KAREN S. MCNEAL, Ph.D.

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Career Mission Statement: *To lead innovation and institutional change in higher education through evidence-based teaching and learning practices and rigorous assessment aimed to support the development of a strong workforce and informed citizenry, while creating interdisciplinary leaders that are effective communicators.*

Areas of Expertise: *Earth System Science, Discipline Based Education Research, Geoscience Education Research, Project Evaluation, Graduate and Undergraduate Teaching and Learning, Science Communication*

EDUCATION

Ph.D., Geology, 2003-2007
Texas A&M University, College Station, Texas

M.S., Oceanography, 2000-2003
Texas A&M University, College Station, Texas

B.S., Major: Marine Science, **Minor: Environmental Studies**
1996-2000**,** Eckerd College, St. Petersburg, Florida

EXPERIENCE

ADMINSITRATION POSITIONS

2023-2025	Program Director, Division of Graduate Education, National Science Foundation
2020-2023	Associate Department Chair, Department of Geosciences, Auburn University

FACULTY POSITIONS

2020-present	Full Professor, Department of Geosciences, Auburn University
2016-2020	Associate Professor, Department of Geosciences, Auburn University
2013-2016	Associate Professor, Department of Marine Earth and Atmospheric Sciences, North Carolina State University
2012-2013	Associate Professor, Department of Geosciences, Mississippi State University
2007-2012	Assistant Professor, Department of Geosciences, Mississippi State University

PROFESSIONAL LEADERSHIP POSITIONS - SERVICE

2025-present	President Elect, AAUP, Auburn University Chapter
2021-present	Executive Committee, AAUP, Auburn University Chapter
2016-present	Senior Faculty/Lead, Discipline Based Education Research Initiative, College of Science and Mathematics
2023-present	Leadership Committee, USGS Southeast Climate Adaptation Science Center
2019-2023	Committee Chair, Department of Geosciences Advisory

	Committee
2018-2019	Past-President National Association of Geoscience Teachers (NAGT), Geoscience Education Research Division
2017-2018	President NAGT, Geoscience Education Research Division
2016-2017	Vice-President NAGT, Geoscience Education Research Division
2015-2019	Associate Editor, Journal of Geoscience Education
2010-2014	Editor for Research, Journal of Geoscience Education
2009-2010	Associate Editor, Journal of Geoscience Education

OTHER ACADEMIC POSITIONS

Summer 2007	Post-Doctoral Research Associate, Department of Chemistry, Texas A&M University
2006-2007	Graduate Fellow, NSF Graduate K-12 Program, Texas A&M University
2003-2006	Graduate Assistant, NSF Information Technology in Science Center for Teaching and Learning, Texas A&M University
2002-2003	Research Assistant, Department of Oceanography, Texas A&M University
2000-2002	Scherck Fellow, Department of Oceanography, Texas A&M University
1998-2000	Laboratory Teaching Assistant, Chemical and Physical Oceanography and Inorganic Chemistry, Eckerd College

HONORS and AWARDS (Post-Graduate Only)

2023-2024	SEC Academic Leadership Development Program (ALDP), Auburn University
2022-2024	Marguerite Scharnagle Endowed Professor, College of Science and Mathematics, Auburn University
2022	National Association of Geoscience Teachers (NAGT), Geoscience Education Research Transformation Award
2022	SEC, Faculty Achievement Award, Auburn University
2019-2022	Molette Endowed Professor, College of Science and Mathematics, Auburn University
2017	Auburn University Senate Departmental Award for Excellence in Education
2017	SEC Travel Award, Auburn University
2014	North Carolina State University Faculty Diversity Professional Development Award
2012	Mississippi State University Office of Research and Economic Development Faculty Leadership Program
2010	Mississippi State University Faculty Pride Award

GRANT FUNDING

$29.8 million total on 50 external grants; $13.1+ million to home institutions; **indicates grants McNeal was awarded but removed herself due to COI during NSF IPA detail.*

Title	Agency	Collaborative Total	NCSU/ MSU/AU Total	Dates	Role and Details
Active Grants (8)					
AU SOLVES: Engaging community partners with interdisciplinary teams to solve stakeholder identified problems through co-produced sustainability research	Auburn Outreach office	$20k	$20k	05/31/25-05/30/26	PI; Mitra Co-PI
CAST Cycle 2: Investigating Hydrological Climate Events in the Upland Watersheds of the Northern Gulf of Mexico (Hydroclimate-AU)	USGS CAST	$280k	$280k	05/01/24-04/28/26	PI (Co-PIs: Shepherd, O'Donnell, Waters, Ojeda, Melina)
McNeal IPA – year 2	NSF- NRT	$126.5k	$126.5k	03/11/24-03/10/25	PI
USGS SECASC Global Change Fellowship	USGS SECASC	$59k	$59k	08/01/24-07/31/25	PI (Student Ally Brown)
Inclusive Course Design for Enhancing Active Learning in STEM	NSF-IUSE	$599k	$599k	07/01/23-06/30/26	Co-PI (PI: Shepherd)*
Hosting the SE Climate Science Center	USGS SECASC	$7M	$319k	08/01/23-07/31/28	AU PI
Collaborative Research: Developing a Diverse, Future-oriented Workforce for Renewable Energy Industries	NSF-IUSE	$299k	$139k	07/01/21-06/30/24	Co-PI (PI: Beckingham)*
NRT: Addressing Resiliency to Climate Related Hazards and Disasters through Data Informed Decision Making	NSF	$3.02M	$3.02M	09/01/19-08/31/25	PI (Co-PI's: (Burton, Tian, Srivastova, Pan)*
Previous Grants (42)					
Best Practices for Project Design: Effectively Addressing Natural Resource Management Needs	USGS-SECASC	$150k	$68k	05/01/20-04/30/23	Auburn PI (Lead PI: Armsworth)
Best Practices for Project Design: Effectively Addressing Natural Resource Management Needs Supplement	USGS-SECASC	$37k	$37k	05/01/20-04/30/24	Auburn PI (Lead PI: Armsworth)
NSF NRT Climate Resilience Supplement	NSF-NRT	$24k	$24k	04/28/23-08/31/24	PI*
Karen McNeal IPA-year 1	NSF- NRT	$183k	$183k	03/11/23-03/10/24	PI
Developing a Diverse Research Workforce with Expertise in Hydrological Climate Events in the Upland Watersheds of the Northern Gulf of Mexico	USGS- CASC	$180k	$180k	03/01/2022 2-02/28/2024	PI

(Hyrdoclimate-Auburn)					
Hosting the SE Climate Science Center – Year 6	USGS	$15k	$15k	08/01/2022 - 07/31/2024	PI
Supplemental Funding – Hosting the SE Climate Science Center	USGS-SECASC	$19k	$19k	08/01/21-07/31/22	PI
The Effectiveness of the Augmented-Reality Sandbox for Improving Spatial Thinking in Undergraduates	NSF GRFP	$138k	$138k	06/01/18-12/31/22	PI (Student Awardee Eli Johnson)
Collaborative Approaches among Scientists and Engineers (CASE)	NSF-REU	$404k	$404k	06/01/20-05/31/2023	Internal Evaluator (PI: Mulligan-Guy)*
Building capacity for the DOI Southeast Climate Science Center to co-produce actionable science focused on global change impacts to natural resources	USGS	$5M	$78k	05/01/17-07/30/23	Auburn PI; (PI: N. Haddad)
Geoscience Education Research (GER) Community Synthesis and Planning Project	NSF-IUSE	$97k	$5k	02/01/15-01/31/16	Consultant; Lead PI: K. St. John
Using Eye-tracking to Assess Effectiveness of Climate Data Visualizations on Public Perception and Understanding	NSF GRFP	$138k	$138k	06/01/18-05/31/21	PI (Student Awardee Steph Courtney)
Climate-Energy Simulations and Immersive Exercises for Deep Learning about Complex Systems	NSF-IUES-GEOPATHS	$340k	$15k	07/01/17-06/30/21	Consultant; PI: J. Rooney-Varga
Geo-STEM	NSF-S-STEM	$500k	$21k	01/01/15-12/31/21	External evaluator & consultant; PI: C. Benitez-Nelson
Becoming an African American Geoscientist: A Qualitative Exploration of Race and Critical Incidences on Recruitment and Persistence	NSF GRFP	$138k	$138k	06/01/20-05/31/21	PI (Student Awardee Akilah Alwan)
The Geo Tech High School Academy: A combined program of experiential field learning and classroom instruction	NSF-IUSE: GEOPATHS	$375k	$71k	9/15/15-8/31/19	Co-PI (Auburn PI); Lead PI: K. Ellins; co-PI: J. Libarkin
NSF Supplement: National Geoscience Teaching Practices Survey	NSF	$100k	$8k	07/01/17-06/30/19	Consultant; PI: K. Manduca
A Framework for Transformative Geoscience Education Research	NSF-IUSE	$97k	$6k	02/01/16-01/31/17	Consultant; Lead PI: K. St. John
Shaping the Future of Geoscience Education Research: Synthesizing Results and Articulating Future Directions	NSF-IUSE	$99k	$3k	01/01/15-12/31/16	Consultant; Lead PI: H. McDonald
Developing and Testing Materials to Improve Spatial Skills in Upper Division Geoscience Courses-TUES Type I	NSF-TUES	$500k	$7k	06/01/11-05/31/16	External Evaluator & Consultant; Lead PI; C. Ormand
Initiating New Science	NSF-GK12	$2.9M	$2.9M	06/2010-	Lead

Partnerships in Rural Education (INSPIRE)				05/2016	PI/Consultant: Co-PIs: D. Schmitz, D. Pierce, L. Bruce
Confronting the Challenges of Climate Literacy [Supplement to on-going project]	NSF-DRK12	$68k	$6k	09/2010-09/2016	NCSU PI; Lead PI: T. Ledley, Co-PIs: K. Ellins and J. Libarkin
Confronting the Challenges of Climate Literacy	NSF-DRK12	$2.8M	$637k	9/15/10-9/30/16	NCSU PI; Lead PI: T. Ledley; co-PI: J. Libarkin & K. Ellins
Testing the use of Augmented Reality Sandbox in the Undergraduate Classroom.	NCSU-STEM Initiative	$3.7k	$3.7k	01/01/16-12/31/17	PI
Hazards TEAMS Teacher Education & Activities for Minority Students in the Meteorological, Geologic, and Hydrologic Hazards. Track 1	NSF-OEDG	$200k	$200k	09/01/11-08/31/15	Co-PI; Lead PI; K. Sherman-Morris
Earth System Science: A Key to Climate Literacy	NASA- Global Education	$280k	$37k	08/31/09-08/30/12	MSU PI; (Lead PI T. Ledley)
CLiPSE Network Expansion Supplement	NSF-CCEP	$150k	$150k	09/01/11-08/31/14	PI; Co-PIs: B. Smith; D. Rutherford, U. Nair,
A Regional Network Partnership for Climate Science Literacy in the Southeastern United States [CLiPSE]	NSF-CCEP	$1M	$1M	09/05/10-08/31/14	PI; Co-PIs: B. Smith; D. Rutherford, U. Nair
Fueling the Geosciences educational pipeline: The development of a K-12 network to support minority participation	NSF-OEDG	$40k	$40k	12/31/09-09/30/2011	Co-PI; PI; K. Sherman-Morris
Diversity Enhancement of the Geosciences through Research Experiences (DEGReE): Mentoring African Americans through Research	NSF-OEDG	$200k	$200k	09/01/09-08/30/13	Co-PI; PI: B. Kirkland
Project SMARTER: Science and Mathematics Advancement and Reform Utilizing Technology and Enhanced Resources	ARC	$260k	$260k	12/2008-12/2009	Co-PI: PI: S. Harpole
Facilitating Student Understanding of Change in the Earth System on Multiple Time Scales	NSF-GEO	$150k	$4k	12/2008-12/2009	Consultant; Lead PI T. Ledley at TERC
Improving TMDL and Waste Load Allocation Permit Limits by Determination and Application of New Sediment Diagenesis Input Parameters in Current Water Quality Models	EPA-RARE	$185k	$185k	01/11/12-12/31/13	PI; Co-PI: J. Martin
Exploratory Research - Using	U.S. Dept. of	$150k	150k	01/01/12-	Co-PI: Lead PI: J.

volatile organic compounds to separate heterotrophic and autotrophic forest soil respiration	Energy – Terrestrial Carbon Cycle			12/31/2014	Hatten
Comprehensive Study of the Impact of the Deepwater Horizon Oil Spill on the Health and Productivity of Gulf Coast Salt Marshes, Deep Water Horizon Oil Spill Research: Phase II Supplement	NOAA-NGI	$81k	$81k	06/2011-12/2011	Co-PI: PI Deepak Mishra
Comprehensive Study of the Impact of the Deepwater Horizon Oil Spill on the Health and Productivity of Gulf Coast Salt Marshes, Deep Water Horizon Oil Spill Research: Phase II	NOAA-NGI	$193k	$193k	08/2010-12/2011	Co-PI: PI Deepak Mishra
Deep Water Horizon Oil Spill Research: Phase I	NOAA-NGI	$250k	$250k	06/2010-12/2010	Senior Personnel; PI; W. McAnally
Modeling Mobile Bay Sediments and Pollutants with New Technologies	NOAA-NGI	$200k	$200k	09/2008-09/2009	Senior Personnel; PI: McAnally
Field Research on Bahamian Lakes-Exploring Records of Anthropogenic and Climate Change	NSF-REU	$500k	$10k	01/01/09-12/31/012	Faculty Mentor & Consultant; PI: L. Park
The Sediment Biogeochemistry of Weeks Bay during Bottom Water Hypoxic and Norm-oxic Events	NOAA-Fellowship	$29k	$29k	06/01/2009-05/31/2010	PI
Sediment and Mercury Modeling	NOAA-NGI	$315k	$315k	01/01/2010-12/31/2012	Co-PI; PI: W. McAnally
In-situ Measurements of Microbial Volatile Organic Compound Production in Mississippi Pine Forest Soils	MSU-Research Initiation Program	$10k	$10k	01/2008-12/2009	PI

Publications *h-index = 25, i10-index=44*

underlined names represent students or post-docs

Peer- Reviewed Geoscience Education Publications:

1) Brown, J.A. and **McNeal, K.S.** 2025. Outcomes from a Classroom Intervention Using an Educational Climate Modeling Tool with Non-Science Major Undergraduates, *Journal of Geography in Higher Education*, *Submitted*.
2) Song, H., **McNeal, K.S.**, Beckingham, L.E., Solomon, J., Lazar, K. 2025. Developing a Broad Measure of Undergraduate Students' Sustainability and Renewable-Energy Knowledge and Perspectives, Journal of Engineering Education, *Submitted.*
3) Song, H., **McNeal, K.S.**, Beckingham, L.E., Solomon, J., Lazar, K. 2025. Evaluating the Impact of Sustainability and Renewable Energy Education on Engineering Undergraduates' Knowledge, Attitudes, and Behaviors, Environmental Engineering Journal, *Submitted.*
4) Mikulak, H. and **McNeal, K.S.** 2025. Recommendations to Improve Atmospheric Science Undergraduate Students' Sense of Belonging. *Journal of Geoscience Education. In Review.*

5) Foust., B., Rogers, S., Cashwell, H., **McNeal, K.S.**, Ojeda, A. 2025. A mixed methods approach to understanding private well stewardship: combining interviews, surveys, and structural equation modeling within the Health Belief Model. *Geohealth, Submitted.*
6) Kumar, J. Worosz., M., Shiu, S., Templer, P. **McNeal., K.S**. 2025. Lessons Learned from Interdisciplinary US National Science Foundation Research Traineeship-Supported Graduate Programs. *PLOS ONE*, *Submitted.*
7) Brown, A., **McNeal, K.S.**, Chandler, M., Zhou, J. 2025. Eye Tracking an Online Climate Modeling Tool to Evaluate Three Dimensions of Usability, *Weather Climate and Society*, *In Review.*
8) Cashwell, H., **McNeal, K.S.**, Dello, K., Davis, C., 2025. Addressing Usability of a Decision Support System, *Climate Services*, *In Review.*
9) Mikulak H. and **K.S. McNeal**. 2025. Factors Influencing Sense of Belonging During Undergraduate Atmospheric Science Studies. *Bulletin of the American Meteorological Society*, *In Review.*
10) Soltis, N. and **McNeal, K.S.**, 2025. Using student drawings of biochemical cycles to explore systems thinking abilities. *Journal of Geoscience Education*, *in press.*
11) Dasgupta, S., Schillerberg, T., Cashwell, H., Mitra, C., **McNeal, K.** 2025. Benefits of a Non-Traditional Science Communication and Internship Experience Based on Research from the National Science Foundation Research Traineeship at Auburn University. *PLOS ONE*. https://doi.org/10.1371/journal.pone.0320372
12) Cashwell, H.J., **McNeal, K.S.** 2025. Connecting the Dots between Active Learning and Science Communication in the Graduate Classroom. *Transformative Dialogues,* 18(1), 251-266. https://doi.org/10.26209/td2025vol18iss11847
13) Cashwell, H. and **McNeal, K.S.** 2024. Implementation of a Climate Decision Support System in an Undergraduate Weather and Climate Classroom. *Journal of Geography in Higher Education*. *49*(3), 356–375 https://doi.org/10.1080/03098265.2024.2423409
14) Benetiz-Nelson, C.R., **McNeal, K.S.**, Jones, W.J. 2023. Improving Retention of Underrepresented Groups in the Geoscience through an Intensive First Year Experience at the University of South Carolina. *Oceanography* https://doi.org/10.5670/oceanog.2024.108.
15) Ojeda, A., Rogers, S., Jannach, C., **McNeal, K.S.** 2023. Development and validation of a groundwater concept inventory (GWCI) for a general audience" presents an innovative approach to designing a concept inventory (CI) instrument that can be utilized to assess groundwater knowledge for a broad audience. *Groundwater* **https://doi.org/10.1111/gwat.13380**.
16) Smith, T. and **McNeal, K.S.** 2023. Assessing motivations, benefits, and barriers of implementing virtual field experiences in geoscience-related disciplines. *Journal of Geoscience Education* https://www.tandfonline.com/doi/full/10.1080/10899995.2023.2258760
17) Cashwell, H.J., **McNeal, K.S.**, Dello, K., Boyles, R., Davis, C. 2023. User Engagement Testing with a Pilot Decision Support Tool Aimed to Support Species Managers. *Weather, Climate & Society*. 327-338. DOI: https://doi.org/10.1175/WCAS-D-22-0010.1
18) Courtney, S., **McNeal K.S.** 2023. Seeing is believing: Climate change graph design impacts user judgments of credibility, usability, and risk, *Geosphere* doi: https://doi.org/10.1130/GES02517.1
19) Courtney, S., A. A. Hyman, **K. McNeal**, L. Maudlin, P. Armsworth, 2022. Development of a survey instrument to quantify individual and organizational use

of climate adaptation science, *Environmental Science and Policy*: 271-279. https://doi.org/10.1016/j.envsci.2022.08.023

20) Hyman, A., Courtney, S., **McNeal, K.**, Bialic-Murphy, L., Furiness, C., Armsworth, P. 2022. Distinct pathways to stakeholder use versus scientific impact in climate adaptation research. *Conservation Letters* http://doi.org/10.1111/conl.12892.
21) Maudlin, L.C. and **McNeal K.S.** 2022. Can a Science Café and a Concert Communicate Global Change Concepts?" *Applied Environmental Education & Communication: 21:* https://doi.org/10.1080/1533015X.2022.2108524
22) Hensel, M., Bryan, J., McCarthy, C., McNeal, K.S., Norfles, N., Rath, K., Rooney-Varga, J.N. 2022. Participatory Approaches Enhance a Sense of Urgency and Collective Efficacy About Climate Change: Qualitative Evidence from the World Climate Simulation, *Journal of Geoscience Education* https://doi.org/10.1080/10899995.2022.2066927
23) Soltis, N. and **McNeal K.S.**, 2022. Development and Validation of a Concept Inventory for Earth Systems Thinking Skills. *Journal for STEM Education Research*. https://doi.org/10.1007/s41979-021-00065-z
24) Johnson, E. and **McNeal, K.S.** 2021. Undergraduate students' perceptions of a geology spatial training activity using the augmented-reality sandbox, *Journal of Geoscience Education*, 70:13-24. https://doi.org/10.1080/10899995.2021.1969862
25) Rooney-Varga, J.N., Hensel,M., McCarthy, C., **McNeal, N.**, Rath, K., Schnell, A., Sterman, J.D. 2021. Building Consensus for Ambitious Climate Action Through World Climate Simulation. *Earth's Future.* https://doi.org/10.1029/2021EF002283
26) Soltis, N., **McNeal, K.S.,** Schnittka, C. 2021. Understanding Undergraduate Student Conceptions about Biogeochemical Cycles and the Earth System. *Journal of Geoscience Education, 69(3):265-280. https://doi.org/10.1080/10899995.2020.1858267*
27) Gold, A.U., Atkins, R., **McNeal, K.S.** 2021. Undergraduates' Graph Interpretation and Scientific Paper Reading Shift from Novice- to Expert-like as a Result of Participation in a Summer Research Experience. *Scholarship and Practice of Undergraduate Research (SPUR)*, 5:7-19. *https://doi.org/10.18833/spur/5/2/2*
28) **McNeal, K.S**., Zhong, M., Soltis, N., Doukolpoulos, L. Alwan, A., Johnson, E., Courtney, S., Porch, M. 2020. Biosensors Show Promise as a Measure of Student Engagement in a Large Introductory Biology Course. *CBE-Life Sciences Education*. 19: 1-10. https://doi.org/10.1187/cbe.19-08-0158.
29) David, C., Aldridge, H., Boyles, R**., McNeal, K.S.,** Maudlin, L., Atkins, R. 2020. Visually communicating climate in a web format. *Weather, Climate and Society,* 12: 877-896. https://doi.org/10.1175/WCAS-D-19-0152.1
30) Kristen St. John, **Karen S. McNeal**, R. Heather MacDonald, Kim A. Kastens, Kelsey S. Bitting, Cinzia Cervato, John R. McDaris, Heather L. Petcovic, Eric J. Pyle, Eric M. Riggs, Katherine Ryker, Steven Semken & Rachel Teasdale. 2020. A community framework for geoscience education research: Summary and recommendations for future research priorities, *Journal of Geoscience Education*, https://doi.org/10.1080/10899995.2020.1779569
31) Soltis, N., **McNeal, K.S.,** Atkins, R., Maudlin, L. 2020. A Novel Approach to Measuring Student Engagement While Using an Augmented Reality Sandbox, *Journal of Geography in Higher Education*, 44(4):512-531. https://doi.org/10.1080/03098265.2020.1771547
32) Maudlin, L. **McNeal, K.S.**, Dinon-Aldridge, H., Davis, C. Boyles, R., Atkins R.M., 2020. Website Usability Differences between Males and Females: An Eye-tracking

Evaluation of a Climate Decision Support System, *Weather, Climate and Society,* 12:183-192. https://doi.org/10.1175/WCAS-D-18-0127.1

33) **McNeal, K.S.**, Ryker, K., Atkins, R., Whitemeyer, S., Giorgis, S., Clark, C., Soltis, N., LaDue, N., Pingel, T. 2020. A multi-institutional study of inquiry-based lab activities using the Augmented Reality Sandbox: impacts on undergraduate student learning. *Journal of Geography in Higher Education, 44(1): 85-107. https://doi.org/10.1080/03098265.2019.1694875*
34) Soltis, N., **McNeal, K.S.,** Forbes, C. & Lally, D. 2019. The relationship between active learning, course innovation and teaching Earth system thinking: A structural equation modeling approach. *Geosphere,* 15 (5): 1703-1721. *https://doi.org/10.1130/GES02071.1*
35) St. John, K., Bitting, K., Cervato., C., Kastens, K., MacDonald, H., McDaris, J., **McNeal, K.S.**, Petcovic, H., Pyle, E., Riggs, R., Ryker, K., Semken, S., Teasdale, R. 2019. Geoscience Education Research Poised for an Evolutional Leap that will Impact How you Teach. *Eos* 100 https://doi.org/10.1029/2019EO127285
36) Beane, R., **McNeal, K.S.,** MacDonald, R.H. 2019. Probing the National Geoscience Faculty Survey for Reported Use of Practices that Support Inclusive Learning Environments in Undergraduate Courses. *Journal of Geoscience Education*, 67: 427-445. https://doi.org/10.1080/10899995.2019.1621714
37) Lally, D., Forbes, C.T., **McNeal, K.S.,** & Soltis, N. 2019. National Geoscience Faculty Survey 2016: Prevalence of systems thinking and scientific modeling learning opportunities. *Journal of Geoscience Education*, 67:2, 174-191. https://doi.org/10.1080/10899995.2019.1565286
38) Atkins, R. and **McNeal, K.S**. 2018. Exploring Differences Among Student Populations During Climate Graph Reading Tasks: An Eye Tracking Study. *Journal of Astronomy & Earth Sciences Education, 5: 85-114.* https://doi.org/10.19030/jaese.v5i2.10219
39) Libarkin, J.L., Gold., A.E., Harris., S., **McNeal, K.S.,** Bowles, R. 2018. A new, valid measure of climate change understanding: Associations with risk perception *Climatic Change, 150: 403-416.* https://doi.org/10.1007/s10584-018-2279-y
40) Strawderman, L., Carruth, D., Sherman-Morris, K., Menard, P., Warkentin, M., & **McNeal, K.S.** 2018. Individual Transportation Decisions under Conditions of Risk and Uncertainty. *Natural Hazards*, 92(2), 927-942. https://doi.org//10.1007/s11069-018-3232-0
41) Aksit, O., **McNeal, K.S.**, Libarkin, J.L., Gold, A.U., Harris, S. 2017. The influence of instruction, prior knowledge, and values on climate change risk perception among undergraduates. *Journal of Research in Science Teaching, 55: 550-572.* https://doi.org/10.1002/tea.21430
42) **McNeal, K.S.,** Radencic-Llack, S., Cartwright, J., Pierce, D.M., and Schmitz, D. 2017. An Earth Hazards Approach to Implementing GIS with Middle School Students through a University-School Partnership. *The Earth Scientist*, 32: 16-21.
43) Shipley, T.F., McConnell, D., **McNeal, K.S.,** Petcovic, H.L., St. John, K.E. 2017. Transdisciplinary education research: Opportunities for GER in a developing STEM discipline based education research alliance (DBER-A). *Journal of Geoscience Education* 65, 354-362. https://doi.org/10.5408/1089-9995-65.4.354
44) St. John, K. and **McNeal, K.S.** 2017. The Strength of Evidence Pyramid: One Approach for Characterizing the Strength of Evidence of Geoscience Education Research (GER) Community Claims. *Journal of Geoscience Education 65, 363-372.* https://doi.org/10.5408/17-264.1

45) **McNeal, K.S.** and Petcovic, H. 2017. Sparking Conversations about Graduate Programs in Geoscience Education Research. *Journal of Geoscience Education*, *65, 399-406.* https://doi.org/10.5408/17-254.1
46) Sherman-Morris, K., Clary, R. **McNeal, K.S.,** Ramirez, J., and Brown, M. 2017. An Earth Hazards Camp to Encourage Minority Participation in the Geosciences. *Journal of Geoscience Education,* 65, 12–22. *10.5408/16-192.1*
47) Mitra, R., **McNeal, K.S.**, Bondell, H. 2017. Task evolved pupillary response with compound interdependent tasks: a cognitive load theory perspective. *Behavior Research Methods, 49(5):1905-1919. 10.3758/s13428-016-0833-y*
48) Ryker, K., **McNeal, K.S.,** LaDue, N., Atkins, R.M., Clark, C. 2016. Augmented Reality Sandboxes: Hacking a hands-on experience*. In the Trenches, 6:1-4.*
49) Sherman-Morris, K. and **McNeal, K.S**. 2016. Understanding Minority and Non-Minority Undergraduate Student Perceptions of the Geosciences, *Journal of Geoscience Education,* 64: 147-156. https://doi.org/10.1080/10382040802148679
50) **McNeal, K.S**., Spry, J., Mitra, R., Tipton, J. 2014. Measuring Student Engagement, Knowledge, and Perceptions of Climate Change in an Introductory Geology Course. *Journal of Geoscience Education*, 62: 655-667*.* 10.5408/13-111.1
51) **McNeal, K.S.**, Walker, S.L., and Rutherford D. 2014. Assessment of 6-20 Grade Educator's Climate Knowledge and Perceptions in the Southeast United States: Results from the Climate Stewardship Survey. *Journal of Geoscience Education*, 62: 645-654. https://doi.org/10.5408/13-098.1
52) **McNeal, K.S.**, Libarkin, J., Shapiro Ledley, T. Haddad, N., Bardar, E., Ellins, K. and Dutta, S. 2014. The role of research in online curriculum development: The case of the EarthLabs climate change curriculum. *Journal of Geoscience Education*, 62: 560-577. https://doi.org/10.5408/13-060.1
53) **McNeal, K.S.**, Hammerman, J.K.L., Christiansen, and J.A, Carroll, J. 2014. Climate Change Education in the Southeastern U.S. Through Public Dialogue: Not Just Preaching to the Choir! *Journal of Geoscience Education*, *62: 631-644.* https://doi.org/10.5408/13-061.1
54) Ellins, K., Gold, A., Haddad, N., Shapiro Ledley, T., Lynds, S., and **McNeal, K.** 2014. Supporting Teacher Professional Development to Facilitate Effective Teaching of Climate Science*. Journal of Geoscience Education*, *62:* 330-342. https://doi.org/10.5408/13-059.1
55) Walker, S. L. and **McNeal, K.S.** 2013. Development and validation of an instrument for assessing climate change knowledge and perceptions: The climate stewardship survey (CSS). *International Electronic Journal of Environmental Education 3(1):* 57-73.
56) Sherman-Morris, K., Brown, M.E., Dyer, J.L., **McNeal, K.S.,** and Rodgers, J.C. 2013. Teachers' geoscience career knowledge and implications for enhancing diversity in the geosciences, *Journal of Geoscience Education* 61, 326-333.
57) Sherman-Morris, K., Rodgers, J.C., **McNeal, K.S.**, Brown, M.E., and Dyer, J.L. 2012. Professional Development Strategies to Enhance Diversity in the Geosciences. *The Science Educator* 21(2): 31-38.
58) Ledley, T.S., Haddad, N., Bardar, E., Ellins, K., **McNeal K.**, and Libarkin J. 2012. EarthLabs-An Earth System Science Laboratory Module to Facilitate Teaching About Climate Change. *The Earth Scientist* 28: 19-24.
59) Miller, H.R., **McNeal, K.S.**, and Herbert, B.E. 2010. Inquiry in the physical geology classroom: supporting students' conceptual model development. J*ournal of Geography in Higher Education 34*: 595-615. https://doi.org/10.1080/03098265.2010.499562

60) Sherman-Morris, K., Schumacher, A., Drobot, S., and **McNeal, K.** 2010. Hurricane preparedness and response among pet care providers along the Gulf Coast: An investigation of the Ike ad Gustav storm events. *International Journal of Mass Emergencies and Disasters 28*: 345-367. https://doi.org/10.1177/028072701002800303
61) **McNeal K.S.**, Miller H.R., and Herbert B.E. 2008. The effect of using inquiry and multiple representations on introductory geology students' conceptual model development of coastal eutrophication. *Journal of Geoscience Education* 56: 201-211. https://doi.org/10.5408/1089-9995-56.3.201
62) Sell K.S., Herbert B.E., Stuessy C. and Schielack J. 2006. Supporting student conceptual model development of complex earth systems through the use of multiple representations and inquiry. *Journal of Geoscience Education 54:* 396-407. https://doi.org/10.5408/1089-9995-54.3.396

Invited Book Chapters Geoscience Education:

63) **McNeal, K.S.**, Atkins, R., Johnson, E., 2021. Visualizing Student Navigation of Geologic Block Diagrams. *In* Applying bio-measurements methodology in Science Education Research, Springer (Ed Devetak, I. and Glazar, S.A.).
64) Rooney-Varga, J.N., Fracassi, E., Franck, T., Kapmeier, F., McCarthy, C., **McNeal, K.S.**, Norfles, N., Rath, K., Sterman, J.D. 2021. A simulation game that motivates people to act on climate*. In WSPC Encyclopedia of Climate Change, 3: 231-244* https://doi.org/10.1142/9789811213960_0029
65) **McNeal, K.S.,** Libarkin, J.L., Ledley, T.S., Ellins, K. 2020. *EarthLabs: A Model for Supporting Undergraduate Student Inquiry About Change over Time and Space. In: Mintzes, J.J., Walter, E.M. (eds) Active Learning in College Science. Springer,* Switzerland, pp. 683-696. https://doi.org/10.1007/978-3-030-33600-4_42
66) **McNeal, K.S.**, Courtney, S., Johnson, E. 2020. *Teaching the Earth: Pathways and Careers in Geoscience Education. In* Encyclopedia of Geological Sciences*,* Elsevier. https://doi.org/10.1016/B978-0-12-409548-9.12085-8
67) **McNeal, K.S.**, Van der Hoeven Kraft, K., Nagy-Shadman, E., Beck, M., and Jones, J. (2018): *Research on Students' Self-Regulated Learning, Metacognition, and Affect. In:* St. John, K. (ed.): A Community Framework for Geoscience Education Research. Framework of the Grand Challenges in Geoscience Education Research. (online at https://nagt.org/nagt/geoedresearch/GER_framework/).
68) **McNeal, K.S.,** Steward, A. Brossman, C., Plonski, B., and Spuck, T. 2013. *Teacher-Fellow and Fellow-Student Partnerships. In T*he Power of Partnerships: A Guide from the NSF Graduate STEM Fellows in K-12 Education (GK-12) Program, (Ed. Stoll, K., Ortega, S, Spuck, T.) American Association for the Advancement of Science, Washington, DC. ISBN: 978-0-87168-754-8
69) Steward, A., **McNeal, K.S., and** Godoy, C. 2013. *Integrating STEM content and Research in the Classroom. In T*he Power of Partnerships: A Guide from the NSF Graduate STEM Fellows in K-12 Education (GK-12) Program, (Ed. Stoll, K., Ortega, S, Spuck, T.) American Association for the Advancement of Science, Washington, DC. ISBN: 978-0-87168-754-8
70) **McNeal, K.S.** and Anderson, R. 2012. *Adaptation and Development of ITS Learning Ecology Participants: An Individual Perspective*. *In* The New Science Education Leadership: An IT-Based Learning Ecology Model (Eds. J.F. Schielack and S.L. Knight) Teachers College Press, New York, NY. ISBN: 080-7-75343-2

Peer-Reviewed Biogeochemistry Publications:

71) Mills, C.G. and **McNeal, K.S.** 2014. Salt marsh sediment biogeochemical response to the BP *Deepwater Horizon* blowout. *Journal of Environmental Quality,* 43:1813-1819. https://doi.org/10.2134/jeq2013.11.0441
72) Puckett, M.K., **McNeal, K.S.,** Kirkland, B.L., Corley, M., and Ezell, J.E. 2011. Biogeochemical stratification and carbonate dissolution-precipitation in hypersaline microbial mats (Salt Pond, San Salvador, The Bahamas), *Aquatic Geochemistry 17:* 397-418. https://doi.org/10.1007/s10498-011-9141-4
73) Gardner, W.S., McCarthy, M.J., Carini, S.A., **McNeal**, **K.S.**, Puckett, M.K., and Pennington, J. 2009. Collection of intact sediment cores with overlying water to study nitrogen- and oxygen-dynamics in regions with seasonal hypoxia. *Continental Shelf Research 29: 2207-2213*. https://doi.org/10.1016/j.csr.2009.08.012
74) **McNeal K.S.** and Herbert B.E. 2009. Volatile organic metabolites as indicators of microbial activity and community composition shifts. *Soil Science Society of America Journal 73*: 579-588. https://doi.org/10.2136/sssaj2007.0245
75) McCarthy M.J., **McNeal K.S.**, Gardner W.S., and Morse J.W. 2008. Bottom-water hypoxia effects on sediment-water interface nitrogen transformations in a seasonally hypoxic, shallow bay (Corpus Christi Bay, Texas, USA). *Estuaries and Coasts* 31: 521-531. https://doi.org/10.1007/s12237-008-9041-z
76) **Sell K.S.** and Morse J.W. 2006. Dissolved Fe^{2+} and $\sum H_2S$ behavior in sediments seasonally overlain by hypoxic-to-anoxic waters as determined by CSV microelectrodes. *Aquatic Geochemistry 12*: 179-198. https://doi.org/10.1007/s10498-005-4574-2
77) Gardner W.S., McCarthy M.J., Sobolev D., Soonmo A., **Sell K.S.** and Brock D. 2005. Nitrogen fixation and dissimilatory nitrate reduction to ammonium (DNRA) support nitrogen dynamics in Texas estuaries. *Limnology and Oceanography 51:* 558-568. https://doi.org/10.4319/lo.2006.51.1_part_2.0558
78) Morse J.W., DiMarco S.F., Hebert A.B., and **Sell K.S.** 2003. A scaling approach to spatial variability in early diagenetic processes. *Hydrobiologia* 494: 25-29. https://doi.org/10.1023/a:1025468921821
79) Morse J.W., DiMarco S.F., **Sell K.S.** and Herbert A.B. 2003. Determination of the optimum sampling intervals in sediment pore waters using the autocovariance function. *Aquatic Geochemistry* 9: 41-57. https://doi.org/10.1023/B:AQUA.0000005657.18821.46
80) Morse J.W., Gledhill D.K., **Sell K.S.**, and Arvidson R.S. 2002. Pyritization of iron in sediments from the continental slope of the northern Gulf of Mexico. *Aquatic Geochemistry* 8: 3-13. https://doi.org/10.1023/A:1020305716808
81) Byrne R.H., Xuewu L., and Kaltenbacher E.A., **Sell K.S.**, 2002. Spectrophotometric measurement of total inorganic carbon in aqueous solutions using liquid core waveguide. *Analytica Chimica* 451: 221-229. https://doi.org/10.1016/S0003-2670(01)01423-4
82) Hopkins A.E., **Sell K.S.**, Soli A.L., and Byrne R.H. 2000. In-situ spectrophotometric pH measurements: the effect of pressure on thymol blue protonation and absorbance characteristics. *Marine Chemistry* 71: 103-109. https://doi.org/10.1016/S0304-4203(00)00043-8

Invited Book Chapters Biogeochemistry:
83) **McNeal, K.S.**, Anderson, E., Ezell, J.E., Guthrie, C., and Spry, J. 2013. *Microelectrodes in marine environments: The exploration of sedimentary sulfide dynamics in shallow estuaries, salt marshes, and hypersaline microbial mats*. *In*

Microelectrodes: Techniques, Structures for Biosensing and Potential Applications (Eds. Lei, K.F.). Nova Publishing, Hauppauge, NY. ISBN 978-1-62948-721-2

Technical Reports, Proceedings, Editorials, New Articles:

84) Solomon, J.T., Song, H., Beckingham, L.E., **McNeal, K.**, Lazar, K. 2024. Imparting High-Level Environmental Behavior Through Tailored Interventions. *Proceedings of the 2024 ASEE Annual Conference & Exposition*. Portland, Or.
85) Song, H., **McNeal, K.,** Solomon, J.T., Beckingham, L.E., Lazar, K. 2024. Continuing Evaluation of Undergraduate Engineering Students' Perspectives on Renewable Energy: A Two-Year Study. *Proceedings of the 2024 ASEE Annual Conference & Exposition*, Portland, Or.
86) Solomon, J., Beckingham, L., **McNeal, K.S.**, Song, H. (2023). Building High-Level Environmental Behavior into HBCU Engineering, ASEE Conference Proceedings.
87) Solomon, J., Beckingham, L., **McNeal, K.S.**, Song, H. (2022). Building High-Level Environmental Behavior into HBCU Engineering, *Proceedings of the ASEE Conference & Exposition*. Baltimore, MD.
88) Harshman, J., McNeal, K., Burkholder, E., Lanius, M. and Ballen, C., and Doukopouplos, L. 2022. Auburn Plainsman, https://www.theplainsman.com/article/2022/04/letter-to-the-editor-we-hear-you
89) Gates, A., **McNeal, K.S.**, Riggs, E., Sullivan, S., & Dalbotten, D. 2019. New Developments in Diversity and Inclusiveness in Geoscience Education. *Journal of Geoscience Education* 67, 286-286.https://doi.org/10.1080/10899995.2019.1671713
90) **McNeal, K.S.**, St. John, K., Kortz, K., Nagy-Shadman, E., Riggs, E., 2017. Editorial: Introduction to the Theme: Synthesizing Results and Defining Future Directions of Geoscience Education Research, *Journal of Geoscience Education* 65, 347-352. https://doi.org/10.5408/1089-9995-65.4.347
91) St. John, K., Petcovic, H., Stokes, A., Arthurs, L., Callahan, C., Feig, A., Gates, A., Gray, K., Kortz, K., **McNeal, K.,** Nagy-Shadman, E., Teed, R., and Van Hoesen, J. 2016. Un-Packing Manuscript Preparation and Review Guidelines for Curriculum and Instruction and Research Papers. *Journal of Geoscience Education*, 64: 1-4. https://doi.org/10.5408/1089-9995-64.1.1
92) **McNeal, K.S**., St. John, K., Buhr Sullivan, S. 2014. Editorial: Introduction to the Theme: Outcomes of Climate Literacy Efforts (Part 1). *Journal of Geoscience Education,* 62: 291-295. https://doi.org/10.5408/1089-9995-62.3.291
93) St. John, K., Dickerson, D., **McNeal, K.S.** 2013. Editorial: Guide to Inspiring Authors. *Journal of Geoscience Education* 61, 252-255.
94) **McNeal K.S.** 2010. Editorial: The Earth science gap in K-12 education. *Journal of Geoscience Education* 58, 197. https://doi.og/10.5408/1.3534857
95) Libarkin, J., Elkins, J.T., **McNeal K.S.,** St. John, K. 2010. Editorial: What role do geoscientists play in society? *Journal of Geoscience Education*, 58, 1. https://doi.org/10.5408/1.3544290
96) Schumacher, A., Sherman-Morris, K., **McNeal, K.**, and Drobot, S. 2009. Pet care professionals' preparedness for, response to, and utilization of resources during Hurricane Gustav. Quick Response Report. Boulder, CO: University of Colorado Natural Hazards Center.
97) Martin, J.L., Evans, D.W., McAnally, W.H., **McNeal**, **K.S.,** Horton, M. 2009. Evaluation of the factors affecting the fate and transport of mercury in coastal estuaries with a focus on Mobile Bay. Northern Gulf Institute.

Theses and Dissertations:

98) **McNeal K.S.** 2007. Understanding complex earth systems: volatile metabolite as microbial ecosystem proxies and student conceptual model development of coastal eutrophication. Doctoral Dissertation, Texas A&M University. pp. 1-172. https://tdl-ir-api.tdl.org/items/fdc694f1-c0cd-4255-ace8-757c53acaa76/full

99) **Sell K.S**. 2003. Temporal influences of seasonal hypoxia on sediment biogeochemistry in coastal waters. Masters Thesis, Texas A&M University. pp. 1-142.

100) **Sell, K.S.** 2000. In-situ spectrophotometric pH measurements: the use of thymol blue indicator in both high pressure and long pathlength cells to determine the CO_2 parameters of seawater. Undergraduate Thesis, Eckerd College. pp. 1-50.

Abstracts and Presentations

Invited Presentations and Seminars: ***TOTAL 38***

Last 10 years Shown Below:

2023	Atmospheric Science Education Research (ASER) student session, Atmospheric and Meteorological Science, National meeting, Virtual Presentation
2023	CuWiP, Auburn University
2021	Department of Engineering and Geological Sciences, Clemson University
2021	Florida Mechanical A&M University, School of the Environment, Tallahassee, FL
2021	Virtual Pub Speaker, Paleontological Research Institution, Ithaca, NY
2021	Dept. Ecology and Evolutionary Biology, University of Tennessee-Knoxville
2020	Geological Society of America, Pardee Session (P5), Montreal, CA
2020	School of The Environment and Earth Sciences, LSU
2020	Water Resources Institute, University of Florida-Gainesville
2020	Department of Geological Sciences, Baylor University
2018	COSAM Science Café, Auburn University
2017	American Geophysical Union, Session ED42A
2017	Geological Society of America Annual Meeting, Session 205 T120
2017	Geological Society of America Annual Meeting, Session 45 T99.
2016	University of Colorado-Boulder, CIRES
2016	Auburn University, College of Science and Mathematics/Department of Geosciences

National and International Presentations, Abstracts, and Proceedings (underlined names represent students or post-docs): **Total 202**

LAST 10 Years Shown Below:

1) Mikulak, H.N., **McNeal, K.**, Partyka, M. (2025). Southeast US and Irish Oyster Farmers' Climate Change and Extreme Weather Perceptions. *American Atmospheric Science 105th Annual Meeting.* New Orlean, LA.

2) Mikulak, H.N., **McNeal K.** (2025). Increasing Students' Sense of Belonging to Improve Atmospheric Science Departments Culture and Climate *American Atmospheric Science 105th Annual Meeting*, New Orlean, LA.

3) Brown, A. and **McNeal, K.S.** (2024). The Impact of a Two-Year Research Experience on Undergraduate Participants Career Perceptions and Research Skills. American Geophysical Union Annual Meeting (Washington, DC),
4) Brown, A. and **McNeal, K.S.** (2024). Examining the Relationship Between Climate Knowledge and Perceptions in an Introductory Weather and Climate Course. American Geophysical Union Annual Meeting (Washington, DC),
5) Mikulak H. and **K.S. McNeal**, (2024). Improving Atmospheric Science Undergraduate Departments' Culture and Climate by Increasing Students' Sense of Belonging. Presented at: *Fifth Symposium on Diversity, Equity, and Inclusion, American Meteorological Society,* Baltimore, MD.
6) Cashwell, H.J.**,** Dello, K.D., **McNeal, K.S.**, Ward, R.V., Rosenberg, K., Hollowell, R., Hollowell, J., Stoop, A. (2024) *Improving Climate Resiliency and Fluency in Rural North Carolina: A Partnership with Albemarle Regional Health Services.* Oral presentation at the American Meteorological Society Annual Meeting, Baltimore, MD.
7) Cashwell, H.J., **McNeal, K.S.** (2024) *Implementation of a Climate Decision Support System in an Undergraduate Weather and Climate Classroom.* Poster presentation at the American Meteorological Society Student Conference, Baltimore, MD.
8) Brown, J., **McNeal, K.**, Chandler, M., Zhou, J. (2024). Evaluating the usability of the EZGCM toolkit and it's impact on undergraduate student's understanding of the climate modeling process and climate science. Poster session presented at: Ninth Annual Earth Educators Rendezvous, July 2024, Pasadena, CA. (10% Contribution)
9) Brown, J., **McNeal, K.**, Chandler, M., Zhou, J. (2024). Evaluating the usability of the EZGCM toolkit and it's impact on undergraduate student's understanding of the climate modeling process and climate science. Poster session presented at: Ninth Annual Earth Educators Rendezvous, July 2024, Pasadena, CA. (10% Contribution)
10) Mikulak H. and **K. McNeal** (2023). Factors Influencing Sense of Belonging During Undergraduate Atmospheric Science Studies. Presented at: *European Science Education Research Association Summer School,* July 2023, Neustadt an der Weinstrasse, Germany.
11) Cashwell, H.J.**, McNeal, K.S.** (2023) *Implementation of a Climate Decision Support System in an Undergraduate Weather and Climate Classroom*. Poster presentation at the 2023 Earth Educators' Rendezvous, Pasadena, CA.
12) Cashwell, H.J.**,** Dello, K.D., Runkle, J., **McNeal, K.S.,** Ward, R. (2023) *Enhancing Climate Resiliency and Literacy of a Frontline Community in Rural North Carolina.* Oral presentation at the American Meteorological Society Annual Meeting, Denver, Colorado.
13) Cashwell, H.J., Dello, K.D., Runkle, J., **McNeal, K.S.**, Ward, R. 2023. Enhancing Climate Resiliency and Literacy of a Frontline Community in Rural North Carolina. American Meteorological Society Annual Meeting, Denver, Colorado.
14) Mikulak, H. and **McNeal, K.S.,** 2023. Sense of Belonging During Undergraduate Studies in Atmospheric Science and the Influence on Career Goals. American Meteorological Society Annual Meeting, Denver, Colorado.
15) Soltis, N. and **McNeal, K.S.**, 2022. Connecting Undergraduate Conceptions of Biogeochemical Cycles to Earth Systems Thinking Skills. American Geophysical Union Fall Meeting, Dec 12-16.

16) Johnson, E., Burmeister, K., Georgios, S., McNeal, K.S., 2022. The Effects of 3d Geologic Block Models on Student Understanding of Spatial and Structural Geology Concepts: Comparing Digital and Physical Modalities. American Geophysical Union Fall Meeting, Dec 12-16.
17) Song, H., **McNeal, K.**, Beckingham, L., Solomon, J., Lazar, K. 2022. Developing a Broad Measure of Undergraduate Students' Sustainability and Renewable Energy Knowledge and Perspectives. American Geophysical Union Fall Meeting, Dec 12-16.
18) Smith, T. and **McNeal K.S.**, 2022. Assessing the Motivations, Benefits, and Barriers of Implementing Virtual Field Experiences. Geological Society of America *Abstracts with Programs.* Oct. 9-12.
19) Smith, T., Cain, C., Ashwood, L., Lee, M.K., **McNeal, K.S.** 2022. Assessing the Source, Distribution and Attenuation of Radon Contamination in Fractured Groundwater Aquifers. Geological Society of America *Abstracts with Programs.* Oct. 9-12.
20) Courtney, S. and **McNeal, K.S.** 2022. Just trust me: Undergraduates' perceptions of climate science and scientists. Earth Educator's Rendezvous. July 11-15.
21) Cashwell, H.J., **McNeal, K.S.**, Dello, K., Boyles, R., Davis, C. 2022. *User Engagement Testing with a Pilot Decision Support Tool Aimed to Support Species Managers.* Oral presentation at the American Meteorological Society Annual Meeting, Virtual Meeting.
22) Courtney, S., Hyman, A., **McNeal, K.**, Armsworth, P. & Maudlin, L. 2022. *How science becomes action: Measuring applications of climate adaptation research*. American Meteorological Society 17th Symposium on Societal Applications: Policy, Research, and Practice, Virtual Meeting, January 24-27.
23) **McNeal, K.S.,** Benitez-Nelson, C., Jones, J. 2021. *Supporting Underrepresented Undergraduate Students in the Geosciences Through Partnerships Between University Housing and Academics.* In Geological Society of America Southeast Regional Meeting, Virtual Meeting, April 1-2.
24) Johnson, E.T., Pitre, M., Maudlin, L., Mitra, C., **McNeal, K.** 2021. The Ecosystem Services of Greenspaces in the Southeastern United States. In Geological Society of America Southeast Regional Meeting, Virtual Meeting, April 1-2.
25) Smith, T.G., **McNeal, K.S.**, 2021. Outdoor activities during COVID-19 and their connection to environmental risk perception (ERP). In Geological Society of America Southeast Regional Meeting, Virtual Meeting, April 1-2.
26) Courtney, S., **McNeal, K**., Hyman, A., Armsworth, P. & Maudlin, L. 2021. *Climate adaptation science to action: Measuring use of CASC-funded research*. In Geological Society of America Southeast Regional Meeting, Virtual Meeting, April 1-2.
27) Courtney, S., **McNeal, K**., Hyman, A., Armsworth, P. & Maudlin, L. 2021. *Measuring the Use of Actionable Science for Natural and Cultural Resource Management*. American Meteorological Society 16th Symposium on Societal Applications: Policy, Research, and Practice, Virtual Meeting, January 9-15.
28) Courtney, S., & **McNeal, K.** 2021. Gamifying climate change communication, action, and justice for public audiences. American Meteorological Society 30th Conference on Education, Virtual Meeting, January 9-15.
29) Song, H., **McNeal, K.S.**, Beckingham, L., Soloman J. (2023). Continuing Evaluation of Undergraduate Engineering Students' Perspectives on Renewable

Energy: A Two-Year Study American Geophysical Union Annual Meeting (San Franciso, CA)

30) Cashwell, H.J., **McNeal, K.S.**, Dello, K., Boyles, R. 2021. User Engagement with a Web-based Decision Support Tool to Support USFWS Scientists' Development of Species Status Assessments. In Geological Society of America Southeast Regional Meeting, Virtual Meeting, April 1-2.
31) Cashwell, H.J., **McNeal, K.S.**, Dello, K., Boyles, R. 2021. An Evaluation of Species Status Assessments: Discovering Climate Information Themes, Understanding USFWS Scientists' Climate Information Needs, and User Engagement with a Web-based Decision Support Tool. In American Meteorological Society Annual Meeting, Virtual Meeting, January 9-15.
32) Johnson, E.T. and McNeal, K.S. 2020. Exploring the spatial ability of undergraduates and the general public. In 2020 Geological Society of America, October 26-30.
33) Maudlin, L.C., **McNeal, K.S.,** Dinon-Aldridge, H., Davis, C., Boyles, R., Atkins, R.: Which User Characteristics Influence the Usability of a Climate Decision Support System? American Meteorological Society 30thConference on Education, Virtual. January 2021.
34) Maudlin, L.C., **McNeal, K.S**., Soltis, N.A., Hassol, S.J.: Narrated Animations and Still Frame Figures: A Comparison Study. The Geological Society of America Fluid Earth Science Education, Virtual. October 2020.
35) Maudlin, L.C., **McNeal, K.S.,** Soltis, N.A., Hassol, S.J.: Narrated Animations and Still Frame Figures: When and How Should I Use Them? American Meteorological Society 29th Conference on Education, Boston, Massachusetts. January 2020.
36) Hensel, M., Bryan, J., McCarthy, C., **McNeal, K.S.,** Norfles, N., Rath, R., Rooney-Varga, J. N. 2020. How the Simulation-Based Learning Game, *World Climate*, Shapes Climate Change Perspectives Among High School and College Students, Traditionally Under-Represented in STEM Fields. Geological Society of America Meeting.
37) Rooney-Varga, J. Rath, K., McCarthy, K., **McNeal K.S.,** Norfles, N., Hensel, M., Sterman, J.D. 2020. Depolarizing climate change communication: A simulation-based experience shifts climate change beliefs and worldview among people who value individualism and social hierarchy. American Geophysical Union Fall Meeting, Dec 1-17.
38) Cashwell, H., **McNeal, K.S**., Boyles, R., Dello, K. 2020. An Evaluation of Species Status Assessments: Discovering Climate Information Themes, Understanding USFWS Scientists' Climate Information Needs and User Engagement with a Web-based Decision Support Tool. American Geophysical Union Fall Meeting, Dec 1-17.
39) Courtney, S. and **McNeal K.S.** 2019. Seeing is believing: Evidence-based graph design for advancing climate literacy. In 2019 American Geophysical Union Fall Meeting, San Francisco, December 9-13.
40) Jones, W., Benetiz-Nelson, C., **McNeal, K.S.,** 2020. Increasing Undergraduates Participation in the Geosciences through the Partnership of University Housing and Academics. Ocean Sciences Meeting, San Diego, CA. Feb 17-20.
41) Maudlin, L., **McNeal., K.S.,** Hassol, S., Soltis, N. 2020. Narrated Animations and Still Frames: When and how should I use them? 100th American Meteorological Society Meeting, Boston, Jan 13-17.

42) Courtney, S. and **McNeal K.S.** 2019. Seeing is believing: Evidence-based graph design for advancing climate literacy. In 2019 American Geophysical Union Fall Meeting, San Francisco, December 9-13.
43) Maudlin, L., and **McNeal, K.S.** 2019. Communicating Global Change through Music. In 2019 American Geophysical Union Fall Meeting, San Francisco, December 9-13.
44) Alwan, A. and **McNeal, K.S.,** 2019. Becoming an African American Geoscientists: A Exploration of Race and Critical Indices on Recruitment and Persistence. Geological Society of America *Abstracts with Programs.* Sept. 22-25.
45) Courtney, S. and **McNeal, K.S.,** 2019. Seeing is Believing: Using Eye-Tracking to Evaluate Climate Change Graph Usability. Geological Society of America *Abstracts with Programs.* Sept. 22-25.
46) Johnson, E.T. and **McNeal, K.S.** 2019. Exploring the Spatial Ability Perceptions of Undergraduate Students Before and After a Spatial Intervention. Geological Society of America *Abstracts with Programs.* Sept. 22-25.
47) Soltis, N.A. and **McNeal, K.S.** 2019. The Underpinnings of Developing an Instrument to Measure Systems Thinking Abilities in the Context of Earth System Science. Geological Society of America *Abstracts with Programs.* Sept. 22-25.
48) Johnson, E.T. and **McNeal, K.S.** 2019. Understanding the Effectiveness of The AR Sandbox through Student Experiences. Earth Educator's Rendezvous, Nashville, TN, July 15-19.
49) Courtney, S. and **McNeal, K.S.,** 2019.Building Better Graphs for Climate Change Communication: Perceptions of Credibility. Earth Educator's Rendezvous, Nashville, TN, July 15-19.
50) Soltis, N.A. and **McNeal, K.S.** 2019. Using Student Drawings of Biogeochemical Cycles to Explore Systems Thinking Abilities. Earth Educator's Rendezvous, Nashville, TN, July 15-19.
51) Johnson, E.T. and **McNeal, K.S.** 2019. Training undergraduate students' spatial reasoning ability using the augmented-reality sandbox: Abstract presented at 68th Annual Southeast Section Meeting, GSA, Charleston, South Carolina, March 28-29.
52) Maudlin, L., **McNeal, K.S.,** Soltis, N., and Hassol, J. 2019. Narrated Animations or Still Frame Figures: Do Both Formats Produce the Same Results? In 2019 American Meteorological Society Meeting, Phoenix, January 6-10.
53) Maudlin, L. and **McNeal, K.S.** 2018. Communicating Global Change through Music: The Affect on Attendee Engagement, Conceptions, Perceptions, and Behaviors. In 2018 American Geophysical Union Fall Meeting, Washington D.C., December 11-15.
54) Rooney-Varga J., Norfles, N., Rath, K., **McNeal, K.,** Cahlahan, M., Stilwell, B., Cloran, S. 2018. Interactive simulations and systems thinking to broaden pathways into climate change and sustainability. In 2018 American Geophysical Union Fall Meeting, Washington D.C., December 11-15.
55) Courtney, S. and **McNeal, K.S.,** 2018. Building Better Graphs for Climate Change Communication: Evidence from Eye-tracking. In 2018 American Geophysical Union Fall Meeting, Washington D.C., December 11-15.
56) **McNeal, K.S.** Zhong, M., Doukolpoulos, L. Soltis, N., Alwan, A. 2018. Measuring Student Engagement in an Active Learning Biology Classroom Using Galvanic Skin Response. AAC&U Transforming STEM Higher Education Conference, Atlanta, GA, Nov. 11-13.

57) Anne, G., Curry, R., Briggs, J., Smith, L., **McNeal, K.S**. 2018. Research Experiences for Community College Students: Expanding the Pipeline for 2YC students into Geoscience Programs at 4YCS. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6.
58) **McNeal, K.S.,** Soltis, N., Zhong, M., Doukopoulos, L., Porch, M. Alwan, A. 2018 Using Skin Sensors to Measure Student Engagement in Traditional and Active Learning Classrooms. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
59) **McNeal, K.S.,** Van Der Hoeven Kraft, K.J., Nagy-Shadman, E.A., Beck, M., Jones, J. P. 2018. A Community Framework for Geoscience Education Research: Research on Geoscience Students' Self-Regulated Learning, Metacognition, and Affect. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
60) Soltis, N.A., **McNeal, K.S.,** Forbes, C., and Lally, D. 2018. The Relationship between Active Learning, Course Innovation and Teaching Earth System Thinking: A Structural Equation Modeling Approach. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
61) Lally, D., Forbes, C., **McNeal K.S.,** Soltis, N. 2018. National Survey of Geoscience Teaching Practices 2016: Current Trends in Geoscience Instruction of Scientific Modeling and Systems Thinking. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
62) Beane, R.J., MacDonald, R., **McNeal, K.S.** 2018. National Geoscience Faculty Survey Results on Education Practices that Support Diversity and Inclusion in Undergraduate Courses. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
63) Johnson, E. T. and **McNeal, K.S**. 2018. Spatial Thinking in Undergraduates Using the Augmented-Reality Sandbox. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
64) Courtney, S.L. and **McNeal, K.S**. 2018. Building Better Graphs for Climate Change Communication. Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6
65) **McNeal, K.S.** 2018. Exploring the Applications of Eyetracking and Skin Biosensors in Geoscience Education. CIRCLE Conference, St Louis, MO. Sept. 6-7.
66) Courtney, S., **McNeal, K.S.** 2018 Undergraduate perceptions of climate change. Earth Educator's Rendezvous, Lawrence, KS, July 16-20.
67) Morrison, A., Kay, J. Gold, A., **McNeal, K.S.**, Soltis, N. 2018. Using Galvanic Skin Sensors to Measure Engagement and Learning Outcomes During Teacher Workshops and Undergraduate Classes about Climate Science Earth Educator's Rendezvous, Lawrence, KS, July 16-20.
68) Lally, D., Forbes, C., **McNeal, K.** 2018. National Survey of Geoscience Teaching Practices 2016: Current Trends in Geoscience Instruction of Scientific Modeling and Systems Thinking. Earth Educator's Rendezvous, Lawrence, KS, July 16-20.
69) **McNeal, K.S.,** Zhong, M., Doukopoulos, L., Soltis, N., Alwan, A. 2018. Measuring student engagement in an active learning biology classroom using galvanic skin response. AAC&U's *Transforming STEM Higher Education* conference November 8-10, Atlanta, GA.
70) Johnson, E., **McNeal, K.S.** 2018 The Effectiveness of the Augmented Reality Sandbox for Improving Spatial Thinking in Undergraduates. Earth Educator's Rendezvous, Lawrence, KS, July 16-20.

71) Soltis N., **McNeal, K.S**. 2018 Understanding Undergraduate Student Conceptions about Biogeochemical Cycles and the Earth System. Earth Educators' Rendezvous, Lawrence, KS, July 16-20.
72) Soltis, N., **McNeal, K.S.**, Atkins, R., Maudlin, L., Schnittka, C. 2018. Understanding Student Engagement while Using an Augmented Reality Sandbox in National Association for Research on Science Teaching, Atlanta, GA, March 10-13.
73) Maudlin, L.C., **McNeal, K.S.**, Dinon-Aldridge, H., Davis, C., Boyles, R., Atkins, R. 2018. Does user experience determine user success with a climate decision support system? Earth Educators Rendezvous, Lawrence, Kansas. July 16-20.
74) **McNeal, K.S.,** Luginbuhl, S., Ngo, A. What are the Best Practices of Using to Twitter in Climate Change Communication?: A Case Study of Two Climate Related Events. In 2017 American Geophysical Union Fall Meeting, New Orleans, December 11-15. (INVITED)
75) Libarkin, J.L., Gold, A.U., Harris, S.E., **McNeal, K.S.,** Bowles, R. 2017. Relating Understanding and Risk Perception with a Validated Measure of Climate Change Conceptions. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25. (INVITED)
76) Atkins, R.M. and **McNeal, K.S**. 2017. Visualizing Student Navigation of Geologic Block Diagrams. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25.
77) Ryker, K., McNeal, K.S., Giorgis, S., Whitmeyer, S.J., LaDue, N., Atkins, R.M., Clark, C.M. 2017. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25.
78) Soltis, N.A., **McNeal, K.S.,** Atkins, R.M., Maudlin, L.C. 2017. Understanding Student Engagement While Using an Augmented Reality Sandbox. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25.
79) St. John, K. Cervato, C., Kastens, K.A., MacDonald, H. McDaris, J.R., **McNeal, K.,** Petcovic, H.L., Pyle, E.J., Riggs, E.M., Ryker, K., Semken, S., Teasdale, R. 2017. Identifying and Prioritizing Geoscience Education Research Grand Challenges Draft Plans for a Community Research Agenda. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25.
80) **McNeal, K.S**. 2017. Utilizing Augmented Reality and Virtual Reality in Geoscience Education: An Overview. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25. (INVITED)
81) Gold, A.U., Morrison, A., Soltis, N.A., **McNeal K.,** Kay, J.E., 2017. Measuring Engagement and Learning Outcomes during a Teacher Professional Development Workshop about Creative Climate Communication. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25.
82) **McNeal, K.S**., 2017. Exploring the Applications of Eye-Tracking and Skin Biosensors in Geoscience Education. In 2017 Geological Society of America GSA, Seattle, Oct. 22-25. (INVITED)
83) Soltis, N. **McNeal, K.S.,** Atkins, R., Maudlin, L. Understanding Student Engagement while using an Augmented Reality Sandbox. Earth Educators Rendezvous, Albuquerque, NM, July 17-21.
84) Maudlin, L., **McNeal, K.S.**, Atkins, R., Davis, C., Boyles, R., and Aldridge, H.D. 2016. Eye-tracking assessment of the usability of a web-based decision making tool used by forestry stakeholders in the southeastern US. In 2016 Geological Society of America GSA, Denver, Sept. 25-28.

85) **McNeal, K.S.,** Soltis, N., Luginbuhl, S., and Ngo, S. 2016. Capturing tweets on climate change: What is the role of Twitter in climate change communication? In 2016 Geological Society of America GSA, Denver, Sept. 25-28. In 2016 Geological Society of America GSA, Denver, Sept. 25-28.
86) Ellins, K., Serpa, L.F., Stocks, E., Shapiro-Ledley, T., Libarkin, J.L., Lavbier, L.L., Samsel, F., Smith, R., **McNeal., K.,** Mandal, A. 2016. Teaching with online educational materials in the geoscience classroom: Examples from Texas and Jamaica. In 2016 Geological Society of America GSA, Denver, Sept. 25-28.
87) Maudlin, L., **McNeal, K.S.,** Atkins, R., Asim, P., Luginbuhl, S., Michalak, A. 2016. Assessing how attending a concert and/or science café about global change alters the engagement, conceptions, perspectives, attitudes, and behaviors of attendees. In 2016 Geological Society of America GSA, Denver, Sept. 25-28.
88) Ryker, K., **McNeal, K.S.,** Atkins, R., Clark, C., 2016. The impacts of an AR sandbox on map-reading skills using a "free-play" experience. In 2016 Geological Society of America GSA, Denver, Sept. 25-28.
89) St. John. K., Kasten, K., MacDonald, H., **McNeal, K.S.** 2016. Emerging priorities and new on-line resources to support geoscience education researchers. In 2016 Geological Society of America GSA, Denver, Sept. 25-28.
90) Atkins, R., **McNeal, K.S.,** and Luginbuhl, S. 2016 An Eye-tracking Study on Expert/Novice Differences During Climate Graph Reading Tasks: Implications for Climate Communication. Earth Educators Rendezvous, Madison, WI July 18-21.
91) Maudlin, L., **McNeal, K.S.** Boyles, R., Aldridge, H.D., Davis, C. and Atkins, R. Eye-Tracking Assessment of the Usability of a Web-based Climate Decision-making Tool Used by Forestry Stakeholders in the Southeastern US. Earth Educators Rendezvous, Madison, WI July 18-21.
92) **McNeal**, **K.,** Libarkin J., Ledley, T. Gold, A., Lynds, S., Haddad, N. Ellins, K., Dunlap, C. Bardar, E. Youngman, E. 2015. Assessment of High-School Students Engaged in the EarthLabs Climate Modules Using the Climate Concept Inventory. In 2015 American Geophysical Union Fall Meeting, San Francisco, December 14-18.
93) Mitra, R. and **McNeal, K.S.** 2015. Pupil diameter as a predictor of cognitive load: A novel tool for geoscience education research. In 2015 American Geophysical Union Fall Meeting, San Francisco, December 14-18.
94) Ngo, A., McNeal, K.S., Luginbuhl, S., Enteen, J. 2015. Capturing Tweets on Climate Change: What is the Role of Twitter in Climate Change Communication? In 2015 American Geophysical Union Fall Meeting, San Francisco, December 14-18.
95) Libarkin**,** J., Gold, A., Harris, S., **McNeal, K**. Bowles, R. 2015 Psychometric Principles in Measurement for Geoscience Education Research: A Climate Change Example. In 2015 American Geophysical Union Fall Meeting, San Francisco, December 14-18.
96) Haddad, N., Ledley, T., Ellins, K., **McNeal, K.,** Bardar, E. Youngman, E., Lockwood, J., Dunlap, C. 2015. The EarthLabs Climate SeriesL Approaching Climate Literacy from Multiple Contexts. In 2015 American Geophysical Union Fall Meeting, San Francisco, December 14-18.
97) Ellins, K. Ledley, T, **McNeal, K. S.**, Haddad, N., Libarkin, J.C., Bardar, E., Youngman, B., Dunlap, C., Lockwood, J. and Mote, A. 2015. Supporting Students Understanding of Change over Time and Space: The EarthLabs Climate Series. In 2015 Geological Society of America GSA, Baltimore, Nov. 1-4.

98) St. John, K., MaCDonald, H., Feig, A. D., LaDue, N., Lukes, L. A., **McNeal, K. S.**, Riggs, E. M., McDaris, J. R., Shaping the Future of Geoscience Education Research: A Community Effort. In 2015 Geological Society of America GSA, Baltimore, Nov. 1-4.
99) **McNeal, K. S.**, Sherman-Morris, K., Warkentin, M., Strawderman, L. Menard, P., 2015. Climate Risk Perceptions and Behavioral Intent Related to Climate Change and Economic Cost. In 2015 Geological Society of America GSA, Baltimore, Nov. 1-4.
100) Atkins R. and **McNeal, K.S.** 2015. Eye-Tracking Study on Expert-Novice Differences During Climate Change Graph Reading Tasks. In 2015 Geological Society of America GSA, Baltimore, Nov. 1-4
101) **McNeal, K.S.,** Mitra. R., Luginbuhl, S., Atkins, R. 2015 Eye Tracking, Pupillometry, and Hand Biosensors in Geoscience Education Research: Current trends, Applications, and Future Directions. Earth Educators Rendezvous, Boulder Colorado. July 13-15.

Courses Taught at Auburn

*=developed course

- *STEM Studio (ESSI 7200) Graduate Course, Auburn University**
- *Climate Internship (ESSI 7920) Graduate Course, Auburn University**
- *Science Communication (ESSI 7150) Graduate Course, Auburn University**
- *Geocommunication (GEOL 7100) Graduate Course, Auburn University*
- *Climate Change and Society (GEOL 4970/6930)- Graduate/Undergraduate Course, Auburn University**
- *Climate Change Literacy and Communication (GEOL 7286) – Graduate Course, Auburn University**
- *Earth System Science (ESSI 8000)* – Graduate Course, Auburn University

Professional Affiliations

National Association of Geoscience Teachers
American Association of University Professors
Geological Society of America
American Geophysical Union

Project Evaluation/Assessment Experience

2022-2023	Consultant/External Evaluator, Polar PASS, University of Colorado-Boulder, National Science Foundation (PI, Twila Moon)
2020-2023	Internal Evaluator, REU: Collaborative Approaches among Scientists and Engineers (CASE), Auburn University
2020-2022	Consultant, Norton Inc.
2016-2019	Consultant/External Evaluator, GeoSTEM, University of South Carolina, National Science Foundation (PI Claudia Benetiz-Nelson)
2015-2016	Consultant, *Shaping the Future of Geoscience Education Research: Synthesizing Results and Articulating Future Directions*, National Science Foundation, PI: Heather McDonald
2013-2015	Consultant/Evaluator, Hazards TEAMS Teacher Education & Activities for Minority Students in the Meteorological, Geologic, and Hydrologic Hazards. Track 1. National Science Foundation, Mississippi State University (PI Kathy Sherman-Morris)

2011-2014	Consultant/External Evaluator, Developing and Testing Materials to Improve Spatial Skills in Upper Division Geoscience Courses-TUES, National Science Foundation, (PI Carol Ormand)
2008-2011	Consultant/External Evaluator, Facilitating Student Understanding of Change in the Earth System on Multiple Time Scales, National Science Foundation (NSF), TERC (PI Tamara Ledley)
2009-2010	Consultant, *REU Site: Field Research on Bahamian Lakes-Exploring Records of Anthropogenic and Climate Change,* 01/01/09-12/31/012, National Science Foundation (NSF), Akron University (PI Lisa Park)

Service

Auburn University Curriculum and Assessment

2019-2023	Lead, Curriculum/Student Enhancement Task Force, Department of Geosciences
Summer 22-24	Facilitator, MOSI/AUSSIE COSAM Faculty Professional Development, Biggio Center
2020-2023	Member, COSAM Curriculum Committee
2021 - 2022	Member, Quality Enhancement Plan Implementation Committee
2019-2022	Member, Senate Core Curriculum and General Education Committee

Journal/Book/International Thesis Reviews

Climatic Change
Studies in Science Education
Journal of Research in Science Teaching
The Anthropocene Review
Norton & Company
McGill University
PLOS ONE
Geosphere
NSTA Press
Pearson, Inc.
International Journal of Science Education
Biogeosciences
Geological Society of America Special Paper
Bioresources Technology
Soil Science Society of America
Journal of Geoscience Education
Limnology & Oceanography
Journal of Geography in Higher Education
Science of the Total Environment

Proposal Reviews

NSF Proposal Panelist (8 different programs)
NOAA Proposal Panelist, Coastal Hypoxia Program
Research Initiative Program, Mississippi State University
Proposal Reviewer, RSP Intramural Program, COSAM, Auburn University

Auburn University Service (2016-present)

- Member, Committee A, AAUP, Auburn University Chapter (2024-present)
- Member, Going Place Investment Fund Committee, Dept. of Geosciences (2024)
- Member, Wellness and Mentoring Committee, Dept. of Geosciences (2024)
- Faculty Mentor to Assistant Professors at AU (2)-2019-present
- Member, COSAM College P&T Committee (2020-2022)
- Member, Senate Adhoc Sustainability Committee (2022-2023)
- Co-Organizer, Climate Symposium (2022, 2023, 2024)
- Earth Day Outreach Event Co-Organizer (2021, 2022, 2023)

- Member, Geoscience Chair 4-year review committee (2021)
- Member, Geophysics Search Committee, (2021-2022)
- Committee Chair, Geosciences Paleoclimate Search Committee (2020-2021)
- Member, COSAM Dean's Search Committee (2020-2022)
- Panelist, Sustainability Film From Paris to Pittsburg (Fall 2019)
- Faculty Mentor, NFS, Auburn University (2018-2020, 2024-2025)
- Faculty Hiring Task Force Lead, Department of Geoscience (2019)
- Search Committee Chair, Organic Biogeochemistry Faculty Search (2018-2019)
- Committee Chair, College of Science and Mathematics, Discipline Based Education Research Faculty Hiring Committee, Auburn University (2017-2018, 2018-2019)
- Committee Member, Applied Geochemistry Lecturer Search (2018-2019)
- Speaker, COSAM Science Night, June 21 (2018)
- Presenter, COSAM Summer Bridge Program (2018, 2019, 2022)
- Member, University Faculty Advisory Committee to ACLC Building Design and Faculty PD (2021)
- Volunteer, Destination STEM, Department of Geosciences (2017, 2019)
- Roundtable co-Convener, Faculty Research Day, Auburn University (2017)
- Member, College of Science and Mathematics, College IT Director position (2017)
- Member, College of Science and Mathematics, Discipline Based Education Research Faculty Hiring Committee, Auburn University (2016-2020)
- Faculty Volunteer, SWISM (Society of Women in Science and Math Annual meeting) (2017)
- Guest Lecturer: Sustainability 101 (2017, 2018, 2019, 2021), Business Sustainability (2019), Environmental Geochemistry (2019), Earth System Science (2019, 2020, 2021, 2022), ESS Seminar (2019, 2022)

Journal Editor Special Issues

- Co-Editor, New Developments in Diversity and Inclusion in the Geosciences, Journal of Geoscience Education (2018)
- Co-Editor, Synthesizing Results and Defining Future Directions of Geoscience Education Research, Journal of Geoscience Education (2017)
- Co-Editor, Climate Change Literacy Issues I & II, Journal of Geoscience Education (2013)

External Committees

- NAGT James Shea Award Committee Member (2011-2019)
- Committee Member, NAGT Teacher Education Division (TED) election board (2014-2019)

Other Reviewer Roles

- Faculty Tenure and Promotion External Letter Provider (9+ letters, 2018-2024)
- Reviewer for multiple journals (reviewed 100+ papers)
- Faculty Course Peer-Reviewer (5)

Meeting/Session Organizer or Chair (Last 10 years)

- Convener, NSF NRT Traineeship Interdisciplinary Team Science, Session held at the International Network for the Science of Team Science, Virtual Conference (2024)
- Co-Technical Chair, Southeast Geological Society of America Meeting, Auburn University, April 1-2 (2021)

- Co-Convener, Session T190. Making Sense of Methodologies and Theoretical Frameworks in Geoscience Education Research, Geological Society of America (2017, 2018, 2019)
- Co-Convener, Geoscience Education Research Community Planning Workshop, Earth Educator's Rendezvous, July 18-22 (2016)
- Co-Convener, Geoscience Education Research Community Planning Workshop, Earth Educator's Rendezvous, July 16-21 (2017)
- Co-Convener, Session T113. Geoscience Education Research: Implications for Undergraduate Geoscience Teaching and Learning, Geological Society of America (2017)
- Convener, Roundtable Geoscience education faculty tenure and promotion, Earth Educator's Rendezvous (2017)
- Co-Convener, Session ED21D, Understanding Learning Processes in Geoscience Classrooms: New Tools and Insights Posters, American Geophysical Union, Dec. 13-18 San Francisco, CA, 2015.
- Co-Convener, Synthesizing Geoscience Education Research: Where are we? What is the path forward? Earth Educator's Rendezvous, July 13-15 (2015)

Certificates

2010-present	Responsible Conduct of Research
2003-present	Human Subjects Research CITI
2002-2013	Scientific diving, American Academy of Underwater Scientists certified
2002-present	Advanced open water SCUBA, PADI certified
1997-present	Open water SCUBA, PADI certified

Students/Post-Docs Advised/Full-Time Employees

	Number
Postdoctoral Scholars	*2*
Doctoral Degree Students – Graduated - Major Advisor/Chair	*7*
Doctor Degree Students – Current - Major Advisor/Chair	*5*
Master Degree Students -Graduated- Major Advisor/Chair	*14*
Master Degree Students -Current- Major Advisor/Chair	*1*
TOTAL GRADUATE STUDENTS/POST-DOCS AS MAJOR ADVISOR/CHAIR	***28***
Doctoral Degree Students – Committee Member	*20*
Doctoral Degree Students - Reader	*2*
Master Degree Students – Committee Member	*21*
TOTAL GRADUATE STUDENT COMMIITTEES-MEMEBER	***43***
Undergraduate Student Workers	*20*
REU Student Advisees	*13*
Undergraduate Student Academic Advisees	*28*
TOTAL UNDERGRADUATE STUDENTS ADVISED	***61***
SUPERVISOR - FULL TIME STAFF	*4*

Doctoral Degree Major Advisor/Chair - Graduated Students

Lindsay Maudlin (Graduated NCSU, Spring 2018, Assistant Professor Iowa State University)*

Dissertation: An Evaluation of a Climate Decision Support System: An Eye-Tracking Study

Nick Soltis (Graduated Auburn, May 2020, Assistant Professor, University

of Indianapolis)*
Dissertation: Exploring and Measuring the Teaching and Development of Earth Systems Thinking Skills in Undergraduate Geoscience Courses

Stephanie Courtney (Graduated Auburn, August, 2022, Associate Climate Liaison, United Southern and Eastern Tribes)*
Dissertation: Perception and application of climate science by distinct audiences: Impacts of measurement, attention, and credibility

Elijah Johnson (Graduated Auburn, August, 2023, Post Doctoral Scholar, USGS)*
Dissertation: Expanding the Measurement, Use, and Support of Spatial Reasoning in STEM and Geosciences

Haven Cashwell (Graduated Auburn, May 2024, Project Manager, Water at Cit of Fayetteville, NC)*
Dissertation: Usability, Undergraduates, Understanding: Enhancing Climate Resiliency and Climate Literacy through Co-Production

Tyler Smith (Graduated Auburn, August 2024, Post-doctoral Scholar, Auburn University)*
Dissertation: Interdisciplinary Interactions Between Humans and the Natural World

Haylie Mikilak (Graduated Auburn, May 2025, Assistant Professor, Bowling Green University)*
Dissertation: Barriers Facing Undergraduate Atmospheric Science Education And Southeast US Oyster Farmers

Master Degree Major Advisor/Chair - Graduated Students

Mary Keith Puckett (Graduated MSU, Fall 2009, Geologist, Nexen, Inc.)*
Thesis: Biogeochemistry of Microbial Mats from a Hypersaline Pond and Reef Biofilm from a Modern Coral Reef, The Bahamas

Sarah Radencic (Graduated MS MSU, August 2009, Graduated PhD 2016, Assistant Clinical Professor Mississippi State University)**

John Eric Ezell (Graduated MSU, Spring 2010, Assistant Clinical Professor, Mississippi State University)*
Thesis: The Sediment and Water Column Biogeochemistry of Weeks Bay During Bottom Water Hypoxic and Norm-oxic Events

Chris Ruhs (Graduated MSU, August 2011, Employment Unknown)*
Thesis: Soil-Microbe-Volatile Organic Compound (SMVOC) Analysis and Authentic Science in the Classroom

Henry Stauffenburg (Graduated MSU, August 2012, Field Specialist August Mack Environmental Consulting Inc.)*
Thesis: Degree of Pyritization and Methylmercury Analysis, Weeks Bay, Alabama

Kendra Wright (Graduated MSU, August 2012, Employment Unknown)*
Thesis: Mn-Oxidizing Bacteria and the Potential for Mercury Remediation in Oak Ridge, TN

Calista Guthrie (Graduated MSU, Spring 2013, Environmental Protection Agency, Wetlands Division)*
Thesis: Salt marsh sediment biogeochemical response to the BP Deepwater Horizon blowout (Skiff Island, LA and Cat Island, Marsh Point, and Saltpan Island, MS)

Erin Anderson (Graduated MSU, Summer 2013, Geologist Neel-Schaffer, Inc.)*
Thesis: Identification of Acid Volatile Sulfides as a Predictor of Sediment Oxygen Demand and Comparison of the Degree of Pyritization in Weeks Bay, AL and Old Tampa Bay, FL

Jonathon Geroux (Graduated MSU, Spring 2014, Geophysicist at Geokinetics)*
Thesis: Polyacrylamide Gels, Microelectrodes, and Centrifugation-Colorimetric Measures: A Comparison of Porewater Analysis Methodologies

Rachel Atkins (Graduated NCSU, August 2016, Assistant Professor at Utah State University)
Thesis: An Eye-tracking Study on Expert/Novice Differences During Climate Graph Reading Tasks: Implications for Climate Communication

Stephanie Courtney (Graduated Auburn, May 2019, See PhD students)*
Thesis: Building Better Graphs for Climate Change Communication: Evidence from Eye-tracking
Elijah Johnson (Graduated Auburn, May 2019, See PhD students)*
Thesis: The Effectiveness of the Augmented Reality Sandbox for Improving Spatial Thinking in Undergraduates
Haven Cashwell (Graduated Auburn, May 2021, See PhD students)*
Thesis: Analysis of Climate Information to Support US Fish and Wildlife Service Species Status Assessments: An Eye-Tracking Study
Jena Brown (Graduated Auburn, August 2023, See PhD students)*
Thesis: Evaluating the Three Dimensions of Usability for an Online Climate Modeling Tool: A Produced Eye Tracking Study

Over 50+ additional graduate students supported from external grant funding received by McNeal

Major Advisee Student Awards (partial list)
NSF Graduate Research Program Awardee (GRFP) (3 total)
NSF National Science Foundation Research Trainee (NRT) (5 total)
SE Climate Adaptation Science Fellow
AU Outstanding Graduate Student
COSAM Outstanding PhD Student
AU Geosciences Advisory Board Outstanding Student Award
AU Geosciences Advisory Board Unsung Hero Award
AU Geosciences Geology Svarda Award
AU Geoscience Advisory Board Travel and Research Award (Multiple)
USGS Water Resources Graduate Research Grant
AU Geosciences Geography Outstanding Student Award
AU Geoscience Graduate Leadership Award
AU COSAM Travel Award (Multiple)
National Association of Geoscience Teachers Outstanding TA Award
3rd Place Atmospheric and Meteorological Sciences (AMS) Poster Presentation Award
1st Place Atmospheric and Meteorological Sciences (AMS) Oral Presentation Award
EER Conference Student Academic Career Prep Award