

Next wave

Recognizing Excellence in Education



New Joint Program students and crew members of the sailing vessel Corwith Cramer during the 2007 summer cruise.



Academic Programs Office, Woods Hole Oceanographic Institution
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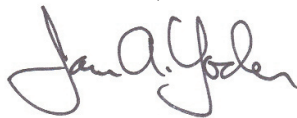
2007 ACADEMIC PROGRAMS

Letter from the Vice President for Academic Programs and Dean

The MIT/WHOI Joint Program celebrates its 40th anniversary in 2008. This program is the cornerstone of WHOI's academic activities, having granted almost 800 degrees to date. Interestingly, postdoctoral and summer undergraduate projects have been ongoing at WHOI even longer than the Joint Program. It is the combination of these strong and competitive education programs which has enabled the Institution to be a leader in ocean science research and education.

In this brochure are examples of just some of the 2007 successes of our Joint Program students, as well as information on our undergraduate summer students and postdocs. Those of us involved with the Joint Program with MIT and the WHOI undergraduate and postdoctoral programs are proud of these accomplishments and of all our students and postdocs, and we hope you share in our pride.

Most sincerely,



James A. Yoder
Vice President for Academic Programs and Dean



Jim Yoder

Christine Charette, WHOI

Joint Program Student Published Papers



Tom Kleindinst, WHOI

Jonathan Woodruff works to extract a sediment core from Sippewissett Marsh in Massachusetts. Jon's research aims to piece together the history of land-falling hurricanes around the world.

Jamie Becker

Benitez-Nelson, C. R., R. R. Bidigare, T. Dickey, M. R. Landry, C. L. Leonard, S. L. Brown, F. Nencioli, Y. M. Rii, K. Maiti, J. W. Becker, T. S. Bibby, W. Black, W.-J. Cai, C. Carlson, F.Z. Chen, V. S. Kuwahara, C. Mahaffey, P. M. McAndrew, P. D. Quay, M. S. Rappé, K. E. Selph, M. E. Simmons, and E. J. Yang. (2007). Mesoscale eddies drive increased silica export in the subtropical Pacific Ocean. *Science* 316: 1017-1021.

Becker, J. W., M. L. Brandon, and M. S. Rappé. (2007). Cultivating microorganisms from dilute aquatic environments: melding traditional methodology with new cultivation techniques and molecular methods. In C. J. Hurst et al. [eds], *Manual of Environmental Microbiology, 3rd Edition*. ASM Press, pp. 399-406.

Erin Bertrand

Bertrand, E. M., M. A. Saito, J.M. Rose, C.R. Riesselman, M.C. Lohan, A.E. Noble, P.A. Lee, G.R. Ditullio. (2007). Vitamin B12 and iron co-limitation of phytoplankton growth in the Ross Sea. *Limnology and Oceanography*. 52 (3) 1079-1093

Rozhkova-Novosad, E.A., J.C. Chae, G.J. Zylstra, E.M. Bertrand, M. Alexander-Ozinskas, R.N. Austin, J.T. Groves. (2007). Profiling mechanisms of alkane hydroxylase activity in vivo using the diagnostic substrate norcarane. *Chemistry and Biology*. 14: 165-172.

Paul Craddock

Zhu W., M. K. Tivey, H. Gittings, P. R. Craddock. (2007). Permeability-porosity relationships in seafloor vent deposits: Dependence on pore evolution processes, *Journal of Geophysical Research*, 112, B05208, doi:10.1029/2006JB004716.

Stacy DeRuiter

DeRuiter, S.L., P.L. Tyack, Y.T. Lin, A.E. Newhall, J.F. Lynch, and P.J.O. Miller. (2006). Modeling acoustic propagation of airgun array pulses recorded on tagged sperm whales (*Physeter macrocephalus*). *The Journal of the Acoustical Society of America* 120(6): 4100-4114.

Abigail Fusaro

Fusaro, A.J., A.R. Baco, G. Gerlach, T.M. Shank. (2007). Development and characterization of twelve microsatellite markers from the deep-sea hydrothermal vent siboglinid *Riftia pachyptila*. *Molecular Ecology Notes* (Online Early Articles). doi:10.1111/j.1471-8286.2007.01897.x

Patricia Gregg

Gregg, P. M., J. Lin, M. D. Behn, L.G.J. Montesi. (2007). Spreading rate dependence of gravity anomalies along oceanic transform faults, *Nature*, 448, 183-187.

David Griffith

Griffith, D. The ecological implications of individual fishing quotas and harvest cooperatives. *Frontiers in Ecology and the Environment*; 6, doi:10.1890/050060

Naomi Levine

Levine, N.M., S.C. Doney, R. Wanninkhof, K. Lindsay and I.Y. Fung. The impact of ocean carbon system variability on the detection of temporal increases in anthropogenic CO₂, *JGR-Oceans*.

Kristin Pangallo

Pangallo, K., R. K. Nelson, E. L. Teuten, B. E. Pedler, C. M. Reddy. (2007). Expanding the range of halogenated 1'-methyl-1,2'-bipyrroles (MBPs) using GC/ECNI-MS and GCxGC/TOF-MS. *Chemosphere*, in press.

Colleen Petrik

Hu, Q., C.M. Petrik, C.S. Davis. (2007). Normal versus gamma: stochastic models of copepod molting rate. *Journal of Plankton Research* 29(11): 985-997.

Desirée Plata

Arey, J.S., R.K. Nelson, D.L. Plata, C.M. Reddy. (2007). Disentangling oil weathering using GCxGC. Part II. Mass transfer calculations. *Environmental Science Technology*. 41 (16), 5747-5755.

Plata, D.L., C.M. Sharpless, C.M. Reddy. Photochemical degradation of polycyclic aromatic hydrocarbons in oil films. *Environmental Science Technology*, in press.

Carly Strasser

Strasser, C.A., S.R. Thorrold, V.R. Starczak, L.S. Mullineaux. (2007). Laser ablation ICP-MS analysis of larval shell in softshell clams (*Mya arenaria*) poses challenges for natural tag studies. *Limnology and Oceanography: Methods* 5: 241-249.

Kristin Pangallo flame-seals a test tube while preparing samples for the National Ocean Sciences Accelerator Mass Spectrometer (NOSAMS). Located on the WHOI campus, NOSAMS was established with support from the National Science Foundation to provide analyses of carbon-14 at natural abundance levels in the ocean.



Tom Kleindinst, WHOI

Joint Program Student Awards, Fellowships, Grants, and In The News



Tom Kleindinst, WHOI

Dan Rogers collects groundwater from the coastal aquifer at Waquoit Bay. Dan's research examines the role of microbes in consuming and transforming nitrogen within the subterranean estuary, a mixing zone between fresh and salty groundwater that exists beneath many beaches along the coastline. This work has implications for how groundwater nutrient discharges are impacting the health of many populated coastal estuaries.

Scientists and students at WHOI are studying marine mammal auditory systems, acoustics, behaviors, pollution effects, and population dynamics. At left, Maya Yamato is studying a whale bone.

Erin Bertrand, National Science Foundation Graduate Research Fellowship

Michael Brosnahan, Environmental Protection Agency Science to Achieve Results (STAR) Fellow

"Transcriptional Markers of Harmful Algal Bloom Termination"

Andrea Burke, National Science Foundation Graduate Research Fellowship

Kevin Cockrell

Best student paper/young presenter award in Acoustical Oceanography at the Meeting of the Acoustical Society of America, Salt Lake City, Utah, June 2007 for "A proposed technique for source localization using an autonomous underwater vehicle," K. Cockrell, H. Schmidt.

Paul Craddock, Schlanger Ocean Drilling Fellowship

"Using New In Situ Laser-Ablation ICP-MS Techniques to Examine Geochemical Heterogeneity Within Hydrothermal Vent Deposits"

Stacy DeRuiter

Second prize in the student poster competition at the Resource Modeling Association Conference: DeRuiter, S.L. 2007. Modeling Sperm Whale Foraging & Response to Airgun Sounds as a Semi-Markov Process in Continuous Time [poster presentation]. 2007 World Conference on Natural Resource Modeling, Cape Cod, MA, 19 - 22 June 2007.

Patricia Gregg

WHOI News Release, Fragmented Structure of Seafloor Faults May Dampen Effects of Earthquakes: Studies of gravity fields suggest volcanism may smooth rough edges of tectonic plates <http://www.whoi.edu/page.do?pid=7545&tid=282&cid=29566&ct=162>

Shane McGary, National Defense Science and Engineering Graduate Fellowship

Christine Mingione, NOAA's National Estuarine Research Reserve System



Tom Kleindinst, WHOI

Joint Program Student Awards, Fellowships, Grants, and In The News

Desirée Plata, MIT's Martin Family Society of Fellows for Sustainability Recipient
MIT's Earth System Initiative Ignition Grant Recipient

"Tiny Tubes, big pollution" Science News, Sept 1, 2007, vol 172, p. 142.

American Chemical Society's Chemical & Engineering News (C&E News). "Nanotube synthesis emits toxic by-products: Evaluating small-scale processes could shed light on potential large-scale environmental issues." R. Petkewich, C&E News, Aug 27, 2007, p. 12. <http://pubs.acs.org/cen/news/85/i35/8535news9.html>

Michael Stanway, National Defense Science and Engineering Graduate Fellowship

Louie Wurch, Environmental Protection Agency STAR Fellow
"A Molecular Approach to Understand Harmful Algal Blooms"

Maya Yamato, National Science Foundation Graduate Research Fellowship



Chris Linder, WHOI

Andrea Burke during an expedition to Antarctica.

Students at Work—*Oceanus* online

Oceanus online provides new stories each week, showcasing the wide variety of research being conducted at Woods Hole Oceanographic Institution. These five students and their research projects were featured in articles published online in 2007. All of these articles can be found here: <http://www.whoi.edu/oceanus/viewSection.do?o=read&status=3&id=1020>.



Mike Jakuba
Applied Ocean Physics & Engineering Department
February 2007

Young Pup Teaches Old Undersea Robotic Bloodhound New Tricks: MIT/WHOI graduate student improves the Autonomous Benthic Explorer's ability to hunt for seafloor vents



Carlos Moffat
Physical Oceanography Department
March 2007

Current Events off Antarctica: Graduate student helps discover a previously unknown ocean current



Regina Campbell-Malone
Biology Department
June 2007

What Does It Take To Break a Whale? Stress tests on whale bones aim to help endangered species



Ari Shapiro
Biology Department
August 2007

Eavesdropping on Whales' Mealtime Conversation: A graduate student's journey to Norway to investigate how orcas orchestrate their hunt



Matthew Jackson
Geology and Geophysics Department
November 2007

Plumbing the Plume That Created Samoa: A graduate student explores the magmatic origins of islands

2007 Joint Program Degree Recipients



Tom Kleindinst, WHOI

Nick Drenzek, Cara Santelli, and Travis Poole at the 2007 WHOI graduation ceremony.

Doctor of Philosophy

Diane K. Adams, Biological Oceanography, *Influence of Hydrodynamics on the Larval Supply to Hydrothermal Vents on the East Pacific Rise*

Alex A. Apotsos, Civil and Environmental and Oceanographic Engineering, *Setup in the Surfzone*

Claudia Augusto-Martins, Biological Oceanography, *Functional Genomics of the Toxic Dinoflagellate *Alexandrium lusitanicum**

Regina Campbell-Malone, Biological Oceanography, *Biomechanics of North Atlantic Right Whale Bone: Mandibular Fracture as a Fatal Endpoint for Blunt Vessel-Whale Collision Modeling*

Brian J. deMartin, Marine Geophysics, *Experimental and Observational Constraints on Deformation, Seismicity, and Fluid Transport at Oceanic Spreading Centers*

Nicholas J. Drenzek, Marine Geochemistry, *The Temporal Dynamics of Terrestrial Organic Matter Transfer to the Oceans: Initial Assessment and Application*

J. Thomas Farrar, Physical Oceanography, *Air-Sea Interaction at Contrasting Sites in the Eastern Tropical Pacific: Mesoscale Variability and Atmospheric Convection at 10°N*

Melanie R. Fewings, Physical Oceanography, *Cross-Shelf Circulation and Momentum and Heat Balances over the Inner Continental Shelf Near Martha's Vineyard, Massachusetts*

Nathalie Fairbank Goodkin, Chemical Oceanography, *Geochemistry of Slow-Growing Corals: Reconstructing Sea Surface Temperature, Salinity and the North Atlantic Oscillation*

Michael V. Jakuba, Mechanical Engineering, *Stochastic Mapping for Chemical Plume Source Localization with Application to Autonomous Hydrothermal Vent Discovery*

Seth Greeley John, Chemical Oceanography, *The Marine Biogeochemistry of Zinc Isotopes*

Petra Klepac, Biological Oceanography, *Interacting Populations: Hosts and Pathogens, Prey and Predators*

Joy M. Lapsertis, Biological Oceanography, *Comparative Analyses of Aryl Hydrocarbon Receptor Structure, Function and Evolution in Marine Mammals*

Wenyu Luo, Oceanographic Engineering, *Three-Dimensional Propagation and Scattering around a Conical Seamount*

Anna P.M. Michel, Mechanical and Oceanographic Engineering, *Laboratory Evaluation of Laser-Induced Breakdown Spectroscopy (LIBS) as a new in situ Chemical Sensing Technique for the Deep Ocean*

Carlos F. Moffat-Varas, Physical Oceanography, *Ocean Circulation and Dynamics on the West Antarctic Peninsula Continental Shelf*

Rajesh Rao Nadakuditi, Electrical and Oceanographic Engineering, *Applied Stochastic Eigen-Analysis*

Travis L. Poole, Oceanographic Engineering, *Geoacoustic Inversion by Mode Amplitude Perturbation*

Cara Marie Santelli, Marine Geomicrobiology, *Geomicrobiology of the Ocean Crust: The Phylogenetic Diversity, Abundance, and Distribution of Microbial Communities Inhabiting Basalt and Implications for Rock Alteration Processes*

Rachel H.R. Stanley, Chemical Oceanography, *A Determination of Air-Sea Gas Exchange and Upper Ocean Biological Production from Five Noble Gases and Tritium Helium-3*

Emily Mary Van Ark, Marine Geophysics, *Seismic and Gravitational Studies of Melting in the Mantle's Thermal Boundary Layers*

Benjamin D. Walther, Biological Oceanography, *Migratory Patterns of American Shad (*Alosa sapidissima*) Revealed by Natural Geochemical Tags in Otoliths*

Jessica M. Warren, Geochemistry and Geophysics, *Geochemical and Rheological Constraints on the Dynamics of the Oceanic Upper Mantle*

Clare M. Williams, Marine Geophysics, *Oceanic Lithosphere Magnetization: Marine Magnetic Investigations of Crustal Accretion and Tectonic Processes in Mid-Ocean Ridge Environments*

Jinshan Xu, Mechanical and Oceanographic Engineering, *Effects of Internal Waves on Low Frequency, Long Range Acoustic Propagation in the Deep Ocean*

Master of Science

Kathryn P. D'Epagnier, Mechanical Engineering, *A Computational Tool for the Rapid Design and Prototyping of Propellers for Underwater Vehicles*

James R. Elsenbeck, II, Marine Geology and Geophysics, *Influence of Grain Size Evolution and Water Content on the Seismic Structure of the Oceanic Upper Mantle*

David E. Farrell, Mechanical Engineering, *Vortex Induced Vibrations of Cylinders: Experiments in Reducing Drag Force and Amplitude of Motion*

Maria A. Parra-Orlandoni, Mechanical Engineering, *Target Tracking Onboard an Autonomous Underwater Vehicle: Determining Optimal Towed Array*

Vikrant P. Shah, Mechanical Engineering, *Design Considerations for Engineering Autonomous Underwater Vehicles Heading in an Anisotropic Noise Field*

Christie L. Wood, Physical Oceanography, *The Interaction of Two Coastal Plumes and Its Effect on the Transport of Alexandrium Fundyense*



Susan Mills, WHOI

Benjamin Walther preparing plankton pumps for mooring deployment.

2007 Postdoctoral Appointments



Joshua Madin

While surveying corals at Lizard Island, Great Barrier Reef, Australia, Doherty Postdoctoral Scholar Michael Berumen came across a giant clam.

Diane Adams, Biology, MIT/WHOI Joint Program, Postdoctoral Investigator

Monica Almeida Silva, Biology, University of St. Andrews, Portuguese Foundation for Science and Technology Postdoctoral Fellow

Alex Apotsos, Applied Ocean Physics & Engineering, MIT/WHOI Joint Program, Postdoctoral Investigator

Michael Berumen, Biology, James Cook University, Doherty Postdoctoral Scholar

Regina Campbell-Malone, Biology, MIT/WHOI Joint Program, Postdoctoral Investigator

Sarah Cooley, Marine Chemistry & Geochemistry, University of Georgia, Postdoctoral Investigator

Nicholas Drenzek, Marine Chemistry & Geochemistry, MIT/WHOI Joint Program, Postdoctoral Investigator

Paul Drevnick, Marine Chemistry & Geochemistry, Miami University, United States Geological Survey Postdoctoral Scholar

Luciano Fernandes, Biology, Universidade Federal do Parana, Brazilian National Council for Scientific and Technological Development/Organization of American States Postdoctoral Fellow

Melanie Fewings, Physical Oceanography, MIT/WHOI Joint Program, Postdoctoral Investigator

Ernst Galutschek, Geology & Geophysics, University of Technology Vienna, Postdoctoral Investigator

Valier Galy, Marine Chemistry & Geochemistry, Institut National Polytechnique de Lorraine (INPL), National Ocean Sciences Accelerator Mass Spectrometry Facility Postdoctoral Scholar

Isabelle Martins Gil, Geology & Geophysics, University of Bremen, Portuguese Foundation for Science and Technology Postdoctoral Fellow

Nathalie Goodkin, Marine Chemistry & Geochemistry, MIT/WHOI Joint Program, Postdoctoral Investigator

Lara Gulmann, Biology, MIT/WHOI Joint Program, Postdoctoral Investigator

Matthew Jackson, Geology & Geophysics, MIT/WHOI Joint Program, Postdoctoral Investigator

Michael Jakuba, Applied Ocean Physics & Engineering, MIT/WHOI Joint Program, Postdoctoral Investigator

James Kinsey, Applied Ocean Physics & Engineering, The Johns Hopkins University, WHOI Deep Ocean Exploration Institute Postdoctoral Scholar

Anthony Kirincich, Physical Oceanography, Oregon State University, WHOI Coastal Ocean Institute Postdoctoral Scholar

Tobias Kukulka, Physical Oceanography, University of Rhode Island,
Cooperative Institute for Climate and Ocean Research Postdoctoral Scholar

Kanchan Maiti, Marine Chemistry & Geochemistry, University of South Carolina,
Columbia, Devonshire Postdoctoral Scholar

Irina Marinov, Marine Chemistry & Geochemistry, Princeton University,
Postdoctoral Investigator

Anna Michel, Applied Ocean Physics & Engineering, MIT/WHOI Joint Program,
Postdoctoral Investigator

Carlos Moffat, Physical Oceanography, MIT/WHOI Joint Program,
Postdoctoral Investigator

Jong Jin Park, Physical Oceanography, Seoul National University,
WHOI Ocean and Climate Change Institute Postdoctoral Scholar

Michelle Portman, Marine Policy Center, University of Massachusetts,
WHOI Marine Policy Fellow

Alexandra Rao, Marine Chemistry & Geochemistry, Georgia Institute of Technology,
Postdoctoral Investigator

Adam Reitzel, Biology, Boston University, WHOI - Beacon Institute for Rivers and
Estuaries Postdoctoral Scholar

Mindy Richlen, Biology, Boston University, Postdoctoral Investigator

Julie Rose, Biology, University of Southern California, National Science Foundation
Postdoctoral Fellowship in Polar Regions Research

Alicia Timme-Laragy, Biology, Duke University, Postdoctoral Scholar

Jessica Warren, Geology & Geophysics, MIT/WHOI Joint Program,
Postdoctoral Investigator

Becky Woodward, Biology, University of Maine,
WHOI Ocean Life Institute Postdoctoral Scholar



Paul Henderson, WHOI

Postdoctoral Scholar Henrieta Dulaiova on the South Shetland Islands, Antarctica. The visit to the Islands was to supply the Copacabana Field Station with fresh food, and was part of a cruise aboard the R/V *Yuzhmorgeologiya*, whereby Dulaiova and colleagues used naturally abundant radioisotopes to investigate organic carbon export and sources of iron to the natural iron fertilized region of the Southern Drake Passage.

2007 Summer and Minority Student Fellows



Tom Kleindinst, WHOI

Summer Student Fellow Carolina Gutierrez performing a necropsy in WHOI's Marine Research Facility.

Roy Barkan, Tel Aviv University, USGS, *Tsunami simulations of the 1755 Lisbon earthquake (Mw. 8.7): Implications for tsunami hazards to the US East coast and the Caribbean*

Skylar Bayer, Brown University, Biology, *Recruitment of larvae in a post-eruption hydrothermal vent community*

Marley Bice, The College of William and Mary, Physical Oceanography, *Hydrostation S Analysis: In the Context of Climate and Circulation*

Elizabeth Boatman, Beloit College, Marine Chemistry and Geochemistry, *Extraction and Analysis of Selenium Isotopes in Natural Samples*

Tess Brandon, Cornell University, Physical Oceanography, *Hydrodynamics of Tidal Flow Across A Submarine Sand Ridge*

Marlene Brito, Northeastern Illinois University, Biology, *Do North Atlantic Right Whales Compensate for Increases in Ambient Noise?*

Carolyn Clarkin, Bucknell University, Marine Policy Center, *Economic Benefits of QuikSCAT Information for the Maritime Container Shipping Industry*

Andreia Da Costa, Rutgers University - Newark College, Marine Chemistry and Geochemistry, *Effects of Grazers and Periodic Substrate Addition on Groundwater Microorganisms*

Orianna DeMasi, Western Connecticut State University, Physical Oceanography, *Understanding the Tides South of Martha's Vineyard*

Jessica Fitzsimmons, Boston University, Marine Chemistry and Geochemistry, *Uranium Geochemistry in Contrasting Subterranean Estuaries*

Carolina Gutierrez, University of Tolima, Biology, *Predicting the Lethality of Rope Entanglements and Vessel Collisions for North Atlantic Right Whale (*Eubalaena glacialis*)*

Sarah Hale, Smith College, Geology and Geophysics, *Submarine Volcanic Morphology of the East Pacific Rise, 9-10°N*

Abigail Heithoff, College of Saint Catherine, Biology, *Linking Phosphatase Activity to Nutrient Physiology in Populations of the N-fixing Cyanobacteria *Trichodesmium* from the Sargasso Sea*

Andrew Ho, Stanford University, Biology, *Acquired Resistance to Polychlorinated Biphenyl Effects in *Fundulus heteroclitus*: New Bedford Harbor Revisited*

Ravishankar Vadasseri Kizhakkedil, Indian Institute of Technology, Madras, Applied Ocean Physics and Engineering, *Characterization of Scattering Layers in Non-Linear Internal Waves using Broadband Acoustic Backscattering Measurements*

David Leen, University of Dublin, Trinity College, Physical Oceanography, *On the Stability of Ocean Overflows*

Angus Logan, University of Cambridge, Marine Chemistry and Geochemistry, *Uranium-238 Concentrations in Seawater*

2007 Summer and Minority Student Fellows

Caroline Martin, National University of Ireland, Galway, Geology and Geophysics, *Using Colour to Estimate the Climate of the Western Peninsular India: Implications for the Reconstruction of the Indian Monsoon*

DeAnna McCadney, Western Kentucky University, Marine Chemistry and Geochemistry, *New Developments in the 4-L Technique for Quantifying Thorium-234 in Seawater and Applications to Particle Flux in the Bering Sea*

Jessica Millar, The University of Chicago, Physical Oceanography, *Signatures of Salt Fingers in Microstructure Data From the Salt Finger Tracer Release Experiment*

Sreeja Nag, Indian Institute of Technology, Kharagpur, Geology and Geophysics, *Part A: Waveform Tomography and its application to Marine Seismic Refraction Data; Part B: Using the IODP Expedition 312 Vertical Seismic Profile to investigate sub-basement reflections in Multi-Channel Profiles*

Dorene Nakata, Carleton College, Geology and Geophysics, *Mapping Volcanism and Tectonism of the Lucky Strike Segment (MAR, 37°N)*

Elena Paulssen, International University Bremen, Biology, *Microbial Community Structure along a Vertical Profile in the Tropical East Pacific*

Lara Polansky, University of Miami, Marine Policy Center, *Determining the Role of *Karenia brevis* Blooms in Emergency Department Respiratory Diagnoses Admissions in Sarasota County, Florida*

Meredith Praamsma, Hope College, Marine Chemistry and Geochemistry, *Analysis of Radiocarbon Content in Salt Marshes*

Michael Toomey, Pomona College, Geology and Geophysics, *Reconstructing a history of intense hurricanes for New England using the overwash record of Oyster Pond, Woods Hole, Massachusetts*

Nicholas Ward, University of California San Diego, Marine Chemistry and Geochemistry, *Fate and composition of Dissolved Organic Carbon in Arctic river water*

Kelsey Winsor, Smith College, Geology and Geophysics, *Benthic foraminiferal Mg/Ca record of MIS 11-12, the most extreme Pleistocene glacial cycle: implications for deep ocean temperature, sea level and climate instability?*



Susan Mills, WHOI

Skylar Bayer received the traditional “shower” after her first *Alvin* dive to deep-sea hydrothermal vents on the East Pacific Rise in the eastern Pacific, at about 10°N.

WHOI Ocean Ventures Fund Recipients

The intent of the WHOI Ocean Ventures Funds is to promote hard-to-fund, cutting-edge research by encouraging scientists to take chances in following their curiosity. Research proposals are reviewed through a competitive process and are awarded based upon innovation and financial need. These funds are available to all students in the MIT/WHOI Joint Program.

Erin Banning, Culturing of anaerobic and microaerophilic predatory bacteria from a subterranean estuary

Maya Bhatia, Carbon cycling in glaciated Arctic environments

H. Carter Esch, Ringing the dinner bell: Humpback whale response to conspecific foraging vocalizations

Naomi Levine, Dimethylsulfoniopropionate (DMSP) degradation: Understanding bacterial DMSP cycling using laboratory, field and numerical modeling studies.

Kristin Pangallo, Halogenated methyl bipyrrroles in the Atlantic Ocean

Desirée Plata, Carbon nanotubes in the marine environment

Kelly Rakow, Form, function and flow in the plankton: jet propulsion and filtration by pelagic tunicates

Daniel Rogers, A metagenomic survey of an anthropogenically-impacted subterranean estuary

Casey Saenger, The Effect of Growth Rate on *Montastrea* spp. Coral Sr/Ca: Implications for Caribbean Sea Surface Temperature Reconstructions

James Saenz, Developing a molecular proxy for marine cyanobacteria

Ratsirin Supcharoen, Vertical and horizontal exchanges in the eastern Bering Sea

Clay Kunz (left) and Chris Murphy, two graduate students in the MIT/WHOI Joint Program fine-tuning *Camper's* camera systems during a summer 2007 expedition to the Gakkel Ridge.



Chris Linder, WHOI

Endowed Funds That Support WHOI's Education Activities

The John M. Alden Fund
The AOP&E and G&G Alumni Fund
The Edna McConnell Clark Foundation Fund
The Robert H. Cole Endowed Ocean Ventures Fund
The Arthur Vining Davis Foundations Fund for Summer Student Fellows
The Arthur Vining Davis Foundations Graduate Student Fellowships
The Henry L. and Grace Doherty Professor of Oceanography
The Doherty Postdoctoral Scholars
The Kenneth O. Emery Fellowship in Marine Geology & Geophysics
The Homer Ewing Fund
The C. Russell Feldman Fund
The Christopher Haebler Frantz Fund
The Paul McDonald Fye Graduate Fellowship in Oceanography
The Ruth and Paul Fye Award for Excellence in Oceanographic Research
The William D. Grant Fund
The George D. Grice, Jr. Postdoctoral Endowed Scholarship Fund
The Earl Hays Memorial Fund
Charles D. Hollister Graduate Student Fellowship
The Jake Hornor Fund
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The George F. Jewett Ocean Ventures Fund

The J. Seward Johnson Fund - A
The J. Seward Johnson Fund - B
The Henry J. Kaiser Family Foundation Ocean Ventures Fund
The Arthur E. Maxwell Graduate Student Fellowship
The Noel B. McLean Fund
Henry A. and Elisabeth W. Morss Education Fund
Elisabeth W. Morss Ditty Bag Fund
The Pavia-Fornari Endowed Fund in Support of Graduate Students
The A. Lawrence Peirson, III Student Opportunity Endowed Fund
The Carl and Pancha Peterson Endowed Fund for Support of Summer Student Fellows
The Lawrason Riggs, III Memorial Fund
The Virginia Rudolph Endowed Student Loan Fund for Women
The Edward and Erla Schwarm Family Fund
The Virginia Walker Smith Fund
The Seth Sprague Educational and Charitable Foundation Fund
The John H. Steele Endowment in Support of Postdoctoral Research
The H. Burr Steinbach Fund
The Alfred G. Mayor and Katharine M. Townsend Memorial Fund
The Richard Vanstone Fund
The F. Thomas Westcott Fund



Above, recent Joint Program graduate Carly Strasser collects microscopic softshell clams (*Mya arenaria*) at low tide in Barnstable Harbor. Photo by Tom Kleindinst, WHOI.

Front Cover: Maya Bhatia sets up an incubation experiment on the western margin of the Greenland ice sheet, by a meltwater lake. Photo by Sarah Das, WHOI.