BRAD ERIK ROSENHEIM

College of Marine Science
University of South Florida
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Positions Held

2013-present | University of South Florida | St. Petersburg, Florida

Assistant Professor

- College of Marine Science

2008-2013 | Tulane University | New Orleans, Louisiana

Assistant Professor

- Department of Earth and Environmental Science
- Director, Stable Isotope Laboratory at Tulane University (SILT U)

2005-2007 | Woods Hole Oceanographic Institution | Woods Hole, Massachusetts

Postdoctoral Investigator

- Project: "A Continuous Flow Accelerator Mass Spectrometer." I was involved building a CO_2- gas accepting accelerator mass spectrometer for ^{14}C measurement, a first of its kind. My work involved assembly, electrical, and programming of the control system, as well as development of peripheral applications such as the programmed temperature pyrolysis/combustion system, automated carbonate analysis, and laser ablation of carbonates.

Education, Honors and Awards

1999-2005 | University of Miami | Miami, Florida

Ph.D., Marine Geology and Geophysics.

Thesis: "An Investigation of the Use of Sclerosponges as High-Resolution Proxy Indicators of the Marine Paleoclimate." I worked validating the use of high-resolution geochemical proxies in the aragonite skeletons of sclerosponges to infer past salinities and temperatures of both surface and subsurface water masses in the Atlantic. This project incurred extensive laboratory work, field work, and modeling, and thus far has resulted in 4 (3 first author) publications and numerous abstracts. Two more first author manuscripts are in preparation.

Outstanding Student of the Year, Marine Geology and Geophysics, 2000.

1995-1999 | University of Vermont | Burlington, Vermont

B.S., Environmental Science, Honors Distinction.

Thesis: "Freshwater Dilution Observed in the Stable Oxygen Isotope Record of the Scleractinian Coral *Montastraea annularis*: Roatan, Honduras." I used three lagoonal coral colonies adjacent to three different coastal land use zones and analyzed a short stable isotope record to ascertain the effects of land use on isotopic records in corals. The results of this project were published as an undergraduate honors thesis.

Magna Cum Laude, 1999.

Phi Beta Kappa, Alpha Chapter of Vermont, inducted 1999.

John Dewey Scholar, 1997-1999.

Charles C. Doll Award, 1998.

Beard Family Scholarship, College of Arts and Sciences, 1995.

Extramural Research Funding

Total Research Funding to Date: **$2.2 million**
Total Indirect Funds Generation: **$0.64 million**

Extramural Research Funding

Current

Gulf of Mexico Research Initiative RFP-I "Consortium for the Advanced Research of Transport of Hydrocarbon in the Environment." November 1, 2011 – October 31, 2014 ($841,693 - current).

NSF Sedimentary Geology and Paleobiology "Collaborative Research: Continuous vs. episodic fluviodeltaic sedimentation: Implications for carbon sequestration and coastal restoration." June 15, 2012 – June 14, 2015. (EAR-1148005 $380,913)

NSF Office of Polar Programs "Timing and duration of the LGM and post-LGM grounding events in Whales Deep paleo ice stream, eastern Ross Sea middle continental shelf." October 1, 2012 – September 30, 2015. ($41,396, current)

Past

NSF Paleoperspectives in Climate Change "Assessing Wind-driven Circulation Variability in the Subtropical N. Atlantic Using an Array of Archived Radiocarbon Records," June 1, 2009 to May 31, 2013. (OCE-0902980 $255,073, current)

NSF Geosciences Instrumentation and Facilities "Development of a Programmed-temperature Pyrolysis/Combustion Reactor System for Radiocarbon Applications," September 15, 2009 – August 31, 2013. (EAR – 0929752 $215,153, current)

NSF Geosciences Instrumentation and Facilities "RAPID: Increasing through-put of novel Ramped Pyrolysis Radiocarbon Preparation Technique for Gulf Coast oil spill studies - Instrumentation Development." Sep. 1, 2010 – Aug. 31, 2013 (EAR – 1058517 $183,369, current)

NSF Ecosystems "Collaborative Research: RAPID: The 2011 Atchafalaya River Flood and a possible altered system state for the Atchafalaya River Delta Estuary." July 1, 2011 – January 1, 2013. (DEB – 1141410 $37,396, current)

NSF Sedimentology and Low-Temperature Geochemistry "Collaborative Research: Geochemical and isotopic time-series of marine and terrestrial degradation of petroleum in the 2010 Gulf of Mexico oil spill." Aug. 1, 2010 – July 31, 2012. (EAR – 1045845 $66,094)

NSF SGER Geomorphology Program "Fate and Transport of Carbon and Sediment during a Mississippi River High Water Event," June 1, 2008 to May 31, 2009. (EAR-0832754, $29,658)

Louisiana Board of Regents " Determining the Distribution of Ages in Sedimentary Organic Material Carried and Deposited by Mississippi River," June 1, 2009 to May 31, 2012. ($190,080, expired)

Pending

NSF Marine Geology and Geophysics "Collaborative Research: Reconstructing centennial-scale Caribbean warming using a coupled model-proxy approach." (pending, $580,185)

Students Advised

2008-present Tulane University New Orleans, Louisiana

Kimberly Roe, M.S. 2011

Matthew Pendergraft, M.S., 2013

Elizabeth Williams, Ph.D., *in progress*

Alvaro Fernandez, Ph.D., *in progress*

Emily Cardarelli, B.S. with honors, 2012

Gabriella March, B.S. with honors, 2010

Jennifer Douglass, B.S. with honors, 2010

Publications
(in preparation)
(*Students are italicized)*

Rosenheim, B.E.; Gourmelen, N.; Shepherd, A.; Leeson, A.; *Williams, E.K.; Fernandez, A.B.*; Palmer, S.; Laenarts, J.; Mulvaney, R.; van der Broecke, M. (in preparation). "Recent Accumulation Rates and Climate Records from Shallow Firn Cores on the Larsen C Ice Shelf, Antarctica." Earth and Planetary Science Letters. (anticipated submission, June, 2014)

Williams, E.K.; **Rosenheim, B.E.** (in revision for resubmission). "Source controlled chemical stability of wetland sedimentary OC as revealed by ramped pyrolysis and ^{13}C analysis: implications for global climate change." Geochemistry, Geophysics, Geosystems (anticipated submission: March, 2013)

Rosenheim, B.E.; Villinski, J.C.; Hayes, J.M.; Dunbar, R.S. (in preparation). "Low-temperature radiocarbon age plateaus ramped pyrolysis analysis of coretop sedimentary organic material from the Ross Sea, Antarctica." Radiocarbon. (anticipated submission: May, 2014)

Publications
(Peer Reviewed and in review)
(*Students are italicized)*

1. Broadbent, E.N.; Almeda-Zambrano, A.M.; Asner, G.P.; Field, C.B.; **Rosenheim, B.E.**; Kennedy-Bowdoin, T.; Balaji, A.; Knapp, D.; Burke, D.; Giardana, C.; Cordell, S. (in review). "Predicting leaf trait variation in a Hawaiian rainforest understory: a microclimate approach based on fusion of airborne LIDAR and hyperspectral imagery." Ecology (submitted: September, 2013).

2. Tang, J., *Fernandez, A.B.*; **Rosenheim, B.E.** (in review). "Assessment of precipitation rate of calcite on equilibrium relationship between temperature and clumped isotope composition." Geochimica et Cosmochimica Acta. (re-submitted: February, 2014).

3. Rosenheim, B.E.; *Pendergraft, M.A.;* Flowers, G.C.; Carney, R.; Sericano, J.; Amer, R.M.; Chanton, J.; Dincer, Z.; Wade, T.L. (in press). "Employing extant stable carbon isotope data in Gulf of Mexico sedimentary organic matter for oil spill studies." Deep Sea Research II.

4. *Fernandez, A.;* Tang, J.; **Rosenheim, B.E.** (2014). "Calibration of temperature to clumped isotope composition of siderite." Geochimica et Cosmochimica Acta, v. 126, p. 411-421. doi: 10.1016/j.gca.2013.11.006

5. Johannesson, K.H.; Telfayan, K.; Chevis, D.A.; **Rosenheim, B.E.**; Leybourne, M.I.; (2014). "Rare Earth Elements in Stromatolites: 1. Evidence that Modern Terrestrial Stromatolites Fractionate Rare Earth Elements During Incorporation from Ambient Waters." In: Y. Dilek and H. Furnes (eds.) Archean Earth and Early Life. Springer (Dordrecht), pp. 385-411.

6. *Pendergraft, M.A.*; Dincer, Z.; Sericano, J.; Wade, T.L.; Kolasinski, J.; **Rosenheim, B.E.** (2013). "Linking ramped pyrolysis isotope data to oil content through PAH analysis." Environmental Research Letters. v. 8, n. 4, doi:10.1088/1748-9326/8/4/044038

7. Duan, S., Allison, M.A.; Bianchi, T.S.; McKee, B.A.; Shiller, A.M.; Guo, L.; **Rosenheim, B.E.** (2013). "Sediment, organic carbon, nutrients, and trace elements: Sources, transport, and biogeochemical cycles in the lowermost Mississippi River." In Biogeochemical Dynamics at Major River-Coastal Interfaces: Linkages with Global Change. Eds. Bianchi, T.S.; Allison, M.A.; Cai, W.-J. Cambridge University Press, New York, NY. 658p.

8. Rosenheim, B.E.; Tang, J.; *Fernandez, A.*; (2013). "Measurement of multiply-substituted isotopologues of CO_2 using a 5kV mass spectrometer." Rapid Communications in Mass Spectrometry. v.27, p. 1847-1857.

9. Rosenheim, B.E.; *Santoro, J;* Domack, E.W. (2013). "Ramped pyrolysis radiocarbon dating of Antarctic sediment, Hugo Island Trough." Radiocarbon. v. 55, n. 1. p. 115-126.

10. Rosenheim, B.E.; *Roe, K.*; Roberts, B.J.; Kolker, ; Allison, M.A.; Johannesson, K.H.; (2013), "The influence of river discharge on carbon transport by the Mississippi/Atchafalaya River System." Global

Biogeochemical Cycles. doi:10.1002/gbc.20018. 13pp.

Publications
(Peer Reviewed)
(*Students are italicized)*

11. Rosenheim, B.E.; Galy, V. (2012). "Direct measurement of terrigenous carbon age structure." Geophysical Research Letters. v. 39, n. 19, doi:10.1029/2012GL052883

- *Nature Geoscience News and Views – "Biogeochemistry: River Carbon Unraveled," (2012) v. 5, p. 684*

12. Datta, S; Neal, A.W.; Mohajerin, T.J.; Ocheltree, T.; **Rosenheim, B.E.**; White, C.D.; Johannesson, K.H. (2011). "Perennial ponds are not an important source of water or dissolved organic matter to groundwaters with high arsenic concentrations in West Bengal, India." Geophysical Research Letters. v. 38., L20404, 5pp.

13. Roberts, M.L.; Burton, J.R.; Elder, K.L.; Longworth, B.E.; McIntyre, C.P.; Han, B.X.; **Rosenheim, B.E.**; Jenkins, W.J.; Galutschek, E.; McNichol, A.P. (2010). "A high performance ^{14}C accelerator mass spectrometry system." Radiocarbon. v. 52, n. 2. p. 228-235

14. Swart, P.K..; Greer, L.; **Rosenheim, B.E.**; Moses, C.S.; Waite, A.J.; Winter, A.; Dodge, R.; Helmle, K. (2010). "^{13}C Suess effect in scleractinian corals mirror changes in the anthropogenic CO_2 inventory of the surface oceans." Geophysical Research Letters. v. 37. pp. L02603.

15. Rosenheim, B.E.; Swart, P.K.; Willenz, Ph. (2009). "Calibration of sclerosponge oxygen isotope records to temperature using high-resolution $\delta^{18}O$ data." Geochimica et Cosmochimica Acta. v.73. p. 5308-5319.

16. Rosenheim, B.E.; Thorrold, S.R.; Roberts, M.L. (2008). "Accelerator mass spectrometer ^{14}C determination in CO_2 produced from laser decomposition of aragonite." Rapid Communications in Mass Spectrometry. v. 22, n. 21. p. 3443-3449.

17. Rosenheim, B.E.; Day, M.B.; Domack, E.W.; Schrum, H.; Benthien, A;. Hayes, J.M. (2008). "Antarctic sediment chronology by programmed temperature pyrolysis: methodology and data treatment" Geochemistry Geophysics Geosystems. v.9.

18. von Reden, K.F.; Roberts, M.L.; Jenkins, W.J.; **Rosenheim, B.E.**; McNichol, A.P.; Schneider, R.J. (2008). "Software development for continuous-gas-flow AMS." Nuclear Instruments and Methods in Physics Research B: Beam Interactions with Materials and Atoms. v. 266, n. 10. P. 2233-2237.

19. Roberts, M.L.; Schneider, R.J.; von Reden, K.F.; Wills, J.S.C.; Han, B.X.; Hayes, J.M.; **Rosenheim, B.E.;** Jenkins, W.J. (2007). "Progress on a gas-accepting ion source for continuous-flow accelerator mass spectrometry." Nuclear Instruments and Methods in Physics Research B: Beam Interactions with Materials and Atoms. v. 259, n. 1. p. 83-87.

20. Rosenheim, B.E.; Swart, P.K.; Eisenhauer, A. (2007). "Constraining Initial ^{230}Th Activity in Incrementally-Deposited, Biogenic Aragonite from the Bahamas" Geochimica et Cosmochimica Acta. v. 71. pp. 4025-4035.

21. Rosenheim, B.E.; Swart, P.K. (2007). "Caribbean sclerosponge radiocarbon measurements re-interpreted in terms of U/Th age models." Nuclear Instruments and Methods in Physics Research B. v. 259. pp. 474-478. doi:10.1016/j.nim.b2007.01.235.

22. Moses, C.S.; **Rosenheim, B.E.**; Swart, P.K. (2006). "Evidence of multi-decadal salinity variability in the eastern tropical North Atlantic" Paleoceanography. v. 21, PA3010. doi: 10.1029/ 2006PA001257.

23. Rosenheim, B.E.; Swart, P.K.; Thorrold, S.R. (2005). "Minor and trace elements in sclerosponge *Ceratoporella nicholsoni*: Biogenic aragonite near the inorganic endmember?" Palaeogeography Palaeoclimatology Palaeoecology. v. 228, n. 1-2. pp**.** 109-129. DOI 10.1016/j.palaeo.2005.03.055.

24. Rosenheim, B.E.; Swart, P.K.; Thorrold, S.R.; Willenz, P. (2005). "Salinity change in the subtropical Atlantic: Secular increase and teleconnections to the North Atlantic Oscillation." Geophysical Research Letters. v. 32, n. L02603. doi: 10.1029/2004GL021499.

25. Rosenheim, B.E.; Swart, P.K.; Thorrold, S.R.; Willenz, P.; Berry, L.; Latcozky, C. (2004). "High-resolution Sr/Ca records in sclerosponges calibrated to temperature in situ." Geology, v.32, n.2. p. 145-148. doi 10.1130/G20117.1

26. Swart, P.K.: Thorrold, S.; Rubenstone, J.; **Rosenheim, B.**; Harrison, C.G.A.; Grammer, M.; Latkoczy, C. (2002). "Intra-annual variation in stable oxygen and carbon and trace element composition

of sclerosponges." Paleoceanography, v.17. 12p. doi:10.1029/2000PA000622

27. Mehrtens, C.; **Rosenheim, B.E.**; Modley, M.; Young, R. (2001). "Reef morphology and sediment attributes, Roatan, Bay Islands, Honduras." Carbonates and Evaporites, v.16, n.2. p. 131-140.

Recent Published Abstracts and Conference Presentations – last 5 years

(*Graduate student presenting)

(°Undergraduate student presenting)

Bianchi, T.S.; Schreiner, K.M.; **Rosenheim, B.E.**; Allison, M.A. (2013). "Particulate organic carbon transport and burial in the Colville River Delta, Beaufort Sea, Alaska." Abstract H34A-06, presented at the 2013 Fall Meeting, AGU, San Francisco, CA 11 December

Tang, J.; Fernandez, A.; **Rosenheim, B.E.** (2013). "Evaluation of kinetic effect on clumped isotope fractionation (Δ_{47}) during inorganic calcite precipitation." Mineralogical Magazine, **77(5)** p. 2308.

Fernandez, A.*; Tang, J.; **Rosenheim, B.E.** (2013). "Calibration of the siderite CO_2 "clumped" isotope paleothermometer." Mineralogical Magazine, **77(5)** p. 1075.

Rosenheim, B.E.; Galy, V.; Williams, E.K.; Roberts, B.; Allison, M.; Schreiner, K.; Bianchi, T. (2013). "Particulate organic carbon age spectra: Evaluating different spectra from different basin types." Mineralogical Magazine, **77(5)** p. 2084.

Rosenheim, B.E.; Williams, E.K.; Roberts, B.J.; Allison, M.A. (2013). "High discharge and particulate organic carbon transport on the Mississippi-Atchafalaya System." ASLO 2013 Aquatic Sciences Meeting, New Orleans, LA, February 17-22.

Pendergraft, M.A.*; **Rosenheim, B.E.**; Schimmelmann, A.; Finkelstein, D. (2013). "Characterizing oil degradation and mixing in bulk samples from coastal environments using ramped-pyrolysis." Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans, LA, January 21-23.

Rosenheim, B.E.; Pendergraft, M.A.; Carney, R.; Cruz, V.; Brunner, C.; Chanton, J. (2013). "Cruise Report - CARTHE Sediment and Water Column Sampling, DWH Spill Site West to Mississippi Canyon." Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans, LA, January 21-23.

Rosenheim, B.E.; Pendergraft, M.A.; Flowers, G.; Carney, R. (2013). "Mapping historical $\delta^{13}C$ data from sedimentary organic material in the Gulf of Mexico provides background for tracking oil contamination." Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans, LA, January 21-23.

Dincer, Z.*; Pendergraft, M.A.; Sericano, J.; Wade, T.; **Rosenheim, B.E.** (2013). "Relating PAH content to overall stability of organic matter containing DWH oil." Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans, LA, January 21-23.

Rosenheim, B.E.; Galy, V.; Roberts, B.J.; Allison, M.A.; Kolker, A.S. (2012). "Age spectra of riverine POC – does variability within or between river basins have a larger impact on POC age distributions?" Abstract B13A-0468 presented at the 2012 Fall Meeting, AGU, San Francisco, CA 3 December

Williams, E.K.*; **Rosenheim, B.E.**; McNichol, A.P.; Roberts, M.L.; Xu, L. (2012). "The impact of varying depositional processes on the preservation of lignin from the Mississippi and Amazon Rivers: A dual application of compound-specific and ramped pyrolysis radiocarbon dating." Abstract B13D-0560 presented at the 2012 Fall Meeting, AGU, San Francisco, CA 3 December

Finkelstein, D.B.; Schimmelmann, A.; **Rosenheim, B.E.**; Pendergraft, M.A.* (2012). "Geochemical and isotopic time series of oil deposited in Barataria Bay and on Grand Isle, Louisiana, after the Deepwater Horizon Oil Spill." Abstract B21A-0336 presented at the 2012 Fall Meeting, AGU, San Francisco, CA 4 December

Rosenheim, B.E.; Williams, E.K.; Pendergraft, M. (2012). "Chemistry of ramped pyrolysis radiocarbon dating." 21st International Radiocarbon Conference, Paris, France

Rosenheim, B.E., Roberts, B.J.; Galy, V.; Allison, M.A.; Kolker, A.S.; Beaupré, S.; Roe, K.M. (2012). "Radiocarbon age distributions in riverine POC." 21st International Radiocarbon Conference, Paris, France

Williams, E.K.*, **Rosenheim, B.E**. (2011). "Chemistry of decomposition of freshwater wetland sedimentary organic material during ramped pyrolysis." Abstract B21E-0297 presented at the 2011

Recent Published Abstracts and Conference Presentations – last 5 years (cont'd)
(*Graduate student presenting)

(°Undergraduate student presenting)

Fall Meeting, AGU, San Francisco, CA 6 December.
Swart, P.K., **Rosenheim, B.E**., Waite, A. (2011). "Paleoproxies as Indicators of Water Mass Changes in the Caribbean (Invited)." Abstract PP22C-01 presented at the 2011 Fall Meeting, AGU, San Francisco, CA 6 December.
Fernandez, A., **Rosenheim, B.E**., Swart, P.K. (2011). "A Century-long Record of Radiocarbon in the Waters of the Cape Verde Islands in the Tropical North Atlantic." Abstract PP23A-1826 presented at the 2011 Fall Meeting, AGU, San Francisco, CA 6 December.
Rosenheim, B.E., Roberts, B.J.; Allison, M.A. (2011). "Quantifying the Age Spectra of Particulate Organic Carbon in the Lower Mississippi River and Atchafalaya Outflow during the Great Flood of 2011 – How Does a High-Flow Event Effect Carbon Transport?" Abstract B24D-05 presented at the 2011 Fall Meeting, AGU, San Francisco, CA 6 December.
Mead, K.A., Wellner, J.S., **Rosenheim, B.E**. (2011). "Age Estimates of Holocene Glacial Retreat in Lapeyrère Bay, Anvers Island, Antarctica" Abstract PP33B-1923 presented at the 2011 Fall Meeting, AGU, San Francisco, CA 7 December
Leventer, A., Domack, E.W., Ishman, S.E., Brachfeld, S.A., Vernet, M., Cape, M., **Rosenheim, B.E**. Gunter, M., Vadman, K.J., Santoro, J. (2011). "Holocene climatic and oceanographic change of the western Antarctic Peninsula: expanding the paleo-record to the open shelf" Abstract PP33B-1928 presented at the 2011 Fall Meeting, AGU, San Francisco, CA 7 December
Rosenheim, B.E. (2011). "A (Dirt) burning desire: Running smaller samples from ramped pyrolysis radiocarbon preparation." International Workshop on Small Scale Radiocarbon Analysis, ETH Zurich, Zurich, Switzerland
Telfeyan, K., Chevis, D.A., **Rosenheim, B.E.**, Johannesson, K.H. (2011). "Rare earth elements in stromatolites: Windows into early life and climate?" presented at 2011 Annual Meeting Geological Society of America, Minneapolis, MN, October
Rosenheim, B.E. (2011). "A (Dirt) Burning Desire: Running smaller samples from ramped pyrolysis radiocarbon preparation." International Workshop on Small Scale Radiocarbon Analysis, ETH Zurich, Switzerland, September 2011
Rosenheim, B.E. (2011). "Tracing the weathering of landed oil from the BP-Deepwater Horizon Spill using isotopic techniques." South Central Section Meeting, Geological Society of America, New Orleans, LA, March 2011.
Rosenheim, B.E., Gourmelen, N., Palmer, S.J., Leeson, A.A., William, E.K.*, Fernandez, A.*, Shepherd, A. (2010). "Stable isotope records from Larsen-C Ice Shelf ice cores to constrain ice shelf growth models." Abstract GC43E-1010 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.
Fernandez, A.*, **Rosenheim, B.E.**, Swart, P.K. (2010) "Coral radiocarbon records from the eastern tropical Atlantic - what can they tell us about Ekman upwelling and the subtropical cells?" Abstract PP43B-1700 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.
Williams, E.K.*, **Rosenheim, B.E.**, Kolker, A.S. (2010) "Constraining organic carbon sequestration in coastal wetlands in response to sea-level rise using samples along a salinity gradient in southeast Louisiana." Abstract B13A-0447 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.
Feng, X., Galy, V., **Rosenheim, B.E.**, Roe, K.M.*, Williams, E.K.* (2010) "Structure, provenance and residence time of terrestrial organic carbon: insights from Programmed temperature Pyrolysis-Combustion of river sediments." Abstract B13B-0483 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.
Roe, K.M.*, Rosenheim, B.E., Roberts, B.J., Kolker, A.S., Allison, M.A. (2010) "A characterization of the lability of particulate organic matter in the lower Mississippi-Atchafalaya River System: An application of a programmed temperature pyrolysis/combustion system." Abstract OSG33-05 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.
Kolker, A.S., Douglas, J.L., **Rosenheim, B.E.** (2009). "Disturbance and recovery in the Anthropocene: Examining sedimentation and coastal progradation on Lana'I, Hawai'i," Eos Transactions, AGU. V. 90(52), Fall Meeting Supplement, Abs. EP43E-0687.
Waite, A.J., Swart, P.K., **Rosenheim, B.E.**, (2009). "A new calibration for the Sr/Ca-temperature relationship in sclerosponges reveals synchronous changes in Caribbean specimens indicative of warming and multi-decadal climate variability," Eos Transactions, AGU. V. 90(52), Fall Meeting

Recent Published Abstracts and Conference Presentations – last 5 years (cont'd)

(*Graduate student presenting)

(°Undergraduate student presenting)

Supplement, Abs. PP41B-1503.

Roe, K.M.*, **Rosenheim, B.E.**, Kolker, A., Allison, M.A., Nittrouer, J.A., Duncan, D.D., Nyman, J.A., Butcher, K.A., Adamic, J.F. (2009) " The effect of flood events on the partitioning of labile and refractory carbon in the Missouri-Mississippi River system," Eos Transactions, AGU. V. 90(52), Fall Meeting Supplement, Abs. B33C-0401.

Swart, P. K., Greer, L., **Rosenheim, B. E.**, Moses, C.S., Winter, A., Dodge, R.E., Helmle, K.P. (2009). "^{13}C Suess effect in scleractinian corals mirror changes in the anthropogenic CO_2 inventory of the surface oceans," Eos Transactions, AGU. V. 90(52), Fall Meeting Supplement, Abs. PP13E-01.

Rosenberg, A. D., Swart, P. K., Eberli, G. P., **Rosenheim, B. E.**, Reed, J. K., (2009) " Deep-sea corals reveal present temperature and salinity conditions in the Florida Straits," Eos Transactions, AGU. V. 90(52), Fall Meeting Supplement, Abs. PP11A-1291.

Rosenheim, B. E., Adamic, J. F., Reed, J. K. Rosenberg, A. D., Grasmueck, M., Swart, P. K., Eberli, G. P., Correa, T., (2009) "Survivor or opportunist? Oxygen isotope records from Stylaster miniata in the Florida Straits," Eos Transactions, AGU. V. 90(52), Fall Meeting Supplement, Abs. PP13E-08.

Douglass, J. L.°, Kolker, A. S., Gasparini, N. M., Butcher, K. A., **Rosenheim**, B. E. (2009) "Timing and forensics of an immense and rapid sedimentary progradation of the NE Lana'i (Hawaiian Islands) coastline," Geological Society of America Annual Meeting, Portland, OR,

Rosenheim, B.E., Domack, E., McNichol, A., Galy, V., Hayes, J. M., Roe, K., Adamic, J. F., Allison, M. A., (2009) "Overview of ramped pyrolysis radiocarbon dating and application to carbon cycling and chronology," 20th International Radiocarbon Conference, Kona, Hawaii.

Invited Talks

How to ruin a perfectly good (radiocarbon) date – Ramped pyrolysis and age spectra of riverine POC, Northwestern University, Chicago, Illinois, 21Feb2014

Paleoclimatology at the Human Timescale, University of South Florida, College of Marine Science, St. Petersburgh, Florida, 17Mar2013

Burn, baby, Burn! Using refined pyrolysis techniques and radiocarbon to improve our understanding of the carbon cycle, University of Southern Mississippi, Stennis, Mississippi, 21May2010

Burn, baby, burn: Insights from Pyrolysis/Combustion Radiocarbon Chronology of Sediments, University of Houston, Houston, Texas, 30Jan2009

Secrets in Secretions, Louisiana Universities Marine Consortium, Chauvin, Louisiana, 4Dec2008

Burn, Baby, Burn! Pyrolysis Radiocarbon Dating applied to Questions of Chronology and Carbon Cycling, Louisiana State University, Wilbur Lecture series (co-hosted by Geology and Oceanography Departments), Baton Rouge, Louisiana, 18Sep2008

Climate Change, Carbon, and Chronology, University of Vermont, Department of Geology Seminar Series, Burlington, Vermont, 8Oct2007

The Burning Question of Antarctic Sediment Chronology, Brown University, Providence, Rhode Island, 26February2007

Revealing the spectrum of ages in bulk-dated organic material from Antarctic Penninsula sediment cores using programmed temperature pyrolysis, University of Miami (RSMAS), Key Biscayne, Florida, Division of Marine Geology and Geophysics Geotopics Series, 13Feb2007

Laboratory Experience and Supervision

Isotope Ratio Mass Spectrometry. I have experience using state of the art IRMS technology. I have used systems from VG Isogas, Thermo-Finnigan (Delta Plus), Finnigan MAT (251), Europa Geo (20/20) to analyze carbonates and waters. I have developed standardized laboratory computation programs for correction of isotope data and I have performed standardization of the Thermo-Finnigan Delta Plus with Kiel III carbonate device to overcome heterogeneities associated with small sample size capabilities. I am currently managing a laboratory housing an Elementar Isoprime system with Dual Inlet and Multi-Prep system. This system is one of only ~15 in the world (as of January 2012) that is capable of measuring multiply-substituted isotopologues of CO_2.

Radiocarbon Determination and Organics. My laboratory group currently runs two Programmed Temperature Combustion systems. We use this system for radiocarbon dating applied to questions of chronology and carbon cycling, as well as oil pollution in sediments.

Laboratory Experience and Supervision (cont'd)

Laser Ablation/Decomposition. I have used laser ablation as a fine scale subsampling tool for paleoceanographic studies. I have made several advances toward developing a technique to use CO_2 generated from laser decomposition of carbonate mineral surfaces for direct AMS determination of ^{14}C.

Minor and Trace Element Spectrometry and Spectroscopy. I experienced in operation of an Inductively Coupled Plasma spectroscope. I have used ICP-AE and OE spectrometers in both industry and academia. Most recently, I was responsible for standardizing a newly acquired Varian Vista Pro ICP-OES axial spectrometer to analyze large carbonate samples for trace elements and small carbonate samples for minor elements. I have performed standardization with seawater samples of various strengths. I have experience with ICP-MS, especially interfaced with a laser micro-sampling device.

Microscopy. I operated both epifluorescence and scanning electron microscopes for minor parts of my Ph.D. dissertation. I am familiar with the principles of these technologies and able to use them autonomously.

Courses Taught

2008-2013 Tulane University New Orleans, Louisiana

EENS 6210: Carbon Cycle Seminar. This course uses David Archer's Carbon Cycle monograph as a basis to explore the literature concerning changes in the Earth's carbon cycle over several time scales in relation to current changes. It is discussion and writing intensive.

EENS 6080: Climatology and Paleoclimatology of the Common Era. This seminar course is designed to familiarize graduate and advanced undergraduate students with literature concerning very Late Holocene climate and to acclimate students to use of large, publicly available data sets to analyze climate. The course involves literature surveys with a Matlab seminar once per week.

EENS 1300: Earth: A Living Planet. This course was designed and implemented as an introductory environmental science course. A laboratory section of the course was designed by myself, Dr. Nicole Gasparini, Dr. Gerhard Piringer, and Dr. George Flowers, and implemented by Dr. Flowers in spring of 2010.

EENS/EBIO 6240: Stable Isotopes in the Environment. This course is designed to familiarize upper level majors and graduate students with the theories and applications of stable isotope measurement in natural levels found in the environment. Half of the class involves lectures and problem sets, while the second half involves performing laboratory analyses for a final class project.

EENS/EBIO 2230: Introductory Oceanography. This course is aimed at science majors, but accessible to non-majors as well. It involves 3 lectures per week, plus a field trip to LUMCON to perform oceanographic measurements aboard a coastal research vessel.

2001-2005 University of Miami Miami, Florida

MSC 101: Introduction to Oceanography, Non-Science Majors. This course gave me the opportunity to teach lectures on topics as broad as wave physics to coral physiology in a delivery suitable for all backgrounds. I have received excellent reviews from students in these classes and have succeeded in presenting both traditional blackboard lectures and multi-media presentations.

Field work experience

2008-2013 Tulane Universiity New Orleans, Louisiana

June 24 – June 29, 2013: Chief Scientist. PE13-33 Benthic Observations Cruise, R.V. Pelican. Consortium for the Advanced Research of Transport of Hydrocarbon in the Environment.

October 7- October 31, 2012: Shipboard Scientist. LMG12-11 LARISSA Cruise, Antarctic Peninsula. Gravity, piston, and kasten cores of paleo ice stream drape sediment.

June 30 – July 3, 2012: Chief Scientist. PE12-33 Benthic Observations Cruise, R.V. Pelican. Consortium for the Advanced Research of Transport of Hydrocarbon in the Environment.

Field work experience (cont'd)

April 2008 - present: Small boat surveying and sampling of Mississippi River (lower reaches) and Atchafalaya River. The research was originally carried out under an NSF SGER grant for sampling of suspended sediment and new sedimentation. The goal of continued research is to characterize this sediment in terms of the spectra of radiocarbon ages present both before and after deposition and to compare between to normal and low flow stages.

August, 2008 – July 2009: Sedimentation and reef survey, Lana'i, Hawaii. These research involves pilot funds from Tulane University (post Hurricane Katrina research enhancement funds) to commence a research collaboration in Hawai'i involving characterization of erosional processes in terms of land use change and climate change. Sedimentation and carbon transport from the ridges of the volcanoes to the reefs is the goal of measurement and quantification.

2005-2007 Woods Hole Oceanographic Institution Woods Hole, Massachusetts

June, 2007: Submersible research cruise, Key West to Fort Lauderdale, Florida, in collaboration with the University of Miami and Harbor Branch Oceanographic Institution. Several submersible dives were made for collection of marine species living at depths less than 990m and of interest in paleoceanographic studies and pharmaceutical research.

1999-2005 University of Miami Miami, Florida

May-Jun., 2003: Exploration of French Antilles for scuba-accessible sclerosponge specimens. Three week scuba exploration of all areas of the coast with either submarine grottoes or steep walls, both conducive to cryptic sclerosponge habitat.

Oct.-Nov., 2002: Caribbean Atlantic Salinity Experiment (CASE-02) Cruise aboard the R/V Suncoaster. I participated in both legs of a month-long coral core collection expedition spanning the Bahamas to the St. Vincent Grenadines. Responsible for drilling corals by scuba using a hydraulic drill tethered to a small dinghy launched from the main vessel. Corals located using physical geography and existing literature to explore each island by snorkel.

Aug., 2002: Sequence Stratigraphy of the Madison formation. Field Assistant for the Comparative Sedimentology Laboratory of the U. of Miami. Measured stratigraphic section of the Madison formation outcropping in Montana.

May, 2002: Stage II of NSF-funded Sclerosponge Calibration Project, Discovery Bay, Jamaica. Sclerosponges were sampled after an incubation period of nearly 3 years. Other sclerosponges were re-stained with Calcein and thermistors were swapped and re-calibrated. Corals were also sampled to compare with proximal sclerosponge records.

Sep., 2001: Geochemical Classification of Bahamas Bank Sediment cruise, R/V Bellows. This cruise gridded the NW Great Bahamas Bank, sampling sediment and water every 10km. Analysis for salinity, grain type, and skeletal makeup of waters and sediment performed on-board.

May, 2001: Carbonate petrography class trip to Andros Island in the Bahamas. Studied Aeolian and shallow water carbonate deposits from the Pleistocene and Holocene as a class project. I took part in explorations of the supratidal mud flats of western Andros Island and sampled dolomite crusts forming in these unique environments.

August, 2000: Exploration of the Commonwealth of Dominica for mature coral colonies. Explored the leeward coast of Dominica for large heads of *Siderastraea sideraea* suitable for climate records and

potential sclerosponge environments by scuba. Several *S. Sideraea* colonies were drilled pneumatically and brought back to Miami. No sclerosponges were found. Also assisted in surveying reef to quantify and monitor corals with known diseases.

Aug. 1999: Initiation of NSF funded Sclerosponge Calibration Project, Discovery Bay, Jamaica. Installed and calibrated temperature thermistors in submarine reef enclosure and stained sclerosponge surfaces using Calcein, a fluorochrome. Operations performed by scuba.

1998-1999 University of Vermont Burlington, Vermont

Jun.-Jul. 2000: Relocation of sediment traps and levels, Roatan, Honduras. I took part in the final part of an abiotic reef survey, relocating sediment measuring devices and recording reef transects for changes since the project was started.

Jul., 1999: Post-Hurricane Mitch abiotic reef assessment, Roatan, Honduras. This trip was planned to assess catastrophic changes to sections of reef due to the passing of Hurricane Mitch the previous year. Sedimentation measuring devices and coral transects were located by snorkel and scuba.

Field work experience (cont'd)

Jul., 1998: Sampling of *Montastraea annularis* for my undergraduate honors thesis, Roatan, Honduras. Land use patterns of the island were assessed and corals were sampled from long-disturbed area, recently-disturbed area, and pristine offshore control site.

Synergistic Activities

Session Convener – American Geophysical Union (2007)

Technical Session Chair – South Central Sectional Meeting GSA, New Orleans (2011)

Session Convener – Gulf of Mexico Oil Spill and Ecosystem Conference (2013)

NSF Panel Review, OCE

DOE Proposal Review, NICCR Coastal Division

NSF Proposal Review, OCE Marine Geology and Geophysics

NSF Proposal Review, EAR Earth Sciences Instrumentation and Facilities

Peer Review Journal Referee

- Geochimica et Cosmochimica Acta
- Radiocarbon
- Crystal Structure
- Marine Chemistry
- Palaeogeography, Palaeoclimatology, Palaeoecology
- Paleoceanography
- Earth and Planetary Review Letters
- Coral Reefs
- Geochemistry, Geophysics, Geosystems
- AGU Books
- Proceedings, International Coral Reef Symposium

Workshop Attendance

- MOSSFA Working Group Meeting, Tallahassee, Florida, 2013
- 3rd International Clumped Isotope Workshop, Harvard University, Boston, Massachusetts, 2013
- International Workshop on Small Scale Radiocarbon Analysis, Zurich, Switzerland, 2011
- 1st International Clumped Isotope Workshop, Seattle, Washington, 2010
- IODP Caribbean Gateway Workshop, Austin, Texas, 2006

CLIVAR Salinity Workshop, Woods Hole, Massachusetts, 2006

Professional Memberships

European Geophysical Union
American Geophysical Union
Geologic Society of America