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Education and Professional Positions

Professor, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, 1998- present

Associate Professor, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, 1991-1998

Assistant Professor, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, 1985-1991

Research Associate, NASA-Ames Research Center, 1982-1984

Lecturer, Department of Chemistry, Stanford University, 1980-1981

NRC Research Associate, NASA-Ames Research Center, 1980-1981

Ph.D. (Organic Chemistry) Stanford University, 1980

B.S. (Chemistry) University of Maryland, 1975

Professional and Honorary Affiliations

American Association for the Advancement of Sciences

American Chemical Society: Organic and Geochemical Divisions

American Geophysical Union

Geochemical Society

Sigma Xi

Research Interests

Research has focused on the biogeochemical transformations of carbon with an emphasis on process-oriented studies of the fate of organic carbon in surface environments. Methanogenesis, methane oxidation, and the influence of macrofauna on organic carbon diagenesis are some of the processes investigated in field areas ranging from the North Carolina slope to the Amazon shelf. Current projects involve the evolution of organic carbon as particles move from exposed bedrock on land to ultimate burial at sea. Riverine systems in northern California, New Zealand and Papua New Guinea are under investigation.

Publications

Carbon remineralization in the Amazon-Guianas tropical mobile mudbelt: a sedimentary incinerator. *Continent. Shelf Res. (in press)* (R.C. Aller and N.E. Blair).

Sedimentation and carbon burial on the northern California continental shelf: the signatures of land-use change. *Continent. Shelf Res. (2005) 25*: 349-371 (E. Leithold, D.W. Perkey, N.E. Blair. T. Creamer).

Intramolecular carbon isotopic composition of monosodium glutamate: Biochemical pathways and product source identification. *J. Agricultural and Food Chemistry (2005) 53*: 197-201 (W.B. Savidge and N.E. Blair).

Patterns of intramolecular carbon isotopic heterogeneity within amino acids of autotrophs and heterotrophs. *Oecologia (2004) 121*: 178-189 (W.B. Savidge and N.E. Blair).

Early diagenetic remineralization of sedimentary organic C in the Gulf of Papua deltaic complex (Papua New Guinea): net loss of terrestrial C and diagenetic fractionation of C isotopes. *Geochim. Cosmochim. Acta (2004) 68*: 1815-1825 (R.C. Aller and N.E. Blair).

From bedrock to burial: the evolution of particulate organic carbon across coupled watershed-continental margin systems. *Mar. Chem. (2004) 92*: 141-156 (N.E. Blair, E.L. Leithold and R.C. Aller).

Seasonal and within-plant gradients in the intramolecular carbon isotopic composition of amino acids of *Spartina alterniflora*. *J. Exp. Mar. Biol. Ecol. (2004) 308*: 151-167 (W.B. Savidge and N.E. Blair).

The Persistence of Memory: The Fate of Ancient Sedimentary Organic Carbon in a Modern Sedimentary System. *Geochim. Cosmochim. Acta, (2003) 67*: 63-73 (Neal Blair, Elana Leithold, Shawn Ford, Kelly Peeler, Jennifer Holmes and David Perkey).

Organic carbon deposition on the North Carolina continental slope off Cape Hatteras. *Deep Sea Research II (2002) 49*: 4687- (C.J. Thomas, N.E. Blair, M.J. Alperin, D.J. DeMaster, R.A. Jahnke, C.S. Martens and L. Mayer).

Transport and digestive alteration of uniformly ¹³C-labeled diatoms in mudflat sediments *J. Mar. Res. (2002) 60*: 517-535 (C.J. Thomas and N.E. Blair).

Deposition of Bomb ¹⁴C in Continental Slope Sediments of the Mid-Atlantic Bight: Assessing Organic Matter Sources and Burial Rates. *Deep Sea Research II (2002) 4*., 4667-4686. (D.J. DeMaster, C.J. Thomas, N.E. Blair, W.L. Fornes, G. Plaia, and L.A. Levin).

Bt resistance management: The importance of alternate host use by *Helicoverpa zea*. *Proc. Nat. Acad. Sci., (2002) 99*: 16581-16586 (F. Gould, N. Blair, M. Reid, T.L. Rennie, J. Lopez, and S.

Micinski).

Watershed control on the carbon loading of marine sedimentary particles *Geochim. Cosmochim. Acta* (2001) 65: 2231-2240 (E. Leithold and N. Blair).

The biogeochemistry of carbon in continental slope sediments: the North Carolina margin *Proceedings of the Organism-Sediment Interactions Symposium, Oct., 1998, Belle Baruch Institute, S.C.* (2000) (N. Blair, L. Levin, D. DeMaster, G. Plaia, C. Martin, W. Fornes, C. Thomas and R. Pope).

Benthic fluxes and porewater concentration profiles of dissolved organic carbon in sediments from the North Carolina continental slope. *Geochim. Cosmochim. Acta* (1999) 63: 427-448 (M.J. Alperin, C.S. Martens, D.B. Albert, I.B. Suayah, L.K. Benninger, N.E. Blair, and J.A. Jahnke).

Macrofaunal processing of phytodetritus at two sites on the Carolina margin: in situ experiments using C-13-labeled diatoms *Marine Ecology-Progress Series* (1999) 182: 37-54 (L.A. Levin, N.E. Blair, C.M. Martin, D.J. DeMaster, G. Plaia, C.J. Thomas).

Bioturbation and particle transport in Carolina slope sediments: A radiochemical approach *Journal of Marine Research* (1999) 57: 335-355 (W.L. Fornes, D.J. DeMaster, L.A. Levin, N.E. Blair).

Rapid subduction of organic matter by maldanid polychaetes on the North Carolina slope. *J. Mar. Res.* (1998) 55: 1-17 (L. Levin, N. Blair, D. DeMaster, G. Plaia, W. Fornes, C. Martin and C. Thomas).

The $\delta^{13}\text{C}$ of biogenic methane in marine sediments: The influence of C_{org} deposition rate. *Chem. Geol. Isotope Geoscience* (1998) 152: 139-150 (N. Blair).

Methane emission from rice: Stable isotopes, diurnal variations, and CO_2 exchange. *Global Biogeochem. Cycles* (1997) 11: 15-27 (J.P. Chanton, G.J. Whiting, N.E. Blair, C.W. Lindau and P.K. Bollich).

Remineralization Rates, Recycling, and Storage of Carbon in Amazon Shelf sediments. *Cont. Shelf Res* (1996) 16: 753-786 (R.C. Aller, N.E. Blair, Q. Xia, and P.D. Rude).

Sulfur Diagenesis and Burial on the Amazon Shelf: Major Control by Physical Sedimentation Processes. *Geo-Marine Lett* (1996) 16: 3-10 (R.C. Aller and N.E. Blair).

The short-term fate of fresh algal carbon in continental slope sediments. *Limnol. Oceanogr.* (1996) 41: 1208-1219 (N.E. Blair, L.A. Levin, D.J. DeMaster and G. Plaia).

A mass balance of ^{13}C and ^{12}C in an organic-rich methane-producing marine sediment. *Geochim. Cosmochim. Acta.* (1996) 60: 3835-3848. (S.E. Boehme, N.E. Blair, J.P. Chanton and C.S. Martens).

Anaerobic Methane Oxidation on the Amazon Shelf. *Geochim. Cosmochim. Acta* (1995) 59: 3707-3715 (N.E. Blair and R.C. Aller).

The Remineralization of Organic Carbon on the North Carolina Continental Slope. *Deep-Sea Res (1994) 4:*, 755-766 (N.E. Blair, G.R. Plaia, S.E. Boehme, D.J. DeMaster and L.A. Levin).

Biological mixing intensity and rates of organic carbon accumulation in North Carolina slope sediments. *Deep-Sea Res (1994) 41:* 735-753 (D.J. DeMaster, R.H. Pope, L.A. Levin, and N.E. Blair).

The Carbon Isotope Biogeochemistry of Methane Production in Anoxic Sediments: 1. Field Observations. In *The Biogeochemistry of Global Change: Radiative Trace Gases (1993)* R.S. Oremland (ed.), Chapman and Hall, NY, pp. 574-593 (N.E. Blair, S.E. Boehme and W.D. Carter, Jr.).

The Carbon Isotope Biogeochemistry of Methane Production in Anoxic Sediments: 2. A Laboratory Experiment. In *The Biogeochemistry of Global Change: Radiative Trace Gases (1993)* R.S. Oremland (ed.), Chapman and Hall, NY, pp. 594-605 (M.J. Alperin, N.E. Blair, D.B. Albert and T.M. Hoehler).

The Carbon Isotope Biogeochemistry of Acetate from a Methanogenic Marine Sediment. *Geochim. Cosmochim. Acta (1992) 56:* 1247-1258 (N.E. Blair and W.D. Carter, Jr.).

The Carbon Isotope Biogeochemistry of Methane Production in Anoxic Sediments. *Global Biogeochem. Cycles (1992) 6:* 271-291 (M.J. Alperin, N.E. Blair, D.B. Albert and T.M. Hoehler).

Spatial Heterogeneity of Benthos on the North Carolina Continental Slope: Large (100-km)-Scale Variations. *Mar. Ecol. Progr. Ser. (1992) 88:* 143-160 (T. Schaff, L. Levin, N. Blair, D. DeMaster, R. Pope and S. Boehme).

Biogeochemical Processes in Amazon Shelf Sediments: *Oceanography (1991) 4:* 27-32 (R.C. Aller, J.Y. Aller, N.E. Blair, J.E. Mackin, P.D. Rude, I. Stupakoff, S. Patchineelam, S.E. Boehme and B. Knoppers).

Carbon Isotopic Composition of Methane in Florida Everglades Soils and Fractionation during its Transport to the Troposphere: *Global Biogeochemical Cycles (1988) 2:* 245-252 (J.P. Chanton, G.G. Pauly, C.S. Martens, N.E. Blair, J.W.H. Dacey).

Intramolecular Carbon Isotopic Measurements of Acetate from a Coastal Marine Sediment: *Science (1987) 236:* 66-68 (N. E. Blair, C. S. Martens, D. J. Des Marais).

Seasonal Variations in the Stable Carbon Isotopic Signature of Biogenic Methane: *Science (1986) 233:* 1300-1303 (C. S. Martens, N. E. Blair, C. D. Green, D. J. Des Marais).

Carbon Isotopic Fractionation in Heterotrophic Microbial Metabolism: *Applied and Environmental Microbiology (1985) 50:* 996-1001. (N. Blair, A. Leu, E. Munoz, J. Olsen, E. Kwong and D. Des Marais).

Carbon Isotopic Composition of Individual, Low Molecular Weight Hydrocarbons and Monocarboxylic Acids from Murchison Meteorite: *Nature* (1984) 307: 252-254. (G. Yuen, N. Blair, D. Des Marais and S. Chang).

Stereoselective Hydrolysis of Leucine Oligomers: *Tetrahedron* (1981) 37: 27-29. (N. E. Blair, F. M. Dirbas and W. A. Bonner).

Experiments on the Abiotic Amplification of Optical Activity: *Origins of Life* (1981) 11: 119-134. (W. A. Bonner, N. E. Blair and F. M. Dirbas).

A Model for the Enantiomeric Enrichment of Polypeptides on the Primitive Earth: *Origins of Life* (1981) 11: 331-335. (N. E. Blair and William A. Bonner).

The Radiolysis of Tryptophan and Leucine with ^{32}P β -Radiation: *J. Mol. Evol.* (1980) 15: 21-28. (N. E. Blair and W. A. Bonner).

Quantitative determination of DL mixtures of optical enantiomers by gas chromatography: *J. Chrom.*(1980), 198: 185-187. (N. E. Blair and W. A. Bonner).

Experiments on the Amplifications of Optical Activity: *Origins of Life* (1980) 10: 255. (N. E. Blair and W. A. Bonner).

Attempted asymmetric radiolysis of D, L-tryptophan with ^{32}P β - radiation: *Nature* (1979) 281: 150-151. (W. A. Bonner, N. E. Blair and J. J. Flores).

Racemization of isovaline by γ -radiation, Cosmological Implications: *J. Am. Chem. Soc.*(1979) 101: 1049. (W. A. Bonner, N. E. Blair, R. M. Lemmon, J. J. Flores and G. E. Pollack).

The Radioracemization of amino acids by Ionizing Radiation: Geochemical and Cosmochemical Implications: *Origins of Life* (1979) 9: 279-290. (W. A. Bonner, N.E. Blair and R. M. Lemmon).

Also a chapter in *Biogeochemistry of Amino Acids*, P. E. Hare, ed., John Wiley and Sons, Inc. (1980).

Enantiomeric Phases in Analytical Gas Chromatography: *J. Chrom.* (1979) 169: 153-159. (W. A. Bonner and N. E. Blair).

Synthesis of Amino Acids under Primitive Earth Conditions in the Presence of Clay: *Origins of Life* (1978) 95-99. (A. Shimoyama, N. Blair and C. Ponnampereuma).

Abstracts and Conference/Symposia Presentations

Kerogen reloaded: Following Organic Carbon's Spiral through Time (2004) Organic Geochemistry Gordon Conference (N. Blair, E. Leithold, D. Perkey, K. Peeler, S. Ford, J. Holmes).

Carbon remineralization in the Amazon - Guianas mobile mudbelt: a sedimentary incinerator (2004) Friday Harbor Symposium for Richard Sternberg (R.C. Aller and N.E. Blair).

The organic memory of sedimentary systems as an indicator of the past lives of particles (2004) (2004) National Geological Society of America meeting (E. Leithold and N. Blair).

Impact of land-use change on carbon burial on the Northern California shelf (2003) National Geological Society of America meeting (E. Leithold, D.W. Perkey, N.E. Blair).

Riverine discharge of black carbon from the US (2003) National Geological Society of America meeting (S. Mitra, T. Lorenson, R. Rosenbauer, K. Kvenvolden, P. Swarzenski, A. Mannino, E. Leithold, N. Blair).

From bedrock to burial: the evolution of particulate organic carbon across coupled watershed-continental margin systems (2003) Symposium on New Approaches in Marine Organic Biogeochemistry, Friday Harbor (N.E. Blair, E. Leithold, R.C. Aller).

Does Riverine OC From the Pacific Rim Have a Distinctive Flavor? (2002) Western Pacific AGU, Wellington, NZ (N.E. Blair, E.L. Leithold, J. Holmes, D. Perkey, K. Peeler, S. Ford).

Source to sink transformations of organic matter in a rapidly uplifting ocean margin (2001) ASLO Aquatic Sciences meeting, Albuquerque, NM (N.E. Blair, E. Leithold, J. Holmes, D. Perkey, K. Peeler, S. Ford).

A watershed control on the carbon loading of marine sedimentary particles? (2001) ASLO Aquatic Sciences meeting, Albuquerque, NM (E.L. Leithold and N.E. Blair).

Deposition of bomb C-14 in continental slope sediments: use of radiocarbon in understanding benthic food web dynamics (2001) ASLO Aquatic Sciences meeting, Albuquerque, NM (D.J. DeMaster, N.E. Blair, C.R. Smith, W.L. Fornes, C.J. Thomas, and G. Plaia).

A benthic carbon budget for the continental slope off Cape Hatteras, N.C., USA (2001) ASLO Aquatic Sciences meeting, Albuquerque, NM (C.J. Thomas, N.E. Blair, D.J. DeMaster, R.A. Jahnke, C.S. Martens, L.J. Pietrafesa)

Factors influencing the transport of kerogen in the Eel River sedimentary system (2001) 221st ACS National Meeting, San Diego, CA (N.E. Blair, E. Leithold, J. Holmes, D. Perkey, K. Peeler, S. Ford).

Fate of phytodetritus in continental slope sediments (2001) 221st ACS National Meeting, San

Diego, CA (N.E. Blair, L. Levin, D. DeMaster, G. Plaia, C. Martin, C.J. Thomas, W. Fornes).

Organic carbon pathways and burial rates in North Carolina continental slope sediments (1998) Ocean Sciences Meeting, San Diego, CA (D.J. DeMaster, R.H. Pope, W.L. Fornes, G. Plaia, N.E. Blair).

Diagenetic processes in rapidly accumulating slope sediments (1998) Ocean Sciences Meeting, San Diego, CA (N.E. Blair, C.J. Thomas, D.J. DeMaster and R.H. Pope).

A comparison of organic matter transport and decay in sediments from coastal and slope sediments using ^{13}C labeled diatoms (1998) Ocean Sciences Meeting, San Diego, CA (C.J. Thomas and N.E. Blair).

Event sedimentation and carbon burial on the Northern California continental margin (1998) Ocean Sciences Meeting, San Diego, CA (E. Leithold and N. Blair).

Observations of Organic Matter Transport in Marine Sediments and Coincident Geochemical Alterations (1998) Organism-Sediment Interactions Symposium, Oct., Belle Baruch Institute, S.C. (C.J. Thomas and N.E. Blair).

The biogeochemistry of carbon in continental slope sediments: the North Carolina margin (1998) Proceedings of the Organism-Sediment Interactions Symposium, Belle Baruch Institute, S.C. (N. Blair, L. Levin, D. DeMaster, G. Plaia, C. Martin, W. Fornes, C. Thomas and R. Pope).

Macrofaunal processing of phytodetritus at two sites on the NC slope: An *in situ*, time series approach. (1997) Ocean Sciences Meeting, Santa Fe N.M. (L. Levin, C. Martin, N. Blair, D. DeMaster, G. Plaia, & C. Thomas).

Who eats how, when and where on the continental margin: C-13 tracer studies of phytodetritus fates (1997) 25th Annual Benthic Ecology Meeting, Portland, ME (L. Levin, N. Blair, D. DeMaster, G. Plaia, C. Martin, C. Thomas and W. Fornes).

Extremely early diagenesis of phytodetritus in slope sediments (1997) Fall National GSA Meeting, Salt Lake City, UT (N. Blair, L. Levin, D. DeMaster, C.J. Thomas, W. Fornes, and G. Plaia).

Carbon Transport and Benthic Respiration in Slope Sediments off Cape Hatteras, NC: A Comparison of Field and Laboratory Experiments (1995) Marine Benthic Ecology Meeting, Rutgers Univ., New Brunswick, N.J. (G. Plaia, N. Blair, L. Levin, D. DeMaster and C. Thomas).

Maldanid Polychaetes as Vehicles for Rapid Subduction of Phytodetritus on the NC Slope (1995) Marine Benthic Ecology Meeting, Rutgers Univ., New Brunswick, N.J. (L. Levin, N. Blair, G. Plaia, D. DeMaster and C. Martin).

The $\delta^{13}\text{C}$ of Biogenic Methane in Marine Sediments: The Influence of C_{org} Deposition Rate (1995) *GSA Abstracts* 27, Oct.

The Short-term Fate of Fresh Algal Carbon in Continental Slope Sediments (1994) ASLO Ocean Sciences Meeting, San Diego (N.E. Blair, G.R. Plaia, D.J. DeMaster, L.A. Levin).

C_{org} Remineralization in Amazon Shelf Sediments (1994) ASLO Ocean Sciences Meeting, San Diego (R.C. Aller, N.E. Blair, Q. Xia, P.D. Rude).

Respiration Rates and Dissolved Organic Fluxes off North Carolina (1994) ASLO Ocean Sciences Meeting, San Diego (C.S. Martens, M.J. Alperin, D.B. Albert, N.E. Blair).

Stable Isotopic Tracing of Methane Emission From Rice (1994) Third Symposium on Biogeochemistry of Wetlands, Orlando FLA (J.P. Chanton, G.J. Whiting, C.W. Lindau, P.K. Bollich and N.E. Blair).

C Transport Within the Slope Seabed: A Tale of Two Sites (1994) Fall AGU Meeting, San Francisco (N.E. Blair, G.R. Plaia, D.J. DeMaster, L.A. Levin).

The Fate of Organic Matter in NC Continental Slope Sediments: a Radiochemical Approach (1994) Fall AGU Meeting, San Francisco (D.J. DeMaster, W.L. Fornes, R.H. Pope, N.E. Blair and L.A. Levin).

Dissolved Organic Carbon in Sediments from the North Carolina Continental Slope (1994) Fall AGU Meeting, San Francisco (M.J. Alperin, C.S. Martens, I.B. Suayah, L.K. Benninger, N.E. Blair, R. Jahnke).

The Carbon Isotope Biogeochemistry of Freshwater Methanogenic Sediments (1992) 203rd National Meeting of the American Chemical Society, San Francisco (N.E. Blair, C.A. Kelley and C.S. Martens).

Methane and Sediment Dynamics on the Amazon Shelf (1992) Fall AGU National Meeting, San Francisco (N.E. Blair, J. Gunn and R.C. Aller).

Diagenetic Isotope Effects in an Anoxic Marine Sediment (1991) 201st National American Chemical Society Meeting, Atlanta (N.E. Blair, S.E. Boehme and W.D. Carter, Jr.).

A Carbon Isotope Budget for an Anoxic Marine Sediment (1991) 201st National A.C.S. Meeting, Atlanta (S.E. Boehme and N.E. Blair).

The Carbon Isotope Biogeochemistry of Methane Production in Anoxic Sediments (1991) 10th International Symposium on Environmental Biogeochemistry, San Francisco (N.E. Blair, S.E. Boehme and W.D. Carter, Jr.)

Biogeochemical Controls on the Carbon Isotopic Composition of Methane Produced in Anoxic Marine Sediment (1991) 10th International Symposium on Environmental Biogeochemistry (M.J. Alperin, N.E. Blair, D.B. Albert, and T.M. Hoehler).

The Effects of Biological Mounds on Biogeochemical Processes in Southeast U.S. Continental Slope Deposits (1990) Benthic Ecology Meeting, Mobile (R.H. Pope, T.R. Schaff, S.E. Boehme, L.A. Levin, N.E. Blair, and D.J. DeMaster).

Relationship between Infaunal Community Structure and Organic Carbon on the Carolina Continental Slope (1990) Benthic Ecology Meeting, Mobile (T. Schaff, L. Levin, N. Blair, S. Boehme, D. DeMaster and R. Pope).

The Production of Dissolved Inorganic Carbon and Methane in Amazon Shelf Sediments (1990) Fall AGU Meeting, San Francisco (N.E. Blair, S.E. Boehme, J.M. Gunn and H.P. Mendlovitz).

Spatial Variability in Biogeochemical Processes on the Southeast U.S. Continental Slope: Large Scale Heterogeneity (1989) Spring AGU Meeting, Baltimore (N.E. Blair, L.A. Levin, D.J. DeMaster, S.E. Boehme, S.L. Harden and T.R. Schaff).

Spatial Variability in Biogeochemical Processes on the Southeast U.S. Continental Slope: The Effects of Biological Mounds (1989) Spring AGU Meeting, Baltimore (D.J. DeMaster, L.A. Levin, N.E. Blair, S.L. Harden, S.E. Boehme, and R.N. Pope).

Biogeochemical Processes Dominating Upper Slope Sediments along a 36° 20' N Transect off North Carolina, USA. (1989) Spring AGU Meeting, Baltimore (C.S. Martens, J.P. Chanton, J.V. Klump, L.K. Benninger, P.M. Crill, R.I. Haddad, D.B. Albert, C.A. Kelley, M.J. Alperin, J.D. Willey, N.E. Blair).

Carbon Isotope Biogeochemistry of Salt Marshes (1988) The Third Chemical Congress of North America, Toronto (N. Blair, J. Gower, J. Chanton).

Seasonal Variation in ΣCO_2 $\delta^{13}\text{C}$ Values from an Anoxic Coastal Sediment (1987) American Chemical Society National Meeting, Denver (N. E. Blair, S. E. Boehme and J. P. Chanton).

The Biogeochemical Processes Controlling the Carbon Isotopic Composition of Methane from Coastal Environment (1987) American Chemical Society National Meeting, Denver (N. Blair, J. Gower and S. Boehme).

The Carbon Isotope Biogeochemistry of Methane from Coastal Sediments (1987) Geological Society of America Fall Meeting, Phoenix (N. E. Blair, S. E. Boehme, W. D. Carter, J.G. Gower, W. J. Showers, J. P. Chanton, C. S. Martens).

Biogeochemical Control of Coastal Sediment Pore Water ΣCO_2 Carbon Isotopic Compositions (1986) EOS, v. 67, p. 1058 (S. Boehme and N. Blair).

Control of the Carbon Isotopic Composition of Sedimentary Biogenic Methane (1985) 8th International Estuarine Research Conference (N. Blair, D. Des Marais and C. Martens).

Seasonal $\delta^{13}\text{C}$ Variations of Methane from an Anoxic Marine Sediment (1985) NASA Symposium on Biospheric Research (N. Blair, D. Des Marais and C. Martens).

Seasonal $\delta^{13}\text{C}$ Variations of Methane from an Anoxic Marine Sediment (1984) EOS, v. 65, p. 960. (N. Blair, C. S. Martens and D. Des Marais).

Carbon Isotopic Fractionation in Microbial Intermediary Metabolism (1983) 6th International Symposium on Environmental Biogeochemistry (N. Blair and D. Des Marais).

Carbon Isotopic Composition of Individual, Low Molecular Weight Hydrocarbons and Monocarboxylic Acids from Murchison Meteorite (1983) 14th Lunar and Planetary Science Conference (G. Yuen, N. Blair, D. Des Marais and S.Chang).

Funded Research

“Acquisition of a multi-use isotope ratio mass spectrometry system: upgrade of isotope biogeochemistry laboratory,” 8/05-7/06, NSF, \$211,126 (N. Blair, L. Leithold, E. Nichols, J. Fountain, M. Schweitzer and D. DeMaster).

“Applications of ¹³C-tracer studies and stable isotope geochemistry to determine rhizosphere alteration of PAH bioavailability in contaminated geomedias,” 9/03-9/06, NSF/BES, \$434,000 (E. Nichols, PI; N.B. and B. Goldfarb, collaborators).

“Age distribution of POC discharged from small mountainous rivers-the influence of sediment yield and soil residence time,” 10/02-9/06, NSF, \$480,000 (with E. Leithold, P.I.)

“Organic Carbon Loading on Marine Sedimentary Particles as an Indicator of River Basin Weathering and Transport Regimes,” 1/99-12/02, NSF, \$267,500 (with E. Leithold, P.I.).

“Organic Carbon Burial in Marine Sediments: Processes Controlling the Organic Carbon Load on Mineral Surfaces in a Coupled River/Continental Margin System,” 5/98-8/00, ACS-PRF, \$60,000 (with E. Leithold, P.I.)

"Deposition and Fate of Modern Organic Carbon in Shelf/Upper Slope Sediments near Cape Hatteras, North Carolina," 8/1/95-1/31/99, DOE, \$330,000 (with D. DeMaster).

"The Fate of Algal Carbon in Continental Slope Sediments: A Multitracer Approach," 1/94-12/95, NOAA-NURP, \$39,682 + submersible time (with D. DeMaster and L. Levin).

"The Fate of Algal Carbon in Continental Slope Sediments: A Multitracer Approach," 10/15/93-10/14/97, NSF, \$668,816 (with D. DeMaster and L. Levin).

"Intramolecular Carbon Isotopic Compositions of Amino Acids," 6/1/92-8/31/94, ACS-PRF, \$43,000 (with W. Savidge).

"Spatial Heterogeneity of Biogeochemical Processes in Continental Slope Sediments," 1/1/91-12/31/91, NOAA-NURP, \$50,050 + submersible time (with L. Levin, PI, and D. DeMaster).

"The Carbon Isotope Biogeochemistry of Methane from Anoxic Sediments," 7/1/89-6/30/93, NASA, \$472,000.

"Photographic Survey of the Sea Floor at the Proposed Mobil Drilling Site off North Carolina, 1000m," 3/1/89-2/28/90, N.C. Dept. of Administration, \$4,125, (with L. Levin, PI, and D. DeMaster).

Diagenetic Processes and Authigenic Mineral Formation in Amazon Shelf Sediments," 1/1/89-9/30/94, NSF \$89,000 (subcontract with R. Aller (PI) SUNY).

"Spatial and Temporal Heterogeneity of Biogeochemical Processes in Continental Slope

Sediments," 9/8/88-10/15/89, NOAA-NURP, submersible time worth \$194,968, (with L. Levin and D. DeMaster).

"Seasonal Variations in Isotopic Signatures of Methane Produced in Organic-Rich Environments," 10/1/85 - 6/30/89, NASA, \$262,132 (with C.S. Martens, PI; J. Chanton and L. K. Benninger, UNC - Chapel Hill).

"Seasonal $\delta^{13}\text{C}$ Variations of Biogenic Methane: Biogeochemical Controls," 10/11/85-6/30/89, NASA, \$402,803.

Computerized Marine Science Data System," 3/1/86 - 2/28/87, Marine Science Council, \$5,000, (with J. Morrison).

"Natural Abundance $\delta^{13}\text{C}$ Measurements of Sediment Interstitial Water Acetate," 3/1/86-8/31/88, ACS - Petroleum Research Fund, \$18,000.

Construction of Gas Chromatography Combustion System," 4/1/85 -4/1/86, U.N.C. Marine Science Council, \$3,500.

"Construction of a Gas Chromatography Combustion System," 5/1/85- 4/30/86, N.C. Board of Science and Technology, \$3,481.

"Carbon Isotopic Measurements of Methane and Its Precursors from Anoxic Sediments," 1/1/85 -12/31/85. University Research Committee, \$3,500.

Classes

Introduction to Oceanography (sophomore level)
Introduction to Oceanography Laboratory (sophomore)
Earth System Chemistry (junior/senior)
Atmospheric Chemistry (graduate level, co-taught)
Biogeochemistry (graduate)
Organic Geochemistry (graduate)
Investigations of the Seabed Laboratory (graduate, co-taught)
Sediment Analysis Laboratory (graduate, co-taught)

Miscellaneous service

Departmental

Jordan II Construction Committee (2002-present)
Marine Science TA coordinator (2000-present)
MEAS Space Committee (chair, 1999-present)
MEAS Classroom Teaching Peer Review Committee (1999)
MEAS Undergraduate Curriculum Committee (1994-95)
MEAS SPA Evaluation Committee (1993-95, chair for 94-95)
MEAS Laboratory Safety Committee (1993-99, chair 95-99)
Field Course Committee (1992-93)
Jordan Hall Common Space Committee (1990-1993, chair 1990-91)
Isotope Biogeochemistry and Elemental Analysis Laboratories (1989-present, supervisor)
Jordan I Construction faculty liaison (1987-1989)

College of Physical and Mathematical Sciences

Dean Review Committee (2004-2005)
Dean's Advisory Committee (2004-2005)
Space Committee (2003-present)
Promotion and Tenure Committee (2001-2003)
Research Advisory Committee (1997-99)
Laboratory Safety Committee (1993-99)

University

Faculty Senate (2004-present)
Faculty Senate Academic Policy Committee (2004-present)
University Courses and Curriculum (1989-1992)

External

National Ocean Sciences Accelerator Mass Spectrometry Advisory Board (10/05-10/07)
RioMar Planning Workshops (2001, 2004)

Biocomplexity Workshop on Animal-Sediment Interactions (2002, invited speaker)
Carbon Erosion Workshop (2002), Palmerston North, New Zealand (invited international reviewer and speaker)
NSF MARGINS Source to Sink planning workshops (1999 – invited speaker, 2000, 2003)
Offshore Drilling Safety discussion group for NC Outer Continental Shelf office (1999)
Joint NC DENR/MMS workshop on Manteo offshore drilling (1998; speaker, planning committee)
NC Government Operations Legislative Committee (1997; provided overview of Cape Hatteras region and offshore drilling)
NC Department of Coastal Management – (1997; consulted regarding proposed offshore drilling)
Consortium for Oceanographic Research and Education Bahama Workshop for Journalists (1996; provided lectures on Carbon Biogeochemical Cycles)
DOE Ocean Margins Program workshops (1994, 1995, 1997)
NOAA-National Undersea Research Program (1993; provided overview of C-cycling on the N.C. slope)
National Academy of Sciences Committee on Oceanic Carbon (1993; provided overview of C-cycling in deltaic and slope sediments)
NOAA-NURP (1993; consulted concerning Cape Hatteras slope)
DOE (1992; consulted concerning Cape Hatteras slope)

Research Cruises

R/V Kilo Moana (2004, Waiapu margin, NZ)
R/V Sproul (1999, Eel margin, N. CA.)
R/V Seward Johnson/DSV Johnson SeaLink II (1996, NC slope, chief dive scientist)
R/V Seward Johnson (1996, NC slope)
R/V Edwin Link/DSV Johnson SeaLink I (3 cruises, 1994-95, NC slope, chief scientist)
R/V Cape Hatteras (1993, NC slope)
R/V Edwin Link/DSV Johnson SeaLink II (1989, NC slope)
R/V Iselin (3 cruises 1989-90, Amazon shelf)
R/V Cape Hatteras (1989, NC slope)
R/V Seaward Explorer/DSV Pisces II (1988, NC slope)
R/V Cape Hatteras (1987, NC slope)