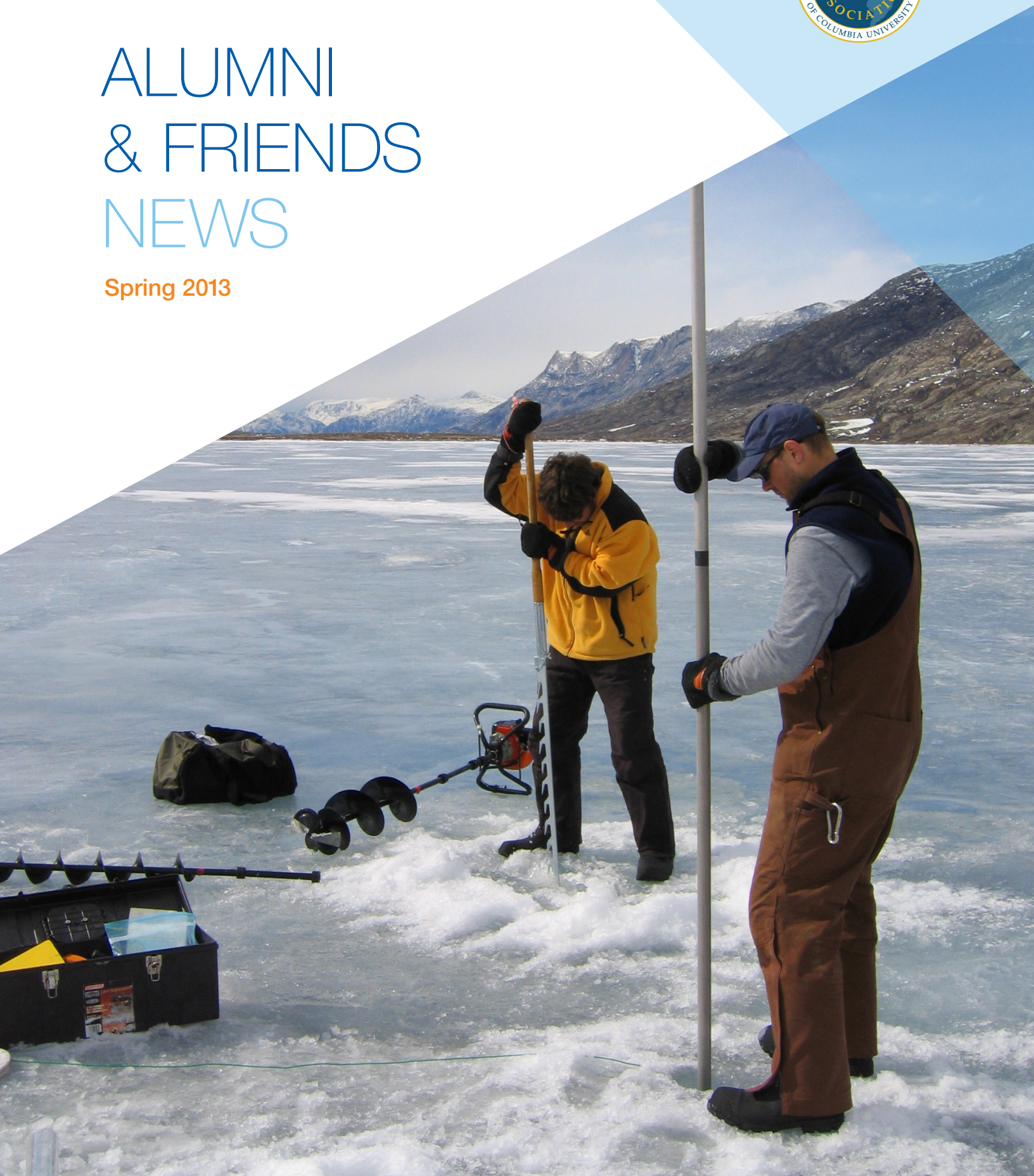
Lamont-Doherty Earth Observatory
Columbia University | Earth Institute

ALUMNI & FRIENDS NEWS

Spring 2013



ISSUE 21

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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Alumni & Friends News is published twice a year. Please e-mail us with comments and suggestions or to subscribe.

Cover Image: Climate scientist William D'Andrea cores a lake in Greenland using a push coring system. Learn more about D'Andrea and his work on page 8.

LETTER FROM THE DIRECTOR

Dear Friends of Lamont

As we head into the busy spring and summer field season, I'd like to reflect on some of the highlights of the past few months. Our researchers, both senior and early career, continue to be recognized for their outstanding contributions to Earth science. I am extremely pleased to report that oceanographer Arnold Gordon and atmospheric scientist Tiffany Shaw are two of the recipients of such awards. We in turn, in collaboration with the G. Unger Vetlesen Foundation, celebrated scientific achievement by our colleagues in the Earth sciences at February's Vetlesen Prize Award ceremony. Funded by the Vetlesen Foundation and administered by Lamont-Doherty, the 2012 Prize was received by atmospheric chemist Susan Solomon of the Massachusetts Institute of Technology and geochemist Jean Jouzel of the Laboratoire des Sciences du Climat et l'Environnement of the Institut Pierre Simon Laplace.

The Observatory's plans for growth in the field of biogeoscience are now coming into fruition, with the arrival of three new scientists in our Division of Biology and Paleo Environment. The renovation and expansion of lab space for our new arrivals, located in the New Core Laboratory, are now ready to be certified and occupied by their research groups. I invite you to learn more about this innovative new field of research by getting to know our new arrivals, Hugh Ducklow, Solange Duhamel and Sonya Dyhrman, as well as Lamonters like Joerg Schaefer and William D'Andrea, who are all featured in this issue.

Lamont's Strategic Planning Committee, led by co-chairs Robin Bell and Maureen Raymo, has been meeting regularly over the last few months. Their task is to identify the most promising scientific directions for future research at the Observatory. In February, a Town Hall meeting was held on campus to engage the entire Lamont community in a discussion of our future grand strategic challenges, as well as perceived obstacles to progress. A report from the committee to the campus in the near future will provide a distillation of the suggestions as a milestone on progress toward a final scientific strategic plan.

I am very much looking forward to the arrival of our summer students and colleagues on campus. With this flurry of activity on campus comes the departure of many of our researchers for their field sites around the globe, from New York City, our own backyard, to the glaciers of New Zealand. Our scientists continue to make exciting breakthroughs in Earth science. I am extremely proud of their achievements and look forward with great anticipation to the results they produce in the coming years in service to society and the scientific community.

Your support of Lamont-Doherty makes possible our scientific research, education programs and the transformation of our science into solutions through collaborations with engineers, public health specialists, policymakers and others. I extend a sincere thanks to each of our donors and I invite new friends to join in support of our world-class research institution.

With best regards,

Sean C. Solomon
Director

Faculty, Staff and Student Awards

Oceanographer Arnold Gordon is the winner of the 2013 Prince Albert I Medal for his outstanding contributions to oceanography, given by the International Association for the Physical Sciences of the Ocean (IAPSO). Only the seventh recipient of this medal, Gordon was cited for his, "Outstanding contribution to our knowledge of the general circulation of the ocean and especially for his studies of the Southern Ocean and inter-ocean exchange." The medal will be awarded at the next IAPSO General Assembly, to be held in Gothenburg, Sweden, in July.

Atmospheric scientist Tiffany Shaw was one of 16 researchers awarded a prestigious Packard Fellowship in Science and Engineering in 2012. This award is given to young investigators to further their work in science and engineering. Shaw studies the fluid dynamics of Earth's weather and climate, using a combination of theory, observations and numerical models. Her research focuses on understanding how moisture is transported and how it interacts with large-scale flow patterns, such as the summer monsoon, and the impact of climate change. In March 2013, Shaw received a Faculty Early Career Development (CAREER) award from the National Science Foundation in recognition of her research and educational activities.

Geophysicist Klaus Jacob was named a Person Who Mattered in 2012 by *Time* magazine, for his dedication to investigating and planning for the effects of major storms on urban infrastructure, both pre- and post-Hurricane Sandy.

Geochemist Kerstin Lehnert received the 2012 Distinguished Service Award from the Geochemical Society for her outstanding service to the geochemical community.

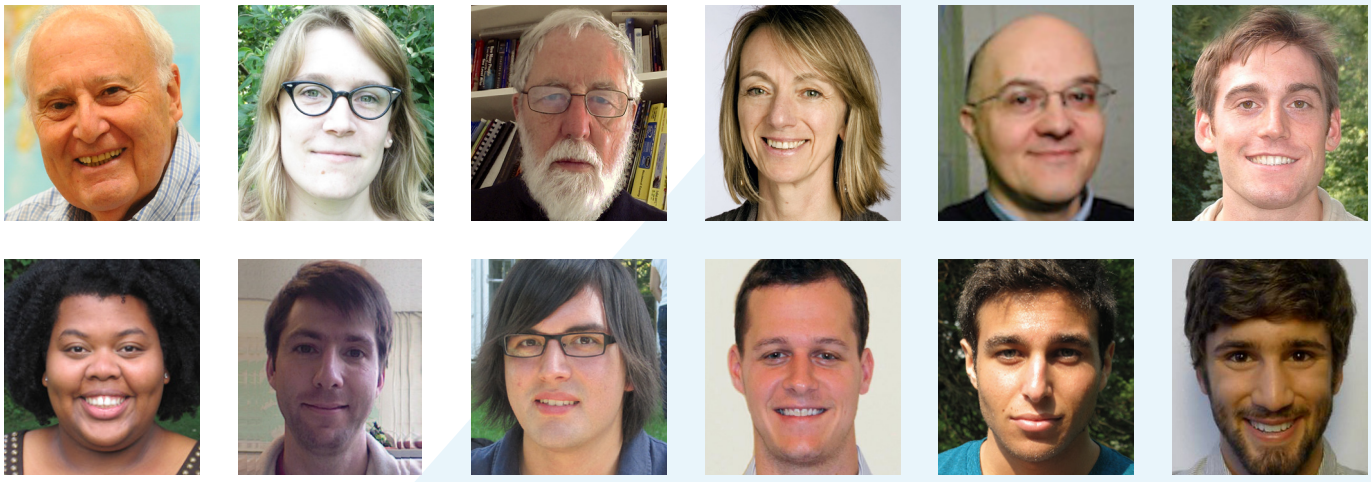
The Department of Earth and Environmental Sciences (DEES) Graduate Student Committee selected Applied Physics and Applied Mathematics Professor Lorenzo Polvani to receive their 2011–2012 Best Teacher Award.

In January 2013, graduate student Chris Hayes was awarded the Best Student Oral Presentation at the American Meteorological Society's Robert Duce Symposium.

In 2012, the DEES established the Graduate Student Research Awards, named for recently retired faculty members. The fall 2012 award recipients were Angelica Patterson, who was honored with the James D. Hays Award, and John Templeton and Marc Vankueren, who each received a Paul Richards Award.

The 29th annual Sara Fitzgerald Langer Book Prize has been awarded to graduate student Jesse Farmer. This award is an acknowledgement, by his peers, of Farmer's outstanding contributions to graduate student life in the department and at Lamont.

Undergraduates Sebastian Vivancos and Adam Formica were the 2012 corecipients of the DEES's first Young Investigator Award, given in recognition of their excellence and creativity in research and writing.



From top left, clockwise: Arnold Gordon, Tiffany Shaw, Klaus Jacob, Kerstin Lehnert, Lorenzo Polvani, Chris Hayes, Angelica Patterson, John Templeton, Marc Vankueren, Jesse Farmer, Sebastian Vivancos, Adam Formica

IcePod: Collecting Data on the Fly

Our Polar Geophysics Group (PGG) has made valuable contributions to the NASA-funded Operation IceBridge, a project devoted to mapping polar ice sheets and increasing understanding of processes happening on and below the ice.

Now, the PGG has applied its expertise to invent a unique instrument system named *IcePod*. Funded by the National Science Foundation and developed by Robin Bell, Nick Frearson, Chris Zappa and colleagues, IcePod is a contains a sophisticated suite of instruments and sensors that work together to measure, in great detail, the ice surface, thickness and ice sheet bed. The system is designed to attach to the exterior of a New York Air National Guard LC-130 aircraft, which carries out routine servicing and targeted flights across Antarctica and Greenland. Datasets collected by IcePod will support the development of more advanced ice sheet models, which researchers rely on for accurate forecasting of global sea level rise and ice mass loss in Earth's polar regions.

After working on IcePod for several years, project scientists saw IcePod take to the sky for its first test flight in February. The instrument was moved to Stratton Air National Guard base, near Albany, New York, and installed on an LC-130 aircraft. Margie Turrin, who assisted with this process, said, "The four days of installation and troubleshooting that led up to the first test flight put a microscope on the complexities of the project, and when the aircraft took to the air and the pod was finally lowered, the instruments responded with data. Celebration!"

PGG scientists and IcePod are back in the lab at Lamont troubleshooting minor issues before the next round of test flights. The first official IcePod deployment will be over Greenland later this year.

Student Geoscience Research Showcased on Campus

A Graduate Student Symposium, organized by the Department of Earth and Environmental Sciences and run by their students, was held at Lamont in early March.

The daylong event is an opportunity for graduate students to share their current research with their peers and members of the greater geoscience community through a series of research talks and poster presentations. Students from Lamont and nearby research institutions participated in the event, which is designed to advance student understanding beyond their specific area of research and increase the visibility of our graduate students within the region's research community.

The Symposium drew a large crowd from the Lamont community, as well as graduate students from Yale, Princeton, Brown, MIT, Rutgers, the University of California, Santa Cruz and Columbia's main campus. Lamont graduate students who presented their research included Amelia Paukert and Alexander Lloyd, geochemistry; Michael Wolovick, glaciology; Abagael West, paleontology; and Yang Zha and Shuoshuo Han, geophysics. The symposium was followed by a Seismology Student Workshop, also organized by graduate students, which focused on the technical details of different methodologies for the analysis of seismic data sets.

IcePod being installed on the rear door frame of a LC130 aircraft before its first test flight in February. *Photo credit: Margie Turrin*

RESEARCH NEWS

Biogeoscience: A New Era of Interdisciplinary Research



From left to right: Hugh Ducklow, Solange Duhamel, Sonya Dyhrman

Interactions among the atmosphere, ocean and global ecosystem create and maintain the conditions at Earth's surface that make it suitable for life.

How these systems respond to human influences is an exciting new focus of investigations being conducted by Lamont-Doherty researchers. The knowledge generated from these studies addresses important issues related to ongoing climate change, the loss of biological diversity and other environmental challenges facing our planet.

This interface between biology and geosciences, known as biogeoscience, is a fairly new field of research, and one that is vital to understanding processes at Earth's surface. Biogeoscience covers all fields of the biological sciences and their interactions with Earth spheres including the atmosphere, hydrosphere and geosphere, and are studied over a wide range of temporal and spatial scales. Ongoing Lamont research in biogeoscience includes the study of biochemistry and organic geochemistry, paleoecology, ecophysiology, climate and paleoclimate, oceanography and paleoceanography, geologic carbon capture and storage, fluid-rock interaction and the human dimensions of environmental change. Some of our scientists examine life at the microbial and subcellular level, deciphering the very mechanisms that channel climate change into ecosystem variation, while others, like organic chemist Pratigya Polissar, use biomarkers to understand the thermal properties of faults and the thermodynamics of fault ruptures.

Expanding studies in biogeoscience is a new interest and priority for the Observatory. "Lamont has always had a small yet distinguished staff in marine biology and biological oceanography, but we felt the need to develop a critical mass of researchers thinking about broader biosystems and their role in the evolution and dynamics of ocean, atmosphere and terrestrial, or solid-Earth systems," said Deputy Director Art-Lerner Lam.

Seed funding from the Lamont directorate and Columbia University has enabled the Observatory to hire exceptional early- and mid-career scientists who bring new capabilities, such as analytical techniques, field programs and research directions, to the Observatory. At the same time, recent investment in laboratory infrastructure has enabled Lamont to attract new researchers and allow our existing science staff to expand their expertise.

Three researchers who have joined our Division of Biology and Paleo Environment in recent months focus their investigations on the role biology plays in Earth science. Department of Earth and Environmental Sciences Professor Hugh Ducklow is a biological oceanographer, formerly of the Marine Biological Laboratory in Woods Hole. Ducklow is an expert in the dynamics of plankton food webs in estuaries, the coastal ocean and the open sea. He currently leads the National Science Foundation–funded Palmer Antarctica Long Term Ecological Research Project on the West Antarctic peninsula.

Lamont Assistant Research Professor Solange Duhamel is a biogeochemist who comes to us from Woods Hole Oceanographic Institution (WHOI). Duhamel examines microorganisms and communities and is specifically interested in understanding the role of microorganisms as agents of biogeochemical transformations and the role of nutrient availability, in particular phosphorus, on the distribution, growth and productivity of plankton.

Department of Earth and Environmental Sciences Associate Professor Sonya Dyhrman is a biogeochemist formerly of WHOI, who arrived in January 2013. Trained in marine biology, Dyhrman devotes herself to the study of phytoplankton ecology, and her work spans a wide variety of topics such as phytoplankton physiology, macronutrient and trace metal biogeochemistry, harmful algal blooms and environmental genomics.

Lamont's focus on biogeoscience will bring about extraordinary new discoveries that add to the growing body of knowledge about the interconnectedness of life and Earth.

"Our scientists will be able to link processes that occur during the lifespans of organisms to the global processes in oceans, atmosphere and on land that drive the evolution of Earth."

Glaciers Provide Clues to Future Climate

Eighteen thousand years ago, at the end of the last ice age, a glacier in New Zealand begins to recede, leaving a trail of boulders and debris in its wake. Ever since, the freshly exposed surfaces of the rocks have been bombarded by cosmogenic rays, which leave trace amounts of specific nuclides on the surface of the rocks..

Today, scientists collect samples of these rocks and conduct specialized analyses to find out the precise date in Earth's history the rocks were uncovered by the glacier. These scientists, and the method they're using—known as "surface exposure dating"—are part of Lamont's Cosmogenic Dating Group. Led by geochemist Joerg Schaefer, researchers in the group use surface exposure dating to understand how glaciers around the globe advance and retreat throughout time.

Schaefer and chemist Roseanne Schwartz have advanced the method to the point at which they can now determine whether a rock has been exposed for thousands of years or just a few. "We've basically got a cosmogenic clock, where the longer the exposure, the more cosmogenic nuclides accumulate. By counting these nuclides, we measure the time since initial exposure. This allows us to derive the precise time a rock was deposited by the glacier," said Schaefer.

Members of the Cosmogenic Dating Group are applying this technique to rocks and glaciers around the world, from New Zealand to Central Asia and beyond, to discover how glaciers, and thus the climate system, behaved in the past. Once the scientists have mapped how a specific glacier responded to variations in temperature over time, they compare the information to the behavior of other glaciers and global climate records, creating a temperature map that shows patterns of global warming, past and present.

Their findings will ultimately be used to improve the accuracy of climate models and to determine what may happen to glaciers as the planet warms, as well as the impact these changes will have on society. "In some areas like Central Asia there are billions of people depending on glacial melt waters," said Schaefer.

Geochemist Joerg Schaefer (left) and colleague Bob Finkel of the University of California, Berkeley, in front of Franz Josef Glacier, New Zealand.

How will glaciers respond to our warming climate in the next 200 or 500 years? Will glacial retreat accelerate, speed up or be the same? Are these temporary changes? "The only way to find out is to look back in time and see what these glaciers did a thousand years ago, a few hundred years ago," said Schaefer.

Schaefer finds the ability to apply this research to human solutions immensely satisfying. "Working with my team and other colleagues at Lamont and Columbia University's Earth Institute, I have the opportunity to merge this line of research into modern societal problems. For example, we're working with engineers looking at hydropower design, because some of these hydropower plants depend largely on glacier meltwater, and anthropologists looking at impacts of climate change on societies. There are enormously exciting scientific challenges and opportunities ahead, and I'm very much looking forward to be an active part of this."

Watch the Cosmogenic Dating Group in action: http://www.ldeo.columbia.edu/glaciers-video

SEARCHING FOR GLACIER AND CLIMATE MYSTERIES IN SHANGRI-LA

"Today we set out on what is to be a collaborative, interdisciplinary scientific effort to examine the links among climate, glaciers and society in the high passes of the Bhutan Himalaya. Nearly 3.2 billion people in South Asia depend on the water that originates from melting glaciers and snowpack of the high Himalaya, yet a gulf of uncertainty hinders our ability to assess the fate of this ice and snow in a warming world. Thus, the goals of this expedition are to collect data that will shed light on the sensitivity of Himalayan mountain glaciers to rising atmospheric temperatures and to place these glaciers into the context of past climate change. Over the next few weeks, our expedition team of scientists and Bhutanese collaborators will follow the famed snowman trek toward the glacier-covered mountains of Rinchen Zoe La. Our team will share the blue pine forest, wildlife, rivers, mountains and people of Shangri-La with you as we meet them, and chronicle all facets of our work."

—Aaron Putnam, *The New York Times*, September 21, 2012

The unique research being done by Lamont's Cosmogenic Dating Group is drawing a large cohort of talented young scientists to the Observatory to work with Joerg Schaefer. Among these is postdoctoral fellow Aaron Putnam, who spent weeks conducting fieldwork in the Bhutan Himalaya last fall as part of a research collaboration between the Cosmogenic Dating Group and Lamont's world-renowned Tree Ring Lab.

While in Bhutan, Putnam wrote a series of *The New York Times'* Scientist at Work blog posts, describing the group's observations, adventures and life in Bhutan. For those who missed it, Putnam's excellent posts can be found on *The New York Times* website.

PROFILE

Lamont Assistant Research Professor William D'Andrea

A climate scientist in Lamont's Division of Biology and Paleo Environment since 2011, William (Billy) D'Andrea seeks to understand global climate change and how the environment has changed over time by reconstructing climate history using molecules preserved in lake sediment cores.

What is the focus of your current research?

I am a climate scientist interested in the natural patterns of climate change. Our instrument-based records of climate, including, for example, temperature from thermometers and precipitation amounts from rain gauges, are too short to reveal how Earth's climate system varied in the past—over decades, centuries and millennia—before the industrial revolution. I look at natural recorders of climate (temperature and precipitation) that are preserved in sediments at the bottom of lakes and the ocean. Specifically, I look at different fat molecules, or lipids, from plants and algae that are preserved in the sediments and accumulate each year. Different lipids can tell you different things about how temperature, precipitation and evaporation have changed through time.

What do your studies tell us about our planet?

Earth is constantly trying to move energy from the equator, where there is more energy, to the poles, where there is less energy. The climate system is the manifestation of that energy being moved around the planet. There are different "pathways" for moving energy around, and the climate system seems to switch around among the different pathways. Some pathway changes happen over days, some over weeks and years, and some over decades. We still don't fully understand how these pathways are connected or what makes them change. This is one of the factors that make it hard to predict how local climates will change in the future.

By reconstructing past climate changes from natural recorders around the globe, we can investigate how circulation in the atmosphere and oceans varied in the past and examine the connections among the different energy pathways. This provides critical information for understanding how the climate system responds when it is forced by different factors, such as changes in Earth's orbit, solar output, volcanic activity and greenhouse gas concentrations.

Where in the world has your research taken you?

I've spent a good deal of time working in the Arctic. I've worked on the west and east coasts of Greenland, Alaska, the Lofoten Islands of Norway and Svalbard. This summer I'm heading to a small island off of Svalbard called Bjørnøya (Bear Island) and to the North Slope of Alaska. Recently, I've also begun working in New Zealand.

What are some of the joys and challenges of working in these areas?

Each of these places is more beautiful than the next. Glacial landscapes are fascinating, so the Arctic is a prime place to see modern glacial processes and then link them to the deglaciated landscapes nearby. It is heaven for someone who loves puzzling about landforms. In the Arctic summer there is unlimited sunshine, so you can work long hours without worrying about nightfall. Many of these places are remote, and I have had to access field sites by helicopter, floatplane, snowmobile, dogsled and (very often) by foot. Fieldwork usually includes recovering sediment cores, and there is a lot of equipment that needs to be lugged into and out of field sites. The work is rigorous and exhausting, but unbelievably satisfying.

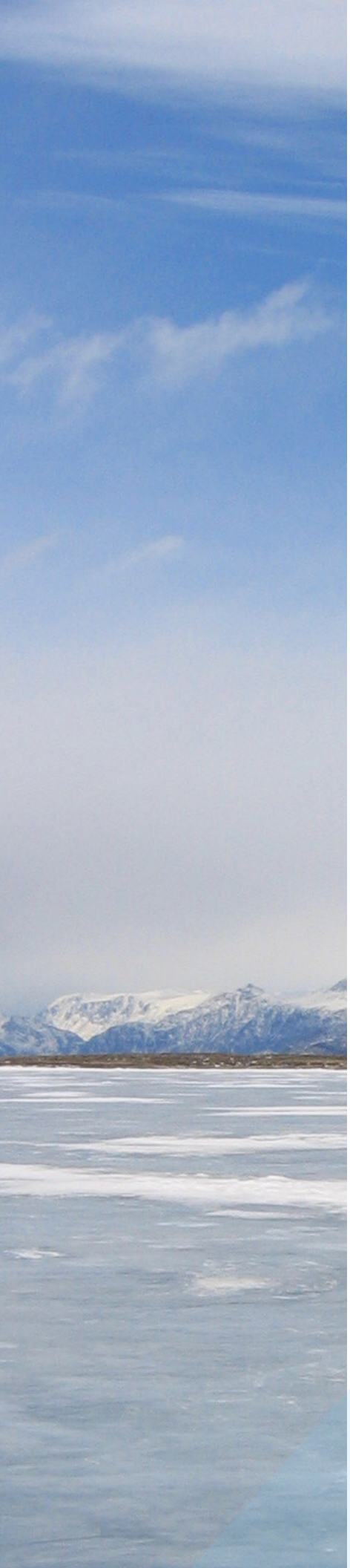
What are some of your most exciting discoveries?

In a recent study from western Greenland, we showed that temperature swings over the past 6,000 years were associated with cultural transitions of Stone Age people and the Norse Vikings and ancestors of the Greenland Inuit in the area. The temperature reconstruction was based on a technique that I spent a lot of time and effort evaluating and developing. Using the same technique more recently, we showed that summers during the past 20 years in west Svalbard, an archipelago to the east of northern Greenland, were warmer than any time in at last the past 2,000 years.

What do you enjoy most about being based at Lamont?

Lamont is a great place to do science. My colleagues are friendly, smart and interesting, which makes it a pleasure to come to work and share ideas. We have brand new instrumentation and a new world-class facility for organic geochemistry and stable isotope analysis, which are major components of my toolkit for studying climate change, so it is a very exciting time for our research group. Lamont is unique in that there really seems to be an expert in just about any Earth system subject you can imagine, so a discussion about anything you are thinking about is always a short walk away.

Pictured top left: Billy D'Andrea inspects sediment from a newly cored lake in Greenland.



ALUMNI AND DEVELOPMENT NEWS

Honoring Excellence in Climate Science

More than 200 friends, alumni, students and members of the extended Lamont-Doherty and Columbia University communities gathered in Columbia's Low Library rotunda on February 21 for the Vetlesen Prize Award dinner and ceremony.

The 2012 Vetlesen Prize was awarded to two of the world's leading climate scientists. Susan Solomon, an atmospheric chemist at MIT, is renowned for leading efforts to identify the cause of the Antarctic ozone hole. She shares the prize with Jean Jouzel, of the Laboratoire des Sciences du Climat et l'Environnement of the Institut Pierre Simon Laplace, a geochemist who extracted the longest-yet climate record from polar ice cores. This prestigious award, which is given in recognition of scientific achievement that results in a clearer understanding of Earth, its history or its relations to the universe, is funded by the G. Unger Vetlesen Foundation and administered by Lamont-Doherty. Solomon and Jouzel share the $250,000 award, considered to be the earth sciences' equivalent of a Nobel Prize.

"Earth science is a collective enterprise, and transformational advances are the product of many authors," said the Vetlesen Prize committee's citation. "Both nominees have made leading and fundamental contributions to climate science."

Maurizio J. Morello, G. Unger Vetlesen Foundation secretary and assistant treasurer. *Photo credit: Eileen Barroso*

Columbia University Provost John H. Coatsworth; Jean Jouzel; Susan Solomon; Steven Cohen, executive director, Earth Institute. *Photo credit: Eileen Barroso*

Susan Solomon (center) with husband Barry Sidwell (right), nephew Sam Rabin (left) and his wife Laura Marie Hendrickson-Rabin. *Photo credit: Eileen Barroso*

Jean Jouzel (center) with son-in-law Arnaud Badou and daughter Maud Badou-Jouzel, wife Brigitte Jouzel and son Jean-Noël Jouzel. *Photo credit: Eileen Barroso*

ALUMNI PROFILE

Greg Mountain, PhD ’81

Gregory Mountain is a marine geologist and geophysicist at Rutgers University, where, after a long research career at Lamont, he was appointed a professor in the Department of Earth and Planetary Sciences since 2003. Mountain is also an adjunct senior research scientist at Lamont; he became the president of the Alumni Board in 2012.

How would you describe your research? What does it tell us about the planet?

I’m interested in how sediment reaches the seafloor, how it moves downslope due to avalanching or along slope due to deep-sea currents and what the distribution of this sediment reveals about past changes in climate and sea level. To do this I use acoustic profiles at various scales of penetration into the seabed linked to sediment samples recovered by piston coring or by various types of drilling. Like much of what is done in the oceans, this research involves many different skills, few of which I possess to any great degree. Consequently, I try to stay on good terms with the many talented people I’ve had the good fortune to work with over the years.

What are some fond memories of the time you spent at Lamont?

One of the marvelous things about Lamont is the sense of community among its students, researchers and support staff, and the productivity that comes from this intersection of creative minds. While classroom experience provided some of what I learned as a student, equal parts came from people and ideas that I sought out, or that ambushed me with little active seeking on my part. A fond set of memories stems from freewheeling discussions in the car while commuting daily between Lamont and Manhattan with Walter Pitman, John LaBrecque, Steve Cande and John Ladd. Perhaps the only other place I learned more about science and life in those years was sitting around the lunch table in the Lamont cafeteria.

Pictured top left: Greg Mountain, PhD ’81 and Alumni Association president

One event I’ll never forget came when working through a special night in the Vax computer room. Bill Haxby was there as well, tweaking his recently developed algorithms to produce maps of sea surface height based on Seasat altimetry. This technique ultimately came to reveal seafloor topography even in places where ships and soundings have never been. I stopped what I was doing to help him pin to the wall a dozen tiled images as they rolled out of the plotter, and in a few minutes we stepped back in silence to view a panorama of the planet’s seafloor shown one 3’ x 4’ sheet at a time. It was a private viewing, just Bill and me, with the flickers of dawn beginning to show outside. At the time I didn’t realize that a new window into how Earth works had just been thrown wide open.

You’ve remained involved with Lamont since receiving your PhD. Why has this connection been important to you?

You don’t have to search far at Lamont to find cutting-edge ideas in the Earth sciences. Staying in touch with the people doing this research, pursuing collaborative projects with them or simply attending seminars keeps my knowledge fresh and my interests moving forward. All of this stimulates my own research and helps keep my classroom lectures from getting stale and out of date. This doesn’t mean I don’t have similar opportunities at Rutgers. The difference is that during such a long association with Lamont, beginning as a student, I’ve gotten to know a wide range of like-minded people whom I can approach on a familiar, first-name basis.

You’ve recently stepped into the role of president of the Alumni Board; what excites you about this position?

I feel privileged to have come from an institution that continues to have such an enormous impact on Earth science. This influence is a result of research done by its current staff as well as by those it has trained and sent out across the globe. I’m excited by the prospect of helping to maintain the links formed during each of our respective times at Lamont—both intellectual and emotional—that now bind us across distance and time.

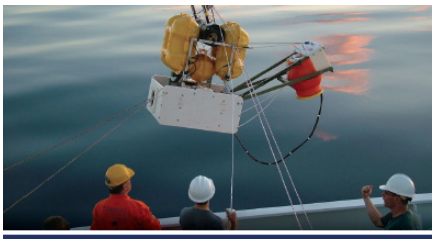
What do you hope to accomplish in your time as Alumni Board president?

I’ll work hard to impress upon our current students, recent graduates and postdocs, that remaining connected to Lamont is a smart career activity. Research directions, job opportunities and personal growth usually advance in unpredictable ways; staying in touch with where you came from and with those traveling parallel paths to yours is a good way of remaining prepared for opportunities when they arise. I will also work hard with the Development Office serving alumni interests and reconnecting with more senior members who, in getting reacquainted with the Palisades campus and its people, may choose to give back in whatever way they see fit.

UPCOMING EVENTS

Our public programs are a great way to expand your understanding of Earth science and learn about current issues facing our planet. Unless otherwise noted, events are held on our campus at 61 Route 9W, Palisades, New York. For more information on our public programs, please e-mail events@ldeo.columbia.edu or call 845-365-8998.

IT'S NOT TOO LATE TO DISCOVER EARTH SCIENCE!



Maya Tolstoy, Ph.D.
Associate Professor, Earth and Environmental Sciences

Join us for the final talk in our popular Spring Public Lecture series and learn how our scientists are getting to the bottom of deep-sea earthquakes. Marine geophysicist Maya Tolstoy will discuss the fascinating seismic activity that takes place each day on the extreme seafloor environment and explain the results of her research that advances understanding of earthquake processes and may lead to improved forecasting for larger tsunami-generating quakes.

Thursday, May 16 6:00–7:00 p.m.
AppNexus Auditorium
28 W. 23rd St, 4th Floor
New York, NY 10010

The lecture is $5, open to the public and includes a reception afterward. Please register in advance to ensure your seat.

Direct link to registration: www.ldeo.columbia.edu/publiclectures or contact us for more information: events@ldeo.columbia.edu, 845-365-8998.

WORLD SCIENCE FESTIVAL

Sunday, June 2, 10:00 a.m.–6:00 p.m.

NYU Campus/Washington Square Park, New York City

We'll be at World Science Festival's Ultimate Street Science Fair again this year celebrating science and sharing our research through hands-on activities. Talk with our scientists about El Niño and La Niña weather patterns, find out what it takes to become a meteorologist and learn to forecast the weather.

SUPPORT LAMONT-DOHERTY

We rely 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 your gift today using the enclosed envelope or our secure online form: www.ldeo.columbia.edu/support

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

IN MEMORIAM

John Beavan (1950–2012)

Geodesist and tectonophysicist John Beavan, a long-term member of the scientific staff at Lamont, succumbed to bladder cancer in November. Beavan earned a PhD from the University of Cambridge in Geodesy and Geophysics, before joining Lamont in 1976, where he rose through the ranks to senior staff at the Observatory. In 1993, he left Lamont to take a position as Crustal Dynamics Geophysicist at GNS Science, New Zealand's national geoscience research institute, though he held an appointment as an adjunct senior research scientist at Lamont until 2000. Beavan's research contributed broadly to our understanding of plate boundary deformation, fault mechanics and the characteristics of major earthquakes around the Pacific. His colleagues remember him as an incredibly rigorous, generous, humble and insightful collaborator; his passing has been keenly felt among all in the worldwide geodesy community.

Karl Turekian (1927–2013)

Renowned geochemist Karl Turekian passed away in March. Turekian was a Lamont-Doherty alumnus (PhD '55) who remained a great friend of Columbia University and Lamont throughout his life. Turekian joined the faculty at Yale University in 1956 and remained there for the rest of his career, advancing to Sterling Professor of Geology and Geophysics Emeritus and senior research scientist at Yale. His investigations centered on the use of radioactive and radiogenic nuclides in deciphering the environmental history of Earth. Much of this work examined estuaries, specifically Long Island Sound, which he turned into the world model for coastal studies. Turekian was a brilliant scientist who enjoyed an extremely productive career, authoring more than 210 articles in international journals and professional volumes, and publishing several books. His contributions to geoscience are legion, and he will be greatly missed by his colleagues and friends at Lamont and throughout the scientific community.

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FROM THE ARCHIVE

Special research scientist Ken Hunkins at work on Station Alpha in the Arctic Ocean during the International Geophysical Year, 1957 to 1958. Hunkins is using a theodolite to determine the position of Station Alpha, which was located on a drifting ice floe and was the first long-term research base on Arctic pack ice operated by a Western country.