

JOHN D. KESSLER

E-mail: john.kessler@rochester.edu

Homepage: <http://www.johnkesslerlab.com>

<http://scholar.google.com/citations?user=IzFBI8AAAAJ&hl=en>

I. EDUCATION AND EXPERIENCE

EDUCATION

Postdoctoral Research, Geoscience, September 2005 – August 2008
Princeton University

Ph.D., Earth System Science, September 2005
University of California, Irvine

M.S., Earth System Science, December 2003
University of California, Irvine

B.S., Chemistry and Mathematics, May 1998
Gettysburg College

PROFESSIONAL EXPERIENCE

University of Rochester, Dept of Earth & Environmental Sciences, Rochester, NY September 2012 - Present
ASSOCIATE PROFESSOR

Texas A&M University, Department of Oceanography, College Station, TX August 2008 – August 2012
ASSISTANT PROFESSOR

Princeton University, Department of Geosciences, Princeton, NJ September 2005 – August 2008
POSTDOCTORAL RESEARCH ASSOCIATE

University of California Irvine, Earth System Science Department, Irvine, CA
GRADUATE RESEARCH ASSISTANT August 2000 – September 2005

National Institute of Standards and Technology, Gaithersburg, MD June 1998 – July 2000
Atmospheric Chemistry Group, Surface and Microanalysis Science Division
RESEARCH CHEMIST

National Institute of Standards and Technology, Gaithersburg, MD May 1996 – June 1998
Microanalysis Research Group, Surface and Microanalysis Science Division
PHYSICAL SCIENCE TRAINEE

II. RESEARCH AND SCHOLARLY ACTIVITIES

AWARDS

The Goergen Award for Excellence in Undergraduate Teaching	2015
National Academy of Sciences: U.S. Kavli Frontiers of Sciences	November 2014
Alfred P. Sloan Research Fellow: Ocean Sciences (\$50,000)	2012-2013
Discover Magazine: 100 Top Stories of 2011	2011
Microbeam Analysis Society Distinguished Scholar Award	2001

FUNDED PROJECTS WITH JOHN D. KESSLER AS LEAD PRINCIPAL INVESTIGATOR

- 1) National Science Foundation (OCE-1634871); “Development of an ultra-fast method for continuous and automated analysis of dissolved greenhouse gases in surface waters,” September 1, 2016 – August 31, 2018.
- 2) Department of Energy (DE-FE0028980); “Characterizing Ocean Acidification and Atmospheric Emission caused by Methane Released from Gas Hydrate Systems along the US Atlantic Margin,” October 2016 – September 2019.
- 3) National Science Foundation (PLR-1417149); “Determining the Source of Methane in Arctic Ocean Waters Adjacent to Subsea Permafrost,” September 1, 2014 – August 31, 2016.
- 4) National Science Foundation (OCE-1318102); “Investigating the chemical and isotopic kinetics of aerobic methane oxidation,” December 10, 2012 – February 28, 2015
- 5) National Science Foundation (OCE-1042650); “RAPID: The effect of methane laden oil on climate and dissolved oxygen: using the Deepwater Horizon oil spill as an analog for clathrate decomposition and seeping methane,” June 1, 2010 - May 31, 2012
- 6) National Oceanic and Atmospheric Administration (through a contract with Consolidated Safety Services, Inc.); “Gulf of Mexico Oil Spill,” September 1 – December 21, 2010
- 7) National Science Foundation (OCE-0849246 and OCE-1300040); “Collaborative Research: Development of a Diode Laser Cavity-Ringdown Spectrometer for Shipboard Measurements of the Stable Isotopes on Oceanic Methane,” October 1, 2008 – November 30, 2012

FUNDED PROJECTS WITH JOHN D. KESSLER AS CO-PI

- 8) National Science Foundation (OCE-1139203); “EAGER: Development of a portable air-water flux system for methane,” July 15, 2011 – June 30, 2014, PI: Dr. Shari Yvon-Lewis, **Co-PI: Dr. John D. Kessler**
- 9) Gulf of Mexico Research Initiative; “Gulf Integrated Spill Research Consortium,” September 1, 2011 – August 31, 2015, PI: Dr. Piers Chapman, **Co-PI: Dr. John D. Kessler**

SHIPBOARD & FIELD EXPERIENCE

R/V Hugh Sharp, US Atlantic Margin, USA, (Chief Scientist)	August 24 – September 7, 2017
R/V Blue Heron, Lake Superior, USA (Chief Scientist)	June 13-22, 2017
R/V Blue Heron, Lake Superior, USA (Chief Scientist)	October 17-22, 2016
R/V Madtom, Lake Ontario, USA	May, August – November, 2016
R/V Ukpik, Beaufort Sea, Alaska, USA (Chief Scientist)	August 28 – September 5, 2015
E/V Nautilus, Gulf of Mexico, USA	April 8 – 21, 2015

R/V Endeavor, North Atlantic Bight, USA (Chief Scientist)	July 7 – 14, 2014
R/V Cape Hatteras, Gulf of Mexico, USA (Chief Scientist)	August 7 – 14, 2012
Kasitsna Bay Field Station, Alaska, USA	July 18-23, 2012
Kasitsna Bay Field Station, Alaska, USA	August 21 – 29, 2011
Toolik Lake Field Station, Alaska, USA	August 14 – 21, 2011
R/V Ukpiq, Beaufort Sea, Alaska, USA	August 9 – 12, 2011
M/V Sarah Bordelon, Deepwater Horizon Oil Spill, Gulf of Mexico, USA (Chief Scientist)	December 3-19, 2010
NOAA Boat Pisces, Deepwater Horizon Oil Spill, Gulf of Mexico, USA (Chief Scientist)	September 7 – 17, 2010
R/V Cape Hatteras, Deepwater Horizon Oil Spill, Gulf of Mexico, USA (Chief Scientist)	June 11 – 20, 2010
R/V Atlantis (DSV Alvin), Santa Barbara & Santa Monica Basins, CA, USA	September 11 – October 1, 2009
R/V Brooks McCall, Gulf of Mexico, USA	July 3 – 20, 2009
R/V New Horizon, Santa Barbara & Santa Monica Basins, CA, USA	June 21 – 30, 2004
B/O Hermano Gines, Cariaco Basin, Venezuela	January 21 – 24, 2004
R/V Alpha Helix, Skan Bay, Unalaska, Alaska, USA	August 28 – September 10, 2003
R/V Alpha Helix, Skan Bay, Unalaska, Alaska, USA	September 16 – October 2, 2001

REFEREED PUBLICATIONS

(**bold** indicates graduate student authors; **bold and asterisk** indicates undergraduate student authors)

- 1) A. M. Shiller, **E. W. Chan**, D. J. Joung, M. C. Redmond, and J. D. Kessler (2017) “Light rare earth element depletion during *Deepwater Horizon* blowout methanotrophy.” *Nature: Scientific Reports*, doi: doi:10.1038/s41598-017-11060-z.
- 2) **K. J. Sparrow** and J. D. Kessler (2017), "Efficient collection and preparation of methane from low concentration waters for natural abundance radiocarbon analysis." *Limnology & Oceanography: Methods*, doi: 10.1002/lom3.10184.
- 3) **Leonte, M.**, J. D. Kessler, M. Y. Kellermann, **E. C. Arrington**, D. L. Valentine, S. P. Sylva (2017), “Rapid rates of aerobic methane oxidation at the feather edge of gas hydrate stability in the waters of Hudson Canyon, US Atlantic Margin.” *Geochimica et Cosmochimica Acta*, doi:10.1016/j.gca.2017.01.009.
- 4) Ruppel, C. D., and J. D. Kessler (2017), “The Interaction of Climate Change and Methane Hydrates.” *Reviews of Geophysics*, doi: 10.1002/2016RG000534.
- 5) **Weinstein, A.***, **L. Navarrete***, C. Ruppel, T. C. Weber, **M. Leonte**, M. Y. Kellermann, **E. C. Arrington**, D. L. Valentine, M. I. Scranton, and J. D. Kessler (2016), “Determining the flux of methane into Hudson Canyon at the edge of methane clathrate hydrate stability.” *Geochem. Geophys. Geosyst.*, 17, doi:10.1002/2016GC006421.
- 6) **Garcia-Tigeros Kodovska, F.**, **K.J. Sparrow**, S.A. Yvon-Lewis, A. Paytan, N.T. Dimova, **A. Lecher**, J.D. Kessler. (2016) “Dissolved methane and carbon dioxide fluxes in Subarctic and Arctic regions: Assessing measurement techniques and spatial gradients.” *Earth and Planetary Science Letters*, doi: 10.1016/j.epsl.2015.12.002.
- 7) **Chan, E.**, J. D. Kessler, A. Shiller, D.J. Joung, F. Colombo. (2016) “Aqueous mesocosm techniques enabling the real-time measurement of the chemical and isotopic kinetics of dissolved methane and carbon dioxide.” *Environmental Science & Technology*, doi: 10.1021/acs.est.5b04304.
- 8) **K.M Christian**, L.K Lautz, G.D Hoke, D.I Siegel, Z. Lu, J. Kessler. (2016) “Methane occurrence is associated with sodium-rich valley waters in domestic wells overlying the Marcellus shale in New York State.” *Water Resources Research*, doi: 10.1002/2015WR017805.
- 9) Dimova, N.T., A. Paytan, J.D. Kessler, **K.J. Sparrow**, **F. Garcia-Tigeros Kodovska**, **A.L. Lecher**, **J. Murray**, and S.M. Tulaczyk. (2015) “Current Magnitude and Mechanisms of Groundwater Discharge in the Arctic: Case Study from Alaska.” *Environmental Science & Technology*, doi: 10.1021/acs.est.5b02215.

- 10) **Lecher, A.L.**, J.D. Kessler, **K. Sparrow, F. Garcia-Tigeros Kodovska**, N. Dimova, **J. Murray**, S. Tulaczyk, A. Paytan. (2015) "Methane transport through submarine groundwater discharge to the North Pacific and Arctic Ocean at two Alaskan sites." *Limnology and Oceanography*, doi: 10.1002/lno.10118.
- 11) Paytan, A., **A. Lecher**, N. Dimova, **K. Sparrow, F. Garcia-Tigeros Kodovska**, J.D. Kessler. (2015) "Methane transport from the active layer to lakes in the Arctic using Toolik Lake, Alaska, as a case study." *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.1417392112.
- 12) Pack, M.A., X. Xu, **M. Lupascu**, J.D. Kessler, C. Czimczik. (2015) "A rapid method for preparing high concentration CH₄ and CO₂ gas samples for ¹⁴C-AMS analysis." *Organic Geochemistry*, doi: 10.1016/j.orggeochem.2014.10.010.
- 13) Kessler, J.D. (2014) "Atlantic Bubble Bath." *Nature: Geoscience*, doi: 10.1038/ngeo2238.
- 14) **Du, M.**, S. Yvon-Lewis, **F. Garcia-Tigeros**, D.L. Valentine, **S. Mendes**, J.D. Kessler. (2014) "High resolution measurements of methane and carbon dioxide concentrations and air-sea fluxes reveal the influence of methane seepage on greenhouse gas dynamics in a massive natural seep field near Coal Oil Point, California." *Environmental Science & Technology*. doi: 10.1021/es5017813.
- 15) **Errera, R.M.**, S. Yvon-Lewis, J.D. Kessler, L. Campbell. (2014) "Response of the harmful alga, *Karenia brevis*, to pre-industrial, current, and future pCO₂ and sea surface temperatures." *Harmful Algae*. doi: 10.1016/j.hal.2014.05.012.
- 16) Lautz, L.K., G.D. Hoke, Z. Lu, D.I. Siegel, J.D. Kessler, **K. Christian, N.G. Teale**. (2014) "Using Discriminant Analysis to Determine Sources of Salinity in Shallow Groundwater Prior to Hydraulic Fracturing." *Environmental Science & Technology*, doi: 10.1021/es502244v.
- 17) Chen, Y., K. Lehmann, J.D. Kessler, B. Sherwood Lollar, G. Lacrampe-Couloume, T.C. Onstott, (2013) "Measurement of the ¹³C/¹²C of atmospheric CH₄ using near-IR Cavity Ring-down Spectroscopy." *Analytical Chemistry*, doi: 10.1021/ac401605s.
- 18) **Du, M.**, and J.D. Kessler (2012). "An Assessment of the Spatial and Temporal Variability of Bulk Hydrocarbon Respiration Following the Deepwater Horizon Oil Spill." *Environmental Science & Technology*, doi: 10.1021/es301363k.
- 19) Ryerson, T.B., R. Camilli, J.D. Kessler, E.B. Kujawinski, C.M. Reddy, D.L. Valentine, E. Atlas, D.R. Blake, J. de Gouw, S. Meinardi, D.D. Parrish, J. Peischl, J.S. Seewald, and C. Warneke (2012). "Chemical data quantify Deepwater Horizon hydrocarbon flow rate and environmental distribution." *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1110564109.
- 20) **Hu, L.**, S.A. Yvon-Lewis, J.D. Kessler, and I.R. MacDonald. (2012) "Methane fluxes to the atmosphere from deepwater hydrocarbon seeps in the northern Gulf of Mexico." *J Geophys Res-Oceans*. 117 (C1), C01009 doi:10.1029/2011JC007208.
- 21) Kessler, J.D., D.L. Valentine, M.C. Redmond, **M. Du, E.W. Chan, S.D. Mendes**, E.W. Quiroz, **C.J. Villanueva, S.S. Shusta, L.M. Werra**, S.A. Yvon-Lewis, T.C. Weber (2011). "A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico." *Science*, 331, 312-315, doi:10.1126/science.1199697.
- 22) Kessler, J.D., D.L. Valentine, M.C. Redmond, **M. Du** (2011). "Response to Comment on 'A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico'." *Science*, 332, 1033, doi:10.1126/science.1203428.

- 23) **Pasche, N.**, Schmid, M., Vazquez, F., Schubert, C. J., Wüest, A., Kessler, J. D., **Pack, M. A.**, Reeburgh, W. S., and Burgmann, H. (2011). "Methane sources and sinks in Lake Kivu." *J Geophys Res-Biogeo*, 116, G03006, doi:10.1029/2011JG001690.
- 24) S.A. Yvon-Lewis, **L. Hu**, J.D. Kessler (2011). "Methane flux to the atmosphere from the Deepwater Horizon oil disaster." *Geophysical Research Letters*, 38, L01602, doi: 10.1029/2010GL045928.
- 25) Valentine, D.L., J.D. Kessler, M.C. Redmond, **S.D. Mendes, M.B. Heintz**, C. Farwell, **L. Hu**, F.S. Kinnaman, S.A. Yvon-Lewis, **M. Du, E.W. Chan, F. Garcia-Tigreros, C.J. Villanueva** (2010). "Propane respiration jump-starts microbial response to a deep oil spill." *Science*, 330, 208-211, doi:10.1126/science.1196830
- 26) **Crowe, S.A.**, S. Katsev, K. Leslie, A. Sturm, C. Magen, S. Nomosatryo, **M.A. Pack**, J.D. Kessler, W.S. Reeburgh, J.A. Roberts, L. Gonzalez, G. Douglas Haffner, A. Mucci, B. Sundby, D.A. Fowle (2010). "The methane cycle in ferruginous Lake Matano." *Geobiology*, doi: 10.1111/j.1472-4669.2010.00257.x.
- 27) Pape, T., A. Bahr, J. Rethemeyer, J. D. Kessler, H. Sahling, K. Hinrichs, S. A. Klapp, W. S. Reeburgh, G. Bohrmann (2010). "Molecular and isotopic partitioning of low-molecular-weight hydrocarbons during migration and gas hydrate precipitation in deposits of a high-flux seepage site." *Chemical Geology*, 269 (3-4), 350–363, doi:10.1016/j.chemgeo.2009.10.009.
- 28) Kessler, J.D., W.S. Reeburgh, D.L. Valentine, F.S. Kinnaman, E.T. Peltzer, P.G. Brewer, J. Southon, and S.C. Tyler (2008). "A survey of methane isotope abundance (^{14}C , ^{13}C , ^2H) from five nearshore marine basins that reveals unusual radiocarbon levels in subsurface waters." *Journal of Geophysical Research*, 113, C12021, doi:10.1029/2008JC004822.
- 29) Kessler, J.D., W.S. Reeburgh, S.C. Tyler (2006). "Controls on Methane Concentration and Stable Isotope ($\delta^2\text{H-CH}_4$ and $\delta^{13}\text{C-CH}_4$) Distributions in the water columns of the Black Sea and Cariaco Basin." *Global Biogeochemical Cycles*, 20 (4), GB4004, doi:10.1029/2005GB002571.
- 30) Kessler, J.D., W.S. Reeburgh, J. Southon, R. Seifert, W. Michaelis, S.C. Tyler (2006). "Basin-wide Estimates of Input of Methane from Seeps and Clathrates to the Black Sea." *Earth and Planetary Science Letters*, 243, 366-375.
- 31) Onstott, T.C., **D. McGown**, J. Kessler, B. Sherwood Lollar, K.K. Lehmann, S.M. Clifford (2006). "Martian CH_4 : Sources, Flux, and Detection." *Astrobiology*, 6 (2), 377-395.
- 32) Kessler, J.D., W.S. Reeburgh, J. Southon, R. Varela (2005). "Fossil Methane Source Dominates Cariaco Basin Water Column Methane Geochemistry." *Geophysical Research Letters*, 32, L12609, doi:10.1029/2005GL022984.
- 33) Kessler, J.D. and W.S. Reeburgh (2005). "Preparation of Natural Methane Samples for Stable Isotope and Radiocarbon Analysis." *Limnology and Oceanography: Methods*, 3, 408-418.
- 34) Currie, L.A. and J.D. Kessler (2005). "On the isolation of elemental carbon (EC) for micro-molar ^{14}C accelerator mass spectrometry: development of a hybrid reference material for ^{14}C -EC accuracy assurance, and a critical evaluation of the thermal optical kinetic (TOK) isolation procedure." *Atmospheric Chemistry and Physics*, 5, 2833-2845.
- 35) Currie, L.A., J.D. Kessler, R.A. Fletcher, J.E. Dibb (2005). "Long range transport of biomass aerosol to Greenland: Multi-spectroscopic investigation of particles deposited in snow." *Journal of Radioanalytical and Nuclear Chemistry*, 263 (2), 399-411.
- 36) Currie, L.A., B.A. Benner, Jr, H. Cachier, R. Cary, J.C. Chow, E.R.M. Druffel, T.I. Eglinton, O. Gustafsson, P.C. Hartmann, J.I. Hedges, J.D. Kessler, T.W. Kirchstetter, D.B. Klinedinst, G.A. Klouda, J.V. Marolf, C.A. Masiello, T. Novakov, A. Pearson, K.M. Prentice, H. Puxbaum, J.G. Quinn, C.M. Reddy, H. Schmid, J.F. Slater, J. Watson, and S.A. Wise (2002). "A Critical Evaluation of Interlaboratory Data on Total, Elemental,

and Isotopic Carbon in the Carbonaceous Particle Reference Material, NIST SRM 1649a." Journal of Research of the National Institute of Standards and Technology, 107, 279-298.

- 37) Currie, L.A., J.D. Kessler, J.V. Marolf, A.P. McNichol, D.R. Stuart, J.C. Donoghue, D.J. Donahue, G.S. Burr, D. Biddulph (2000). "Low-level (submicromole) Environmental ^{14}C Metrology." Nuclear Instruments and Methods B, 172, 440-448.

***CONFERENCE PLATFORM PRESENTATIONS
(ONLY LISTED ARE THE INVITED TALKS WITH KESSLER AS LEAD PRESENTER)***

- 1) *Title:* Quantifying the flux and fate of methane into the Hudson Canyon at the edge of methane clathrate hydrate stability
Conference: American Geophysical Union, San Francisco, CA, December 14-18, 2015
- 2) *Title:* Someday We'll Find It; The Methane-Climate Connection
Conference: Science Teachers Association of New York State – 120th Annual Conference, Rochester, NY, USA, November 6-9, 2015
- 3) *Title:* Assessing Hydrocarbon Biodegradation and Release Rates with Natural Stable Isotope Measurements
Conference: The First Symposium on Deep Sea Oil Spills
Qingdao Cooperative Innovation Center of Marine Science and Technology
Ocean University of China, Qingdao, Shandong Province, China
October 28-30, 2013
- 4) *Title:* A Chemical Investigation of Aerobic Methane Oxidation Following a Large Water Column Methane Perturbation
Conference: Gordon Research Conference on Natural Gas Hydrate Systems, Ventura, CA, USA, March 18-23, 2012.
Session: New Results
- 5) *Title:* The Biogeochemical Cycling of Dissolved Methane and Oxygen Associated with the Deepwater Horizon Disaster
Conference: American Chemical Society, San Diego, CA, USA, March 25-29, 2012.
Session: Fate of petroleum in the marine environment: Lessons learned two years after the Deepwater Horizon incident
- 6) *Title:* The Biogeochemical Cycling of Dissolved Methane and Oxygen Associated with the Deepwater Horizon Disaster
Conference: Deepwater Horizon (DWH) Oil Spill Principal Investigator's One Year Update Workshop, St. Petersburg, FL, October 25-26, 2011
- 7) *Title:* Using the Deepwater Horizon Disaster to Investigate Natural Biogeochemical Cycling Associated with Rapid Methane Emissions
Conference: American Association of Petroleum Geologists (AAPG), Houston, TX, April 10-13, 2011
- 8) *Title:* Using the Deepwater Horizon Disaster to Investigate Natural Biogeochemical Cycling Associated with Rapid Methane Emissions
Conference: PERGAMON, Brussels, Belgium, February 21-23, 2011
- 9) *Title:* Using the Deepwater Horizon Disaster to Investigate the Biogeochemical Cycling Associated with Rapid Methane Emissions
Conference: Energy Forum 2011: Energy Security and Sustainability – Global Challenges, Texas A&M Engineering Institute, February 1, 2011
- 10) *Title:* Using the Deepwater Horizon Disaster to Investigate Natural Biogeochemical Cycling Associated with Rapid Methane Emissions
Conference: American Geophysical Union, San Francisco, CA, December 13-17, 2010
- 11) *Title:* Using measurements of natural isotopes to determine oceanic methane sources, sinks, and fluxes
Conference: American Geophysical Union, San Francisco, CA, December 15-19, 2008

INVITED SEMINARS AT UNIVERSITIES AND RESEARCH INSTITUTIONS

- 1) February 5, 2015
Rochester Institute of Technology
Title: Someday We'll Find It; The Methane-Climate Connection
- 2) May 21, 2014
Monterey Bay Aquarium Research Institute
Title: Methane Munching Microbes: Calculated Consumption or Blowout Bender?
- 3) December 6, 2013
University of Rochester: Laboratory for Laser Energetics
Title: What the Deepwater Horizon Disaster taught us about Global Climate Change
- 4) October 18, 2013
University of Rochester: Big Data Forum 2013
Title: Big Data in the Ocean Sciences: from ultra-fast instrumentation to global data integration
- 5) October 11, 2013
University of Rochester: Meliora Weekend (Joint with Prof. Vas Petrenko)
Title: Fairchild Colloquium: The Adventure of the Geosciences: Atmospheric and Oceanographic Expeditions into Climate Change
- 6) April 5, 2013
Stony Brook University
Title: Challenges when Assessing Hydrocarbon Degradation via Isotopic Fractionation
- 7) February 13, 2013
University of Rochester, Faculty Perspectives Seminar Series
Title: Oceans and Rapid Climate Change: A Look at the Greenhouse Effect
- 8) February 8, 2013
University of Rochester, Sustainability Seminar Series
Title: Oceanic Secrets Revealed by the Deepwater Horizon Disaster
- 9) January 24, 2013
Syracuse University, Department of Earth Sciences
Title: Oceanic Secrets Revealed by the Deepwater Horizon Disaster
- 10) November 15, 2012
University of Waterloo, Department of Earth and Environmental Sciences
Title: Death of a Hydrocarbon Plume
- 11) November 9, 2012
University of Southern Mississippi, Department of Marine Science
Title: Death of a Hydrocarbon Plume
- 12) October 12, 2012
University of Texas at Austin, Institute for Geophysics
Title: Challenges when Assessing Hydrocarbon Degradation via Isotopic Fractionation
- 13) October 11, 2012
University of Texas at Austin, Jackson School of Geosciences
Title: Death of a Hydrocarbon Plume

- 14) April 17, 2012
TAMU-CS Department of Atmospheric Science Seminar Series
Title: The Death of a Hydrocarbon Plume
- 15) December 10, 2010
TAMU Research Foundation Councilors and Board of Trustees Meeting
Title: Oceanic Secrets Revealed by the Deepwater Horizon Disaster
- 16) November 9, 2010
TAMU-Galveston Department of Oceanography Seminar Series
Title: Using the Deepwater Horizon Disaster to Investigate the Biogeochemical Cycling Associated with Rapid Methane Emissions
- 17) November 5, 2010
Yale University Yale School of Forestry & Environmental Studies Seminar Series
Title: Using the Deepwater Horizon Disaster to Investigate the Biogeochemical Cycling Associated with Rapid Methane Emissions
- 18) November 4, 2010
Yale University, The Yale Climate & Energy Institute
Title: Disaster in the Gulf: A Panel Discussion on the Deepwater Horizon Spill
- 19) November 1, 2010
TAMU-CS Department of Oceanography Seminar Series
Title: Using the Deepwater Horizon Disaster to Investigate the Biogeochemical Cycling Associated with Rapid Methane Emissions
- 20) August 27, 2010
Rice University, Center for the Study of the Environment and Society Seminar Series
Title: Persistent Localized Underwater Methane Emission Study (PLUMES)
- 21) August 26, 2010
Rice University, Department of Earth Science Seminar Series
Title: Using the Deepwater Horizon Disaster to Investigate the Biogeochemical Cycling Associated with Rapid Methane Emissions
- 22) November, 2009
University of Texas at Arlington
Title: Oceanic Methane Isotope Biogeochemistry: From Reeburgh to Rayleigh

III. INSTRUCTIONAL ACTIVITIES

GRADUATE CLASSES TAUGHT

Chemical Oceanography	2010, 2013, 2014, 2015, 2016
Isotope Geochemistry/Environmental Radiochemistry	2009, 2011, 2013, 2015, 2017
Advanced Seminar in Climate and Environmental Change	2015
Seminar in Stable Isotope Geosciences	2010
Research	2009 – 2017

UNDERGRADUATE CLASSES TAUGHT

Chemical Oceanography	2013, 2014, 2015, 2016
Isotope Geochemistry	2013, 2015
Research in Ocean Biogeochemistry	2014, 2016
Advanced Seminar in Climate and Environmental Change	2015
Interdisciplinary Oceanography	2010, 2011, 2012
Introduction to Oceanography	2009, 2011, 2012
Undergraduate Research	2011 – 2017

GRADUATE STUDENTS ADVISED

Ph.D.: Mengran Du (2009-2014)

Title of Dissertation: Determining the fate of methane released from the seafloor in deep and shallow water environments

Current Position: Associate Scientist, Sanya Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences, Sanya, China

Ph.D.: Kathryn Sparrow (2011-2016)

Title of Dissertation: Assessing the Contribution of Methane Sourced from Ancient Carbon in the Alaskan Arctic Ocean to the Modern Atmosphere Using Natural Radiocarbon Measurements

Current Position: Postdoctoral researcher, Department of Environmental Science and Analytical Chemistry, Stockholm University

M.S.: David Jaenike (2013-2014)

Title of Thesis: Changes in evaporation caused by increasing concentrations of dissolved CO₂ in water: a kinetic and isotopic effect

Current Position: TTM Technologies, Stafford, CT

Ph.D. Eric Chan (2009-present)

Passed written and oral qualifying exams

Ph.D. Mihai Leonte (2012-present)

Passed written and oral qualifying exams

Ph.D. Fenix Garcia-Tigreros (2013-present)

Passed written qualifying exam

M.S. Amy Eisenstadt (2016-present)

UNDERGRADUATE STUDENTS ADVISED WITH THESIS RESEARCH IN THE LAB AND FIELD

B.S.: Stephanie Hendrickson (Spring 2011)

Michele Ebbole (Spring 2012)

Adam Solomon (Spring 2012)

Lili Schachter (Spring 2013)

Daniel Diaz-Etchevehere (Spring 2016)

Gabryella Pulsinelli (Spring 2016)

PRESENTATIONS BY ADVISED GRADUATE STUDENTS (asterisk & bold indicates graduate student authors)

Title: Dissolved Methane and Carbon Dioxide Fluxes in Subarctic and Arctic Regions: Assessing Measurement Techniques and Spatial Gradients (Poster)

Authors: **Fenix Garcia-Tigeros Kodovska***, K.J. Sparrow, S.A. Yvon-Lewis, A. Paytan, N.T. Dimova, **A. Lecher**, J.D. Kessler

Conference: Ocean Sciences, New Orleans, LA, February 21-26, 2016

Title: Investigating the emission, dissolution, and oxidation of CH₄ within and around a seep bubble plume in the Gulf of Mexico (Poster)

Authors: **Mihai Leonte***, J. Kessler, S. Scolofsky

Conference: Ocean Sciences, New Orleans, LA, February 21-26, 2016

Title: Investigating the Chemical and Isotopic Kinetics of Aerobic Methane Oxidation in Two Different Novel Environments (Talk)

Authors: **Eric Chan***, J. Kessler, A. Shiller, M. Redmond, **E. Arrington**, D.L. Valentine

Conference: Gulf of Mexico Oil Spill & Ecosystem Science Conference, Tampa, FL, February 1-4, 2016

Title: High Resolution Analytical Techniques for the Analysis of Methane Oxidation in Mesocosm Experiments (Poster)

Authors: **Eric Chan***, J. Kessler, M. Redmond, A. Shiller, **E. Arrington**, D.L. Valentine, F. Colombo

Conference: Gulf of Mexico Oil Spill & Ecosystem Science Conference, Tampa, FL, February 1-4, 2016

Title: Investigating the chemical and isotopic kinetics of aerobic methane oxidation in the Northern US Atlantic Margin, Hudson Canyon (Poster)

Authors: **Eric Chan***, J. Kessler, A. Shiller, M. Redmond, **E. Arrington**, D.L. Valentine

Conference: American Geophysical Union, San Francisco, CA, December 14-18, 2015

Title: High resolution and comprehensive techniques to analyze aerobic methane oxidation in mesocosm experiments (Poster)

Authors: **Eric Chan***, J. Kessler, M. Redmond, A. Shiller, **E. Arrington**, D.L. Valentine, F. Colombo

Conference: American Geophysical Union, San Francisco, CA, December 14-18, 2015

Title: Carbonate Chemistry Dynamics in an Area of Active Gas Seepage: the Hudson Canyon, US Atlantic Margin (Poster)

Authors: **Fenix Garcia-Tigeros Kodovska***, J. Kessler, **M. Leonte**, A. Chepigin, M. Kellermann, **E. Arrington**, D.L. Valentine

Conference: American Geophysical Union, San Francisco, CA, December 14-18, 2015

Title: The potential influence of aerobic methane oxidation on ocean carbon dioxide and pH (Talk)

Authors: **Fenix Garcia-Tigeros Kodovska*** and J. Kessler

Institution: Center for Arctic Gas Hydrates, Environment and Climate (CAGE), The Arctic University of Norway, December 2, 2015

Title: Efficient collection and preparation of methane from extremely large volumes of water for natural radiocarbon analysis (Talk)

Authors: **Katy Sparrow*** and J. Kessler

Conference: 22nd International Radiocarbon Conference, Dakar, Sénégal, November 16-20, 2015

Title: A Comprehensive Analysis of Methane Oxidation Events in Mesocosm Experiments (Talk)

Authors: **Eric W. Chan*** and J. Kessler

Conference: Goldschmidt, Prague, CZ, August 16-21, 2015

Title: Efficient Collection of Methane from Extremely Large Volumes of Water for Natural Radiocarbon Analysis (Poster)

Authors: **Katy Sparrow*** and J. Kessler

Conference: American Geophysical Union, San Francisco, CA, December 14-19, 2014

Title: Comparison of Two Techniques to Calculate Methane Oxidation rates in Samples Obtained from the Hudson Canyon Seep Field in the North Atlantic (Poster)

Authors: **Mihai Leonte***, J. Kessler, **A. Chepigin**, T. Weber, C. Ruppel, M. Kellermann, **E. Arrington**, D. Valentine, S. Silva

Conference: American Geophysical Union, San Francisco, CA, December 14-19, 2014

Title: High resolution measurements of methane concentrations and air-sea fluxes reveal the influence of methane seepage on greenhouse gas dynamics in a massive natural seep field near Coal Oil Point, California (Poster)

Authors: **Mengran Du***, S. Yvon-Lewis, D. Valentine, **S. Mendes**, and J.D. Kessler

Conference: Gulf of Mexico Oil Spill and Ecosystem Science Conference, Mobile, Alabama, January 26-29, 2014

Title: Theoretical and Experimental Reevaluation of Stable Isotope Kinetics During Microbial Growth Stages (Platform)

Authors: **Eric Chan*** and J.D. Kessler

Conference: American Geophysical Union, San Francisco, CA, December 9-13, 2013

Title: Methane Production and Destruction: Theoretical and Experimental Reevaluation of Methane Isotope Kinetics (Poster)

Authors: **Eric Chan*** and J.D. Kessler

Conference: 2011 IYC O₃ Symposium on Stratospheric Ozone and Climate Change, Washington DC, November 7-11, 2011

Title: Using Dissolved Oxygen Anomalies to Assess the Spatial and Temporal Variability of Hydrocarbon Respiration in Response to the Oil Spill Event (Poster)

Authors: **Mengran Du*** and J.D. Kessler

Conference: 2011 IYC O₃ Symposium on Stratospheric Ozone and Climate Change, Washington DC, November 7-11, 2011

Title: Using Dissolved Oxygen Anomalies to Assess the Spatial and Temporal Variability of Hydrocarbon Respiration in Response to the Oil Spill Event (Poster)

Authors: **Mengran Du*** and J.D. Kessler

Conference: 2011 DWH Oil Spill Principal Investigator 1-Year Updated Workshop, St. Petersburg FL, October 2011

IV. SERVICE AND ADMINISTRATIVE ACTIVITIES

PRESENTATIONS TO COMMUNITY GROUPS

January 20, 2017

James P.B. Duffy School # 12, Rochester, NY

Title: Changing Climate and Greenhouse Gases in Lakes and the Ocean

May 29, 2015

Science Adventure Day, Honeoye Falls-Lima Manor School

Title: The Ocean Sciences

February 1, 2014

TEDx Allendale

Allendale Columbia School

Title: The Broader Impacts of Science

March 31, 2011

College Station Rotary Club

Title: Using the Deepwater Horizon Disaster to Investigate the Biogeochemical Cycling Associated with Rapid Methane Emissions

September 23, 2010

College Station Rotary Club

Title: Persistent Localized Underwater Methane Emission Study (PLUMES)

July, 2010

Bryan Public Library

Title: Let's Make Lemonade: Using the Gulf oil spill to learn how the Earth Functions

DEPARTMENTAL AND UNIVERSITY SERVICE

Member of the Faculty Senate

Board of Academic Honesty

Member of Faculty Search Committee for the Dean of The College

Member of Faculty Search Committee for the Chair of Environmental Medicine

Advisory Committee: River Campus Libraries

Internal Steering Committee: Institute for Data Science

Executive Committee: Center for Energy and the Environment

College Strategic Planning Committee

Contributed to the Faculty Search for Data Science (Global Biogeosciences Search)

Contributed to the Meeting/HSCCI Collaboratory for Visualization Science

Member of Faculty Search Committees

Undergraduate Advisor: Department

Undergraduate Advisor: Pre-Major

Member of Committee to Revise Environmental Sciences (BS) and Environmental Studies (BA) Majors

Discussion leader in NSF Responsible Conduct of Research Workshop

Contributed to the Faculty Perspectives Seminar Series, Sponsored by the Office of Alumni Relations

REVIEWER FOR THE FOLLOWING JOURNALS

Basin Research
Biogeosciences
Chemical Geology
Environmental Science & Technology
G-Cubed
Geo-Marine Letters
International Journal of Earth Sciences

Limnology & Oceanography
Limnology & Oceanography: Methods
Marine Chemistry
Nature: Geoscience
Proceedings of the National Academy of Sciences
Science

PROPOSAL REVIEWER FOR THE FOLLOWING FUNDING AGENCIES

National Science Foundation: Ocean Sciences: Chemical Oceanography (Panel Review as well)
National Science Foundation: Polar Programs
National Science Foundation: Major Research Instrumentation-Recovery and Reinvestment
National Environmental Research Council
Netherlands Organization for Scientific Research (NOW): Council for the Earth and Life Sciences Open Program

V. OTHER

MEMBERSHIPS

American Geophysical Union

SHORT COURSES

Quantitative X-ray Microanalysis of Bulk Specimens and Particles,	Lehigh University,	June 1999
Scanning Electron Microscopy and X-ray Microanalysis,	Lehigh University,	June 1998