

Nathan Anderson Quarderer

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[GitHub](#) | [Google Scholar](#) | [ORCID](#) | [LinkedIn](#)

Education

- **PhD; Teaching & Learning (Science Education);** The University of Iowa; (2020)
Dissertation: *Climate change as a means of exploring 8th grade students' epistemologies of science in traditional and place-based learning environments*. Dr. Brian Hand, Chair
- **MS; Civil & Environmental Engineering (Hydraulics);** The University of Iowa; (2010)
Thesis: *Sediment-size analysis, nitrate monitoring, bathymetric mapping and construction of a two-dimensional hydrodynamic model of a backwater region of the Upper Mississippi River system 2008–2009*. Dr. Larry Weber, Chair.
- **BS; Astronomy & Physics (Mathematics minor);** The University of Iowa; (2005)

Experience

Cooperative Institute for Research in Environmental Sciences (CIRES);

The University of Colorado Boulder (Boulder, CO)

- **The Environmental Data Science Innovation & Impact Lab (ESIIL);** Education Director; (August 2022 – Present)
 - Oversee planning and implementation of the *ESIIL Stars* program designed to build capacity to teach and learn Earth and Environmental data science (EDS) at smaller minority serving institutions including Tribal Colleges and Universities (TCUs)
 - Develop and maintain partnerships with TCU faculty through the *Project Red Bus* initiative, a collaboration between the American Indian Higher Education Consortium (AIHEC) and the Indigenous Peoples Climate Change Working Group (IPCCWG)
 - Design and lead the *ESIIL Data Short Course* for early career faculty and researchers
 - Supervise ESIIL Education team members including holding regular meetings and overseeing time allocations
 - Attend weekly meetings with ESIIL Leadership Team
- **Earth Lab;** Education Director; (March 2022 – Present)
 - Oversee sustainable funding model for Earth Lab Education team through securing grants and awards from external partners and maintaining annual income stream through the Earth Lab Earth Data Analytics Professional Graduate Certificate Program
 - Lead instruction and implementation of the *Harnessing the Data Revolution* (HDR) *Earth Data Science Corps* (EDSC) program including partnering with CIRES Education & Outreach team to oversee program assessment and evaluation
 - Supervise Earth Lab Education team members including holding regular meetings and approving monthly time sheets
 - Attend weekly meetings with Earth Lab Leadership Team
 - Ensure that Earth Lab's open education portal (<https://www.earthdatascience.org/>) is maintained as lessons and teaching materials are updated
- **Earth Lab;** Postdoctoral Associate; (May 2020 – May 2023)
 - *Harnessing the Data Revolution Earth Data Science Corps* – Assessment coordinator; Evaluation team; coordinate and assess technical Python workshops for novice programmers from historically underrepresented communities in STEM; design and assess technical training for faculty from tribal colleges and Hispanic Serving Institutions
 - *Earth Data Analytics Foundations professional certificate program* – Assessment and evaluation team; develop program evaluation reports and assess student performance metrics

Front Range Community College (Westminster, CO)

- **Geoscience Department**; School of Science; Instructor (**January 2025 - Present**)
 - Oversee instruction for *Environmental Science (ENV1111)*; Lead instructor; developed and implemented curricular materials and assessment tools for community college STEM courses delivered through face-to-face and online learning environments

The University of Iowa (Iowa City, IA)

- **Department of Teaching & Learning**; College of Education; Graduate Research & Teaching Assistant; (**September 2017 – May 2020**)
 - *Argument-based Strategies for STEM-infused Science Teaching (ASSIST)*; Research and evaluation team; developed assessment instruments to track teacher performance across three ASSIST cohorts; conducted interviews with participating teachers
 - *Center for Global & Regional Environmental Research (CGRER)*; Education team; developed open, place-based curricular materials for 8th grade science lessons focused on climate change
 - *Societal & Educational Applications of the Earth & Environmental Sciences (SIED:4102)*; *Societal & Educational Applications of the Biological Sciences (SIED:4103)*; Lead instructor; worked with preservice teachers to develop and apply curricular materials and assessment tools for primary and secondary science lessons focused on earth, environmental, and biological sciences
 - *Exploring the Geology, Mining History, and Environmental Issues of the Colorado Rockies (SIED:4110)*; Teaching assistant; conduct assessment interviews with preservice teachers enrolled in immersive geoscience field course
- **IIHR Hydrosience & Engineering**; College of Engineering; Graduate Research Assistant; (**January 2008 – August 2010**)
 - Served as point of contact between IIHR engineers and outside agencies during collaborative efforts to dredge and restore an Upper Mississippi River (UMR) backwater located in Pool 18
 - Developed 2D hydrodynamic model of UMR backwater system using the Surface Water Modeling System (SMS) and US Bureau of Reclamation Sedimentation and River Hydraulic Watershed (SRH-W) model
 - Collected data used to calibrate hydrodynamic models including bathymetric surveying and flow characteristics (Acoustic Doppler Velocimetry)
 - Contributed to environmental sampling at New Boston, IL (sediment core collection and analysis; realtime nitrate nitrogen monitoring)
- **Department of Physics & Astronomy**; College of Liberal Arts & Sciences; Undergraduate Research Assistant; (**January 2005 – January 2008**)
 - Built and maintained instructional resources and lecture demonstrations for physics and astronomy courses
 - Traveled and presented with the *Hawkeyes on Science* outreach program
 - Participated in plasma physics research; helped maintain *Q-machine* (plasma chamber)

Northeast Iowa Community College [NICC] (Calmar, IA)

Arts & Sciences Department; Faculty (Science & Mathematics); (**January 2011 – August 2020**)

- Oversaw instruction for *College Physics I & II*, *Survey of Physics*, *Environmental Science*, *College Algebra*, *Intermediate Algebra*, *Applied Math*, *Pre-algebra*; Lead instructor; developed and implemented curricular materials and assessment tools for community college STEM courses delivered through face-to-face and online learning environments
- *NICC Assessment Committee*; Data analysis team; created assessment dashboard for NICC, college-wide assessment initiative under guidance from the Higher Learning Commission (**2017-2019**)

- *National Alliance for Partnerships in Equity (NAPE); STEM Equity Pipeline* professional development training; Participant (**2017 – 2018**)

Louisa County Conservation (Wapello, IA)

AmeriCorps Naturalist; (**September 2009 – October 2010**)

- Design and present environmental education outreach programs for local K-12 school and public groups in Louisa County, IA and surrounding communities
- Create outreach material including maps and kiosks for the Lake Odessa Water Trail and Iowa River Water Trail using GIS mapping software
- Organized cleanup of Iowa River removing over 2,000 pounds of trash and recyclables from a nine-mile river reach

Contracts & Awards

MS-CC Hackathon Planning & Implementation - Organize and implement two hackathon events; co-hosted with Fort Valley State University and West Virginia State University

Funding Agency: MS-CC (Minority Serving Cyberinfrastructure Consortium)

Amount Requested: \$22,000

Period of Award: 1/1/26 - 5/1/26

Role on Project: PI

Co-PI: Lilly Jones-Sanovia, James Sanovia

CU Workforce Development Seed Grant - Teaching Capacity Unleashed: Transforming Your Curriculum & Community Through Environmental Data Science at Tribal and Two-Year Colleges

Funding Agency: University of Colorado Boulder Research & Innovation Office (RIO)

Amount Requested: \$25,781

Period of Award: 7/1/25 - 6/30/26

Role on Project: PI

Co-PI: Lilly Jones-Sanovia, James Sanovia

CIRES Proposal #801 - Earth Data Science training needs for GeoPark

Funding Agency: GeoPark

Amount Requested: \$41,636

Period of Award: 3/1/23 - 6/30/23

Role on Project: PI

Co-PI: Elsa Culler

NSF Award #2153040 - Environmental Data Science Innovation and Impact Lab (ESIIL): Accelerating Discovery by Fostering an Open and Diverse Earth Data Revolution (J. Balch - PI)

Funding Agency: National Science Foundation

Amount Awarded: \$19,999,990

Period of Award: 18/1/22 - 7/31/27 (estimated)

Role on Project: Senior Personnel

NSF Award #1924337 - HDR DSC: Earth Data Science Corps - Fulfilling Workforce Demand at the Intersection of Environmental Science and Data Science (J. Balch - PI)

Funding Agency: National Science Foundation

Amount Awarded: \$1,180,445

Period of Award: 10/1/19 - 9/30/23

Role on Project: co-PI

Travel grants and awards (The University of Iowa)

Graduate Student Research Award \$500 (2019)

Graduate Student Senate Travel \$750 (2019)

Audrey Qualls Travel Grant \$300 (2018)

Office of the Dean Graduate Student Travel \$300 (2018)

Publications

(Preprint) **Quarderer, N.**, Kaiser, A., Culler, E., Halama, K., Post, A. K., Iglesias, V., ... Balch, J. (2024, December 4). Advancing Data Science Proficiency in the Earth and Environmental Sciences: How an Earth Data Science Program is Helping Researchers Rethink Their Approach to Data Analytics. <https://doi.org/10.31219/osf.io/g98yd>

Quarderer, N. A., Wasser, L., Gold, A. U., Montañó, P., Herwehe, L., Halama, K., ... Balch, J. (2024). Fostering the Development of Earth Data Science Skills in a Diverse Community of Online Learners: A Case Study of the Earth Data Science Corps. *Journal of Statistics and Data Science Education*, 33(1), 3–15. <https://doi.org/10.1080/26939169.2024.2362886>

McIntosh, T. L., Verleye, E., Balch, J. K., Cattau, M. E., Ilangakoon, N. T., Korinek, N., Nagy, R. C., Sanovia, J., Skidmore, E., Swetnam, T. L., Tuff, T., **Quarderer, N.**, & Wessman, C. A. (2023). Cyberinfrastructure deployments on public research clouds enable accessible Environmental Data Science education. In *Practice and Experience in Advanced Research Computing (PEARC '23)* (pp. 367–373). Association for Computing Machinery. <https://doi.org/10.1145/3569951.3597606>

(Preprint) Wasser, L., Palomino, J., Herwehe, L., **Quarderer, N.**, McGlinchy, J., Balch, J., & Joseph, M. B. (2022, February 24). Student-Directed Learning in the Open Earth & Environmental Data Science Classroom. <https://doi.org/10.31219/osf.io/xdj4z>

Mahood, A. L., Joseph, M. B., Spiers, A. I., Koontz, M. J., Ilangakoon, N., Solvik, K. K., Quarterer, N., McGlinchy, J., Scholl, V. M., St. Denis, L. A., Nagy, C., Braswell, A., Rossi, M. W., Herwehe, L., Wasser, L., Cattau, M. E., Iglesias, V., Yao, F., Leyk, S., Balch, J. K. (2023). Ten simple rules for working with high-resolution remote sensing data. *Peer Community Journal*, 3, e4. [doi:10.24072/journal.223](https://doi.org/10.24072/journal.223).

<https://peercommunityjournal.org/articles/10.24072/pcjournal.223/>

Quarderer, N. A., Fulmer, G. W., Hand, B., & Neal, T. A. (2021). Unpacking the connections between 8th graders' climate literacy and epistemic cognition. *Journal of Research in Science Teaching*, 58(10), 1527– 1556. <https://doi.org/10.1002/tea.21717>

Quarderer, N. A. (2020). Climate change as a means of exploring 8th grade students' epistemologies of science in traditional and place-based learning environments (University of Iowa). University of Iowa. <https://doi.org/10.17077/etd.005349>

Quarderer, N. A., Neal, T. A., Dunkhase, J. (2019). An Immersive Geoscience Field Course as a Vehicle for Exploring the Nature of Science. *International Journal of Environmental and Science Education*, 14(1).

- Quarderer, N.A., & McDermott, M. A.** (2020). Examining science teacher reflections on argument-based inquiry through a critical discourse lens. *Research in Science Education*, 50(6), 2483–2504. <https://doi.org/10.1007/s11165-018-9790-z>
- Quarderer, N. A.** (2010). *Sediment-size analysis, nitrate monitoring, bathymetric mapping and construction of a two-dimensional hydrodynamic model of a backwater region of the Upper Mississippi River System 2008-2009* (University of Iowa). University of Iowa. <https://doi.org/10.17077/etd.nyp55qjl>
- Merlino, R. L., Fisher, R., Kim, S. H., & **Quarderer, N.** (2005). Charging of dust in a negative ion plasma. *Bulletin of the American Physical Society*.
- Cook, J. M., Divoky, M., Hofstrand, A., Lamb, J., & **Quarderer, N.** (2005). CCD Observations of Times of Minima of Eclipsing Binaries. *Information Bulletin on Variable Stars*, 5636, 1.

Book Chapters

- Kuhn, M., McDermott, M. & **Quarderer, N.** (2019). *Current and future visions of inquiry in the science curriculum*. In Akpan, B. (Eds.) *Science Education: Visions of the Future*. Abuja: Next Generation Education.

Reports

- Ward, E., Paulsen, B., Littrell, M., Gold, A., & **Quarderer, N.** (2024). ESIL Stars Program Cohort 2 2024 Annual Report. Zenodo. <https://doi.org/10.5281/zenodo.14907730>
- Ward, E., Weber, J., Pérez, P., Littrell, M., Gold, A., & **Quarderer, N.** (2024). ESIL Stars Annual Report 2023. Zenodo. <https://doi.org/10.5281/zenodo.10642365>
- Quarderer, N.**, Ward, E., Pérez, P., Montaña, P., & Lab, E. (2023). Harnessing the Data Revolution Earth Data Science Corps- Fulfilling Workforce Demand at the Intersection of Environmental Science and Data Science Program (Version 2). figshare. <https://doi.org/10.6084/m9.figshare.22151735.v2> ([f])
- Quarderer, N.**, Ward, E., Gold, A. U., & Montaña, P. (2022). HDR NSF Evaluation Report 2022 (Version 1). figshare. <https://doi.org/10.6084/m9.figshare.21785462.v1>
- Quarderer, N.**, Montaña, P., Gold, A. U., & Lab, E. (2021). HDR NSF Evaluation Report 2020 (Version 1). figshare. <https://doi.org/10.6084/m9.figshare.16655200.v1>
- Lab, E., **Quarderer, N.**, Palomino, J., Herwehe, L., & Wasser, L. (2021). *Summary of Training Needs Assessment for North Central Climate Adaptation Science Center (NC CASC)* (Version 1). figshare. <https://doi.org/10.6084/m9.figshare.16755046.v1>

Presentations

- Quarderer, N.** (2025). Journal of Statistics and Data Science Education: Promoting Innovative and Inclusive Approaches in Statistics and Data Science Education. Paper presented at the Joint Statistical Meeting (JSM); Nashville, Tennessee. <https://ww3.aievolution.com/JSMAnnual2025/Events/viewEv?ev=2386>
- Quarderer, N.** (2025). Literacy In Action: Empowering K–12 Learners through Sustainability and Environmental Justice. Paper presented at the National Council of Teachers of English (NCTE) annual meeting; Denver, Colorado.
- Quarderer, N.**, Ward, E., Halama, K., Balch, J., Culler, E., Nagy, R. C., Sanovia, J., Rattling Leaf, J., & Gold, A. (2024). Building Capacity to Teach and Learn Earth & Environmental Data Science at Smaller Minority Serving Institutions (Version 1). Paper presented at the National

- Association for Research in Science Teaching (NARST) Conference; Denver, Colorado. figshare. <https://doi.org/10.6084/m9.figshare.24945054.v1>
- Culler, E., Sanovia, J., & **Quarderer, N.** (2024). Listen, Amplify, Build: An Invitation to Earth Data Science for Indigenous Students (Version 1). figshare. <https://doi.org/10.6084/m9.figshare.25631928.v1>
- Balch, J. K., Nagy, R. C., Hummel du Amaral, C., Culler, E., Gold, A., Iglesias, V., Monteleoni, C., Parker, J., Rattling Leaf, J., Stavros, N., Sullivan, S., Swetnam, T. L., Tuff, T., & **Quarderer, N.** (2023). COS 208-5 - The Environmental Data Science Innovation & Inclusion Lab (ESIIL): a next-generation NSF data synthesis center (Version 1). figshare. <https://doi.org/10.6084/m9.figshare.24263068.v1>
- Quarderer, N.**, Halama, K., Post, A. K., Hummel du Amaral, C., Culler, E., Nagy, R. C., Tuff, T., Sanovia, J., Balch, J., Rattling Leaf, J., Gold, A., Swetnam, T. L., Monteleoni, C., Parker, J., Sullivan, S., & Iglesias, V. (2023). Creating Inclusive Spaces for Earth and Environmental Data Science Education (Version 1). figshare. <https://doi.org/10.6084/m9.figshare.23990001.v1>
- Quarderer, N.** (2023). *The Environmental Data Science Innovation & Inclusion Lab + Earth Lab: Education Initiatives*. Talk presented at the American Indian Higher Education Consortium (AIHEC) Conference. Albuquerque, New Mexico (March 4-7)
- Balch, J., Amaral, C., Culler, E., Gold, A., Iglesias, V., Monteleoni, C., Nagy, C., Parker, J., **Quarderer, N.**, Rattling Leaf Sr, J., Sanovia, J., Stavros, N., Sullivan, S., Swetnam, T., Tuff, T. (2022, December), *The Environmental Data Science Innovation & Inclusion Lab (ESIIL): A Next-Generation NSF Data Synthesis Center*. Poster presented at the American Geophysical Union (AGU) Fall Meeting. AGU, Chicago, Illinois.
- Quarderer, N.**, Balch, J., Nagy, C., Culler, E., Gold, A., Korinek, N., Halama, K., Herwehe-Kim, L., Sanovia, J., Tinant, C., Biganne, E., Logan, J., Parr, D., Brady, S., Travis, W., Wasser, L. (2022, December). The Earth Data Science Corps & ESIIL Stars Programs: Models for Learning and Teaching Environmental Data Science Skills. Poster presented at the American Geophysical Union (AGU) Fall Meeting. AGU, Chicago, Illinois. <https://doi.org/10.6084/m9.figshare.21785567.v1>
- Quarderer, N.** (2022, March). *Factors That Influence Learners' Climate Literacy and Conceptions of Climate Change*. Paper presented at the National Association of Research in Science Teaching (NARST), NARST, Vancouver, British Columbia.
- Quarderer, N.**, Wasser, L., Herwehe, L., Montañó, P., Gold, A., & Korinek, N. (2021, December). Assessing Students' Self-Perceived Growth in Python Skills, Data Science Skills, Science Communication Skills, Science Practices & Science Identity: An Examination of the Earth Data Science Corps 2020-2021. In AGU Fall Meeting Abstracts (Vol. 2021, pp. ED55C-0299). <https://doi.org/10.6084/m9.figshare.19633320.v1>
- Wasser, L. A., Herwehe, L., Montañó, P., Gold, A. U., **Quarderer, N.**, Biggane, E., ... & Korinek, N. (2020, December). Lowering Barriers to Teaching Earth Data Science to Undergraduates in Historically Underrepresented Communities Using a Virtual, Cloud-Compute Supported, Student-Directed Learning Environment. In AGU Fall Meeting Abstracts (Vol. 2020, pp. ED020-0007). <https://doi.org/10.6084/m9.figshare.13492128.v1>
- Quarderer, N.**, & Fulmer, G. W. (2020, March). *Exploring the Epistemic Orientations of Eighth Graders in a Unit on Weather & Climate*. Paper presented at the National Association of Research in Science Teaching (NARST), NARST, Portland, Oregon. - canceled due to COVID-19

- Desbien, D., O’Kuma, T., **Quarderer, N.** (2020, January). *Computational Physics in Introductory Physics Courses*. Workshop presented at the Winter Meeting of the American Association of Physics Teachers (AAPT), Orlando, Florida.
- Neal, T. A., & **Quarderer, N.** (2019, December). *Assessing Students' Epistemologies of Science in the Context of a Unit on Weather & Climate Change*. In AGU Fall Meeting Abstracts (Vol. 2019, pp. ED31D-0992).
- Neal, T. A., & **Quarderer, N.** (2019, December). *Telling Their Story: Pre-Service Teachers Reflect on an Immersive Field Geology Course*. In AGU Fall Meeting Abstracts (Vol. 2019, pp. ED22A-08).
- Quarderer, N.**, Durelle, J. (2019, October). *Meeting Accreditation & Assessment Requirements in a Two-Year College Physics Classroom*. Paper presented at Fall Meeting of the Iowa Section of the American Association of Physics Teachers (IAAPT), Ames, Iowa.
- Quarderer, N.**, & Fulmer, G. W. (2019, March). *Informing the Development of a Climate Change Survey for Eighth Graders Using a Rasch Modeling Approach*. Poster presented at the National Association of Research in Science Teaching (NARST), NARST, Baltimore, Maryland.
- Quarderer, N.**, & McDermott, M. A. (2019, March). *Exploring the Epistemic Orientations of ASSIST PD Participants Using a Mixed-Methods Approach*. Paper presented at the National Association of Research in Science Teaching (NARST), NARST, Baltimore, Maryland.
- Weiss, K., **Quarderer, N.**, McDermott, M. A. (2019, March). *Immersive Professional Development and its Impact on Teacher Implementation: An Update on the ASSIST Approach*. Paper presented at the National Association of Research in Science Teaching (NARST), NARST, Baltimore, Maryland.
- McDermott, M. A., Kuhn, M., Bedward, J., Weiss, K., **Quarderer, N.** (2019, January). *Comparing Engagement with the ASSIST Approach in Pre-Service and In-Service Teacher Programs*. Paper presented at Annual International Meeting of the ASTE, Association of Science Teacher Educators, Savannah, Georgia.
- O’Kuma, T., Desbien, D., **Quarderer, N.** (2019, January). *Computational Modeling Using Glowscript in Introductory Physics*. Workshop presented at the Winter Meeting of the American Association of Physics Teachers (AAPT), Houston, Texas.
- Quarderer, N.**, & Neal, T. A. (2018, December). *Measuring 8th Grade Students' Understanding of Topics Related to Climate Change: A Place-Based Approach*. In AGU Fall Meeting Abstracts (Vol. 2018, pp. ED43E-1272).
- McDermott, M. A., Weiss, K., **Quarderer, N.**, Durow, L., (2018, March). *Assessing the Impact of a Professional Development Program on Teacher Implementation of the ASSIST Approach*. Paper presented at the National Association of Research in Science Teaching (NARST), NARST, Atlanta, Georgia.
- Quarderer, N.**, Weiss, K., McDermott, M. A., (2018, January). *Model Development Using the ASSIST Approach*. Paper presented at Annual International Meeting of the ASTE, Association of Science Teacher Educators, Baltimore, Maryland.
- Quarderer, N.** (2018, January). *The Ranking Task as Interactive Lecture Demonstration*. Poster presented at Winter Meeting of the American Association of Physics Teachers (AAPT), San Diego, California.
- Desbien, D., O’Kuma, T., **Quarderer, N.** (2018, January). *Using Glowscript in the Introductory Physics Classroom*. Workshop presented at the Winter Meeting of the American Association of Physics Teachers (AAPT), San Diego, California.

- Quarderer, N.** (2017, November). *Arduino in the Introductory Physics Classroom*. Paper presented at Fall Meeting of the Iowa Section of the American Association of Physics Teachers (IAAPT), Sioux Center, Iowa.
- Quarderer, N.** (2017, March). *Arduino in the Introductory Physics Classroom*. Workshop presented at University of Iowa STEM Pre-Service Teacher Conference, North Liberty, Iowa.
- Quarderer, N.** (2017, July). *Position and Velocity vs. Time Graphs with Arduino*. Poster presented at Summer Meeting of the American Association of Physics Teachers (AAPT), Cincinnati, Ohio.
- Quarderer, N.** (2017, July). *Arduino for Beginners*. Workshop presented at the Two-Year College New Faculty Experience Commencement Conference, Blue Ash College, Blue Ash, Ohio. In tandem with the Summer Meeting of the American Association of Physics Teachers (AAPT), Cincinnati, Ohio.
- Quarderer, N.** (2016, November). *The Ranking Task as Interactive Lecture Demonstration*. Paper presented at Fall Meeting of the Iowa Section of the American Association of Physics Teachers (IAAPT), Iowa City, Iowa.
- Quarderer, N., & Linebarger, D.** (2016, May). *Multimodal Representations as a Means of Developing Science Literacy in Young Learners*. Paper presented at the International Conference on Education in Mathematics, Science, and Technology (ICEMST), Bodrum, Turkey.
- Quarderer, N.** (2015, July). *GlowScript in the Introductory Physics Classroom*. Paper presented at Two-Year College Tandem Conference at Summer Meeting of the American Association of Physics Teachers (AAPT), College Park, Maryland.
- Quarderer, N.** (2014, July). *Interactive Lecture Demonstrations with Video Analysis*. Paper presented at Summer Meeting of the American Association of Physics Teachers (AAPT), Minneapolis, Minnesota.

Curricular Materials Developed

- Quarderer, N. (2018). *Investigating Precipitation: Locally, Nationally, and Globally (Bundle 6: Climate, Tier II, Part A)*. In Neal, T. (2018). Iowa 8th grade Science Bundles. Retrieved from <https://pressbooks.uiowa.edu/8thgradescience/>
- Quarderer, N. (2016). *Greenhouse Gases and Their Effect on Earth's Climate*. In PhET Interactive Simulations, Teaching Resources ([The Greenhouse Effect](https://phet.colorado.edu/en/contributions/view/4185)). Retrieved from <https://phet.colorado.edu/en/contributions/view/4185>
- Quarderer, N. (2013). *Light Behaves Like a Wave (Sometimes...)*. In PhET Interactive Simulations, Teaching Resources ([Wave Interference](https://phet.colorado.edu/en/contributions/view/3787)). Retrieved from <https://phet.colorado.edu/en/contributions/view/3787>
- Quarderer, N. (2005 – 2008). In Stille, D., et al. (2019). *Instructional Resources and Lecture Demonstrations*. The University of Iowa, Department of Physics and Astronomy. Retrieved from <https://instructional-resources.physics.uiowa.edu>

Teaching Experience

Teaching Assistant, University of Colorado Boulder

- Earth Analytics Data Science Bootcamp, GEOG 4463 (2021 – Present)
- Earth Analytics, GEOG 5563 (2022 – Present)
- Earth Analytics Applications; GEOG 5663 (2022 – Present)

Instructor, Front Range Community College

- Environmental Science, ENV1111 (**2025 – Present**)

Graduate Teaching Assistant, University of Iowa

- Exploring the Geology, Mining History, and Environmental Issues of the Colorado Rockies, SIED:4110 (**2018 – 2019**)
- Societal and Educational Applications of the Biological Sciences, SIED:4102 (**2017 – 2019**)
- Societal and Educational Applications of the Earth and Environmental Sciences, SIED:4103 (**2017 – 2019**)

Instructor, Northeast Iowa Community College (2011 – 2020)

- College Physics I, PHY162
- College Physics II, PHY172
- Survey of Physics, PHY106
- Environmental Science, ENV115
- Environmental Science Lab, ENV116
- Technical Mathematics, MAT744
- Applied Mathematics II, MAT773
- College Algebra, MAT120
- Math for Liberal Arts, MAT110
- Intermediate Algebra, MAT102
- Elementary Algebra, MAT063
- Pre-Algebra, MAT053
- Data Acquisition and Assessment, WTT225
- Wind Turbine Siting, WTT204
- AC/DC Fundamentals, ELE113

Memberships

- The American Geophysical Union (AGU) (**2018 - Present**)
- The National Association for Research in Science Teaching (NARST) (**2018 - Present**)
- The American Association of Physics Teachers (AAPT) (**2013 - 2020**)

University Service

Northeast Iowa Community College (NICC)

- Quality Faculty Plan (**2019**)
- Curriculum Committee (**2019**)
- Sustainability Committee (**2017 – 2020**)
- Assessment Committee – Faculty Representative (**2016 – 2019**)
- Phi Theta Kappa (PTK) – Faculty Advisor, Beta Epsilon Phi Chapter (**2012 – 2019**)
- College Senate – Representative; Faculty at Large (**2012**)

Professional Service

The American Association of Physics Teachers (AAPT)

- Committee on Physics at Two-Year Colleges; Area committee chair (**2019**)
- Iowa AAPT Section Representative (**2017 – 2020**)
- Iowa AAPT Section President (**2015-2016**)

- Early Career Leadership Award Task Force; Chair (**2019**)
- Two-Year College New Faculty Experience; *Alumni in Residence* (**2016 – 2017**)
- Leadership Institute (**2015**)

National Science Foundation (NSF)

- **Proposal Review Panelist**
 - Discovery Research PreK-12 (DRK-12) (**2022**)

Reviewer for: *International Journal of STEM Education; European Journal of Developmental Psychology*

Honors

Phi Theta Kappa (Beta Epsilon Phi chapter) *Special Advisor Award* (**2016**)

Evaluation & Consulting

Upper Iowa University / Northeast Iowa Community College *Pre-Service Science Teacher Preparation Partnership*; Consultant (**2019 – 2020**)

Department of Education's Mathematics and Science Partnerships Program (MSP) project *Increasing Primary School Teachers' Understanding of the Iowa Science Standards and Developing K-2 Science Curriculum Using ASSIST Approach Framework*; External Evaluator (**2018**)

Title IIA Teacher Quality Grant program *Argument-based Strategies for STEM Infused Science Teaching (ASSIST)*; Consultant (**2016 – 2018**)

Selected Professional Development (co-Leader)

- [Sensing the Earth II](#) - *Earth Data Science with Python Workshop*; Haskell Indian Nations University; Lawrence, KS; (**Nov. 17, 2022**)
- **The University of Iowa Center for Global & Regional Environmental Research (CGRER)** *8th Grade Phenomenon Bundle Professional Development Workshop (Land Use & Climate Change)*; University of Iowa; Iowa City, IA; (**Oct. 28, 2017**)
- **Argument-based Strategies for STEM-infused Science Teaching (ASSIST)**
 - North Tama County Community Schools; Traer, IA; (**June 18 – 22, 2018**)
 - Cedar Valley Catholic Schools; Waterloo, IA; (**June 11 – 15, 2018**)
 - Central Rivers Area Education Agency; Cedar Falls, IA; (**September 15, 2017**)
 - University of Northern Iowa; Cedar Falls, IA; (**July 10 – 14, 2017**)
 - Cedar Valley Catholic Schools; Waterloo, IA; (**June 26 – 30, 2017**)
 - North Tama County Community Schools; Traer, IA; (**June 19 – 23, 2017**)
 - Cedar Valley Catholic Schools; Waterloo, IA; (**January 7, 2017**)
 - Cedar Valley Catholic Schools; Waterloo, IA; (**June 20 – 24, 2016**)

Selected Professional Development (Participant)

CyVerse Foundational Open Science Skills 2022

Hosted by CyVerse; virtual/online; (**September 8 – November 17, 2022**)

Sensing the Earth

- **Tribal Climate Science Partnership Summit**; held at University Corporation for Atmospheric Research (UCAR); Boulder, CO; (**June 15 – 17, 2022**)
- **Tribal College Faculty Data Science Experience**; held at Haskell Indian Nations University; Lawrence, KS; (**November 17 – 18, 2022**)

Climate Solutions Days

Hosted by the North Central Climate Adaptation Science Center (NC-CASC); held virtually/online; (**April 14 – 18, 2022**)

Software Carpentry

- Certified Carpentries Instructor (**September 12, 2022**)
- **Software Carpentry Workshop**; University of Colorado CIRES/Earth Lab; Helper; (**May 18 – 20, 2022**)
- **Software Carpentry**; University of Colorado CIRES/Earth Lab; Helper; (**June 28 – July 1, 2021**)
- Carpentries Online Instructor Training; (**May 3 – 6, 2021**)

ATE Project for Physics Faculty

- Physics Laboratory Conference 9; Lee College; Baytown, TX; (**October 15 – 17, 2015**)
- Modeling Tools for Introductory Physics (MTIP) Workshop; Fox Valley Technical College; Appleton, WI; (**April 23 – 25, 2015**)
- Instructional Strategies for Introductory Physics (ISIP); Green River Community College; Auburn, WA; (**March 27 – 29, 2014**)
- Laboratory Tools for Introductory Physics (LTIP); Lee College; Baytown, TX; (**November 15 – 17, 2012**)
- Computational and Modeling Tools for Introductory Physics (CMTIP); Mt. San Antonio College; Walnut, CA; (**March 29 – 31, 2012**)
- Instructional Strategies for Introductory Physics (ISIP) Workshop; Austin Community College; Austin, TX; (**November 3 – 5, 2011**)

AAPT Two-Year College New Faculty Training Experience

- **Alumni in Residence Program**
 - Commencement; UC Blue Ash College; Blue Ash, OH (**July 21 – 23, 2017**)
 - Conference; Seminole State College; Sanford, FL (**March 9 – 12, 2016**)
- **Participant**
 - Commencement; University of Minnesota, St. Paul, MN; (**July 24 – 26, 2014**)
 - Conference; Delta College; Saginaw, MI; (**March 6 – 10, 2013**)

Other Experience

- **Data Science**
 - Unix/Shell
 - Bash, git, GitHub
 - Python (VPython, GlowScript, Pandas, Matplotlib, Numpy, Xarray, Geopandas, Earthpy; Rioxarray)
 - R (R Studio, tidyverse [ggplot2, dplyr], Test Analysis Modules, WrightMap, psych)
 - Jupyter Notebook; JupyterLab; JupyterHub; Google Colab
 - Cloud Computing (CyVerse Cacao; Jetstream2)
 - Markdown
- **Software**
 - Learning Management Systems (Canvas, Brightspace/D2L, Discourse)
 - Qualtrics
 - Microsoft Office
 - Google (Sheets; Docs; Slides; Forms)
 - ArcGIS
 - Surface Water Modeling System (SMS 9.0)
 - Sedimentation and River Hydraulic Watershed (SRH-W) model (US Bureau of Reclamation)
 - Arduino IDE
- **Field Data Collection**
 - Global Positioning Systems (GPS)
 - Sediment core sampling
 - Bathymetric surveying
 - Acoustic Doppler Current Profiler (ADCP)
 - Acoustic Doppler Velocimeter (ADV)
 - Water quality analysis