John McDaris

Science Education Resource Center
Carleton College
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Northfield, MN 55057
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PROFESSIONAL PREPARATION

Ph.D., Earth Sciences, 2024
University of Minnesota, Minneapolis, MN
Demonstrating the potential for real-time groundwater monitoring using simple, continuous measurements

M.S., Geophysics, 2000
University of Minnesota, Minneapolis, MN

B.S. *cum laude*, Physics, 1997; Minor—Mathematics
North Carolina State University, Raleigh, NC

PROFESSIONAL EXPERIENCE

2024 – Present:	Education Associate Science Education Resource Center (SERC), Carleton College
2021 – 2024:	Project Specialist Science Education Resource Center (SERC), Carleton College
2018 – 2024:	Graduate Research Assistant / Graduate Teaching Assistant University of Minnesota, Twin Cities
Aug-Dec, 2009:	Adjunct Earth Science Faculty Rochester Community & Technical College
2003 – 2021:	Geoscience Education Associate Science Education Resource Center (SERC), Carleton College

GRANTS AND FUNDING

Collaborative Research: Cultural Change in Geoscience (C-ChanGe): Transforming Departmental Culture through Faculty Agents of Change (Awarded, 2024-2025)
National Science Foundation, Directorate for Geosciences, #2403844
Role: Co-Principal Investigator
Amount: $1,265,746.00

PROFESSIONAL ACTIVITIES

Community Visioning

- Program Advisory Committee – Intellectual Point (2025-26)
- 2023 Representation and Retention in Geoscience (R2GEO) Planning Summit
- Steering Committee (2021-2022) - Defining research and teaching priorities in Near-Surface Geophysics (NSF EAR 2139353)
- Outreach, Diversity, and Education Committee (OEDC) for the NSF Continental Scientific Drilling Coordination Office (CSDCO) (2015)

Diversity, Equity, and Inclusion

- Minnesota Groundwater Association Diversity, Equity, and Inclusion Committee (2020-2023)
- UMN Department of Earth and Environmental Sciences Diversity and Equity Committee (2018-2021)

Grant Proposal Peer Review

- NSF Improving Undergraduate Science Education (IUSE) Program
- NASA National Space Grant College and Fellowship Program
- NASA Minority University Research and Education Project (MUREP) Aerospace Academy – MAA
- NASA ESTEEM-TCU Program

- NASA Innovations in Climate Education – Tribal (NICE-T) Program
- NASA Global Climate Change Education (GCCE) Program

Manuscript Peer Review

- Environmental and Engineering Geophysics (2024)
- Frontiers in Ecology (2021)
- Journal of Geoscience Education (2018, 2020, 2024, 2025)

PUBLICATIONS

Journal Articles and Book Chapters

Published

16. McDaris, J.R., Feinberg, J.M., Fisher, B.A., & Runkel, A.C. (2025). Automated Groundwater Monitoring in Twin Cities Aquifers Shows Anthropogenic Changes in Water Quality Measures. *Environmental & Engineering Geoscience 2025*; 31 (2): 131–143. doi: https://doi.org/10.21663/EEG-D-24-00088
15. Stine, J.M.G., Feinberg, J.M., Huttenlocker, A.K., Irmis, R.B., Ramirez, D. Doctor, R., McDaris, J., Henderson, C.M., Read, M.T., Shannon, K.B., Noren, A., O'Grady, R., Sloo, A., Steury, P., Fernandez, D.P., Henrici, A.C., & Tabor, N.J. (2024). Paleozoic Equatorial Records of Melting Ice Ages (PERMIA): calibrating the pace of paleotropical environmental and ecological change during Earth's previous icehouse. *Scientific Drilling*, 33(2), 109-128. https://doi.org/10.5194/sd-33-109-2024
14. McDaris, J.R., Feinberg, J.M., Levine, J., & Runkel, A.C. (2023). Establishing Specific Conductance-Chloride Relationships for Quaternary and Bedrock Aquifers in 1 the Twin Cities Metropolitan Area, Minnesota, United States. *Earth Science, Systems, & Society*, 3:10084. https://doi.org/10.3389/esss.2023.10084
13. Hanson, R.B., Kruse, S., Comas, X., Doro, K., Holmes, T., Knight, R., Lyon, L., McDaris, J., Minsley, B., Morris, I., Rodríguez Tribaldos, V., Slater, L., Tsai, V., & Zhang, C. (2022). Defining Research and Teaching Priorities that Could be Advanced Through a Near-Surface Geophysics Center. American Geophysical Union. https://doi.org/10.1002/essoar.10512087.1
12. McDaris, J.R., Feinberg, J.M., Runkel, A.C., Levine, J., Kasahara, S., & Alexander Jr., E.C. (2022). Documentation and Prediction of Increasing Groundwater Chloride Concentration in the Twin Cities, Minnesota. *Groundwater*. https://doi.org/10.1111/gwat.13227
11. Beane, R.J., Baer, E.M.D., Lockwood, R., Macdonald, R.H., McDaris, J.R., Morris, V.R., Villalobos, I.J. & White, L.D. (2021). Uneven increases in racial diversity of US geoscience undergraduates. *Commun Earth Environ* 2, 126. https://doi.org/10.1038/s43247-021-00196-6
10. St. John, K., McNeal, K. Macdonald, R.H., Kastens, K., Bitting, K., Cervato, C., McDaris, J.R., Petcovic, H., Pyle, E., Riggs, E., Ryker, K., Semken, S., & Teasdale, R. (2020). A Community Framework for Geoscience Education Research: Summary and Recommendations for Future Research Priorities. *Journal of Geoscience Education*. DOI: 10.1080/10899995.2020.1779569
9. Macdonald, R.H., Beane, R.J., Baer, E.M.D., Eddy, P.L., Emerson, N.R., Hodder, J., Iverson, E.R., McDaris, J.R., O'Connell, K., & Ormand, C.J. (2019). Accelerating Change: The Power of Faculty Change Agents to Promote Diversity, Equity, and Inclusive Teaching Practices. *Journal of Geoscience Education*. DOI: 10.1080/10899995.2019.1624679
8. St. John, K., Bitting, K., Cervato, C., Kastens, K.A., Macdonald, R.H., McDaris, J.R., McNeal, K.S., Petcovic, H., Pyle, E., Riggs, E., Ryker, K., Semken, S., & Teasdale, R. (2019), An evolutionary leap in how we teach geosciences. *Eos*, 100, https://doi.org/10.1029/2019EO127285. Published on 08 July 2019.
7. McDaris, J.R., Iverson, E.R., Manduca, C.A., & Orr, C.H. (2019). Teach the Earth: Making the Connection Between Research and Practice in Broadening Participation. *Journal*

of Geoscience Education. DOI: 10.1080/10899995.2019.1616272

6. Orr, C.H. & McDaris, J.R. (2019). Supporting implementation of program-level changes to increase learning about Earth. In Gosselin, D.C., Egger, A., Taber, J. (Eds), Interdisciplinary Teaching about Earth and the Environment for a Sustainable Future. Springer, New York, NY.
5. St. John, K., Bitting, K., Cervato, C., Kastens, K.A., Macdonald, R.H., McDaris, J.R., McNeal, K.S., Petcovic, H.L., Pyle, E.J., Riggs, E.M., Ryker, K., Semken, S., & Teasdale, R. (2018). Synthesis: Discussion and Implications. In St. John, K. (Ed), A Community Framework for Geoscience Education Research. National Association of Geoscience Teachers. https://doi.org/10.25885/ger_framework/15
4. McDaris, J.R., Manduca, C.A., Iverson, E.R., & Orr, C.H. (2017). Looking in the Right Places: Minority-Serving Institutions as Sources of Diverse Earth Science Learners. Journal of Geoscience Education, November 2017, Vol. 65, No. 4, pp. 407-415.
3. Banta, L.M., Crespi, E.J., Nehm, R.H., Schwarz, J.A., Singer, S., Manduca, C.A., Bush, E.C., Collins, E., Constance, C.M., Dean, D., Esteban, D., Fox, S., McDaris, J., Paul, C.A., Quinan, G., Raley-Susman, K.M., Smith, M.L., Wallace, C.S., Withers, G.S., & Caporale, L., (2012) Integrating Genomics Research throughout the Undergraduate Curriculum: A collection of inquiry-based genomics lab modules. *CBE Life Science Education*, vol. 11, 1–5, Fall 2012.
2. Manduca, C.A., Mogk, D.W., B. Tewksbury, Macdonald, R.H., S.P. Fox, Iverson, E.R., K. Kirk, McDaris, J.R., C. Ormand, & M. Bruckner (2010). SPORE: Science Prize for Online Resources in Education: On the Cutting Edge: Teaching Help for Geoscience Faculty: *Science*, v. 327, no. 5969, pp. 1095-1096.
1. Williams, M.L., Mogk, D.W., & J. McDaris (2010). Research and Teaching about the Deep Earth. *Eos*, Vol. 91, No. 32, 10 August 2010.

Invited Talks

2024

McDaris, J.R. (2024). Using high-frequency measurements of specific conductance to infer real-time groundwater chloride concentrations. August 6, 2024, 2024 Salt Symposium

2022

McDaris, J.R. and Feinberg, J.M. (2022). Twin Cities Metropolitan Area Groundwater Chloride and Monitoring with Specific Conductance. August 22, 2022, Metropolitan Council.

McDaris, J.R., Feinberg, J.M., Fisher, B., Levine, J., and Runkel, A. (2022). Using Historical Groundwater Chloride Data to Pick Targets for (Automated) Continuous Monitoring. November 8, 2022, UMN Water Council Water Cooler.

2021

McDaris, J.R. and Feinberg, J.M. (2021). Monitoring groundwater chloride using *in situ* specific conductance measurements. March 10, 2021, Minnesota Department of Health Hydro Group.

2020

McDaris, J.R. (2020). Chloride Concentrations in Twin Cities Metropolitan Area Groundwater and Future Monitoring using Specific Conductance. November 18, 2020 Minnesota Geologic Survey Brown Bag Lecture Series

First Author Presentations at Professional Conferences

2025

McDaris, J.R., Huyck Orr, C., and Dolan, E. (2025). Using your teaching to improve student success and move forward your research agenda. Geological Society of America Abstracts with Programs. Vol. 57, No. 6, 2025 doi: 10.1130/abs/2025AM-9944

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McDaris, J.R., Huyck Orr, C., Jones, J., and Czeck, D. (2025). C-ChanGe: A Model and Resources for Catalyzing Positive Departmental Change. Geological Society of America Abstracts with Programs. Vol. 57, No. 6, 2025 doi: 10.1130/abs/2025AM-9978

McDaris, J.R., Huyck Orr, C., Jones, J., Czeck, D., Eddy, P., Macdonald, R.H., and Baer, E. (2025). From SAGE 2YC to C-ChanGe: Building on a Successful PD Model for Disciplinary Change. Transforming Institutions Conference, (St. Louis, MO).

2023

McDaris, J.R. and Feinberg, J.M. (2023). Monitoring chloride concentrations from road salt with continuous specific conductance measurements in the context of a multi-aquifer, urban groundwater system. Abstract NS31A-0609 presented at 2023 Fall Meeting, American Geophysical Union, San Francisco, CA, 10-16 Dec.

2022

McDaris, J.R. and Feinberg, J.M. (2022). Using Specific Conductance Telemetry to Monitor Groundwater Chloride in Real Time. Geological Society of America Abstracts with Programs. Vol 54, No. 5, 2022. doi: 10.1130/abs/2022AM-380453

2021

McDaris, J.R., and Feinberg, J.M. (2021). Chloride Concentrations and Specific Conductance in TCMA Groundwater. April 2, 2021. UMN Earth Student Research Symposium.

McDaris, J.R., Feinberg, J.M., Fisher, B.A., Levine, J., Runkel, A. (2021). Real-time monitoring of groundwater quality using in-situ measurements of specific conductance. Abstract NS25B-0428 presented at 2021 Fall Meeting, American Geophysical Union, New Orleans, LA, 13-17 Dec.

2020

McDaris, J.R., and Feinberg, J. (2020). Using real-time electrical conductivity measurements to understand chloride in groundwater. Geological Society of America Abstracts with Programs. Vol. 52, No. 5, ISSN 0016-7592

McDaris, J.R., Baer, E.M.D., Macdonald, R.H., and Ormand, C.J. (2020). Supporting Student Success at Multiple Scales: Lessons on Promoting Change from SAGE 2YC Change Agents. Geological Society of America Abstracts with Programs. Vol 52, No. 6, 2020 doi: 10.1130/abs/2020AM-358211

2019

McDaris, J.R., Baer, E.M.D., Emerson, N., Hodder, J., Macdonald, R.H., and Ormand, C. (2019). Synthesizing lessons for creating change in faculty, programs, institutions, and regional networks: SAGE 2YC Faculty as Change Agents. Presented at the 2019 Earth Educators' Rendezvous, (Nashville, Tennessee).

McDaris, J.R., Feinberg, J.M., and Maxson, J. (2019). Developing an Urban Field Course as an Engagement and Transfer Tool. Abstract ED23F-1073 presented at 2019 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.

McDaris, J.R., Macdonald, R.H., Ormand, C., Iverson, E.R., Baer, E., and Emerson, N. (2019). Increasing Diversity, Equity, and Inclusion in Two-Year College Geoscience: Lessons Learned from the SAGE 2YC Project. Abstract ED31B-04 presented at 2019 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.

2018

McDaris, J.R., Manduca, C.A, Iverson, E.R., Orr, C.H. (2018). Teach the Earth: Linking research and practice to attract, support, and prepare diverse students for geoscience careers. Abstract ED11A-10 presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.

McDaris, J.R., Ormand, C., Baer, E.M., Hodder, J., Macdonald, R.H., Emerson, N. (2018). SAGE 2YC: Sustaining Faculty Learning. Poster presented at the 2018 Earth Educator's Rendezvous (Lawrence, KS).

2017

McDaris, J.R., Baer, E.M.D., Macdonald, R.H., Ormand, C.J., Hodder, J., Emerson, N.R. (2017). The SAGE 2YC Website: Updated Content to Support 2YC Faculty as Agents of Change. Geological Society of America Abstracts with Programs. Vol. 49, No. 6. doi: 10.1130/abs/2017AM-300600

McDaris, J.R., Bralower, T., Anbar, A., Leinbach, A.A. (2017). Best Practices in Teaching Online: faculty-Sourced Guidance from InTeGrate. Geological Society of America Abstracts with Programs. Vol. 49, No. 6. doi: 10.1130/abs/2017AM-301314

McDaris, J.R., Bralower, T., Anbar, A., Leinbach, A.A. (2017). Teaching about the Earth Online: Faculty-Sourced Guidance from InTeGrate. Abstract ED53E-0197 presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.

McDaris, J.R. and Orr, C.H. (2017). Lessons from the InTeGrate Implementation Teams: Synthesizing Real-World Experience. Earth Educators' Rendezvous. Albuquerque, NM.

2016

McDaris, J.R. and Manduca, C.A. (2016). Drawing Diverse Students into your Class. Earth Educators' Rendezvous, Madison, WI.

McDaris, J.R. and Manduca, C.A. (2016). Showcasing Approaches to Inclusivity and Broadening Participation in Geoscience and STEM. Geological Society of America Abstracts with Programs. Vol. 48, No. 7.

2015

McDaris, J.R. and Manduca, C.A. (2015). Characterizing the Prevalence and Practices of Geoscience Programs at Minority Serving Institutions. Geological Society of America Abstracts with Programs. Vol. 47, No. 7, p.46.

McDaris, J.R., Manduca, C.A., and Macdonald, R.H. (2015). Broadening Access to STEM and Geoscience through Support for the Whole Student. Earth Educators' Rendezvous, Boulder, CO.

McDaris, J.R., Manduca, C.A., Macdonald, R.H., and Iverson, E.R. (2015). Addressing Issues of Broadening Participation Highlighted in the Report on the Future of Undergraduate Geoscience Education. Abstract ED14B-06 presented at 2015 Fall Meeting, AGU, San Francisco, Calif., 14-19 Dec.

2014

McDaris, J.R., Hodder, J., Macdonald, R.H., Baer, E.M.D., Blodgett, R.H. (2014). Undergraduate Research in Geoscience with Students from Two-year Colleges: SAGE 2YC Resources. Abstract ED21D-3477 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 14-19 Dec.

McDaris, J.R., Layou, K.M., Macdonald, R.H. , Baer, E.M.D., Hodder, J., Blodgett, R.H. (2014). Preparing, Supporting, and Advising 2YC/4YC Transfer Students. Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.111

McDaris, J.R., Macdonald, R.H., Manduca, C.A. (2014). Supporting Diverse STEM Students using the Whole Student Framework. Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.191

McDaris, J.R., Manduca, C.A., Larsen, K. (2014). Understanding the Prevalence of Geo-Like Degree Programs at Minority Serving Institutions. Abstract ED43B-3464 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 14-19 Dec.

2013

McDaris, J.R., Kirk, K.B., Layou, K., Macdonald, R.H., Baer, E.M.D., Blodgett, R.H., Hodder, J. (2013). Supporting Geoscience Students at Two-year Colleges: Career Preparation and Academic Success. Abstract ED11F-02 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

McDaris, J.R., Nelson, T., Egger, A., Manduca, C.A., and Williams, W. (2013). Showcasing Successful Strategies for Supporting Minority Students in the Geosciences. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.379.

2012

McDaris, J.R. (2012). Online Resources for Teaching Geoscience in the Field. Abstract ED53B-0927 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

McDaris, J.R., Larsen, K., Baer, E.M.D., Blodgett, R.H., Hodder, J., Macdonald, R.H., van der Hoeven Kraft, K.J., and Maier, M. (2012). Online Resources for Geoscience Instructors at Two-Year Colleges, Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p. 174

McDaris, J.R., Tewksbury, B.J., and Wysession, M.E. (2012). Using Grand Challenges For Innovative Teaching in Structural Geology, Geophysics, and Tectonics. Abstract ED43E-01 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

2011

McDaris, J.R., Macdonald, R.H., Blodgett, R.H., Manduca, C.A., and Maier, M. (2011). Website Resources and Support for Two-Year College Geoscience Educators, Abstract ED11E-08 Presentation at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.

McDaris, J.R. and Manduca, C.A. (2011). On the Cutting Edge: Faculty Professional Development in the Geosciences. Poster presented at AACC's Broadening Impact: NSF-Funded Projects at Two-Year Colleges Conference. June 16-17, 2011.

McDaris, J.R. (2011). Teaching about Hazards in the Geoscience Classroom. Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 137.

2010

McDaris, J.R. and Macdonald, R.H. (2010). Teaching About Hazards Using Current Events. Geological Society of America *Abstracts with Programs*, Vol. 42, No. 5, p. 24

McDaris, J.R., Kirk, K.B., Mogk, D.W., and Bruckner, M.Z. (2010), Virtual Workshop Experiences for Faculty: Lessons Learned from On the Cutting Edge, Abstract ED31B-0641 Poster presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

2008

McDaris, J.R., Dahlman, L., and Barstow, D. (2008). EarthLabs: A National Model for Earth Science Lab Courses, *Eos Trans. AGU,* 89(53), Fall Meet. Suppl., Abstract ED21B-0624.

2007

McDaris, J.R., Dahlman, L., and Barstow, D. (2007). EarthLabs- Investigating Hurricanes: Earth's Meteorological Monsters, *Eos Trans. AGU,* 88(52), Fall Meet. Suppl., Abstract ED42A-07.

2006

McDaris, J.R. and Manduca, C.A. (2006). Teaching in the Field: Gathering the Collective Expertise. Geological Society of America Abstracts with Programs, 38(7), 524.

McDaris, J.R., Manduca, C.A., and Macdonald, R.H. (2006). Geohazards Visualizations and Teaching Materials Just-In-Time. Geological Society of America Abstracts with Programs, 38(7), 153.

2005

McDaris, J.R., Macdonald, R.H., and Manduca, C.A. (2005). "The 2004 Indian Ocean Tsunami: Using a Disaster as a Teachable Moment." *Geological Society of America Abstracts with Programs*, 37(5), 98.

2004

McDaris, J.R., Fox, S., and Manduca, C.A. (2004). Supporting Reusability. Tucson, AZ, 2004 Joint Conference on Digital Libraries, June 2004.

McDaris, J.R. and Manduca, C.A. (2004). "Developing Effective Online Learning Resources in the Geosciences." EOS Trans. AGU, Fall Meeting Supplement, Abstract ED41A-0246 85(47).

Professional Development Expertise

Through my work on grant-funded projects at SERC, I have developed expertise in designing and implementing professional development activities and materials for faculty

related to pedagogy, content, and broader impacts. Examples of this work can be found on the project websites listed below.

Design and facilitation of professional development for faculty:
Cultural Change in Geoscience (C-ChanGe), *Alaska Undergraduate Research Experience (AK UNiTE)*, *InTeGrate*, *National Association of Geoscience Teachers (NAGT)*, *LSAMP North Star STEM Alliance*, *On the Cutting Edge*, *Supporting and Advancing Geoscience in Two-Year Colleges (SAGE 2YC)*, *Network of STEM Education Centers (NSEC)*, *HHMI Inclusive Excellence 2 Learning Community Cluster 4 (LCC4)*

Scaffolded collection and synthesis of program-level content:
C-ChanGe, *InTeGrate*, *LSAMP North Star STEM Alliance*, *SAGE 2YC*, *Supporting STEM Success in a Liberal Arts Context*, *NSEC*, *CUREnet*, *AK UNiTE*, *LCC4*

Development of professional development materials:
C-ChanGe, *InTeGrate*, *NAGT*, *LSAMP North Star STEM Alliance*, *Building Strong Geoscience Departments*, *SAGE 2YC*

HONORS AND AWARDS

- 2023 Mistletoe Research Fellowship – Momental Foundation
- Samuel Goldrich "Footsteps" Award – 2023-2024, ESCI University of Minnesota
- 2023 GA Harris Fellowship – METER Group, Inc.
- 2022 North Central Section Student Travel Grant – Geological Society of America
- Mooney Graduate Fellowship – 2022-2023, ESCI University of Minnesota
- Dennis Graduate Fellowship – 2021-2022, ESCI University of Minnesota
- Outstanding TA Award – 2021, ESCI University of Minnesota
- Gil Gabanski Scholarship – 2020, Minnesota Groundwater Association
- Banerjee Graduate Fellowship – 2019-2020, ESCI University of Minnesota
- Gruner Graduate Fellowship – 1999-2000, ESCI University of Minnesota
- Mooney Graduate Fellowship – 1998-1999, ESCI University of Minnesota
- Sigma Pi Sigma – National Physics Honor Society

PROFESSIONAL SOCIETY MEMBERSHIPS

National Association of Geoscience Teachers
American Geophysical Union
Geological Society of America
International Association for Geoscience Diversity
National Organization of Gay and Lesbian Scientists and Technical Professionals
Minnesota Groundwater Association