract S43A-1374.

Callahan, C.N., Geissman, J.W., Selverstone, J. & Brearley, A. (2005). Magnetic properties of mantle xenoliths and evidence of localized modification of the mantle beneath the Rio Puerco volcanic field, New Mexico. *American Geophysical Union Fall Meeting,* Abstract T13A-0424.

Callahan, C.N., Geissman, J.W., Selverstone, J. & Brearley, A. (2004). Characterization of magnetic properties and magnetic mineralogy of mantle xenoliths from the Rio Puerco Volcanic Field, New Mexico. *Geological Society of America Abstracts with Programs, 36*(5), 146.

Callahan, C.N., & Markley, M.J. (2002). Tectonic significance of igneous foliation and lineation in the Mount Waldo Pluton, Waldo County, Maine. *Geological Society of America Abstracts Annual Meeting*.

Callahan, C.N., Byerly, G.R., & Smith, M.J. (2001). The American Geological Institute Minority Participation Program (MPP): Thirty years of improving access to opportunities in the geosciences through undergraduate and graduate scholarships for under-represented minorities. *American Geophysical Union Spring Meeting*, Abstract ED21D-04 Invited.

WORKSHOPS OR CONFERENCE SESSIONS

Callahan, C.N. (2018). Mentoring Practices, Roundtable Discussion. Earth Educators' Rendezvous, Lawrence, KS.

Forbes, C., & **Callahan, C.N.** (2018). Advancing Transdisciplinary Dialogue in Geoscience Education Research, Earth Educators' Rendezvous, Lawrence, KS.

PROFESSIONAL AFFILIATIONS

Council on Undergraduate Research
Geological Society of America
The International Association for Geoscience Diversity
National Association of Geoscience Teachers
National Science Teachers Association

COURSES TAUGHT

Geology 111, Exploring the Earth
Geology 202, Hydrosphere for K-8 Teachers
Science 225, Integrated Life Science for K-8 Teachers