

DR. KAREN S. MCNEAL (SELL)

Current Title: Assistant Professor

Appointment: 50% Research, 50% Teaching

Physical Address: Department of Geosciences, PO Box 5448, Mississippi State, MS, 39762

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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:

2007-Present	Assistant Professor, Department of Geosciences, Mississippi State University
Summer 2007	Research Associate, Post-Doctoral, Department of Chemistry, Texas A&M University
2006-2007	Graduate Fellow, NSF Graduate K-12 Program, Texas A&M University
Summer 2004-2006	Campus Resource Person, NSF Information Technology in Science Center for Teaching and Learning, Texas A&M University
2003-2006	Graduate Assistant, NSF Information Technology in Science Center for Teaching and Learning, Texas A&M University
2002-03	Research Assistant, Department of Oceanography, Texas A&M University
2000-2002	Scherck Fellow, Department of Oceanography, Texas A&M University
Spring 2000	Laboratory Teaching Assistant, Chemical and Physical

Oceanography, Eckerd College

Summer 1999

Undergraduate NSF REU Student, Eckerd College

Summer 1998

Geochemistry Research Intern, United States Geological Survey (USGS), St. Petersburg, FL

1998-99

Laboratory Teaching Assistant, General Chemistry I and II, Eckerd College

Publications: Refereed journal publications – 18 and 2 in prep; Technical Reports - 2; Editorials - 2; Theses/Dissertations – 3; Abstracts – 36

Peer-Reviewed Publications (underlined names represent students):

McNeal, K.S. and Anderson, R. 2011. *Adaptation and Development of Community Members. In A Learning Ecology Model to Promote Science Education Leadership* (Eds. S. Knight and J. Schielack) Teachers College Press. submitted.

Ezell, J.E., **McNeal, K.S.**, Phipps, S., 2011. A Diurnal and Spatial Assessment of the Water Column and Sediment Biogeochemistry during Seasonal Hypoxic Conditions in Weeks Bay, Alabama. *Estuaries and Coasts*: submitted.

Ledley, T.S., E Bardar, **K. McNeal**, J. Libarkin, K. Ellins, N. Haddad, C Comer, Confronting the Challenges of Teaching Climate Science, *Proceedings of the 6th International Geoscience Education Conference*, Johannesburg, South Africa, September 2010, submitted.

Puckett, M.K., **McNeal, K.S.**, Kirkland, B.L., and Corley, M. 2011. Evidence of biogeochemical stratification and carbonate precipitation in hypersaline microbial mats (Salt Pond, San Salvador, The Bahamas), *Aquatic Geochemistry*: in revision.

Miller, H.R., **McNeal, K.S.**, and Herbert, B.E. 2010. Inquiry in the physical geology classroom: supporting students' conceptual model development. *Journal of Geography in Higher Education* 34: 595-615.

Sherman-Morris, K., Schumacher, A., Drobot, S., and **McNeal, K.** 2010. Pet care providers hurricane preparedness in the Houston and New Orleans metropolitan areas: An investigation of the Ike and Gustav storm events. *International Journal of Mass Emergencies and Disasters* 28: 345-367.

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.

- 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.
- 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.
- McCarthy M.J., **McNeal K.S.**, Gardner W.S., 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.
- 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.
- Sell K.S.** and Morse J.W. 2006. Influences of seasonal hypoxia on iron and sulfur biogeochemistry in coastal sediments. *Aquatic Geochemistry* 12: 179-198.
- 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.
- Morse J.W., DiMarco S.F., Hebert A.B., **Sell K.S.** 2003. A scaling approach to spatial variability in early diagenetic processes. *Hydrobiologia* 494: 25-29.
- 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.
- 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.
- Byrne R.H., Xuewu L., 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.
- 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.

Technical Reports:

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. <http://www.colorado.edu/hazards/research/gr/>

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. <http://www.northerngulf institute.org/research/shortabstract.php?pid=42>

Editorials:

McNeal K.S. 2010. Editorial: The Earth science gap in K-12 Education. *Journal of Geoscience Education* 58: 197.

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: 1-1.

Theses and Dissertations:

McNeal K.S. 2007. Understanding complex earth systems: volatile metabolites as microbial ecosystem proxies and student conceptual model development of coastal eutrophication. Doctoral Dissertation, Texas A&M University. pp. 1-172.

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

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 CO₂ parameters of seawater. Undergraduate Thesis, Eckerd College. pp. 1-50.

Publications in Preparation:

McNeal, K.S., Vasquez, Y., Avandano, C., Moreno, K., and Besinaiz, J. 2011. Analyzing at-risk and bilingual elementary students' classroom behavior and conceptual understanding during inquiry-, technology-, and game-based Earth science activities. *Journal of Geoscience Education*: in prep.

Radencic, S. and **McNeal K.S.** 2011. The use of internet-based GIS resources to increase conceptual understanding of ground water and surface water processes in low-income, middle school students, *Journal of Geoscience Education*: in prep.

Abstracts and Presentations:

Invited Presentations and Seminars:

- 2010 Mississippi State University, Department of Chemistry
- 2009 Michigan State University, Division of Science and Math Education
- 2009 Michigan State University, Department of Geological Sciences
- 2009 Mississippi State University, Department of Soil Science
- 2008 Dauphin Island Sea Lab, Alabama Marine Science Institution
- 2008 Mississippi State University, Department of Biology
- 2007 California State University, Fullerton, Department of Geology
- 2007 Eastern Washington University, Department of Geology
- 2007 Grand Valley State University, Department of Geology
- 2006 Mississippi State University, Department of Geosciences
- 2006 Grinnell College, Departments of Chemistry and Biology
- 2006 Harper College, Department of Geology

National and International Presentations and Abstracts (underlined names represent BGERG students):

- McNeal, K.S.**, Libarkin, J., Ledley, T., and Guthrie, C. 2010. High School Students' Understanding of Change over Time and System Complexity: A Focus on the Cryosphere. In 2010 American Geophysical Union Fall Meeting, Section ED12-0659, San Francisco, December 13-1.
- Radencic, S., **McNeal, K.S.** 2010. Expanding Earth and Space Science through the Initiating New Science Partnerships In Rural Education (INSPIRE). In 2010 American Geophysical Union Fall Meeting, Section ED03-0669, San Francisco, December 13-17.
- Ruhs, C.V. and **McNeal, K.S.** 2010. A Novel Method for Analyzing Microbially Affiliated Volatile Organic Compounds in Soil Environments. In 2010 American Geophysical Union Fall Meeting, Section A53C-0261, San Francisco, December 13-17.
- Donna M. Pierce, **K. S. McNeal**, L. M. Bruce, S. H. Harpole, D. W. Schmitz. 2010. INSPIRE: Initiating New Science Partnerships in Rural Education. Bull. Am. Astron. Soc., 42, 37.09.
- Gulich, L., Libarkin, J.C., **McNeal, K.**, Ledley, T. 2010. High School Student Understanding of the Cryosphere. In 2010 Geological Society of America GSA, Denver, Oct. 31- Nov. 3, Abstract 248-25.
- Ledley, T. Barder, E., Haddad, N., and **McNeal, K.S.** 2010. Confronting the Challenges of Teaching Climate Science. 6th Quadrennial Conference of the International Geoscience Educators Organisation (IGEO), Johannesburg, South Africa, Aug. 30- Sept. 3.

Ezell, J.E. and **McNeal, K.S.** 2010. Biogeochemistry of Weeks Bay during bottom water hypoxic and norm-oxic events. Goldschmidt, Knoxville, TN, June 13-18, In 2010 Goldschmidt 20th Annual Meeting, Section 16B, Abstract A275.

Ruhs, C.V., and **McNeal, K.S.**, 2010. Authentic inquiry into gas chromatography for a chemistry laboratory class. Goldschmidt, Knoxville, TN, June 13-18, In 2010 Goldschmidt 20th Annual Meeting, Section 21B, Abstract A890.

Wright, K., **McNeal, K.S.**, and Han, F.X. 2010. Metabolic diversity and identification of soil microbial communities in mercury contaminated soil of Oak Ridge, TN. Goldschmidt, Knoxville, TN, June 13-18, In 2010 Goldschmidt 20th Annual Meeting, Section 16E, Abstract A1143.

Kirkland, B.L., Thibaudeau, G., **McNeal, K.S.**, Sherman-Morris, K., Baghi-Riding, N., Meek, C., Dickerson, O.E., Jennings, M.M., 2010, Human Resources for the Energy Workforce of the Future: Finding the best employees requires addressing diversity now, American Association of Petroleum Geologists, Annual Meeting Abstracts, v. 19.

Frank, E., **McNeal, K.S.**, Donaldson, J.R., Lawrence A. 2010. The Analysis of a Microbial Mat Profile using three Community Composition Methods: Polymerase Chain Reaction, Community Level Substrate Utilization, and Fatty Acid Methyl Ester. In 2010 Geological Society of America 44th Annual North-Central/South-Central Joint Meeting, Section 33, Branson, MI, April 11-13, Abstract 18-16.

Spry, J., **McNeal, K.S.**, Donaldson, J.R., Lawrence A. 2010. Redox Dynamics and Community Structure in Hypersaline Microbial Mats, San Salvador: Salt Pond, French Pond, Triangle Pond. In 2010 Geological Society of America 44th Annual North-Central/South-Central Joint Meeting, Section 33, Branson, MI, April 11-13, Abstract 18-17.

Playle, E., **McNeal, K.S.**, Donaldson, J.R., Lawrence A. 2010. The Effects of Bioturbation and Disruption on the Reconstruction and Reconstitution of the Photosynthetic Cyanobacterial Layer of Algal Mat Communities. In 2010 Geological Society of America North-Central/South-Central 44th Annual Joint Meeting, Section 33, Branson, MI, April 11-13, Abstract 18-15.

McNeal, K.S., Clary, R., Sherman-Morris, K., Kirkland, B., Gilham, D., and Moe, A. 2009. Mississippi State University's Geoscience Education and Geocognition Research Program in the Department of Geosciences. In 2009 American Geophysical Union Fall Meeting, Section ED44A, San Francisco, December 14-18, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract ED12A-06.

McNeal, K.S., Buell, R., Eiland, L. 2009. Training Teachers to Use Technology and Inquiry-based Learning Practices in the Geosciences through an Industry

University Partnership Paper Number. In 2009 American Geophysical Union Fall Meeting, Section ED44A, San Francisco, December 14-18, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract ED44A-04.

Ezell J.E. and **McNeal K.S.** 2009. A diurnal study of the sediment biogeochemistry of Weeks Bay during bottom water hypoxic and norm-oxic events. In 2009 Geological Society of America GSA, Section 116, Portland, Oct. 18-21, *Conference abstracts with programs*, 41(7): pp. 195.

Corley, M.E., Folk, R.L., Kirkland, B.L., Lynch, F.L., **McNeal, K.S.**, Puckett, M.K., 2009. A New Look at Familiar Environmental: Early Carbonate Precipitates and Biofilms in Hot Springs, Salt Ponds, and Reefs, American Association of Petroleum Geologists, Denver, June 7-10.

Ledley, T., Libarkin, J., **McNeal, K.**, Ellins, K., Barstow, E., and Comer, C. 2008. AGU. Facilitating Students Understanding Change in the Earth System on Multiple Time Scales. In 2008 American Geophysical Union Fall Meeting, Section ED21B, San Francisco, December 10-14, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract ED21B-0627.

Herbert B.E. and **McNeal, K.S.** 2008. Developing Student Understanding of Complex Earth Systems. A Critical Review. In 2008 Joint Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM, Section T175, Houston, Oct. 5-9, *Conference abstracts with programs*, pp. 192.

Puckett, K., **McNeal, K.S.**, and Kirkland, B.L. 2008. A Biogeochemical Description of Microbial Biofilms from Fowl Cay Reef and Microbial Mats at Salt Pond, the Bahamas. In 2008 Joint Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM, Section T273, Houston, Oct. 5-9, *Conference abstracts with programs*, pp. 238.

Radencic, S. and **McNeal, K.S.** 2008. The Use of Internet-Based GIS Resources to Increase Conceptual Understanding of Hydrologic Systems In Low-Income, Middle School Students. In 2008 Joint Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM, Section T175, Houston, Oct. 5-9, *Conference abstracts with programs*, pp. 192.

McNeal, K.S., Brown, M., Rodgers, J., and Sherman-Morris, K. 2008. The Use of Technologies to Foster On-Line Learning Communities in the Geosciences. In

2008 Geological Society of America Fall Meeting Southeastern Section Spring Meeting, Section T10, Charlotte, April 10-12, *Conference abstracts with programs 40(4): pp. 45.*

McNeal, K.S., Vasquez, Y., Alvandano, C., Moreno, C., Besnaiz, J. 2007. At-Risk and Bilingual Fifth-Grade Students' On-Task Behavior and Conceptual Understanding in Earth Science-Related Topics during Inquiry-, Technology-, and Game-Based Activities. In 2007 American Geophysical Union Fall Meeting, Section ED23B, San Francisco, December 10-14, *Eos Trans. AGU, 87(53)*, Fall Meet. Suppl., Abstract ED23B-1293.

McNeal, K.S. and Herbert, B.H. 2007. Volatile Organic Metabolites as Indicators of Soil Microbial Community Structure and Activity. In 2007 Soil Science Society of America, American Society of Agronomy, Crop Science Society of America Annual Meeting, Section 188, New Orleans, November 4-8, *Annual meetings abstracts [CD-ROM] ASA-CSSA-SSSA.*

Herbert, B.E. and **McNeal, K.S.** 2006. Following The Money: Characterizing the Dynamics of Microbial Ecosystems and Labile Organic Matter in Grassland Soils. In 2006 American Geophysical Union Fall Meeting, Section B-09, San Francisco, December 11-15, *Eos Trans. AGU, 87(52)*, Fall Meet. Suppl., Abstract B52A-02.

McNeal K.S., and Herbert B.E. 2006. Volatile Organic Carbon Metabolites as Indicators of Soil Microbial Community Shift in Microcosm Studies. In 2006 Geological Society of America Fall Meeting, Section T51, Philadelphia, November 22-25, *Conference abstracts with programs 38(7): pp.29.*

Miller H.R., **McNeal K.S.** and Herbert B.H. 2006. Transfer of Geoscience Field Research at Laguna Atascosa National Wildlife Refuge through Authentic Inquiry in the Science Classroom. In 2006 Geological Society of America Fall Meeting, Section T51, Philadelphia, November 22-25, *Conference abstracts with programs 38(7): pp. 361.*

McNeal K.S., Stuessy, C.S, Simanek E., Herbert B.E. 2006. The GK12 Experience in the Fifth Grade Classroom with At-Risk Students: The Benefits and Challenges. In 2006 Geological Society of America Fall Meeting, Section T51, Philadelphia, November 22-25, *Conference abstracts with programs 38(7): pp. 158.*

Sell K.S. 2006. How do ITS Participants Adapt Their Authentic Science Experiences to Their Planned Classroom Instructional Frameworks? In 2006 American Education Research Association Spring Meeting, Section 26.085, San Francisco, April 8-12, *Annual meeting program and supplement, pp. 130.*

Sell K.S., Peschel J., Simmons M., and Herbert B. 2005. IT-Supported Authentic

Inquiry in Undergraduate Science and Engineering Education. In 2005 American Geophysical Union Fall Meeting, Section ED-53A, San Francisco, December 5-9, *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract ED53A-0334.

Sell K.S., Miller H.R., Herbert B.E. 2004. The use of Multiple Representations to Enhance Student Mental Model Development of a Complex Earth System in an Introductory Geoscience Course. In 2004 American Geophysical Union Fall Meeting, Section ED-41A, San Francisco, December 14-17, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract ED41A-0248.

Miller H.R., **Sell K.S.**, Hebert B.E. 2004. Influences of Learning Environment Characteristics on Student Learning During Authentic Science Inquiry in an Introductory Physical Geology Course. In 2004 American Geophysical Union Fall Meeting, Section ED-41A, San Francisco, December 14-17, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract ED41A-0249.

Sell K.S., B.E. Herbert, J. Schielack, and C. Stuessy 2004. Use of Physical Models and Information Technology to Explore Student Difficulties in Developing Rich Mental Models of Complex Earth & Environmental Systems. In 2004 Geological Society of America Fall Meeting, Section T133, Denver, November 7-10, *Conference abstracts with programs 36(5): pp. 555.*

Sell K.S., B.E. Herbert, and J. Schielack. 2004. Student Cognitive Difficulties and Mental Model Development of Complex Earth and Environmental Systems. In 2004 American Geophysical Union Spring Meeting, Section ED-31A, Montreal, Canada, May 17-21, *Eos Trans. AGU*, 85(17), Jt. Assem. Suppl., Abstract ED31A-02.

Sell K.S. and Morse J.W. 2003. Temporal Influences of Seasonal Hypoxia on Sediment Biogeochemistry, In 2003 Geological Society of America Fall meeting, Section 19, Seattle, November 2-5, *Conference abstracts with programs 35(6): pp.83.*

Sell K.S. and Morse J.W. 2003. Temporal Influences of Seasonal Hypoxia on Sediment Biogeochemistry, In 2003 Oceanography International and The Oceanography Society Summer Meeting, New Orleans, June 4-6, *Oceanography 16(2): pp.60.*

Regional Presentations:

Diaz-Ramirez, J., McAnally, W., Martin, J.L., **McNeal, K.**, Ezell, J.E., Sharp, J., and Phipps, S. 2010. Assessment of Weeks Bay and Its Watershed, Alabama, 2010 Alabama Water Resources Conference, Auburn University, Sept. 9-10.

B. L. Kirkland, F. M. Corely, K. Puckett, **K.S. McNeal**, L. Lynch, R. L. Folk, 2009. Nano-scale Nessies and other Serendipitous Observations (about Calcium

Carbonate Precipitation and Organic Matter). College of Arts and Sciences Research Showcase, Mississippi State University, Oct. 21-22.

B.L. Kirkland, F. L. Lynch, R. L. Folk, A.M. Lawrence, M. Corely, K. Puckett, and **K.S. McNeal**. 2008. Nannobacteria, Organic Matter, and Precipitation in Hot Springs, Reefs, and Tidal Flats: serendipitous science and real implications. Bio Inspired Design Conference, Mississippi State University, August 19-22.

Metoyer S. and **Sell K.S.** 2006. Authentic Science Inquiry Lessons; Tested, Approved, and "Good to Go". In 2006 Conference for Advancement of Science Teachers Fall Meeting, November 9-11.

McCarthy, M.J., Gardner W.S., **Sell K.S.** and Morse J.W. 2006. Bottom-water Hypoxia Effects on Sediment-Water Interface Nitrogen Transformations Corpus Christi Bay, Texas, USA. In 2006 Texas Bays and Estuaries Meeting, Port Aransas.

Sell K.S. and Metoyer S. 2005. Influencing Science Teaching Practices Through Authentic Scientific Research Learning: The Water Environment Team. In 2005 School, Science, and Math Association Meeting, Fort Worth, November 10-12.

Sell K.S. and Morse J.W. 2003 Temporal Influences of Seasonal Hypoxia on Sediment Biogeochemistry, Gulf Estuarine Research Symposium, Port Aransas, April 18.

Beazley M. and **Sell K.S.** 2002. Biogeochemistry of the Deep Gulf of Mexico, The Sixth Annual Symposium of the Geochemistry of the Earth's Surface, Honolulu, University of Hawaii, June 4-6.

Funding Awards and Applications:

Proposals in Review (3):

2010 *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*, 08/2010-12/2010, Co-PI, Northern Gulf Institute (NGI), National Oceanic and Atmospheric Administration (NOAA), Mississippi State University (\$200,000), *Submitted*.

2010 *Exploratory Research - Using volatile organic compounds to separate heterotrophic and autotrophic forest soil respiration*, Co-PI, 01/01/11-12/31/2012, US Department of Energy, Terrestrial Carbon Cycle Research Program, (\$149,968), *Submitted*.

2010 New, GK-12: Graduate Research Experiences in Environmental Sciences (GREENS), Co-PI, National Science Foundation, Graduate K-12 Program,

Solicitation 09-556, 01/01/11-12/31/2016, Solicitation 09-556, Mississippi State University (\$2,907,517), *Submitted*.

Funded Projects (18): Total Funding to Date \$5,689,676

- 2011 *Improving TMDL and Waste Load Allocation Permit Limits by Determination and Application of New Sediment Diagenesis Input Parameters in Current Water Quality Models*, PI, 01/11/11-12/31/12, Environmental Protection Agency (EPA), (\$200,000), *Funded*.
- 2010 *Deep Water Horizon Oil Spill Research: Phase I*, 08/2010-12/2010, Northern Gulf Institute (NGI), National Oceanic and Atmospheric Administration (NOAA), Mississippi State University (\$250,000), Sub-contract (\$10,000), *Funded*.
- 2010 *A Regional Network Partnership for Climate Science Literacy in the Southeastern United States [CLiPSE]*, PI, 01/01/11-12/31/12, National Science Foundation, Climate Change Education Program, (\$998,998), *Funded*.
- 2010 *DRK-12: Confronting the Challenges of Climate Literacy*, Co-PI, 09/2010 – 08/2014, National Science Foundation, Discovery Research K-12 Program, Solicitation 08-502, TERC (\$2.5M), MSU Collaborative Institute (\$636,948), *Funded*.
- 2010 *GK12: Initiating New Science Partnerships in Rural Education (INSPIRE)*, PI, National Science Foundation (NSF), Graduate K-12 Program, 06/2010-05/2015, Solicitation 09-556, Mississippi State University (\$2,907,517), *Funded*.
- 2009 *Bioavailability Studies of Heavy Metals and Radionuclide Contaminants in Ecosystems of Selected DOE Sites and Application of Phytoremediation*, 02/01/09-01/31/10, US Department of Energy, Mississippi State University (\$270,004), Sub-contract (\$10,000), *Funded*.
- 2009 *Fueling the Geosciences educational pipeline: The development of a K-12 network to support minority participation*, Co-PI, 12/31/09-12/30/2010, National Science Foundation (NSF), Solicitation 08-605, Mississippi State University (\$39,828), *Funded*.
- 2009 *The Sediment Biogeochemistry of Weeks Bay during Bottom Water Hypoxic and Norm-oxic Events*, PI, 06/01/2009-05/31/2010, National Oceanic and Atmospheric Administration (NOAA), Project Number NA09NOS4200026, Mississippi State University (\$28,572), *Funded*.
- 2009 *Project SMARTER: Science and Mathematics Advancement and Reform utilizing Technology and Enhanced Resources*, Co-PI, 12/2008-12/2009 Appalachian Regional Commission (ARC), Mississippi State University (\$259,613), *Funded*.

- 2009 *Diversity Enhancement of the Geosciences through Research Experiences (DEGReE): Mentoring African Americans through Research*, Co-PI, National Science Foundation (NSF), Solicitation 08-605, 09/01/09-08/30/11, Mississippi State University (\$196,090), *Funded*.
- 2009 *Earth System Science: A Key to Climate Literacy*, Co-PI, National Aeronautics and Space Administration (NASA), Solicitation NNH08ZDA001N, 09/01/09-08/31/12, TERC (\$280,000), Sub-contract (\$37,000), *Funded*.
- 2009 *The University of Akron and Mississippi University Undergraduate Research Partnership*, PI, 01/01/09-12/31/09, Mississippi State University, Quick Grant Program (\$1,200), *Funded*.
- 2009 *Modeling Mobile Bay Sediments and Pollutants with New Technologies*, 09/2008-09/2009, Year 3 Renewal, Northern Gulf Institute (NGI), National Oceanic and Atmospheric Administration (NOAA), Mississippi State University (\$200,000), Sub-contract (\$16,415), *Funded*.
- 2009 *REU Site: Field Research on Bahamian Lakes-Exploring Records of Anthropogenic and Climate Change*, 01/01/09-12/31/12, National Science Foundation (NSF) Solicitation 07-569, Akron University (\$482,712), Faculty Mentor, Consultant (\$10,000), *Funded*.
- 2009 *Sediment and Mercury Modeling*, Co-PI, 01/01/2010-12/31/2012, Northern Gulf Institute (NGI), National Oceanic and Atmospheric Administration (NOAA), Mississippi State University (\$314,595), *Funded*.
- 2008 *In-situ Measurements of Microbial Volatile Organic Compound Production in Mississippi Pine Forest Soils*, PI, Research Initiation Program, 01/2008-12/2009, Mississippi State University (\$10,000), *Funded*.
- 2008 *Facilitating Student Understanding of Change in the Earth System on Multiple Time Scales*, National Science Foundation (NSF), Geoscience Education Division Solicitation 05-609, 09/2008-08/2010, TERC (\$150,000), Consultant (\$4,000), *Funded*.
- 2008 *Modeling Mobile Bay Sediments and Pollutants with New Technologies*, Year 2 Renewal, Northern Gulf Institute (NGI), National Oceanic and Atmospheric Administration (NOAA), 09/2007-09/2008, Mississippi State University (\$250,000), Sub-contract (\$8,900), *Funded*.

Unfunded Proposals (12)

- 2010 FIELD: *Field Investigations for Earth sciences Learning Development, track 2 limited submission*. Co-PI, 09/2010 –08/2013, National Science Foundation, Geoscience Education Program, (\$400,000), *Not Funded*.
- 2009 *A Novel Quantitative Risk Assessment Model for Geologic CO₂ Storage*, Senior Scientist, Department of Energy, 01/2010-12/31/2013, Solicitation DE-PS26-09NT0001263, Mississippi State University (\$1,598,373), *Not Funded*.
- 2009 *Physical disturbance affects of redox-transition particles in seasonal hypoxic zones*, Co-PI, 01/01/2010-12/31/2012, National Science Foundation (NSF), Ocean Sciences -Chemical Oceanography Program, Solicitation PD 98-1670, University of Texas (\$600,000), MSU Collaborative Institute (\$210,000), *Not Funded*.
- 2009 *Pilot Studies to Support Development of Nutrient Load Reduction Strategies*, Co-PI, 01/01/2010-12/31/2012, Northern Gulf Institute (NGI), National Oceanic and Atmospheric Administration (NOAA), Mississippi State University (\$700,000), Sub-contract (\$117,422), *Not Funded*.
- 2009 *What is the Connection? My Watershed, Our Ocean*, Co-PI, 10/2009-09/2011, National Oceanic and Atmospheric Administration (NOAA) Bay Watershed Education Program, Solicitation SEC-OED-2009-2001648, Mississippi State University (\$200,000), *Not Funded*.
- 2009 *DRK-12: Confronting the Challenges of Climate Literacy*, Co-PI, 09/2009 – 09/2013, National Science Foundation, Discovery Research K-12 Program, Solicitation 08-502, TERC (\$2.2M), MSU Collaborative Institute (\$575,000), *Not Funded*.
- 2008 *Generation of Chlorophyll-a Time-Series for Water Quality Modeling of Nutrients in Mobile Bay*, Co-PI, National Aeronautics and Space Administration (NASA), ROSES A28, Solicitation NNH08ZDA001N-PO, 01/01/09-12/31/10, Mississippi State University (\$366,985), *Not Funded*.
- 2008 *GK12: Initiating New Science Partnerships in Rural Education (INSPIRE)*, PI, National Science Foundation (NSF), Graduate K-12 Program, 01/2009-12/2013, Solicitation 08-556 Mississippi State University (\$2,798,805), *Not Funded*.
- 2008 *Analysis of the Combined Impacts of Climate Change on the Mobile Bay Watershed and Mobile Bay, Alabama*, Co-PI, 01/2009-12/2011, Environmental Protection Agency, Science to Achieve Results, Solicitation EPA-G2008-STAR, Mississippi State University (\$790,584), *Not Funded*.
- 2008 *DRK-12: Confronting the Challenges of Climate Literacy*, Co-PI, 09/2008 – 09/2012, National Science Foundation, Discovery Research K-12 Program, Solicitation 08-502 (\$2.5M), *Not Funded*.

2008 *Assessing Seasonal Hypoxic Conditions in a Shallow Gulf Coast Estuary, (Week's Bay, Alabama, USA)*, PI, Gulf Coast Association of Geological Societies (\$10,000), *Not Funded*.

2007 *Hurricane Outreach and Public Education (HOPE) Project*, Co-PI, 08/2008-08/2010, National Science Foundation, Geoscience Education Division, Solicitation 05-609, Mississippi State University (\$145,000), *Not Funded*.

Courses Taught:

Principles of Pedagogical Design with STEM Research Products (GG 6990) – Geoscience Graduate Degree Program, Mississippi State University

Geoscience Education: Theory, Research, and Practice (GG 8990) - Geoscience Graduate Degree Program, Mississippi State University

Biogeochemical Cycles and Processes (GG 8990) – Geoscience Graduate Degree Program, Mississippi State University

Environmental Geosciences (GG 8233) - Teachers in Geoscience Masters Degree Program, Distance Learning Program, Mississippi State University

Ocean Science (GG 8203) - Teachers in Geoscience Masters Degree Program, Distance Learning Program, Mississippi State University

Field Research Methods (GG 8400) - Teachers in Geoscience Masters Degree Program, Distance Learning Program, Mississippi State University

Geology I: Process and Products (GG 8113) - Teachers in Geoscience Masters Degree Program, Distance Learning Program, Mississippi State University

Resources and the Environment (GG 4033/6033) – Geoscience Undergraduate/ Graduate Degree Program, Mississippi State University

Professional Affiliations:

2010-present	The Geochemical Society
2008-2010	Association of Environmental & Engineering Geologists
2008-present	Sigma Gamma Epsilon
2007-present	Soil Science Society of America
2006-present	National Association of Geoscience Teachers
2005-present	American Society of Limnology & Oceanography
2004-present	American Geophysical Union
2003-present	Geological Society of America

Honors and Awards (Graduate and Post-Graduate Only):

- 2009-present Faculty Fellow, GeoSystems Institute, Mississippi State University
- 2007 Co-author of the 2nd place poster award in the ““Humanities and Social Sciences” and receipt of ribbon award for the interdisciplinary research and education categories, Student Research Week, Texas A&M University.
- 2006 Awarded the \$2000 Oswald graduate scholarship from the Department of Geology & Geophysics, Texas A&M University
- 2006 Co-author of the \$100 2nd place award poster award in the “Humanities and Social Sciences” category, Student Research Week, Texas A&M University
- 2005 Awarded the \$4000 Ronald McAdams graduate scholarship from the Department of Geology & Geophysics, Texas A&M University
- 2005 Awarded the \$300 paper award in the “Cognitive and Instructional Technologies Laboratory” category, 10th Annual Educational Research Exchange, Texas A&M University, Jan. 28
- 2004 Awarded the \$6000 Chevron-Texaco graduate scholarship for “Outstanding Current Geology Student” from the Department of Geology & Geophysics, Texas A&M University
- 2004 Awarded the \$300 Research Paper Award in the “Cognitive and Instructional Technologies Laboratory” category, 9th Annual Educational Research Exchange, Texas A&M University, Jan. 30
- 2004 Awarded a \$1000 research scholarship from the Texas Water Resource Institute
- 2003 “Honorable Mention” student research poster, The Ocean Sciences (TOS) meeting, New Orleans
- 2000-02 Awarded Texas A&M University Scherck Fellowship in Oceanography (\$15,500/yr)

Professional Service:

- 2010 Manuscript Reviewer, *Biogeosciences*
- 2010-present Editor for Research, *Journal of Geoscience Education*

2010	Proposal Panel Review Member, NOAA, Silver Spring, MD
2009	Manuscript Reviewer, Geological Society of America Special Paper, <i>Qualitative Inquiry in Geoscience Education</i> , Ed. A. Stokes
2009-2010	Associate Editor, <i>Journal of Geoscience Education</i>
2009-present	Committee Member, Research Committee, Department of Geosciences, Mississippi State University
2009- present	Committee Member, PhD Program Committee, Department of Geosciences, Mississippi State University
2009	Manuscript Reviewer, <i>Bioresources Technology</i>
2008, 2009	Research Initiative Program Proposal Reviewer, Mississippi State University
2008	Manuscript Reviewer, <i>Soil Science Society of America</i>
2008-present	Geological Society of America, Campus Representative, Mississippi State University
2008	Co-Convener, AEG Teacher Training Workshop, New Orleans
2008	Manuscript Reviewer, <i>Journal of Geoscience Education</i>
2008	Co-Convener, Session T175, "Teaching and Learning about Complex Earth Systems: Effective Strategies in Undergraduate Classrooms and Teacher Development Programs", Geological Society of America Joint Meeting, Oct 5-9, Houston, TX
2007-present	Co-sponsor Geosciences Club, Mississippi State University
2007-present	Co-sponsor MSU Upsilon Chapter, Sigma Gamma Epsilon
2005-2007	Manuscript Reviewer, <i>Limnology & Oceanography</i>
2004	Guest Manuscript Reviewer, <i>Journal of Geography in Higher Education</i>

Field Research Excursions:

2008-2009 Salt Pond Microbial Mats, San Salvador, Bahamas

2008, 2010 Weeks Bay, Alabama, National Estuarine Research Reserve

2004-2006 Dissertation Research, Laguna Atascosa National Wildlife Refuge, TX

2001-2003 R/V Gyre, Deep Gulf of Mexico Benthic Ecology Program, Texas A&M University

2003 R/V Walton Smith, The Bahamas Whiting Exploration, University of Miami

2002 Thesis Research, Corpus Christi Bay, TX

Certificates:

2008 Perkin Elmer Gas Chromatography Mass Spectrometry Operator Training Course

2004 Information Technology in Science Center for Teaching & Learning, two-year program certification

2002-present Scientific diving, American Academy of Underwater Scientists certified

2002-present Advanced open water SCUBA, PADI certified

1997-present Open water SCUBA, PADI certified

Collaborators:

Dr. Bruce Herbert, Texas A&M University, College Station (Dissertation Advisor)

Dr. John Morse, Texas A&M University, College Station (Thesis Advisor)

Dr. Eric Simanek, Texas A&M University, College Station (Post-Doctoral Advisor)

Dr. Wayne Gardner, University of Texas, Port Aransas

Dr. Lori Bruce, Mississippi State University

Dr. Brenda Kirkland, Mississippi State University

Dr. Tamara Ledley, TERC

Dr. Heather Miller, Grand Valley State University

Dr. James Martin, Mississippi State University

Dr. William McAnally, Mississippi State University

Dr. Julie Libarkin, Michigan State University

Dr. Deepak Mishra, Mississippi State University

Dr. Donna Pierce, Mississippi State University

Dr. David Rutherford, University of Mississippi

Dr. Darrel Schmitz, Mississippi State University

Dr. Kathy Sherman-Morris, Mississippi State University

Dr. Becky Smith, Mississippi State University

Students Advised:

Master Degree Students-Graduated Students

Ms. Mary Keith Puckett (Graduated, Fall 2009, current Geologist, Nexen, Inc.)*

Thesis: Biogeochemistry of Microbial Mats from a Hypersaline Pond and Reef Biofilm from a Modern Coral Reef, The Bahamas

Ms. Sarah Radencic (Graduated, August 2009, current MSU GK12 Program Coordinator)*

Mr. John Eric Ezell (Graduated, Spring 2010, current PhD Student, University of Florida)*

Thesis: The Sediment and Water Column Biogeochemistry of Weeks Bay During Bottom Water Hypoxic and Norm-oxic Events

Ms. Charlotte Buehler (Graduated, Spring 2010, current MSU PhD Student)**

Master Degree Students-Current Students

Mr. Chris Ruhs (Current)*

Ms. Kendra Wright (Current)*

Mr. Henry Stauffenburg (Current)*

Mr. Andrew Birmingham (Current)**

Doctoral Degree Students-Current Students

Mr. Shankar Ganapathi Shanmugam (Current)**

Ms. Charlotte Buehler (Co-Chair, Current)*

Ms. Bobbie Richardson (Co-Chair, Current)*

Mr. Sachi Mishra (Current)**

Undergraduate Advisees

Ms. Maria Cade (Current)*

Mr. Assonman Degny (Current)*

Mr. Jason Leist (Current)*

Mr. Sam Lamar (Current)*

Mr. Larry Flippo (Current)*

Mr Mark McDaniel (Current)*

Mr. Samuel Lamar(Current)*

TIG Distance Learning Program Graduate Students

Ms. Tracie Schroeder**

Ms. Jennifer Haydon**

Mr. Garrett Bostwick**

Mr. Robert Sidebotham**

Mr. Curt Taylor**

Mr. Eric Stauffer**

Ms. Shannon Wright-Sahabi**

Ms. Janette Stewart**

Ms. Cheryl Utecht**

Ms. Kimberly Drake**

Ms. Stephanie Linders**

Ms. Julian Carroll**

Ms. Megan Cordes**

Mr. Christopher Etherington**

Ms. Katia Etherington**

Mr. Matthew Farrer**

Mr. David Moyer**

Mr. Matthew Olsen**

Mr. Trevor Oystriick**

Mr. Jason Plawa**

Mr. Chris Benson**

Mr. Jason Charpinsky**

Ms. Audra Degg**

Ms. Carolyn Ford**

Ms. Christy Pratt**

Ms. Robin Reinarts**

Ms. Leigh Remack**

Ms. Patricia Russell**

Ms. John Urgese**

Mr. Bryan Valko**

Ms. Michelle Amin**

Ms. Jessica Jones**

Ms. Jennifer Kennedy**
Mr. Michael Lamonica**
Mr. Daniel Miller**

Mr. Thomas Savage**
Mr. Mark Van Zweden**

*=major advisor

**=served as committee member

Lab Technicians

Ms. Kendra Wright

Ms. Calista Guthrie

Mr. Jason Leist

Student Workers

Master Degree Students

Ms. Maggie Corley

Ms. Saranee Dutta

REU Students Advised

Ms. Emily Frank (University of Akron)

Mr. Evan Playle (Eckerd College)

Mr. Jake Sprey (University of Alabama)

Undergraduate Students

Ms. Maria Cade

Full-time Employees

Ms. Sarah Radencic (INSPIRE Project Coordinator)

Mr. Julian Carroll (CLIPSE Project Coordinator)

Mr. Curry Templeton (BGERG Research Associate)