

TRACY MICHELLE QUAN
Associate Professor
Boone Pickens School of Geology
Oklahoma State University
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EDUCATION

- Ph.D. Marine Geochemistry, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program in Oceanography (2005)
Thesis title: Chemical Characterization of Dissolved Organic Matter (DOM) in Seawater: Structure, Cycling, and the Role of Biology, 211p.
- B.S. Chemistry with a Specialization in Earth Science, University of California, San Diego-Revelle College (1999)

RESEARCH EXPERIENCE

Associate Professor

Boone Pickens School of Geology, Oklahoma State University (June 2015-present)

Assistant Professor

Boone Pickens School of Geology, Oklahoma State University (September 2009 to May 2015)

Adjunct Professor

Department of Chemistry, Oklahoma State University (January 2013 to present)

Postdoctoral Associate

Institute of Marine and Coastal Sciences, Rutgers University (July 2005 to August 2009) – *using carbon and nitrogen isotopes and biogeochemistry to evaluate environmental conditions of aquatic environments, past and present.*

Postdoctoral Researcher

Woods Hole Oceanographic Institution (February 2005 to June 2005) – *characterization of oceanic dissolved organic matter (DOM) and preparation of manuscripts for publication.*

Graduate Research Assistant

Woods Hole Oceanographic Institution (August 1999 to February 2005) – *characterization of oceanic dissolved organic matter (DOM) using chemical, spectroscopic and isotopic measurement techniques.*

RESEARCH INTERESTS

Organic biogeochemistry; experimental geochemistry; petroleum geochemistry; measurement of stable isotopes and biomarkers in oceanic and sedimentary organic matter; using N isotopes as a paleo-redox proxy; biogeochemical cycles for C and N; compound specific radiocarbon analyses.

ADVISORS

Paul G. Falkowski (Postdoctoral – IMCS, Rutgers University)
Daniel J. Repeta (Ph.D – Woods Hole Oceanographic Institution)

GRANT PROPOSALS

Submitted:

QUAN, T. M. Characterization of organic compounds in produced water from Black Warrior Basin coalbed methane reservoir, Alabama, USA; \$15,000 over 1 year. Submitted to President's Fellows Faculty Research Award, OSU, 10/17/16.

QUAN, T. M., IVEY, T., and PUCKETTE, J. O. GP-EXTRA: Improving diversity, recruiting, and retention via research experiences and small-group cooperative learning. Total request: \$339,337 over 3 years. Submitted to NSF IUSE GEOPATHS, 10/11/16.

Funded:

- QUAN, T. M.**, Investigating the nitrogen cycle and paleoenvironmental conditions during Cretaceous Ocean Anoxic Events. Total request: \$14,871 over 1 year. Application to sail as Inorganic Geochemist, IODP Expedition 369 accepted 1/3/17; funding pending final budget submission in the spring.
- OSU A&S FY16 Spring Travel Program Award: **QUAN, T. M.** Invited Presentation at the 2016 Geological Society of America South-Central Section Meeting. Duration of award 1/1/16-6/30/16. Total funding: \$1000; Quan sole PI.
- OSU A&S FY16 Fall Travel Program Award: **QUAN, T. M.** Preliminary analysis of produced water from coalbed methane reservoirs in the Black Warrior Basin, Alabama, USA. Duration of award 7/1/15-12/31/15. Total funding: \$1000; Quan sole PI.
- Newfield Exploration Company: BOARDMAN, D., PASHIN, J., ATEKWANA, E., PUCKETTE, J., **QUAN, T. M.**, and GRAMMER, M. High resolution stratigraphy, paleoceanography, and conodont biostratigraphy of the Mississippian Strata and Devonian Woodford Shale in the Newfield Central Oklahoma coring project. Duration of award 2014-2016. Total funding: \$546,894.00; Quan share: \$81,651.00.
- NSF OCE-0961914: **QUAN, T. M.** Nitrogen cycle changes across the Cretaceous-Paleogene mass extinction event. Duration of award 7/1/10-6/30/14. Total funding \$343,893.00; Quan sole PI.

Not funded:

- QUAN, T. M.** Characterization of organic compounds in produced water from Black Warrior Basin coalbed methane reservoir, Alabama, USA; \$15,000 over 1 year. Submitted to President's Fellows Faculty Research Award, OSU, 11/1/15.
- DAVIS, K. M., IVEY, T., and UTLEY, J. G. STEM, Inc: An inclusive approach to broadening participation in a year-long informal STEM experience for middle level students; \$299,296 over 2 years. Submitted to NSF DRL-AISL program 11/14/14. S. Marks, J. Puckette, and **T. M. Quan** serving as Senior Personnel.
- QUAN, T. M.** CAREER: Deciphering the evolution of an oxygen-deficient basin: a multi-proxy approach to reconstructing paleoenvironmental changes; \$728,114.00 over 5 years. Submitted to NSF OCE program, 7/22/14.
- QUAN, T. M.**, and PASHIN, J. C. NMR and isotopic analysis of produced water from coalbed methane reservoirs in the Black Warrior Basin, Alabama, USA. Total request: \$110,000.00 over 2 years. Submitted to ACS Petroleum Research Fund, New Directions program, 3/14/14.
- ATEKWANA, E. A., LATIMER, J., OBOH-IKUENOBE, F., **QUAN, T. M.**, and STONE, J. Collaborative Research: Climatic vs. tectonic forcing on the formation and demise of Pleistocene mega-paleolakes in the Middle Kalahari Desert of northern Botswana. Total request: \$601,736.00 over 3 years, OSU portion: \$212,246.00; Quan share: \$14,588.00. Submitted to NSF EAR Sedimentary Geology and Paleobiology, 1/16/14.
- QUAN, T. M.** Investigating nitrogen cycle and paleoenvironmental changes across the K-Pg and OAE 2 using nitrogen isotopes; \$14,988 over 1 year. Submitted as part of application to sail on IODP Expedition 351 as an organic geochemist, 10/10/13.
- QUAN, T. M.** CAREER: Deciphering anoxia in the Black Sea: a multi-proxy approach to reconstructing paleoenvironmental changes; \$709,039 over 5 years. Submitted to NSF OCE program, 7/24/13
- QUAN, T. M.** Utilizing stable nitrogen isotopes to characterize organic matter evolution in the Woodford Shale, Anadarko Basin; \$99,979 over 2 years. Submitted to the American Chemical Society Petroleum Research Fund Doctoral New Investigator program, 11/4/11, not funded.
- QUAN, T. M.** and WRIGHT, J. D. Collaborative Research: Evaluating the mid-Pleistocene climatic revolution using a multi-proxy record from the Black Sea; total: \$551,031 over 3 years,

OSU: \$470,275 over 3 years. Submitted to NSF OCE Paleo Perspectives on Climate Change, 10/18/11, not funded.

QUAN, T. M. Utilizing stable nitrogen isotopes to characterize organic matter evolution in the Woodford Shale, Anadarko Basin; \$99,981 over 2 years. Submitted to the American Chemical Society Petroleum Research Fund Doctoral New Investigator program, 11/10, not funded.

QUAN, T. M. Isolation of a bulk porphyrin fraction from sediment samples for nitrogen isotope measurement. Submitted to OSU School of Arts and Sciences ASR+1 program 1/10, not funded.

QUAN, T. M. Nitrogen isotope analysis of the Woodford Basin. Submitted to AAPG/OSU Consortium 12/09, not funded; resubmitted 5/10, not funded.

QUAN, T. M. and **FALKOWSKI, P. G.** Do Sedimentary Organic Nitrogen Isotopic Values Reflect Oceanic Redox State?: Case studies of the Black and Mediterranean Seas. Submitted to NSF GEO OCE, 8/08, not funded.

FALKOWSKI, P. G. and **QUAN, T. M.** Changes in Sedimentary Nitrogen Isotopes through Redox Cycles in the Black Sea. Submitted to NSF GEO OCE, 8/07; not funded.

CRUISE PARTICIPATION

R/V *Melville*, North Central Pacific: lead day shift for HMWDOM ultrafiltration and collection (June, 2002)

R/V *Pelican*, Mississippi River and the Gulf of Mexico: collected several CDOM samples and did HMWDOM ultrafiltration and collection (April, 2001)

R/V *Knorr*, Sargasso Sea: aided in HMWDOM ultrafiltration and collection (June, 2000)

TEACHING EXPERIENCE (* indicates new course)

Oklahoma State University

Practical Mineralogy (GEOL 2254), Instructor

Fall 2009: 39 undergraduate students; 2 lab sections

Fall 2010: 40 undergraduate students; 2 lab sections

Fall 2011: 40 undergraduate students; 2 lab sections

Fall 2012: 47 undergraduate students; 3 lab sections; 1 honors student

Fall 2013: 49 undergraduate students; 3 lab sections

Fall 2014: 35 undergraduate students; 2 lab sections

Spring 2015: 28 undergraduate students; 2 lab sections; 1 honors student

Fall 2015: 38 undergraduate students; 2 lab sections

Spring 2016: 28 undergraduate students; 2 lab sections

Fall 2016: 25 undergraduate students; 2 lab sections

Introduction to Physical Geology (GEOL 1114), Instructor

Spring 2011: 198 undergraduate students; 9 lab sections

Spring 2012: 198 undergraduate students, 9 lab sections

Spring 2013: 196 undergraduate students, 9 lab sections

Spring 2017: 133 undergraduate students, 6 lab sections

Marine Biogeochemical Cycles* (GEOL 4573/5573 formerly 4990/5710), Instructor

Fall 2010: 8 graduate students

Fall 2012: 14 graduate students

Fall 2014: 11 graduate students

Spring 2017: 6 graduate students

Organic Geochemistry (GEOL 5533), Instructor

Fall 2013: 11 graduate students

Spring 2016: 7 graduate students

Geology Colloquium (GEOL 4300/5300), Instructor

Spring 2010: 9 undergraduate students, 3 graduate students

Special Problems in Earth Science (GEOL 4990)

Summer 2015: 1 student
Fall 2015: 3 students
Fall 2016: 4 students
Master's Thesis (GEOL 5000)
Summer 2010: 1 graduate student
Spring 2011: 1 graduate student
Fall 2011: 2 graduate students
Spring 2012: 2 graduate students
Summer 2012: 1 graduate student
Fall 2012: 2 graduate students
Spring 2013: 2 graduate students
Summer 2013: 1 graduate student
Fall 2013: 1 graduate student
Spring 2014: 1 graduate student
Spring 2015: 2 graduate students
Fall 2015: 1 graduate student
Spring 2016: 1 graduate student
Fall 2016: 1 graduate student
Spring 2017: 1 graduate student
Advanced Studies in Geology (GEOL 5710/5990)
Fall 2011: 1 graduate student
Spring 2013: 1 graduate student
Fall 2016: 1 graduate student
Spring 2017: 1 graduate student

Other experience

Guest lecturer on data management and analysis techniques, GEOL 5243 Research Methods and Techniques in Geosciences, Fall semesters (2012-2016).
Guest lecturer on petroleum geochemistry, GEOL 3413 Petroleum Geology for Engineers, Fall and Spring semesters (2011-2016)
Guest lecturer on geology/geochemical topics for CHEM 2980 Current Topics for Chemistry Professionals, OSU Department of Chemistry:
The Periodic Table of the Elements: Elements of Geology (Fall 2015)
Chemistry of Materials: Mining and Minerals (Spring 2016)
Chemistry and Life (Fall 2016)
Introduction to Oceanography, Co-Instructor, Rutgers University, Department of Marine and Coastal Sciences/Department of Earth and Planetary Sciences
Spring 2009: 121 undergraduate students
History of the Earth System, Substitute Lecturer, Rutgers University, Department of Marine and Coastal Sciences (2006, 2008)
Marine Organic Geochemistry Substitute Lecturer, Rutgers University, Department of Marine and Coastal Sciences (2006)
Aquatic Chemistry, Graduate Teaching Assistant, Massachusetts Institute of Technology
Department of Civil and Environmental Engineering
Fall 2000: 15 graduate students
Organic Chemistry, Undergraduate Teaching Assistant, University of California, San Diego
Department of Chemistry and Biochemistry
1996-1998: 30 undergraduate students per quarter; 5 quarters
General Chemistry, Undergraduate Teaching Assistant, University of California, San Diego
Department of Chemistry and Biochemistry
1996: 30 undergraduate students per quarter; 1 quarter

STUDENTS

Master's Students

Aaron Prock Fall 2015-present
Bradley Beckwith Fall 2013-Summer 2016; thesis defended 6/16
Brice Otto Fall 2013-Spring 2015; thesis defended 5/15
Keith Rivera Fall 2011-Fall 2013; thesis defended 8/13
Andrew Nelson Fall 2010-present
Ekenemolise Adigwe Spring 2010-Spring 2012; thesis defended 4/12

PhD Students

Mark Bryan Spring 2015-Fall 2015
Leye Adeboye Fall 2016-present

Committee Member

Hendratta Ali, PhD, Geology, defended 2009
Bay Woods, M.S., Geology
Daniel Bassett, M.S., Geology, defended 2012
Shane Morrison, M.S., Environmental Science, defended 2012
Brian Smith, M.S., Geology, defended 2012
Natalie Gentry, M.S. Geology, defended 2012
Lance Gill, PhD, Chemistry, defended 2012
Morgan Ostroski, M.S., Geology, defended 2013
Mathis Hodge, PhD, Chemistry, defended 2014
Pride Abongwa, PhD, Geology, defended 2014
Christopher Geyer, M.S. Geology, defended 2014
Brittany Ford, M.S. Geology
Scott Meier, M.S. Geology, defended 2014
Rawlings Akondi Nkerh, M.S. Geology, defended 2014
Nicole Paizis, M.S. Geology, defended 2016
Mary Niles, M. S. Geology, defended 2014
Zakary Ward, M.S. Geology
Ibrahim Al-Atwah, M.S. Geology, defended 2015
Christian Obasi, PhD, Geology
Leigha King, PhD, Anatomy and Cell Biology, OSU-Tulsa
Jesse Blumenthal, MS, Geology
Nathan Pickering, PhD, Chemistry

Undergraduate Students (independent research and special projects)

Nicholas Sandella, independent research, Fall 2016-present
Connor Adams, independent research, Fall 2016-present
Micah Morgan, independent research, Spring 2016-present
Brandi Morman, independent research, Fall 2015-Spring 2016
Clayton Burgess, independent research, Fall 2015-Spring 2016
Amber Johnson, independent research, Summer 2015
Kristen Sigl, independent research, Spring 2015-present
Wentz Research Grant recipient, 2016-2017
Macy Ayala, independent research, Fall 2013-Spring 2014
Brice Otto (co-advised with Michael Formolo, University of Tulsa), independent research, Spring 2013
Andrew Shelton, CIED 4713 research project, Fall 2012
Stacy Sutliff, independent research, Summer 2012-Spring 2013
Erin Pearson, Freshman Honors Seminar project Fall 2011-Spring 2012

William Christopher Stanford, independent research, graduated 5/11

Student Research Grants

- Kristen Sigl, Using Biomarkers to Determine Unknown Origins of Oil in the Mississippian Carbonate Reservoir, 2016-2017 OSU Wentz Research Grant, \$4500/1 year.
- Aaron Prock, Constraining biogeochemical processes of a coalbed methane system using NMR and isotopic analysis of produced water in the Black Warrior Basin, Alabama, USA, 2016-2017 AAPG Grants-In-Aid Fred A. & Jean Dix Named Grant, \$3000/1 year.

HONORS AND AWARDS

- Nominee, Blavatnik National Awards for Young Scientists, Physical Sciences & Engineering (2016)
- Nominee, OSU Sigma Xi Young Investigator Award (2015)
- Nominee, OSU A&S Faculty Council Junior Faculty Award for Scholarly Excellence (2014)
- Phi Beta Kappa, Γ of Oklahoma Charter Member (2013)
- Sigma Xi (2012)
- IMCS Postdoctoral Fellowship, Rutgers University (2005)
- National Science Foundation Graduate Student Fellowship (1999-2001)
- National Defense Science and Engineering Graduate Fellowship, Department of Defense (declined, 1999)
- Joseph Mayer Award for Undergraduate Research in Chemistry, UCSD (1999)
- Summer Student Fellow, Woods Hole Oceanographic Institution (1998)
- Phi Beta Kappa, Σ of California Member (1998)
- David Marc Belkin Research Scholarship, UCSD (1998)
- Summer Research Undergraduate Fellow, Scripps Institution of Oceanography (1997)

WORKING GROUPS:

- Unconventional Hydrocarbon Cooperative, Oklahoma State University
- NICOPP (Nitrogen Cycle in the Ocean, Past and Present), PAGES-IMAGES (2010-2011)

PROFESSIONAL AFFILIATIONS

- American Geophysical Union (AGU), affiliated with Ocean Sciences Section
- Association for the Sciences of Limnology and Oceanography (ASLO)
- Geological Society of America (GSA)-Campus Representative
- Association for Women Geoscientists (AWG)
- Tulsa Geological Society
- Geochemical Society
- American Association of Petroleum Geologists (AAPG)
- American Chemical Society (ACS)
- National Association of Geoscience Teachers (NAGT)

DEPARTMENTAL, COLLEGE, AND UNIVERSITY SERVICE

- OSU Women's Faculty Council Treasurer/Secretary (2016-present)
- OSU Phi Beta Kappa Committee on Members in Course (2016-present)
- OSU Goldwater Scholarship Selection Committee (2015-present)
- OSU Teach Advisory Council Geology representative (2015-present)
- College of Arts and Sciences Policy and Planning Committee (2012-present)
- Ad Hoc Search Committees
 - School of Geology Head Search-member (2012-2013)
 - Geochemist/Geophysicist Assistant Professor-member (2013-2014)
 - Geochemistry Lab Technician-head (2014-2015)
- Preliminary Exam Committee-member (2010-2015); chairperson (2013-2014)
- Safety/Ergonomics Committee-member (2013-2016); chairperson (2015)

Assessment/Undergraduate Committee-member (2009-present)
Personnel Committee-member (2010-2011; 2012-2013; 2015-present)
Lab safety and instrument procedures instructor, graduate student orientation (2012-present)
Emerging Technologies and Geoscience (ETAG) Committee-faculty chairperson, joint faculty and alumni committee (2010-2012)
OSU Chemistry and Geology Consortium
Outreach Committee-member (2012-present)
Association for Women Geoscientists Cowgirl Student Chapter-advisor (2011-present)
Reviewer for the College of Arts and Science FY 2012 Travel Grant Proposals
Geological Society of America Campus Representative (2011-present)

PROFESSIONAL SERVICE

Session chair, GSA Annual Meeting 2015
GSA South Central Section Meeting 2015 Planning Committee: Student Volunteer Chair
Session chair, GSA South Central Section Meeting 2015
Panel Reviewer: NSF GEO OCE Paleoceanography panel (2011)
Proposal Reviewer: NSF GEO OCE Ocean Drilling Program (2014), NSF GEO OCE Paleoceanography (2012, 2013, 2015), ACS PRF program (2010); NSF GEO OCE marine sciences division (2010, 2012, 2013); NWO *Veni programme* (Innovational Research Incentive Scheme) (2007).
Reviewer: *Biogeosciences* (2007), *Chemical Geology* (2011, 2015), *Geology* (2013), *Applied Geochemistry* (2014), *Palaeogeography, Palaeoclimatology, Palaeoecology* (2015)

OUTREACH/COMMUNITY SERVICE/PRESS

Activity design for Oklahoma WONDERtorium 'Geology Month' programming (Jan. 2017)
Collaborating with the Oklahoma WONDERtorium to develop the Geology Rocks! summer camp program (2015)
OSU Foundation Grandparent University Faculty: Oklahoma Geology major (June 2014, June 2015, June 2016)
Oklahoma Science Standards Focus Group (2014)
Halliburton OSHA-GAP Geoscience Ambassador Program: geochemistry (June 2013)
Press Release for Galbraith et al., 2013 article in *Nature Geoscience* (June 2013)
Press Release for Richoz et al., 2012 article in *Nature Geoscience* (August 2012)
Created an NSF-funded, interactive educational activity for high school students in collaboration with educational consultant Dr. Edward Cohen (2010-2014). This activity introduced students to the IODP deep sea drilling program and the scientific method, detailing how deep sea cores are obtained, and how scientists use them to answer research questions. The activity can be found at <http://joidesresolution.org/node/3495>.
Subject of COSEE-NOW interview "Getting to the Core of Ocean Science" by Ari Daniel Shapiro; posted online at <http://coseenow.net/scientist-resources/broader-impact/case-studies/getting-to-the-core-of-ocean-science/> (2012)
Representative of OSU Pickens School of Geology for OERB Education television shoot (2011)
Representative of OSU Pickens School of Geology for Oklahoma NSF EPSCoR Women in Science Conference: Investigating the Rock Cycle: Fun with Crayons (Spring 2010, Spring 2011, Fall 2011, Fall 2012, Fall 2014, Fall 2015, Fall 2016)
Association for Women Geoscientists information table volunteer for AAPG, AGU, and GSA conferences
OSU National Lab Day presentation: Metal, Malachite, and Mine Drainage: the Geochemistry of Copper (2011, 2012, 2013, 2014, 2015, 2016)
Skyline Outdoor Day, Stillwater OK (2010)
OSU Kids Discovery Camp presentation, Stillwater OK (2010)
Visiting geologist to Covenant School, Stillwater OK (2009)

Interviewed as part of NY Times article about science education at Rutgers ("Rutgers Uses Robot Sub to Interest Students in Marine Sciences" by Lisa W. Foderaro, 5/3/09)
Moderator/Science Judge, Massachusetts Ocean Science Bowl (2000, 2002, 2005)
Moderator/Science Judge, NJ Ocean Science Bowl (2006, 2007, 2008, 2009)
Postdoctoral Representative to IMCS, Rutgers University (2005)
Organizing Member, Postdoctoral Association, Rutgers University (2005)
Wrote Expedition Diary for WHOI/MIT Joint Program Website (2002)
Representative, Graduate Student Council, Woods Hole Oceanographic Institution (2002)
Moderator/Science Judge, National Ocean Science Bowl (2001)

ADDITIONAL TRAINING

Preparing Online Instructors 6 week course, 1/17-3/17
NAGT/AGU Broadening Participation in the Geosciences: Making What Works Work for You workshop, 12/13/16
3D Printing Applications for Your Classroom, 2/25/16
Foundation Center Proposal Writing Workshop, 1/27/15
NAGT Building Stronger Geoscience Courses workshop with visiting facilitator 5/14/14 (organized workshop at OSU).
Principal Investigators Association:
 Crafting a successful CAREER proposal, one of NSF's most prestigious awards, 4/22/14.
 Transitioning from an early investigator award to the coveted R01 webinar, 1/21/14.
CRSTL Broader Impacts Workshop, 5/9/13
Oklahoma EPSCoR NSF Day, 1/8/13
NAGT/AGU Large Classroom Workshop: Effective teaching and learning in the large classroom setting, 12/4/12.
SERC/Cutting Edge Early Career Geoscience Faculty: Teaching, research, and managing your career, College of William and Mary, 6/10/12-6/15/12.
Developing a strategy for attaining promotion and tenure at OSU, OSU ADVANCE Seminar, 11/15/11
Write Winning Grants Seminar, 9/28/11
ITILE courses/workshops:
 TurningPoint Cloud, 10/6/16
 Asking Engaging Questions to Elicit Student Participation, 1/14/15
 Improving Student Outcomes in a Flipped Learning Environment, 11/12/14
 Resources to Support Your Research Agenda, 1/29/14.
 Assessment Series: Strategies for Curriculum Mapping, 3/7/13
 SMART Board Training, 12/18/12
 D2L Training: Content and Gradebook, 8/21/12; Discussions, Dropbox and Quizzes, 8/28/12;
 D2L Integration, 9/5/12; Introduction to the New D2L 8/14/13
 Using clickers in the classroom, 7/20/12
 Clicker Introduction, 6/27/12
 Supporting Student Success Series: Putting the Puzzle Pieces Together-Effective Teaching for Today's Students, 4/10/12; Flipping the Classroom Effectively, 10/15/13; Active Learning Strategies that Engage Students in the Classroom, 11/19/13
 Teaching and Learning Series: Effective Lecture Techniques-Keeping Students Engaged, 3/8/12
 Teaching Strategies that Engage Students, 2/22/12.
 Using Rubrics as an Assessment and Teaching Tool, 1/7/11
 Building Learning Communities: Three Levels of Interaction, 1/7/11
Lithostratigraphy and conodont biostratigraphy of the Kinderhookian to Osagean series in SW Missouri, NW Arkansas, and NE Oklahoma Field Trip; GSA Joint North-Central and South-Central meeting (April 2010).
OSU ADVANCE Mentorship Program-Mentee (2009-2011)

PUBLICATIONS AND PRESENTATIONS

Manuscripts

Published (* indicates graduate student, ** indicates undergraduate student)

- ESMERAY-SENLET, S., WRIGHT, J. D., OLSSON, R. K., MILLER, K. G., BROWNING, J. V., and **QUAN, T. M.** (2015) Evidence for reduced export productivity following the Cretaceous/Paleogene mass extinction. *Paleoceanography*, 30, 718-738; doi:10.1002/2014PA002724.
- RIVERA, K. T.*, PUCKETTE, J. and **QUAN, T. M.** (2015) Critical evaluation of redox versus thermal maturity controls on $\delta^{15}\text{N}$ in organic-rich shales: A case study of the Woodford Shale, Anadarko Basin, Oklahoma, USA. *Organic Geochemistry*, 83-84, 127-139.
- QUAN, T. M.**, ADIGWE, E. N.*, RIEDINGER, N., and PUCKETTE, J. (2013) Evaluating nitrogen isotopes as proxies for depositional environmental conditions in shales: Comparing Caney and Woodford Shales in the Arkoma Basin, Oklahoma. *Chemical Geology*, 360-361C, 231-240; doi: 10.1016/j.chemgeo.2013.10.017.
- GALBRAITH, E. D., KIENAST, M. and the **NICOPP WORKING GROUP** (2013) The acceleration of oceanic denitrification during deglacial warming. *Nature Geoscience* (6), 579–584; doi: 10.1038/ngeo1832.
- QUAN, T. M.**, WRIGHT, J. D. and FALKOWSKI, P. G. (2013) Co-variation of nitrogen isotopes and redox states through glacial-interglacial cycles in the Black Sea. *Geochimica et Cosmochimica Acta* (112), 305-320.
- ROBINSON, R. S, KIENAST, M. and the **NICOPP WORKING GROUP** (2012) A review of nitrogen isotopic alteration in marine sediments. *Paleoceanography*, 27(4); doi: 10.1029/2012PA002321.
- RICHOZ, S., VAN DE SCHOOTBRUGGE, B., PROSS, J., PÜTTMANN, W., **QUAN, T. M.**, LINDSTROM, S., HEUNISCH, C., FIEBIG, J., and WIGNALL, P. B. (2012) Hydrogen sulphide poisoning of shallow seas following the end-Triassic extinction. *Nature Geoscience*; 5(9), 662-667; doi: 10.1038/NGEO1539.
- VAN DE SCHOOTBRUGGE, B., **QUAN, T. M.**, LINDSTRÖM, S., PÜTTMANN, W., HEUNISCH, C., PROSS, J., FIEBIG, J., PETSCHICK, R., RÖHLING, H.-G, RICHOZ, S., ROSENTHAL, Y., and FALKOWSKI, P. G. (2009) Floral changes across the Triassic/Jurassic boundary linked to flood basalt volcanism. *Nature Geoscience*, 2(8), 589-594; doi:10.1038/ngeo577.
- QUAN, T. M.** and FALKOWSKI, P. G. (2009) Redox control of N:P ratios in aquatic ecosystems. *Geobiology*, 7(2), 124-139; doi: 10.1111/j.1472-4669.2008.00182.x.
- QUAN, T. M.**, VAN DE SCHOOTBRUGGE, B., ROSENTHAL, Y., FIELD, M. P. and FALKOWSKI, P. G. (2008) Nitrogen isotope and trace metal analyses from the Mingolsheim core (Germany): Evidence for redox variations across the Triassic-Jurassic boundary. *Global Biogeochemical Cycles*, 22, GB2014, doi:10.1029/2007GB002981.
- VAN DE SCHOOTBRUGGE, B., PAYNE, J. L., TOMASOVYCH, A., PROSS, J., FIEBIG, J., BENBRAHIM, M., FÖLLMI, K. B., and **QUAN, T. M.** (2008) Carbon cycle perturbation and stabilization in the wake of the Triassic-Jurassic boundary mass-extinction event. *Geochemistry, Geophysics, Geosystems*, 9(4), doi:10.1029/2007GC001914. Paper highlighted in *Nature Geoscience* June 2008.
- QUAN, T. M.** and REPETA, D. J. (2007) Characterization of high molecular weight dissolved organic carbon using periodate over-oxidation. *Marine Chemistry*, 105(3-4), 183-193.
- REPETA, D. J., **QUAN, T. M.**, ALUWIHARE, L. I., and ACCARDI, A. (2002) Chemical characterization of high molecular weight dissolved organic matter in fresh and marine waters. *Geochimica et Cosmochimica Acta*, 66(6), 955-962.

Submitted (* indicates graduate student, ** indicates undergraduate student)

In preparation (* indicates graduate student, ** indicates undergraduate student)

- QUAN, T. M., NELSON, A.J.***, MILLER, K. G., and OLSSON, R. K. Nitrogen isotopes across the K-Pg mass extinction, New Jersey Coastal Plain. In preparation.
- QUAN, T. M.**, and NELSON, A.J.* Nitrogen cycle changes at Demerara Rise across the K-Pg mass extinction. In preparation.
- QUAN, T. M.**, ADIGWE, E. N.* and PUCKETTE, J. Analysis of the nitrogen cycle in the Arkoma Basin, Oklahoma: deposition of the Woodford and Caney shales.

Abstracts/Presentations (* indicates graduate student, ** indicates undergraduate student)

- QUAN, T. M.**, VINSON, D. S., PROCK, A., DARRAH, T. H., MCINTYRE-REDDEN, M. R., and PASHIN, J. C. (2016) Evaluation of Biogeochemical Processes and Rock-Water Interactions in the Black Warrior Basin Coalbed Methane Reservoir (Alabama, USA) Via Isotopic Characterization of Formation Water Samples. Abstract H13F-1466 presented at 2016 Fall Meeting, AGU, San Francisco, Calif. 12-16 Dec.
- GILKERSON, T. PASHIN, J. C., **QUAN, T. M.**, DARRAH, T. H. and VINSON, D. S. (2016) Relationship between formation water salinity and biogenic coalbed methane: Black Warrior Basin, Alabama (USA). 234-23 Geological Society of America *Abstracts with Programs*. Vol. 48, No. 7, doi: 10.1130/abs/2016AM-286731.
- QUAN, T. M.** (2016) Evaluating unconventional resource plays using nitrogen isotopes. 12-8 Geological Society of America *Abstracts with Programs*. Vol. 48, No. 1, doi: 10.1130/abs/2016SC-273085.s (Invited presentation).
- VINSON, D. S., **QUAN, T. M.**, MCINTYRE-REDDEN, M. R., DARRAH, T. H., BLAIR, N. E., and PASHIN, J. C. (2015) Connection of dissolved inorganic carbon to biogenic coalbed methane: isotope evidence from Black Warrior Basin, Alabama (USA). 271-10 Geological Society of America *Abstracts with Programs*, Vol. 47, No. 7, p. 683.
- QUAN, T. M.**, PUCKETTE, J., RIVERA, K.*, OTTO, B.*, and ADIGWE, E.* (2015) Using nitrogen isotopes to evaluate unconventional resource plays. Unconventional Resources Technology Conference (URTeC) Abstract 2173544. San Antonio, TX.
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- QUAN, T. M.** and NELSON, A. J.* (2012) Determining Paleoredox Conditions Across the Cretaceous-Paleogene Mass Extinction at Blake Nose: Evaluation of Carbon and Nitrogen Isotopes and Trace Metal Profiles. Abstract PP31A-2002 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- COHEN, E. and **QUAN, T. M.** (2012) Development and implementation of an inquiry lesson for grades 6-12 explicitly teaching the nature and process of science, from ship to shore, for core data of the Cretaceous-Paleogene (K-Pg). Abstract ED21A-0710 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- QUAN, T. M.** and NELSON, A. J.* (2011) Nitrogen Isotope Profiles Through the Cretaceous-Paleogene Boundary: Comparing Records from the New Jersey Coastal Plain and Demerara Rise. Abstract B33I-05 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- GALBRAITH, E. D., KIENAST, M. and the **NICOPP WORKING GROUP** (2011) Synoptic global view of nitrogen isotopes in the modern and glacial oceans. Abstract B41B-0211 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- STANFORD, W. C.** , TROIANI, T., SIMMS, A. and **QUAN, T. M.** (2011) Nitrogen isotopes as proxies for paleoenvironmental changes in estuarine systems. Paper No. 7-9, Geological Society of America *Abstracts with Programs*, Vol. 43, No. 3, p. 9.
- QUAN, T. M.**, WRIGHT, J. D., and FALKOWSKI, P. G. (2010) Nitrogen Cycling in the Black Sea on Glacial-Interglacial Time Scales. Abstract PP31A-1615 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- ADIGWE, E.* and **QUAN, T. M.** (2010) Nitrogen Isotopes in the Woodford Shale-Arkoma Basin: $\delta^{15}\text{N}$ as a proxy for unconventional resources. Paper No. 191-10, Geological Society of America *Abstracts with Programs*, Vol. 42, No. 5, p. 468.
- NICOPP WORKING GROUP** (2010) NICOPP: Nitrogen Cycle in the Ocean, Past and Present. Poster presented at 10th International Conference on Paleoceanography.
- QUAN, T. M.**, GILL, B. C. and LYONS, T. W. (2010) Nitrogen isotope profile from the Cambrian SPICE Event: Comparison with Mo and other redox proxies. *Geochimica et Cosmochimica Acta*, 74(11) Supplement 840.
- RICHOZ, S., VAN DE SCHOOTBRUGGE, B., PÜTTMANN, W., HEUNISCH, C., **QUAN, T. M.**, LINDSTRÖM, S., FIEBIG, J., and PROSS, J. (2010) Redox changes across the Triassic-Jurassic boundary: From anoxic to euxinic black shale deposition. *Geophysical Research Abstracts*, Vol. 12, EGU2010-5390-1, 2010.
- QUAN, T. M.** and FALKOWSKI, P. G. (2008) Redox control of N:P ratios in aquatic ecosystems. *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract PP43A-1515.
- KASHIYAMA, Y., OGAWA, N. O., CHIKARAISHI, Y., GROSJEAN, E., SUMMONS, R. E., MASLEN, E., GRICE, K., GODFREY, L., **QUAN, T. M.**, FALKOWSKI, P. G., KITAZATO, H., OHKOUCHI, N. (2008) Compound-specific isotope analysis of nitrogen in sedimentary porphyrins: A novel and powerful approach for reconstructing the nitrogen cycle of the past ocean. *Eos Trans. AGU* 89(53), Fall Meet. Suppl., Abstract PP42-07.
- QUAN, T. M.**, WRIGHT, J. D., and FALKOWSKI, P. G. (2008) Nitrogen isotopes as a paleoredox proxy: Co-variation of nitrogen isotopes and redox states through glacial-interglacial cycles in

the Black Sea. Invited speaker, Paper No. 284-3, Geological Society of America *Abstracts with Programs*, Vol. 40, No. 6, p. 433.

RICHOZ, S., VAN DE SCHOOTBRUGGE, B., PÜTTMANN, W., HEUNISCH, C., QUAN, T. M., FIEBIG, J., and PROSS, J. (2008) Repeated photic zone euxinia after the Triassic-Jurassic mass extinction event. Paper No. 318-4, Geological Society of America *Abstracts with Programs*, Vol. 40, No. 6, p. 505.

QUAN, T. M., VAN DE SCHOOTBRUGGE, B., ROSENTHAL, Y., and FALKOWSKI, P. G. (2006) Geochemical evidence for redox variations across the Triassic-Jurassic boundary in the Tethys sea. Paper No. 161-5 Geological Society of America *Abstracts with Programs*, Vol. 38, No. 7, p. 394.

QUAN, T. M. and REPETA, D. J. (2005) Radiocarbon analysis of individual amino acids isolated from marine high molecular weight dissolved organic matter. Talk given at the ASLO/TOS Aquatic Sciences Meeting.

QUAN, T. M. and REPETA, D. J. (2004) Characterization of high molecular weight dissolved organic carbon using periodate over-oxidation. Talk given at ASLO/TOS Ocean Research Conference.

QUAN, T. M. and REPETA, D. J. (2000) Chemical Characteristics of High Molecular Weight Dissolved Organic Matter in Fresh and Marine Water. AGU/ASLO Ocean Sciences Meeting, poster presentation.

Invited seminars

Department of Geology and Geography, West Virginia University (4/24/14). Using nitrogen isotopes to evaluate depositional environments: a Woodford Shale case study.

Department of Geology and Geography, West Virginia University (4/24/14). Nitrogen on Geologic Time Scales.

Boone Pickens School of Geology, Oklahoma State University (1/24/14). What Nitrogen Isotopes can tell us of the Woodford Shale.

Randolph W. Chapman Colloquium, Department of Earth Sciences, University of New Hampshire (1/24/13). Sedimentary nitrogen isotopes as redox proxies.

Department of Geosciences, University of Massachusetts, Amherst (1/24/13). Sedimentary nitrogen isotopes as redox proxies.

Department of Geosciences, University of Tulsa (11/14/12). Nitrogen isotopes as redox proxies.

Department of Chemistry, Oklahoma State University (9/22/11). Nitrogen isotopes as redox proxies.

Boone Pickens School of Geology, Oklahoma State University (9/9/11). Nitrogen isotopes as redox proxies.

2nd Workshop of the NICOPP Working Group, Halifax, Nova Scotia, Canada (7/9/11). Nitrogen isotopes as proxies for paleoenvironmental change in Copano Bay, TX.

ConocoPhillips School of Geology and Geophysics, University of Oklahoma (3/31/11). Nitrogen isotopes as redox proxies.

Boone Pickens School of Geology, Oklahoma State University (2/12/10). Nitrogen isotopes as redox proxies.

Department of Geosciences, Princeton University (4/9/09). Investigating the redox control of nitrogen cycling: case studies from past and present systems.

Department of Earth and Environmental Sciences, Wright State University (2/28/09). Investigating the redox control of nitrogen cycling: case studies from past and present systems.

Department of Earth Science and Astronomy, University of Tokyo (2/24/09). Investigating the redox control of nitrogen cycling: case studies from past and present systems.

Geochemistry Division, Lamont-Doherty Earth Observatory (2/9/09). Investigating the redox control of nitrogen cycling: case studies from past and present systems.

Department of Earth and Environmental Science, Temple University (1/22/09). Investigating the redox control of nitrogen cycling: case studies from past and present systems.

Department of Geosciences, Princeton University (10/13/08). Investigating the redox control of nitrogen cycling: case studies from past and present systems.

Department of Earth and Environmental Science, Rensselaer Polytechnic Institute (9/7/08). Utilizing nitrogen isotopes as a paleoredox proxy.

Department of Geosciences, University of Akron (2/20/08). Utilizing nitrogen isotopes as a paleoredox proxy.

Center for Marine Environmental Sciences (Marum), University of Bremen (5/22/07). Geochemical evidence for environmental changes at the Triassic-Jurassic boundary.

Institute of Geosciences, Goethe University Frankfurt (5/9/07). Geochemical evidence for environmental changes at the Triassic-Jurassic boundary.

Department of Marine Science, University of Southern Mississippi (8/20/07). Geochemical evidence for environmental changes at the Triassic-Jurassic boundary.

Department of Chemistry and Biochemistry, University of North Carolina, Wilmington (1/18/07). Molecular markers and isotopic signatures of marine organic matter: investigations into carbon and nitrogen biogeochemistry.