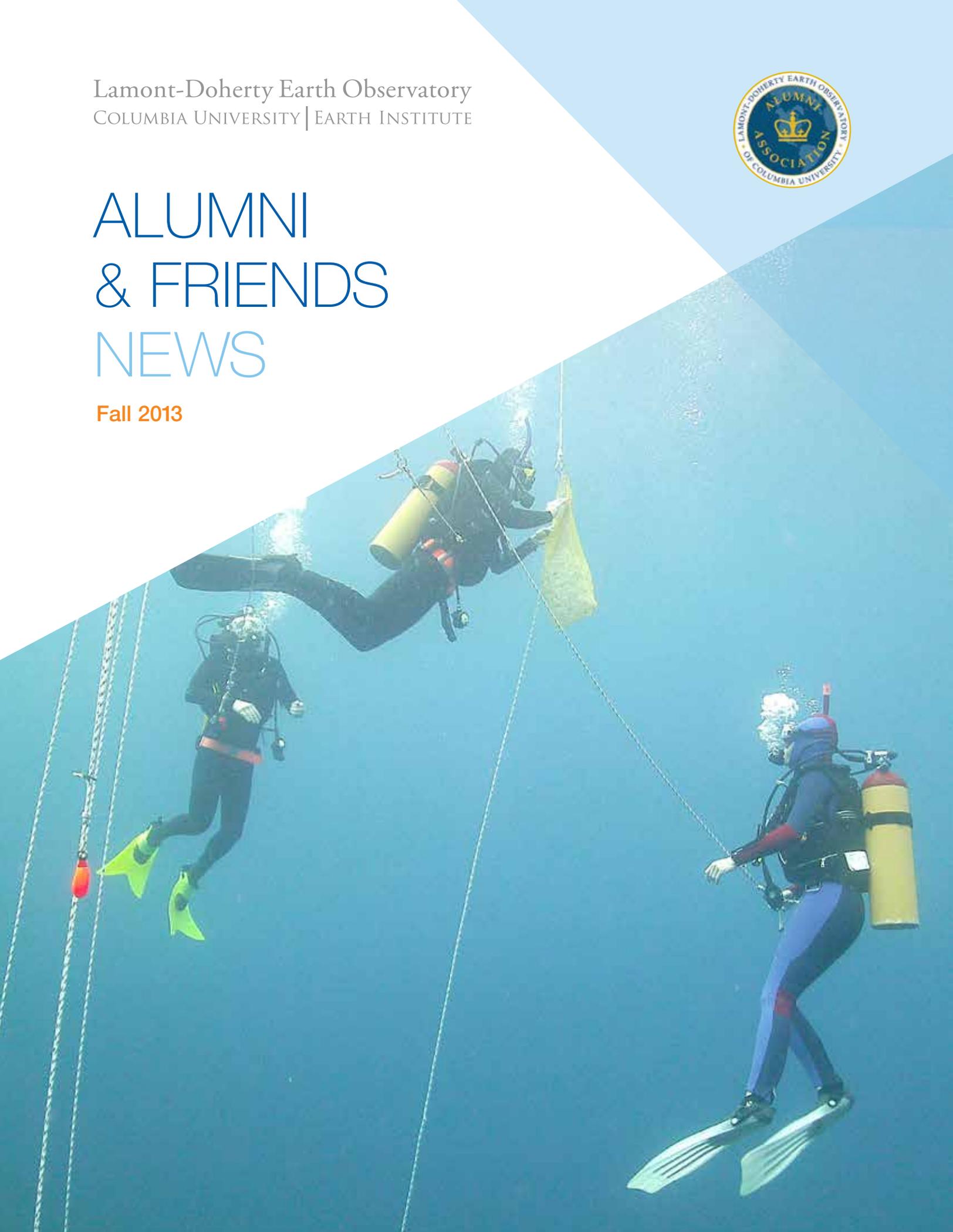


Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE



ALUMNI & FRIENDS NEWS

Fall 2013



ISSUE 22

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MISSION

Lamont-Doherty Earth Observatory seeks fundamental knowledge about the origin, evolution and future of the natural world. Our scientists study the planet from its deepest interior to the outer reaches of its atmosphere, on every continent and in every ocean, providing a rational basis for the difficult choices facing humanity.

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Cover Image: Geochemist Bärbel Hönisch and students from her research group collect planktonic foraminifera off Southern California's Catalina Island. The foraminifera will be used in laboratory studies that examine how the organisms respond to changing ocean conditions. Left to right: Alexander Gagnon (University of Washington), Jordan Snyder (University of California, Davis) and Bärbel Hönisch. *Photo credit: Kate Davis*

LETTER FROM THE DIRECTOR

Dear Friends of Lamont



A new academic year is upon us, and many of our scientists have returned from fieldwork in far-flung locations on land and sea. The apple trees outside Lamont Hall have littered the ground with their fruit, and campus is awash in fall color and new faces.

In August, we welcomed 19 new graduate students to our Department of Earth and Environmental Sciences, and since the start of the year, 13 postdoctoral scientists have joined our ranks. These bright young scholars bring enthusiasm and innovative ideas, lending new energy to our current investigations and shaping the directions of our future research.

Students on our campus are fortunate to be mentored and instructed by some of Earth science's most accomplished researchers, including G. Unger Vetlesen Professor of Earth and Climate Sciences Mark Cane and Professor of Earth and Environmental Sciences Terry Plank. In May, these two outstanding scientists were elected as new members of the National Academy of Sciences, the country's most prestigious scientific organization.

As the new academic year takes shape, so, too, has the Lamont strategic plan. The Strategic Planning Committee is putting the finishing touches on a plan that argues persuasively for the maintenance of Lamont's core strengths in basic science, identifies several key research themes that crosscut the traditional disciplines and Observatory divisions, and highlights a number of targeted initiatives for particular focus in research, recruitment and fundraising. I look forward to sharing this plan with you later this fall.

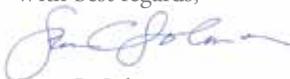
Nearly one year ago Hurricane Sandy struck the eastern United States, altering landscapes, causing serious loss of life and property, and changing the way we think about the impact of extreme weather. Before Sandy, our researchers examined what might happen should a severe storm impact Greater New York. During and after Sandy, these scientists, including Adam Sobel and Klaus Jacob, were among the first to lend their expertise to help city and state officials understand and rebuild from the storm.

Today, Sobel, Jacob and others continue to conduct the fundamental research that enables society to plan for extreme weather events such as Sandy. The knowledge generated by these scientists informs decision making for land use and urban planning in response to sea level rise and other consequences of our warming climate.

Your support of Lamont-Doherty facilitates a diverse range of critical Earth science research, from deciphering past and present climates to predicting the risks presented by natural hazards in the United States and around the world. The scientific knowledge we provide allows policy makers to address the challenges facing society now and in the coming decades.

In closing, I extend a sincere thanks to each of our donors, and I invite new friends to join in the growing partnership that supports each of our scientific and educational activities.

With best regards,



Sean C. Solomon
Director

AWARDS

Faculty, Staff and Student Awards

In April, [Mark Cane](#), an expert on the El Niño climate pattern, and [Terry Plank](#), an authority on explosive volcanoes, were elected to the National Academy of Sciences. Membership in the National Academy, given for excellence in original scientific work, is one of the highest honors awarded to engineers and scientists in the United States. Of the 84 scientists elected this year, just five are Earth scientists, and we are very pleased that two of those scientists are from Lamont.

[Mark Cane](#) is also the recipient of the American Geophysical Union's 2013 Maurice Ewing Medal. Named for Lamont's founding director, the Ewing Medal is awarded for "significant original contributions to the scientific understanding of the processes in the ocean; for the advancement of

oceanographic engineering, technology, and instrumentation; and for outstanding service to the marine sciences."

Atmospheric scientist [Tiffany Shaw](#) was awarded a Faculty Early Career Development award, also known as a CAREER award, by the National Science Foundation for her work as a researcher, teacher and scholar. Through this program, NSF emphasizes the importance on the early development of academic careers dedicated to stimulating the discovery process in which the excitement of research is enhanced by inspired teaching and enthusiastic learning.

Department of Earth and Environmental Sciences (DEES) graduate students [Abagael West](#), [Angelica Patterson](#) and [Asna Ansari](#) are recipients of National

Science Foundation Graduate Research Fellowships. Each student will benefit from a three-year annual stipend and cost of education allowance for tuition and fees, as well as opportunities for international research and professional development.

DEES graduate student [Alexandra Bausch](#) was awarded a NASA Earth and Space Science Fellowship. Her proposed research project is entitled Assessing the Causes for the Rise in Abundance and Seasonal Productivity of the Green, Mixotrophic Dinoflagellate *Noctiluca* in the Arabian Sea Ecosystem.

DEES undergraduate [Rachel Sheppard](#) received the Walter C. Pitman III Award in acknowledgment of excellence in research and presentation as expressed by her senior thesis.



From top left, clockwise: Mark Cane, Terry Plank, Tiffany Shaw, Abagael West, Angelica Patterson, Asna Ansari, Alexandra Bausch, Rachel Sheppard



From top left, clockwise: Michael Wolovick, Meredith Nettles, Claire Bendersky, Klaus Jacob, Bärbel Hönisch, Peter Kelemen, Benjamin Cook, Alex Chekalyuk, Alex de Sherbinin

Graduate student [Michael Wolovick](#) was awarded a NASA Earth and Space Science Fellowship in support of his research project entitled Ice Sheet Sliding Constrained by Assimilation of Stratigraphic Data.

Undergraduates in the Department of Earth and Environmental Sciences named seismologist [Meredith Nettles](#) the recipient of the Best Teacher Award for 2013 and graduate student [Claire Bendersky](#), the 2013 Best Teaching Assistant Award.

Geophysicist [Klaus Jacob](#) was named a Hero of the Harbor by New York's Metropolitan Waterfront Alliance for being an advocate of the dangers of sea level rise and storm surge, before, during and after Hurricane Sandy.

Lamont-Doherty's 2013 Excellence in Mentoring Award went to [Bärbel Hönisch](#) in June. This internal award recognizes the importance of quality mentoring, which benefits the institution as a whole, its junior members and the mentors themselves. At the award ceremony, graduate student Jesse Farmer commented, "Barbel works tirelessly as an educator both inside and outside the classroom."

Geochemist [Peter Kelemen](#) was named a Geochemistry Fellow by the Geochemical Society and the European Association of Geochemistry, which is bestowed upon outstanding scientists who have made a major contribution to the field of geochemistry.

In June, climate scientist [Benjamin Cook](#) received NASA's Early Career Achievement Medal. This award is given

in recognition of unusual initiative or creative achievement that makes significant contributions to the awardees discipline area and NASA's mission and goals.

The National Science Foundation awarded Assistant Research Professor [Alex Chekalyuk](#) an Antarctica Service Medal in recognition of his service on a U.S. Antarctic expedition.

The Center for International Earth Science Information Network Senior Research Associate [Alex de Sherbinin](#) was named an Honorary Fellow by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), an honor awarded to exceptional scientists for the purposes of providing skills, advice and guidance to UNEP-WCMC.



Graduate student Natalia Zakharova examines a fresh section of core with New York State Museum geologist Brian Slater.
Photo credit: Kim Martineau

CAMPUS NEWS

Pilot Drilling in Palisades

This summer, a deep hole was drilled behind Lamont's seismology parking lot. It was not part of an effort to extend a subway line from Manhattan to Lamont but rather a research project sponsored by the U.S. Department of Energy's National Energy Technology Laboratory (NETL) through the American Recovery and Reinvestment Act of 2009, with co-funding from New York State Energy Research and Development Authority (NYSERDA).

The campus drill site is one of two pilot boreholes chosen to study the late Triassic strata of the Newark Basin, composed of layered sedimentary and volcanic rocks, and to explore formations that might accommodate the future sequestration of carbon dioxide.

The Lamont team, led by geologists David Goldberg, Paul Olsen and Dennis Kent, is partnering with Houston-based Sandia Technologies, Poughkeepsie-based Conrad Geoscience, Rutgers University, Schlumberger, New York State Museum and NETL. Beginning in late July, the upper 750 feet of the borehole were

drilled and cored over the lowermost 100 feet; the hole was then cased and cemented through the base of the Palisades sill, a huge shelf of volcanic rock. In late August, drilling and continuous coring began for the 1,250-foot interval below casing; the final depth of the borehole will be approximately 2,000 feet. The drilling is authorized and overseen by the New York State Department of Environmental Conservation (DEC) and Rockland County Department of Health.

Upon drilling completion, geophysical logs will be collected by Schlumberger to obtain in situ information on porosity, lithology and structure. The cores and geophysical measurements will be used to evaluate the geologic characteristics of the Newark Basin. Although no carbon dioxide injection is planned at this site, knowledge of the storage capacity of the basin can be applied to studies of other rift basins along the Atlantic coastline. The borehole will remain open and is available for further studies under the DEC permit.



Photo credit: Angel Mojarro

Climate Models: This Season's Hottest Trend

On a Friday in late August, science and fashion collided on the Lamont campus when 13 climate scientists from Lamont, the International Research Institute for Climate and Society (IRI) and the NASA Goddard Institute for Space Studies (GISS) met for a fashion photo shoot in the Monell Auditorium.

Photos from the shoot will be used in the 2014 Climate Models wall calendar, a project of IRI's Francesco Fiondella and Lamont's Rebecca Fowler, which presents a year's worth of Lamont, IRI and NASA GISS climate scientists and information about their work. For more information, and to purchase a calendar, visit www.climatemodels.org.

Lessons from Hurricane Sandy

“The mud of Sandy is gone. The mood of Sandy has stayed. Those living near Sandy tides are throwing the dice whether to leave or to stay, to raise a home, or to raze it and run.”

As the one-year anniversary of Hurricane Sandy approaches, Lamont scientists from a variety of disciplines continue to examine the impact of the storm. Sandy raised key questions about the concentration of human activity in risk-prone coastal areas and concern about the rising incidence of extreme climate events. The powerful destruction caused by the storm is a stark reminder that worldwide, cities must focus on preparedness and recovery in order to become more resilient to natural disasters.

The breadth and depth of the fundamental research being conducted on climatic extremes done at Lamont helps society understand and tackle the problems related to extreme weather in the United States and around the globe. From examining how Sandy evolved into

a devastating superstorm, to the effects of climate change on sea levels, urban storm surge and future weather events, the knowledge generated by our scientists enables humankind to prepare for the intensifying extremes ahead.

We asked Lamont scientists studying Sandy to reflect on the storm, its aftermath and what they’ve learned from the hurricane in the past year.

Roger N. Anderson, geologist

From a building perspective, do not put your electric switchgear and other vulnerable infrastructure in the basement—second floor or higher!

Klaus Jacob, geophysicist

“The mud of Sandy is gone. The mood of Sandy has stayed. Those living near Sandy tides are throwing the dice whether to leave or to stay, to raise a home, or to raze it and run. If only they could sell. There is much talking and planning, at best confused action—so far. And confusion abounds: flood maps that ignore the rise of the seas, made for today, not for tomorrow. But which tomorrow? How high to build when the target moves with no upper end in sight, towed up by puffing SUVs. Give or take, the country is still in denial of seas rising, and Sandy’s younger sisters to come will have their work cut out to shake us from our slumber. For good, no, for better; but at an ever higher price yet to be paid.”

Microbiologist Andy Juhl collects water samples in Newtown Creek, a federal Superfund site that divides Brooklyn and Queens, soon after Hurricane Sandy. The samples he collects are used to measure the storm’s impact on the Hudson River’s water quality.
Photo credit: Kim Martineau





Hurricane Sandy, the second-costliest hurricane in U.S. history, approaches the East Coast of the United States.
Photo credit: NASA

Andrew Juhl, microbiologist

“From the perspective of water quality, Superstorm Sandy did not worry me as much as the chronic sewage spills in the Hudson River almost every time it rains. It would be a shame if efforts to harden the system for a future storm came at the expense of dealing with the day-to-day problems that pose a far greater public health risk. I would recommend prioritizing those projects that make the system more resilient to big events and help it deal with everyday challenges so that the volume of untreated sewage getting into New York and New Jersey waters declines.”

Arthur Lerner-Lam, seismologist

“The modern city is not invulnerable; we are not ‘stronger than the storm.’ Amplified by rising seas, severe storms can render our urban infrastructure useless and punish some of our most vulnerable citizens. We won’t be able to

stop severe weather or sea level rise, at least not in our lifetimes, but we can pull together and adapt if we have effective government, an engaged citizenry and the civic will to act. We are smart enough as a society to understand the consequences of inaction. Are we smart enough to act?”

Adam Sobel, atmospheric scientist

“Our infrastructure wasn’t ready for Sandy, and it’s even less ready for the future. Because global warming leads to sea level rise, we’ll become more and more vulnerable to Sandy-like events. Looking beyond Sandy to the broader impacts of warming, we’re in trouble. In terms of adaptation locally, the Bloomberg plan is a big step forward, but we’ll see how much of it happens. In terms of mitigation—slowing the long-term warming down, since it’s too late to stop it—we’re going nowhere. We urgently need a price on carbon.”

“The modern city is not invulnerable; we are not ‘stronger than the storm.’ Amplified by rising seas, severe storms can render our urban infrastructure useless and punish some of our most vulnerable citizens.”

OUR EXPERTS IN THE NEWS

Rising Seas

“The problem is we’re still building the city of the past. The people of the 1880s couldn’t build a city for the year 2000—of course not. And we cannot build a year-2100 city now. But we should not build a city now that we know will not function in 2100. There are opportunities to renew our infrastructure. It’s not all bad news. We just have to grasp those opportunities.”

—Klaus Jacob in *National Geographic*

Algae Study Could Unlock Huge Potential

“It’s still very rare to have a whole genome sequence for any marine phytoplankton. It’s absolutely unprecedented to have multiple strains of the same species sequenced.”

—Sonya Dyhrman in the *San Diego Union-Tribune*

Heat-Trapping Gas Passes Milestone, Raising Fears

“It feels like the inevitable march toward disaster.”

—Maureen Raymo in *The New York Times*

Measuring Carbon Age in Ivory Could Help Combat Poaching

“We’ve developed a tool that allows us to determine the age of a tusk or piece of ivory, and this tells us whether it was acquired legally. Our dating method is affordable for government and law enforcement agencies and can help tackle the poaching and illegal trade crises.”

—Kevin Uno in *The Guardian*

Lamont-Doherty scientists are regularly in the news for their groundbreaking work. Stay up to date on our research by visiting the “In the News” page of ideo.columbia.edu.

RESEARCH NEWS

R/V *Marcus G. Langseth*: Collecting Atlantic Records

Our research vessel, the *Marcus G. Langseth*, spent the late spring conducting its first-ever Atlantic Ocean science mission to the Rainbow Hydrothermal Vent field on the Mid-Atlantic Ridge, southwest of the Azores. This expedition required a dense array of ocean bottom seismometers and two-dimensional seismic imaging to examine the structures underlying these vents.

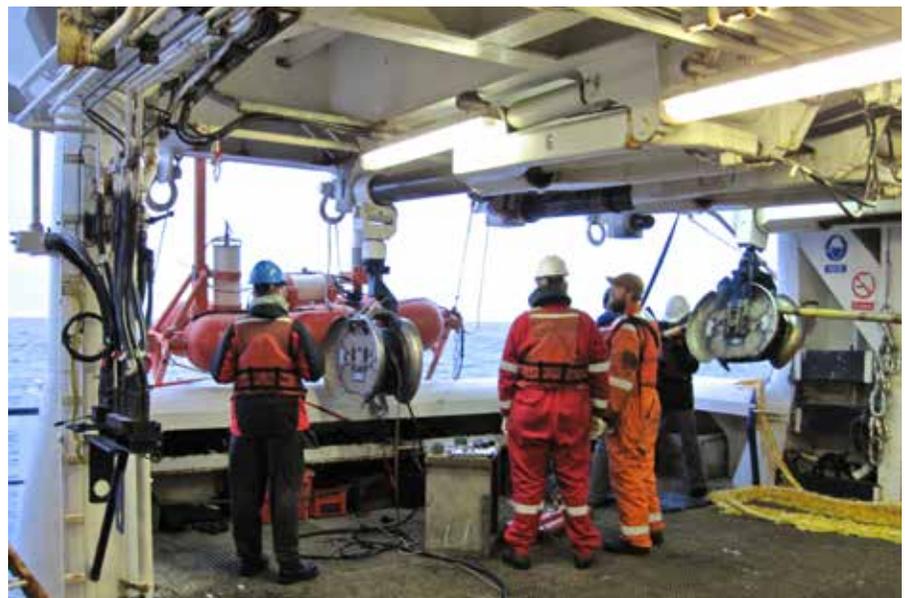
During June and July, Lamont marine seismologist Donna Shillington and colleagues Dale Sawyer and Julia Morgan of Rice University led an international team of scientists on a cruise conducting seismic surveys in the Deep Galicia Basin of the northeast Atlantic Ocean. The goal of the project is to learn more about the birth of the Atlantic, which likely began about 200 million years ago.

The group collected the first-ever three-dimensional (3D) seismic imaging data needed to study the unique rifted continental-to-oceanic crust transition

in the Deep Galicia Basin, located about 200 miles off the coast of northern Spain. Using sound waves, the team created a 3D picture of the rocks in the Deep Galicia Basin. The new datasets resulting from this expedition will improve understanding of how continents stretch and break apart, creating new ocean basins in between.

While at sea, Shillington and Lamont graduate student James Gibson, among others, shared life and work aboard the *Langseth* through a website and blog: galicia3d.blogspot.com.

Following the Galicia cruise, the *Langseth* headed to the Reykjanes Ridge in the North Atlantic Ocean, for a monthlong cruise led by scientists from the University of Hawaii at Manoa (including Fernando Martinez, PhD ’88) and Iceland’s Institute of Earth Sciences. The goal of their marine geophysical expedition is to collect multibeam, magnetics and gravity data that will inform understanding of the evolution of the Reykjanes Ridge, a segment of the Mid-Atlantic Ridge just south of Iceland. This data will be used to test competing theories about what’s happening in this geologically fascinating area, with important implications for our understanding of geodynamic processes within the earth.



Scientists prepare to deploy a streamer cable, used to collect seismic data, from the stern of the R/V *Langseth* during the Galicia research cruise.

Photo credit: Marianne Karplus



PROFILE

Lamont Research Professor Felix Waldhauser

A research professor in Lamont's Division of Seismology, Geology and Tectonophysics, seismologist Felix Waldhauser studies the fine-scale details of earthquake distributions and characteristics, as well as the fault systems they produce, to gain insight into the processes that cause and control them.

What is the focus of your current research?

A long-standing problem in seismology is that the locations of earthquakes within Earth's crust and mantle remain rather fuzzy—current estimates gleaned from globally recorded seismograms are often not accurate even to within tens of kilometers. I spend a good portion of my time developing high-precision relocation methods for global-scale applications that can simultaneously process the massive amount of seismic data that has accumulated over the last several decades to sharpen the location of millions of past earthquakes and the faults they occur on. We also implement these methods in existing real-time monitoring systems

in order to pinpoint the location of new earthquakes almost instantaneously, which will lead to improvements in the immediate evaluation and mitigation of seismic hazards. These same methods can also improve our ability to rapidly discriminate between naturally occurring earthquakes and explosions caused by nuclear bomb testing, helping to identify incompliances with the Comprehensive Nuclear-Test-Ban Treaty.

As part of two side projects, I am characterizing seismicity for the purpose of reevaluating estimates of seismic hazards for nuclear power plants in the U.S., as well as investigating the potential link between recent earthquakes and nearby fracking-related activity.

What does your research tell us about the planet?

Most of the world's earthquakes occur along the boundaries of tectonic plates, where they represent the primary physical expression of ongoing tectonic processes. We now have the tools to zoom into these large active fault systems and inspect structural and temporal details that, until now, were buried in the large uncertainties of existing earthquake location estimates.

We've been studying the subduction zone system that generated the 2004 Indian Ocean earthquake and tsunami that killed more than 230,000 people. We were able to resolve a spatiotemporal signal in the aftershock sequence that showed that some of the aftershocks were caused by seawater that got trapped in the oceanic crust millions of years ago and subsequently pushed down to great depths in the mantle. The strong shaking during the 2004 quake caused the ancient seawater to escape and rise up to the surface, causing earthquakes as it rose.

On a much smaller scale, we have been looking at thousands of small cracking events recorded by ocean bottom seismometers (OBS) on the East Pacific Rise (EPR), where ocean plates are spreading apart and new crust is being formed. The location and characteristics of the cracking events revealed pathways by which seawater circulates underneath

the ridge before being released back into the ocean via hydrothermal vents. These data may reveal the potential impact of seismic activity on biochemical and environmental conditions near hydrothermal vents that support a vast array of unique and highly specialized life forms.

What are some of your most exciting discoveries?

The 2004 Indian Ocean tsunami had a near-field component of enigmatic origin that caused most of the destruction in Indonesia. Our aftershock analysis illuminates a secondary fault system off the coast of Sumatra that appears to be the source of that near-field tsunami. These so-called splay faults branch off the subduction interface and reach the seafloor at a steep angle, causing exaggerated vertical displacement of the seafloor that sets off the tsunami wave.

The seismic expression of hydrothermal circulation cells revealed by our OBS data from the EPR offers a new and alternative view of the inner workings of the ridge system to what is typically shown in textbooks. These findings also remind us just how much of the seismic action and scientific insight we are likely missing by not being able to closely monitor the ocean floors for long periods of time.

Perhaps most exciting to me is that we are barely scratching the surface here, and we should be able to unlock a wealth of new information from existing seismic data that standard analysis practices have not been able to extract.

Is there a field component to your research?

Seismologists nowadays have easy access to terabytes of seismic archives from past earthquakes over the Internet. Data from an increasing number of seismic stations from around the world can be streamed to our desktop computers in near real time. Thanks to this ease of data availability and access, I can essentially explore the seismological world from my office.

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That said, sometimes research questions call for the deployment of seismometers in new places. The OBS data we are using to study the EPR were recorded 2.5 km beneath the surface of the Pacific Ocean. My colleagues and I spent several weeks on a research vessel to deploy and recover these instruments. During these expeditions I had the privilege to learn about life in the deep sea from my biology-minded shipmates; I also dove to the ocean floor in the submersible Alvin to see the abundance of rather bizarre life forms that thrive in the inherently extreme conditions.

What do you enjoy most about working at Lamont?

I enjoy many aspects of being a Lamont. The scale and diversity of research carried out at Lamont spans all of the major Earth science disciplines, and this makes it a very unique, progressive and interdisciplinary place to do science. Lamont fosters an entrepreneurial and eclectic atmosphere, and provides a great amount of intellectual freedom. I also can't help but appreciate Lamont's physical setting: perched high on the Palisades Sill, overlooking the Hudson River, yet only a stone's throw away from Manhattan.

Going to AGU Fall Meeting in San Francisco?

Join us for Lamont's largest alumni event of the year.

Save the date for our annual alumni reception!

Tuesday, December 10, 2013

Marriott Union Square, 30th Floor
480 Sutter Street, San Francisco, CA

Details will arrive in your mailbox later this fall.

LETTER FROM THE ALUMNI BOARD PRESIDENT

Dear Alumni and Friends of Lamont,



I hope this short note finds you well. I write while en route to board the R/V *Roger Revelle* and begin a four-week seismic and coring cruise in the western Pacific. There, I'll join colleagues, young scientists and graduate students from more than a half-dozen U.S. research universities, each arriving to lead, learn or lend their talents to a challenging adventure in ocean exploration. This reflection brings to mind the long path that has brought me here from when I first went to sea 41 years ago. I'm pleased to know that I can now be part of "giving back" to a rising generation that will soon be seeking answers to questions that haven't yet been asked.

My message for you is simple: science is collaborative, with strong, supporting ties that run both horizontally and vertically. We work in teams of equals, but we also depend on contributions from those who are here to learn. They bring fresh ideas, they challenge us to stay current and they have an inner passion that's ready to catch fire. At this point in my career, I welcome the chance to provide opportunities for the next generation of researchers to continue the quest of following exploration to wherever it leads.

Alumni associations strengthen the warp and woof of these supporting ties. They bind colleagues throughout their careers, from the days when they first met as students, and they bind the mentor to



the rising star, both of whom know that the learning goes up, as well as down, the years between them.

As I left the Lamont campus yesterday, signs for Orientation Day 2013 were going up, welcoming the 19 incoming grad students soon to arrive. Wally Broecker was hosting a two-day seminar on carbon isotopes. Dave Goldberg was managing the drilling of a well targeting pre-rift basement rock, which had reached 600 feet into the sill below where Ray Long's house used to stand. Mo Raymo is holding seminars on XRF core studies that will soon be a regular feature in the newly rebuilt Core Lab. And Terry Plank is out with the other sports fans, a force to contend with on both the soccer field and volleyball pitch in the midday sun.

Lamont doesn't stand still; it is the same diverse, vibrant, engaged community it's always been. The faces, the challenges and the questions may change, but the energy does not. Through ties in the Alumni Association, even if you're not on the campus, you can remain part of Lamont's vitality and worth.

I hope your summer went well and the fall that's ahead holds special rewards. I'll be returning to my land-based work in early October and look forward to seeing many of you in San Francisco during our annual gathering at AGU.

Best regards,

Greg Mountain



Join the Director's Circle

State of the art facilities

World-renowned scientists

Groundbreaking discovery

DIRECTOR'S CIRCLE

From master classes with world-renowned climate scientists to tours of the laboratories in which their discoveries are made, members of the Director's Circle gain exclusive access to Lamont-Doherty Earth Observatory and stay informed about groundbreaking advances in Earth and environmental science.

Throughout the year, Director's Circle members are invited to events with Lamont experts, where attendees and their guests enjoy the rare opportunity to discuss Earth science with our accomplished researchers.

The Director's Circle recognizes supporters of Lamont who contribute annual gifts of \$2,000 or more. These gifts include support for our Innovation Fund, which awards annual grants to scientists at the Observatory who are pursuing exciting new areas of research.

For more information about joining the Director's Circle, please contact Stacey Vassallo at staceyv@ldeo.columbia.edu, or call 845-365-8634.

SUPPORT US!

Lamont-Doherty relies on a variety of funding sources for our research activities and education programs. This support ensures that our scientists and students can continue to do the vital research that increases our scientific knowledge, informs public policy and addresses pressing environmental issues.

As we work to understand fundamental Earth processes and find solutions to the challenges facing our planet, your support is more important than ever. We thank each of our donors for their loyalty and enthusiasm and look forward to working with new friends as we build for the future.

Please make a gift in support of Lamont using the enclosed envelope or our secure online form at www.ldeo.columbia.edu/support.

Lamont-Doherty Earth Observatory is a 501(c)3 nonprofit organization. Gifts to the Observatory are tax deductible in accordance with law.



Tree-ring scientist Neil Pederson and colleagues set out into a coppiced woodland of Bhutan to collect data from the forest's trees.
Photo credit: Neil Pederson

SAVING TREES, EXPANDING AUDIENCE

This will be the final issue of our print newsletter. We'll soon transition to a monthly e-newsletter, which will provide our friends and alumni with more frequent and timely updates. The change is one we believe is important, as it will significantly reduce our use of paper and enable improved communications with our growing audience of Earth science enthusiasts.

Please send a request to alumni@ldeo.columbia.edu to be added to our e-newsletter mailing list.

LDEO.columbia.edu



FROM THE ARCHIVE

In the early 1950s, Lamont scientists used some of the newly created tools of seismology to survey the Hudson riverbed prior to the construction of the Tappan Zee Bridge.

The group determined that the river's sediments were 740 feet thick—thicker than sediments found in the river crossings such as New York's Holland and Lincoln Tunnels. The data collected by Lamont scientists is one of the reasons engineers decided to “float” the Tappan Zee in the sediments rather than anchoring it to the bedrock.

Standing: Jack Oliver, Walter Beckmann, J. Lamar Worzel;
kneeling: Martin Cassidy, Charles Drake, Thomas Aldrich