



UNIVERSITY *of*  
ROCHESTER

# Department of Earth and Environmental Sciences

2013 ALUMNI NEWSLETTER

# Letter from the Chair

Dear Alumni and Friends,

Welcome to the 3rd Annual Earth and Environmental Sciences newsletter. This past year has been yet another exciting time of growth and change in EES. We continue to recruit new faculty across a range of disciplines from solid Earth to oceans and atmospheres. We have also recently established a new endowment fund to support student research in EES.

Knowledge of integrated Earth systems is essential for addressing fundamental research questions about how the Earth works, as well as challenges that face humanity as we interact with our dynamic planet. Our department has recently expanded to include a broader range of disciplines in global change research, yet we continue to maintain our strengths in solid Earth processes. Our goal is to build a well-rounded geosciences program that focused on understanding Earth systems from core to hydrosphere and atmosphere. The most recent addition to the faculty is Dr. John Kessler, who studies methane cycling in oceanic settings. Dr. Kessler joined the department as Associate Professor in fall of 2012. He is currently gearing up for a research cruise in summer 2014 that will involve both graduate and undergraduate students at UR. You can read about Dr. Kessler's research, which is highlighted in the newsletter. In 2013, we recruited a new faculty member, Dr. Dustin Trail, in experimental geochemistry and Earth materials. Dr. Trail's research focuses on the geochemistry of minerals formed early in Earth's history to trace the origins of Earth's oceans, life, and the processes of oxygenation of the early atmosphere. We plan to hire an additional faculty member this academic year in Solid Earth Processes that will bring our faculty up to 9 and we are also involved in interdisciplinary faculty searches within data science. In the future, we hope to make new faculty hires in data science and Earth systems modeling that will provide stronger linkages across the range of disciplines that represent our strengths.

This year, we said farewell to Dr. Asish Basu, who retired from the University of Rochester to accept the chairmanship of the Department of Earth and Environmental Sciences at the University of Texas, Arlington. Asish's career at Rochester is highlighted in the newsletter. With 34.5 years of service to the University and 11 years of service as chair of EES, we are grateful to Asish for the his efforts to help build the strong department that we are today. In honor of Asish, we have established the Asish Basu Fund in support of student research that will enable EES students to apply for research grants within the department. We are grateful for the generous support from alumni and friends that has made this possible.

We have enjoyed the many photos and updates from alumni (featured in the alumni section of the newsletter). Please keep the updates coming! We look forward to sharing exciting new developments in future newsletters.

Sincerely,

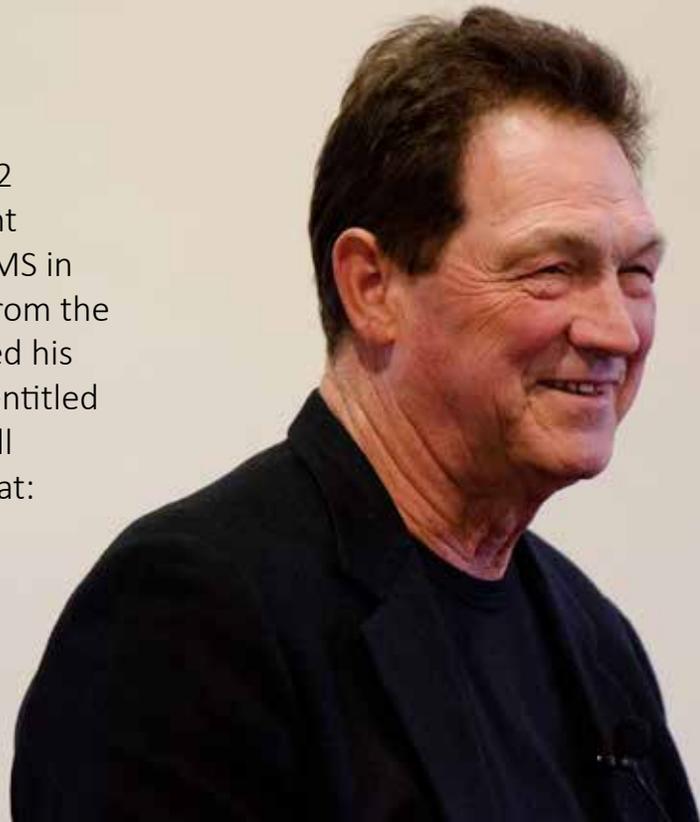


**Carmala Garziona**  
*Professor and Chair*

# Department News

## EES Alumni Achievement Award – 2012 & 2013

**Dr. Howard (Howdy) Pratt** was the 2012 recipient of the EES Alumni Achievement Award. Dr. Pratt earned his BS in 1960, MS in 1962, and PhD in 1966, all in Geology, from the University of Rochester. Dr. Pratt received his award on April 3, 2012 and gave a talk entitled “Field of Dreams: If you build it, they will come”. His talk and notes can be found at: [ees.rochester.edu/alumni/index.html](http://ees.rochester.edu/alumni/index.html)



**Dr. Thorne Lay** (B.S. in Geology 1978), Professor at the University of California, Santa Cruz, is the 2013 recipient of the EES Alumni Achievement Award. Dr Lay’s research is broadly focused on the use of geophysical methods to study the structure and physical properties of Earth’s interior. Dr. Lay will be visiting the University of Rochester to give a talk and receive his award in Fall 2013.

EES Fairchild Colloquium Series featured a seminar by **Dr. Michael Mann** from Pennsylvania State University entitled: “The Hockey Stick and the Climate Wars during Meliora Weekend, Fall 2012.



**Gautam Mitra** received the **2012 University of Rochester Lifetime Achievement Award for Graduate Education** for his outstanding contributions as a mentor and a role model to graduate students. Photo shows Gautam and his recent graduate student, Liz Baker, at the graduate student commencement ceremony, where Gautam received the award.

**Vasilii Petrenko** was a 2013 Packard Fellowship Recipient - Petrenko's research uses novel, high-precision measurements of carbon-14 in carbon monoxide from ice cores to estimate the change in the oxidizing capacity of the atmosphere since before the Industrial Revolution. Atmospheric oxidizing capacity controls the amount of warming that can result from emission of greenhouse gases such as methane.



**Cynthia Ebinger** was elected as an AGU Fellow in 2013 for her "fundamental work on the evolution of continental rifts toward seafloor spreading in East Africa and afar." Only 62 of the 62,000 AGU Members were elected this year.

# Graduate Student News and Awards

## MS DEGREES

Elizabeth Baker-October 2012

Nandini Kar-March, 2013

## PHD DEGREES

Manahloh Belachew Yihun-May 2012

**Elizabeth Baker** received a **2012 GEOCORP** award to be a Guest Scientist at the John Day Fossil Beds National Monument. She undertook a structural mapping research project on faulting within the national monument, and presented her results at the Annual Meeting of the Geological Society of America.

**Manahloh Belachew** was awarded the **2012 University of Rochester Outstanding Dissertation Award** for “Dynamics of dike intrusions and 3D velocity structure beneath an incipient seafloor spreading center in Afar, Ethiopia”

**Richard Bono** was awarded the **2012 Harold T. Stearns Fellowship Award** for his GSA Graduate

Student Research Proposal: “Testing Motion between Pacific and Indo-Atlantic Hotspots Using Paleomagnetic Data from Midway Atoll Basalt Cores”

**Nandini Kar** was awarded admission into **ExxonMobil’s 2013 Bighorn Basin Field Short Course**.

**Rebecca Kreuzer** received a **2013 NSF Graduate Research Fellowship**.

**Lin Li** was awarded a **2012 Outstanding Mention** (proposals of exceptional merit in conception and presentation) for his GSA Graduate Student Research Proposal: “Stable isotopes of modern surface water in the west Hoh Xil Basin, NW Tibetan Plateau: variations and controlling factors”

Undergraduates **Kidus Alemayahu ‘15** and **Leah Sabbeth ‘14** and graduate students **David Brink-Roby** and **Talor Walsh** won 1st Place in the **DOE National Geothermal Competition**.

# Undergraduate Student News and Awards

## FACULTY PRIZE FOR ACADEMIC EXCELLENCE-2012:

Beth Sarah Meyers

Cecilia Anne Scribner

## LATTIMORE PRIZE-2012

Joshua Whitney

Leah Sabbeth

## 2012 CATHERINE BLOCK MEMORIAL PRIZE

Catherine Lambert

## TAKE-5 2012-2013 ACADEMIC YEAR

Lindsey Davidge

Brian Castro

Emily Kraus

Catherine Lambert

## FACULTY PRIZE FOR ACADEMIC EXCELLENCE IN GEOLOGY-2013

Catherine Lambert

**ANNALISE KJOLHEDE MEMORIAL PRIZE FOR  
ACADEMIC EXCELLENCE IN ENVIRONMENTAL  
SCIENCES-2013**

Joseph Griggs

**LATTIMORE PRIZE-2013**

Erin Hayes

Daniel Rosenstein

Hubert Zal

Luis Navarrete

Sarah Smith



Out of the nearly 5,000 full-time undergraduates at the University of Rochester, exactly three are pursuing a major in geomechanics. These are the brave few! **Kayon Ellis '16** (left) is from Jamaica, and 2012-13 was her first year living in the United States. "I find the study of the earth fascinating," says Ellis. "You just can't study anything in isolation; you have to analyze the whole system." **Michael Grotke '14** (middle) grew up in Tucson, Arizona and attended high school in Rochester. He hopes "to use this degree towards a career in the oil and natural gas industry, most likely shale-gas and crude oil exploration." **Brian Castro '12** (T5) (right) had a hard time deciding between studying physics and mechanical engineering and has embraced the geomech major with vigor. Castro conducted seismic research at the University in Professor Cynthia Ebinger's lab.



# Faculty Highlight

**Asish Basu** retired from the University of Rochester in December 2012 to take the chairmanship of the Department of Earth and Environmental Sciences at UT Arlington. Asish spent more than 34 years at Rochester. He joined the department during a critical time after the sudden departure of a number of prominent faculty. Asish dedicated 11 years to serving as chair of the EES department and was instrumental in helping to rebuild the strong department that we have today. Asish is viewed fondly by his colleagues and students as an excellent collaborator and an outstanding mentor and teacher.

Asish's diverse research interests are primarily based on petrological, mineralogical, and geochemical approaches in understanding aspects of Earth's evolution. His main research tools are trace elements, radiogenic and stable isotopes, in combination with other laboratory and field-based observations. He has applied these tools to rocks that formed under diverse conditions including sedimentary, igneous, and metamorphic environments to understand processes at work at different time periods of Earth history and the broader implications for tectonics and geodynamics. Although broadly focuses on solid Earth geochemistry, Asish also has an interest on how the hydrosphere has interacted with the lithosphere.

Some of Asish's recent and ongoing research has focused on the chronology and deep mantle plume origin of continental flood basalt volcanism. He is also involved in studies of the petrology and geochemistry of meteorites, terrestrial impact craters, and impacts products. In the realm of plate tectonics, his research has focused on studies of subduction zone metamorphism, such as the Franciscan subduction complex in California, to identify



Three generations of scientists (left - Ian MacGregor, Asish's PhD advisor; center - Asish Basu; right - Billy Faggart, one of Asish's first graduate students).

the protoliths of high pressure rocks and their tectonic evolution. Asish has also examined ophiolite emplacement mechanisms and aspects of ultra-high pressure metamorphism, such as along the Himalayan suture zone. Additional research activities have focused on the origins of the world's oldest banded iron formations in the Indian craton and the origin of ultrabasic rocks in the East Africa Rift System.

Asish writes, "It was heart-breaking for me to leave the department after 34 and 1/2 years of teaching some of the best students in the country. I decided to leave as an opportunity came up to teach and help build a program in a larger public university at the University of Texas at Arlington that also has possibly the most diverse student-body in the country. It is a challenge that I undertook as the last phase of my teaching and research career. But Rochester will always be at the core of my heart. The students and the faculty at Rochester, past and present, will remain in my memory. They contributed greatly to my teaching, learning and research and to my professional growth."

**John Kessler** joined the faculty in fall 2012. John is an oceanographer who uses chemical and isotopic measurements to investigate interactions of global climate with the oceans. More specifically, John studies the dynamics of the oceanic methane system. The oceans contain the largest global reservoir of methane, the magnitude of which is so great that it is classified as one of the largest global carbon reservoirs. As such, oceanic methane is currently investigated as both a fossil fuel (since methane is the dominant component of natural gas) and as an agent in climate change (since methane is a greenhouse gas that has a Global Warming Potential 20 times that of carbon dioxide over a 100 year time horizon). Methane in ocean sediments and waters is metastable, with dynamics that can change with changing temperature, pressure, and chemical parameters. John's research on oceanic methane seeks to quantify what Dayton E. Carritt used to refer to as the four Rs: rates, routes, reactions, and reservoirs.<sup>1</sup>

Following his undergraduate education in Chemistry and Mathematics, John worked for the Atmospheric Chemistry Group at the National Institute of Standards and Technology. There he developed his analytical chops and discovered his love for the geosciences. He returned to graduate school to specialize in chemical oceanography at the University of California Irvine. There he used measurements of the stable- and radio-carbon content of methane to fingerprint different sources of methane and partition fluxes from sediments to the water column and ultimately to the atmosphere. As is probably true with many graduate students, the labor-intensive nature of his laboratory procedures caused him unrest and upon graduation he accepted a post-doctoral position at Princeton University developing instrumentation that could make these measurements at a fraction of the effort. John's task as a post-doctoral researcher was to develop this portable instrument so that it could ultimately measure the isotopes of methane in-situ on the ocean floor as well as in the atmosphere of Mars. Most recently, John was an assistant professor at Texas A&M University. His methane expertise and close proximity to the Gulf of Mexico made him an ideal scientist to investigate the Gulf of Mexico oil spill. In this manmade disaster, methane was the dominant hydrocarbon released to the deep ocean. To date, John has participated in 6 expeditions to



the oil spill site, leading 4 of the expeditions. His team discovered that methane was retained in the deep waters of Gulf of Mexico and consumed by bacteria in only a few weeks. While these results give a deeper understanding of this disaster, they also provide insight into how the planet functions naturally. Geologic data suggests that large releases of methane from the seafloor may have occurred in the history of the planet and John's research is giving a better understand on the fate of this released methane.

John is developing courses integrating his research into the classroom, with courses in general and chemical oceanography, both new to the University of Rochester. In addition, he will be teaching courses on isotope fractionation and developing opportunities for both graduate as well as undergraduate students to gain first-hand experience conducting oceanographic research at sea.

<sup>1</sup>(As a point of note, Dayton E. Carritt is John's academic great grandfather. Dayton E. Carritt begot Jim Carpenter. Jim Carpenter begot William Reeburgh. William Reeburgh begot John Kessler.)

# Undergraduate Profiles

## Sarah Smith

Coming into the U of R, I had almost no idea what I was going to major in, but was immediately drawn to the sciences. After taking a number of Biology, Neuroscience, and Environmental Science courses, I finally decided on Geology in my junior year. Since being involved in the department, I have had many opportunities to learn more about my field of study and gain lab and field experience. My most exciting and influential experience was summer 2012, when I traveled to the Andes in Peru and Bolivia with Professor Carmala Garziona as a research assistant. During my time there, I was able to learn more about her research, as well as get a sense of what field work was like. This past semester I have been working in the Stable Isotope Ratios in the Environment, Analytical Laboratory (SIREAL), and have been able to add to my experiences this summer by processing and analyzing samples we collected from the Andes.

The field experience I gained in the Andes, and my lab work upon my return, have both led to my writing of a senior thesis. Being able to work and learn about one topic in depth has helped me narrow down my academic interests, as well as confirm my interest in pursuing geology in academia. After I graduate from the U of R, I plan on pursuing my Masters in Geology, and taking some time off to unicycle, juggle, and run away with the circus.





## Samantha Tramontano

My name is Samantha Tramontano, and I am originally from Staten Island, New York. I recently graduated from the University of Rochester in May 2013 with a Bachelor's of Science in Geology.

The first class that I took that made me want to be a geology major was a freshman quest course that showcased the geology of California by taking us on a 7 day field trip there. Two years later, I found myself on a 6-month field camp and study abroad program in New Zealand. Part of my classes at the University of Canterbury included a semester long research project on a volcanic dome on Banks Peninsula. I was able to find evidence for magma mixing during intraplate volcanism by analyzing more silica-rich xenoliths in a trachytic groundmass. This project and my current project in Rochester on magnetized zircons from the Jack Hills unit in Western Australia have solidified a specific interest in mineralogy and exploration.

Outside of geology, I have spent time studying saxophone at Eastman Conservatory, learning African dance, and helping plan an art and music festival in the city of Rochester. I have found here that it is most rewarding for me to combine my love of geology with the energy of a performance. My experiences as an introductory workshop leader and my past summer job as a lab science teacher for 6-7 year old girls showed me how gratifying it was to share how interesting geology and other sciences are in a non-classroom setting. After I graduate, I am intending on pursuing alternative teaching opportunities, as well as mineral research and exploration jobs. I am also strongly considering graduate school in my future, and look forward to exploring all of these possibilities in the coming years.



## Lindsey Davidge

When I was in the sixth grade, I attended an outdoor science school program in Oregon where I was taught how to identify native plant species, how to measure the pH or dissolved oxygen of a river and why someone might want to know, how animals are affected by various types of pollution, and how the components of the soil affect an ecosystem. I probably would have forgotten most of these things if I hadn't also taught at the program throughout high school, and carried my interest in environmental education and problem-solving with me to college as well.

When I transferred to the University of Rochester in 2009, I had vague intentions of studying chemical engineering and even vaguer intentions to later apply that knowledge to solve environmental problems. I began to take courses from the Earth & Environmental Science department in addition to the chemical engineering curriculum, and knew that I had no option but to study both. I find the application of chemical and physical sciences to the study of earth's systems to be an incredible lens into the earth on which we live, and hope to one day use my education to better understand our earth and our relationship to it.

I have loved the prevalence of research and the abundance of research opportunities available at this university and have been able to conduct geophysical research under the advisory of Dr. Cynthia Ebinger for the past few years. I am also took advantage of the Take Five Scholars Program last year and so have been able to study not only the sciences, but also how the advance of science and technology has shaped our modern world. In May, I travelled to Greenland on a field expedition with Dr. Vasilii Petrenko's group, and then moved to Seattle to teach science to high school students through Teach for America. I know that all of these experiences will help me succeed with whatever adventures come next!



## Anne Weaver

*BS in Environmental Science (expected December 2013)*

I chose the Environmental Science major during my sophomore year in Rochester. In high school, I enjoyed my science and math AP courses and decided to major in chemistry in college. However, taking organic chemistry in freshman year convinced me that I did not want to work in a lab all the time for the rest of my life. Turning to environmental science was a natural choice for a couple of reasons. First, it allows me to study and integrate a range of sciences. Also, I was fortunate enough to grow up in Alaska exploring the vast and beautiful surroundings and developing a deep love and appreciation for our natural environment.

Two experiences that I have had since choosing this major stand out as particularly rewarding, though all of the coursework has been gratifying. First, I received the Rigby Wile Prize for outstanding work in the foundational biology courses. It was totally unexpected and felt great to be recognized for my efforts. Also, I used a Research and Innovation Grant to pay for a Summer 2012 internship. I worked at an environmental services consulting firm in Alaska, allowing me to make professional connections in the field and to become familiar with the NEPA regulation framework.

Another reason for pursuing an Environmental Science degree is that there will be many career opportunities available in Alaska as the resource-rich state tries to balance economic gain with environmental responsibility. After graduating from the University of Rochester, I hope to spend a few months traveling and possibly volunteering abroad. Then, I plan to attend graduate school for a Master's degree in the environmental sciences before returning to my home state to start a career in environmental regulation and protection to help ensure that its unique character is preserved for and enjoyed by future generations.



## Arctic Expedition 2012

Undergraduate majors in geological sciences found their classroom in the High Arctic last summer when they accompanied Prof. John Tarduno on an expedition funded by the National Science Foundation. The purpose of the expedition was to examine an episode of extreme Arctic warmth about 90 million years ago—as evidenced by a spectacular assemblage of vertebrate fossils, including turtles and champosaurs, extinct crocodile-like reptiles—and to test whether the period was related to an episode of volcanic carbon dioxide emission. Here, (left to right) students Alayna Callanan '14 of Boxford, Massachusetts, Jenna Kaempfer '15 of Fort Collins, Colorado, and Robert McKinley '13 of Rockport, Maine

# Tribute to the late Annalise Kjølhede

(d. November 13, 2012)



When Annalise and I set out to build a small farm on campus through the UR KEY program, I wasn't sure we could do it. We wanted to establish an on campus farm to raise awareness about the importance of local foods for our environment and to facilitate a way for students to connect with the Earth. Annalise had an unwavering dedication to the project and an eagerness to improve the University community. Whenever we ran into problems, Annalise approached them with optimism and fresh ideas. With infectious enthusiasm, charm and warmth, Annalise was able to bring people together, and also bring out the best in others. We succeeded in creating a garden that, thanks to Annalise's hard work, will yield fresh vegetables for each new class of students who come to campus. She showed me that a small group of dedicated individuals can create positive change within the community. I will always be thankful to her for that lesson.

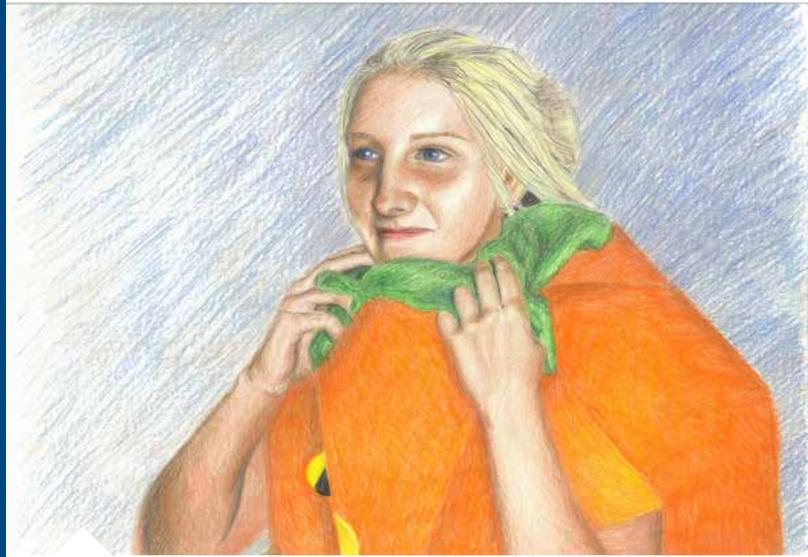
There are few people in this world who have as much positive energy as Annalise had. She loved life and embraced every moment. Annalise was creative, intelligent, and compassionate. She was a free spirit, an entrepreneur, and always full of ideas. These qualities made her an integral member of every community she was a part of. I believed Annalise would do something huge to change the world. She wasn't granted the time to finish some of her big ideas, but along her journey she touched thousands of people and her impact on the world will still be profound. It is now our responsibility to continue her legacy. Honor Annalise by improving your community, using peace, compassion and laughter in your relationships with others, and respecting Mother Earth (or as Annalise would say, the Pachamama).

Annalise was a radiant personality. Her enthusiasm for life, learning, and sharing was infectious, and she brightened every activity that she participated in. Annalise was an excellent student at Rochester. She graduated cum laude with a Bachelor of Science degree in Environmental Sciences in 2011. For her academic accomplishments, she was awarded the EES Faculty Prize for Academic Excellence in Environmental Sciences (2011). In memory of Annalise, we are renaming this annual award the Annalise Khøljede Prize for Academic Excellence.

Annalise touched the lives of many other students at Rochester by participating as a Workshop Leader in Introduction to Geosciences. She enjoyed plant ecology and evolution research in the Department of Biology's Ramsey Lab. She completed a senior honors thesis on the soils and geology of Rochester old-growth forests as part of her research. Annalise spent a fifth year at Rochester as a KEY Scholar and co-developed the South Campus Microfarm. Annalise's presence in EES will have a lasting positive influence on us, and we are grateful for the way that she enriched our lives as both our student and our teacher.

—Carmie Garziona

Annalise reveled in taking risks and was an environmentalist with grand ideas. Her family once discovered a document on her computer titled, "Bold Ideas to Save the Earth". She had big plans, but her friends will remember her most for the scheming that made every day absurd. She could turn breakfast into a maple syrup food-fight and traverse landscapes on a hopper ball. While studying abroad she once designed a sparkly gold and magenta spandex suit to be handmade by a Senegalese tailor. Her wardrobe staple was a glitter-sequin headband.



This is a portrait of Annie wearing a pumpkin costume she discovered at her high school's lost-and-found. She loved randomly wearing it to class. One year she strapped undergarments to it for Halloween and called herself a "sexy pumpkin." She even wore it skiing sometimes, mystifying kids as she raced by. She died too soon and too full of life in a skiing accident this November. It devastated us, but Annie's decision to be an organ donor brought a miracle to six other families for Thanksgiving. She was already changing the world, and the memory of her will continue to do so.

Rage in Peace, Annalise.

-Cristy Skevington and Sarah Woods

# Graduate Student Profiles

Nandini Kar



My research focuses on the geodynamic mechanisms responsible for formation of the Central Andean Plateau, more specifically the Altiplano Plateau, and the relation between large-scale surface uplift and regional climate. I joined the graduate program in Department of Earth and Environmental Sciences at the University of Rochester in September, 2010 following my undergraduate and Master's in Geology from the Presidency College, Kolkata, India. The strong focus on research here at the Department of Earth and Environmental Sciences, excellent graduate level courses and especially the opportunity to work with Professor Garzzone and her advice had helped me to grow as a geologist and become a better researcher since I came to Rochester. Growing up at the foothills of the Himalaya, I was always interested in understanding the processes that form such huge features on the Earth surface and I am really excited to work in a project where I actually get to research a similar question.

The geodynamic mechanism responsible for the growth of the Altiplano Plateau has been highly debated over the years and the range of proposed mechanisms portray two very different stories to explain the formation of the world's second highest plateau: gradual surface uplift of Altiplano over the scale of tens of million years or stable elevations punctuated by pulses of rapid surface uplift in late Miocene. Debates also exist about the nature of uplift along the strike of the plateau. I am trying to address this problem through reconstruction of the late Miocene deformation and elevation history of the northern most part of the plateau; this study in combination with existing elevation records from northern-central and southern plateau will provide a complete temporal and spatial uplift history of the Altiplano Plateau, that in turn will shed light on the underlying mechanism of uplift. I use stable isotope proxies, oxygen ( $\Delta^{18}\text{O}$ ) and clumped C-O isotope ( $\Delta^{47}$ ) from carbonates to constrain past elevation. These proxies relate to climate as well as elevation, and that makes this problem more challenging as such large scale elevation change can potentially affect the regional and perhaps the global climate. For better understanding of this climate-uplift relation and Cenozoic climate change, the findings of the present study will be integrated with General Circulation Modeling in a collaborative effort. The final integrated result will better characterize the geodynamics of the Central Andean Plateau and the associated climate change.

# Richard Bono

The focus of my research is to investigate how changes in the geologic and geomagnetic record reveal core and mantle dynamics, and the implications on the evolution of Earth's paleogeography and paleoclimate. To achieve this goal, my research with the Paleomagnetic Research Group (led by Prof. John Tarduno), involves various geologic formations distributed across Earth and over its lifespan. Field work conducted in 2011 and 2012 has included travel to the Canadian High Arctic and the Chatham Islands (NZ) to sample Cretaceous basalt flows, to Western Australia to study the earliest records of the geomagnetic field, as well as Northern Quebec to investigate 560 million year old igneous formations.

My specific research interests look at how changes on different time scales of the geomagnetic field can be applied to understanding solid Earth and surface processes. Paleomagnetic study of single silicate grains hosting Archean zircons from Western Australia may provide insight into the origin and timing of the Earth's magnetic field. High-latitude basalts from the Arctic formed during the Cretaceous Normal Superchron allow for investigation of an anomalous long period of geomagnetic field stability and its potential impact on paleoclimate. Study of Pacific volcanism, such as Midway Island formed by the Hawaiian hotspot or the Chatham Islands, allows for analysis of the large scale mantle convection dynamics which drive plume and plate motion.

I entered the University of Rochester as an undergraduate in 2006, and started research in paleomagnetism by 2008. I received my bachelor's (2010) and master's (2011) degrees, and have continued on towards a PhD. The unique opportunities for undergraduate involvement in research at the University of Rochester allowed for a passion in geosciences to develop. The small department size and growing number of faculty have resulted in frequent opportunities to closely work with a wide range of allied disciplines, and the focus on undergraduate involvement in research provides excellent opportunities for both mentoring and mentorship. Innovative classes, with a heavy emphasis on field trips, have led to research projects investigating how geologists observe and learn. This project involves collaboration with Brain and Cognitive Sciences as well as cutting-edge eye-tracking and imaging technology from RIT to gain fundamental insights on geoscience education.

My research with the Paleomagnetic Research Group at the University of Rochester has allowed me to present at national conferences such as AGU and GSA, as both a graduate and undergraduate student. This research will hopefully provide a foundation for continued study synthesizing solid Earth processes with their climatic and geographic consequences.



**HOWIE SCHER** (GEOL. 1999) **AND**  
**PETE LIPPERT** (GEOL. 2003) **HAVE A**  
**HISTORY OF FINDING THEMSELVES**  
**IN THE SAME PLACE.**

*Sunset on the North Atlantic from the bridge of the JOIDES Resolution*

It started as undergrads, sharing the same bowling-alley-shaped office in Hutchison Hall, working on the same outcrops in the High Canadian Arctic with John Tarduno, and organizing USGO events. Their paths diverged for a while after UR. Howie completed a PhD at the University of Florida where he studied ocean gateways and Cenozoic climate change; then he returned to UR as a visiting assistant professor. Pete headed for warmer climates right after UR, too, when he started a PhD program at UC Santa Cruz to study early Cenozoic tectonics of the Tibetan orogen. But it wasn't long before they began bumping into each other in Santa Cruz, after Howie heard the siren call on the West Coast and began a post-doc in Ocean Sciences. Although their paths diverged again when Howie returned East to join the faculty at the University of South Carolina and Pete headed to the desert for a post-doc at the University of Arizona, it wasn't long before they were sharing workspace again. This time it was on the R/V JOIDES Resolution, where they both sailed as part of the science party for Integrated Ocean Drilling Program (IODP) Leg 342 in the North Atlantic for two months the summer of 2012. Howie sailed as a geochemist, tasked with deciphering the history of ocean acidification and detecting gas hydrates, among other things; Pete sailed as a paleomagnetist, teaming up with the biostratigraphers to keep time in the ocean mud.

Pete and Howie together at the Bremen Core Repository during the Leg 342 Sampling Party. Behind us are scores of meters of the Eocene-Oligocene Transition at a site that Howie and I will both spend a lot of time studying for the next several years.



Leg 342 drilling operations were in storied waters, approximately 10 nmi from the century-old wreckage of the Titanic. The crew of Leg 342 were in search of the secrets of climate and oceanographic change locked in the exceptionally thick Paleogene (66-33 million years) sediment drift deposits of the Newfoundland Banks. Here, for the first time in ocean drilling history, we have the potential study the transition from a greenhouse to an icehouse Earth, super-greenhouse events, and abrupt glaciations at millennial timescales. Leg 342 recovered a number of juicy targets, as well as some unanticipated surprises, including the day the oceans died (the Cenomanian-Turonian boundary, ~93 myr), the day the dinosaurs died (Cretaceous-Paleogene boundary, ~66 myr), the super-greenhouse Paleocene-Eocene Thermal Maximum (~56 myr), the rapid descent into Antarctic glaciation (Eocene-Oligocene boundary, ~34 myr), and the onset of Northern Hemisphere glaciation throughout the early Neogene. At the end of two months on the open ocean, Leg 342 had collected more than 5.4 km of core representing more than 75 million years of Earth history in unprecedented detail. You can get a sense of the amazing people we worked with and the amazing science underway for yourself: check out the *IODP Expedition 342, The Documentary!*, as well as other Leg 342 video dispatches on the Ocean Leadership YouTube channel: [youtube.com/user/oceanleadership](https://www.youtube.com/user/oceanleadership)



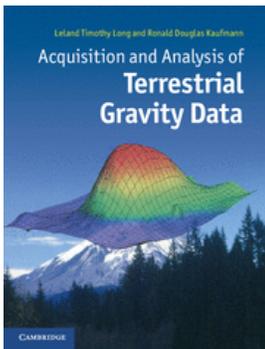
Pete and Howie in Bermuda before embarking on two months of ocean drilling in the North Atlantic on the R/V JOIDES Resolution (background).

Leg 342 will keep Howie, Pete, and their students busy for years to come, and it is sure to keep these two Yellowjackets buzzing around each other regularly.

# Alumni Updates 2013

## GEORGE STONE-GEO-1955

Attached is an image of me celebrating 30 years of collecting the trilobite, *Isotelus iowensis*, from the Upper Ordovician, Maquoketa shale of Pike County MO. The *I. iowensis* I'm holding is the largest ever found. I'm 80 now and still collecting, traveling a lot, and mountain climbing in the San Juan Mountains of Colorado in the summer.



## TIM LONG-GEO- 1962

I migrated into Geophysics at New Mexico Tech (MS) and Oregon State University (PH.D). Since 1968 and for 40 years I taught geophysics and studied earthquakes and the Earth's gravity field. Along the way I was privileged to guided over 40 MS and 10 Ph.D. students into industry and academia. In retirement, I decided to formalize the gravity research. With a former student Ron Kaufmann we have published "Acquisition and Analysis of Terrestrial Gravity Data" through Cambridge University Press.

## CHIP GROAT-GEO – 1962

I became President and CEO of The Water Institute of the Gulf, a not-for-profit independent research institute based in Baton Rouge, Louisiana, on February 1, 2012. The Water Institute ([www.thewaterinstitute.org](http://www.thewaterinstitute.org)) focuses on research in support of coastal restoration and storm protection, and water resource systems in the Mississippi delta region, the Gulf of Mexico, and internationally. I began this position on leave status from The University of Texas at Austin and retired from UT in November. My email address is now [cgroat@thewaterinstitute.org](mailto:cgroat@thewaterinstitute.org).



## GAIL EDWARDS-GEO-1962

After working for 4 years in the geology field, I had 3 children. Obtained an MA in Art Therapy, and worked for the Army at Walter Reed and The National Naval Medical Center. After retirement I returned to painting. Lately I've painted geological subjects. Here are 2: [www.gmeart.com](http://www.gmeart.com). The striped painting is my take on a geological map of gently dipping sediments.



## **ALAN COOPER-GEO-B.S. 1966**

As an emeritus scientist of USGS and consulting professor at Stanford University, my continuing work focuses on climate history of the Antarctic continental margin from seismic and drilling data. I'm also promoting linkage of arts to science to enhance impact of science messages -- successfully done in rapid digital publication:

[pubs.usgs.gov/of/2007/1047](http://pubs.usgs.gov/of/2007/1047)

and International symposia:

[scar2012.geol.pdx.edu/rendezvous.php](http://scar2012.geol.pdx.edu/rendezvous.php)

I am an active violinist in classical and pops groups (e.g., [leftbanktrio.com](http://leftbanktrio.com)) also with international science-arts performances:

[soundwaves.usgs.gov/2012/06/outreach2.html](http://soundwaves.usgs.gov/2012/06/outreach2.html)

I encourage you to use your talents and join the arts to science movement. P.S. There are pictures of me at the above weblinks.

## **GARY L. KINSLAND**

### **GEO-1969/M.S.-1972/PHD-1974**

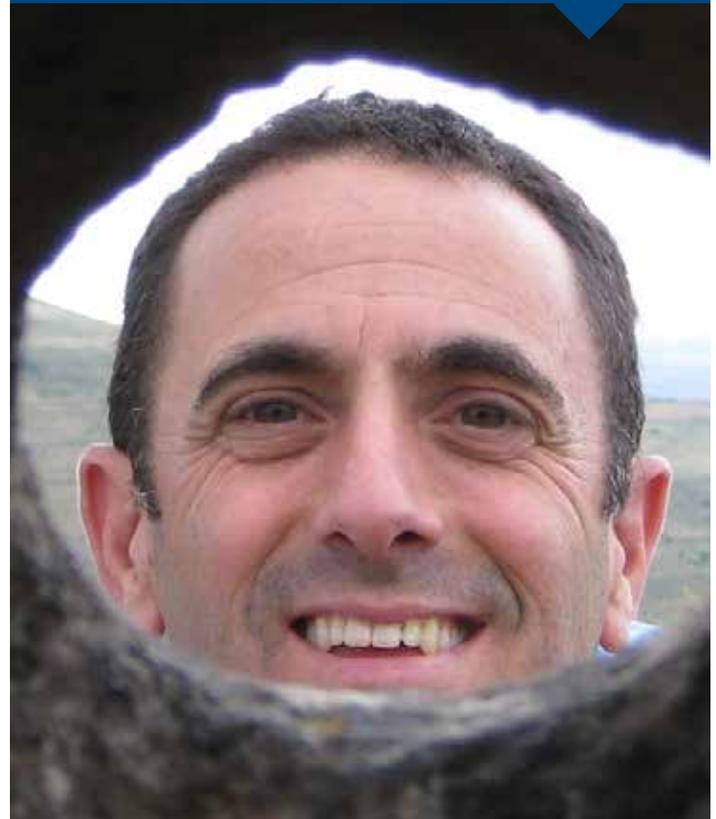
I am where I have been for 36 years...at the University of Louisiana at Lafayette (<http://geology.louisiana.edu>). I am a geophysicist in a department which won last year's (2012) Imperial Barrel Competition. This is an international competition run by the Am. Assoc. of Pet. Geologists where in teams of 5 students are given geological and geophysical data in a geographic area. They work with these data, decipher the subsurface geology, determine and risk various drilling sites and present their findings before a group of judges from the petroleum industry. Our team of 5 graduate students won, over 109 other teams from around the globe... including from all of the universities here in the states that you might think are petroleum affiliated. (UR could enter this competition.) My research is in determining the coal resources of northern Louisiana, Chicxulub Impact structure and effects in the Gulf of Mexico, 3D immersive reality imaging and interpretation of LIDAR imagery (geomorphology), seismic stratigraphy and seismic geomorphology. This is all very different from the high pressure mantle mineralogy research I was involved in at UR with Dr. Bill Bassett in the early 1970s. I would/could retire except for two things, I have two young girls (14 and 12) to get through school and I am still enjoying what I do.

## **WALKER SMITH-BIO-GEO-1972**

Dr. Walker Smith will return in late January to McMurdo Station, Antarctica to complete his latest NSF-sponsored program field work. This project couples oceanographic observations (including acoustic estimates of mesozooplankton and small fish) collected through the use of a glider (an undulating underway robot) with observations of Adelie penguin distributions and obtained from penguin satellite tags. The program will directly test if penguin foraging distribution is food driven or linked more closely to physical features. The trip is Smith's 35th venture to the Antarctic.

## **ANDREW KANDEL-GEO-1983**

works for the Heidelberg Academy of Sciences and Humanities as an archaeologist in a long-term research project entitled "The Role of Culture in Early Expansions of Humans" ([www.roceeh.net](http://www.roceeh.net)). His latest project takes him to Armenia, where he is excavating an Upper Paleolithic cave site in a basalt landscape, studying the behavior of early modern humans and trying to understand the paleoenvironment of 30,000 years ago. He is about to begin another dig in Israel, where the transition from Neanderthals to modern humans is preserved at a cave site in Mount Carmel and previous work found rare examples of shell beads.



### **ALLISON MACFARLANE-GEO-1987**

Allison was designated by President Obama as Chair of the Nuclear Regulatory Commission. She was sworn in in July 2012 as the 15<sup>th</sup> person to lead this agency charged with regulating the civilian use of nuclear materials. She will serve a term ending June 30, 2013.

### **ELISA BERGSLIEN-B.S.-1992, M.S.-1995**

Currently Associate Professor, Earth Sciences and Science Education, Buffalo State College. I have a book that came out recently: "An Introduction to Forensic Geoscience coming out under Wiley's Blackwell imprint. [amazon.com/Introduction-Forensic-Geoscience-Elisa Bergslien/dp/1405160543](http://amazon.com/Introduction-Forensic-Geoscience-Elisa-Bergslien/dp/1405160543)



### **FRIEDRICH TEICHMANN M.S.-1993/PhD-1995**

I joined up again with the Austrian Military after my stay at the UofR in 1996; after my initial function as military geography I moved more into the IT world, did two longer mission tours abroad and I am now the director of the ICT-Innovation Department of the Austrian Armed Forces; current rank Colonel

P.S. Greetings to anyone who still knows me.

### **TROY SAMPERE-EVS-B.S.-1998**

I graduated from the EES department with a focus in ecology in 1998. After graduating I headed out to California to work at a boys and girls camp as the director of the nature program. I then taught Biology for a School in New Orleans, LA for one year before going to graduate school. I finished my Master's in Environmental Science from Portland State University doing mainly stream benthic ecology and toxicology work. I went on to finish my PhD at Tulane University in New Orleans in 2008 in the Environmental Science Department. This was not easy with Katrina occurring in the middle of my program. My main focus was biogeochemistry of Gulf of Mexico sediments and carbon cycling. While in graduate school I received a lot of gratification and positive response to my teaching of various courses and labs and really enjoyed the outcomes. This will be my 5th year teaching college, I teach a variety of lecture and online science courses catering mainly to undergraduates, but lately have been focusing on geology. I currently work at McNeese State University in Lake Charles, LA. Sadly, I have not returned to Rochester since I left, maybe I'll get a chance someday. I spend most of my time off in New Orleans where I own a house near Tulane. [tsampere@mcneese.edu](mailto:tsampere@mcneese.edu)



Note: Normal Pic with beard  
Other pic is me just being stupid. It was at the Great Salt Lake. It was a sand that had been cemented together by salt crystals. Very salty.

### **CHRISTOPHER GOODSON- EVS-B.S.-1999**

now lives in Denver with wife Ashley. Big news: they are expecting a kiddo in August, 2013! Chris works for Kleinfelder providing environmental compliance and soil remediation services to oil and gas clients. Drop him a line at [cgoodson@kleinfelder.com](mailto:cgoodson@kleinfelder.com)

### **DOLAN PATRICK-GEO-B.A.-2001**

After my time at U of R, I moved to Vermont and settled into a role as a snowboard instructor at Stowe, where I would occasionally joke about how I was putting my Geology degree to good use. I was, after all, working on a mountain. I stayed several years, and through the American Association of Snowboard Instructors certification program, learned how to be a more effective teacher. This led to my transition to a certification program for public school teachers and, following a brief stint at a high school in Vermont, to my current position teaching Physics and Astronomy at the Ethel Walker School in Connecticut. After some time back in the classroom, I am far more appreciative of the frustrations I must have caused my own professors, particularly Dr. Mitra and Dr. Basu, two people to whom I owe a debt of gratitude. The intervening years and the scraps of wisdom I have cobbled together from working with students of my own and with my young son Oliver, have led me to appreciate my time spent at U of R and my professors who were not only great researchers and instructors, but exceptional models to a student turned teacher like myself.

### **ALEXEI SMIRNOV-PHD-2002**

Has been promoted to Associate Professor with tenure at Michigan Tech.

### **PETE LIPPERT-GEO-B.S.-2003**

I graduated from UR in 2003 with a degree in Geology and a Take-5 in the Social History of Medicine. I promptly switched coasts to pursue graduate work at UC Santa Cruz, where I earned my PhD in Geology in 2010. After a short stint teaching at UCSC, I moved to Tucson where I am a post-doctoral researcher in the Dept. of Geosciences at the Univ. of Arizona.

2012 was a big year full of new directions, including sailing as a scientist on the Integrated Ocean Drilling Program Leg 342 for two months in the North Atlantic (see the write-up elsewhere in this issue), and securing a tenure-track professorship in Geology at the Univ. of Utah in Salt Lake City. I've had the opportunity to return to the Northeast on several occasions recently, and each time I am pleasantly reminded of the landscape and the rocks that got me hooked on geosciences at UR.



### **AUSTEN ERICKSON-EVS-B.S-2011**

I just finished up my MS in Applied Mathematics at Northwestern University, and I'm now starting my PhD in the same at the University of New South Wales in Sydney Australia under an APA (Australian Postgraduate Award) Scholarship. The attached photo is me during a Tough Mudder race in Wisconsin a few months ago.



### **MELANIE STANGE-ESP-2007**

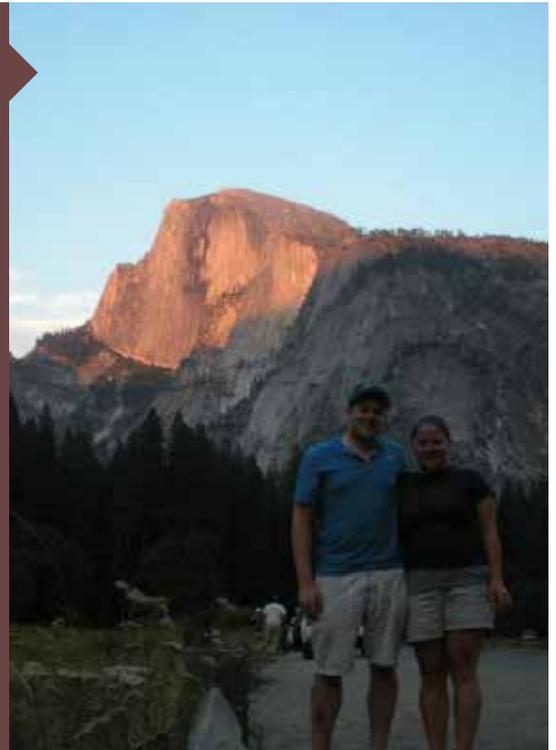
After graduating from UR in 2007, I completed the Master of Public Health program at the SUNY Albany School of Public Health, focusing on health policy and management. For the past three years I have been working in New York State government on implementation of federal health care reform. I currently work for the New York Health Benefit Exchange on the External Affairs, Outreach & Marketing team.

### **TYLER NICHOLAS-EVS-2012**

Right now I am working on my MS in Environmental Health at the University of Washington School of Public Health. I'm a research assistant in Environmental and Occupational Epidemiology, and working under Joel Kaufman, who is the PI of the MESA study (Multiple Ethnic Study on Atherosclerosis). I really love it here in Seattle and hope to stick around for the PhD in Environmental and Occupational Hygiene! It was great to hear from EES, I hope you are doing well in Rochester! tpn12@uw.edu  
P.S. The attached picture of me was taken in Israel this past summer!

### **KENDRA WILLIAMS-GEO-2008**

After graduating at UR I moved home to Oregon to pursue a Master's Degree at Portland State University. I continued with geology, focusing on environmental geology and geomorphology. My Masters thesis was entitled "Analysis and Characterization of Debris Flows in November, 2006, Mount Adams, Washington." During the Master's Program I worked for the State of Oregon in the Department of Geology and Mineral Industries. I focused on hazards mapping and surficial geology. After finishing up I passed the Geologist in Training exam and entered the professional field. I am currently working for Fulcrum Environmental Consulting in Yakima, Washington. I provide technical support, field services, and reporting for a variety of environmental applications including environmental site assessments, soil and groundwater investigations, underground storage tank decommissioning and site assessment activities, remediation, and monitoring. I enjoy my work as an environmental geologist and plan to continue and become a registered geologist. I attached a photo of a recent "field trip" to Yosemite National Park.  
kendrajwilliams@gmail.com



### **DIEGO VASQUEZ 2010-GEO-B.S, 2011-M.S.**

Finishing up graduate school at the University of Southern California in Los Angeles, have included Petroleum Engineering and Geological Engineering coursework as well as independent research in geochemistry into the GIS Master of Science program. Current research is focused on using noble gas geochemistry with geological modeling and numerical simulation for reservoir characterization applied to petroleum fields. Objectives include to create a digital (3D) geologic model using geostatistical engineering algorithms, as well as to develop a numerical programming code for the simulation and estimation of hydrocarbon fluids within the reservoir, specifically using noble gas geochemistry analyses as the primary datasets for the quantification of the subsurface fluids and determination of their dynamic interactions. Results look very promising for improving overall reservoir engineering/characterization as well as for improving production operations and for exploration.

## MEGAN O'CONNOR- EVS-BS-2011

I am a second year Masters student at SUNY-Environmental Science and Forestry studying Water and Wetland Resource Studies. I spent last summer working at the Charles Darwin Research Station in Galapagos collecting data for my thesis research. My thesis work is on the use and effect of pesticides on Santa Cruz Island in the Galapagos and how policy plays a role in pesticide application. Pesticide residues have emerged through bioaccumulation in sea lions and researchers are interested in the how pesticide is being used on the islands currently. I am looking to graduate my program in December and am applying for several different programs to continue my academic career!

# List of Donors

Thanks to all who have generously donated to EES over the past year!

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