



# NUHOU KANAKA PUKA

Department of  
GEOLOGY & GEOPHYSICS  
University of Hawai'i, Manoa  
Summer 2012

This issue is published in an electronic  
only format

### *Inside this issue...*

Back on the surface of Mars .....	1
MGeo Program .....	3
Message from the Chair .....	4
Degrees, Awards & Honors .....	5
Distinguished Alumnus .....	6
Paul Wessel, AGU Fellow .....	7
GG Research highlights .....	8
GG Picnic & Softball Challenge.....	14
Remembering K. W. Taylor .....	15
Alumni news .....	18
Farewell to colleagues .....	20
Field trips .....	21
Donation form .....	29

### **Nuhou Kanaka Puka**

*Nuhou Kanaka Puka ("Alumni News" in Hawaiian) published by the Department of Geology and Geophysics of the School of Ocean and Earth Science and Technology (SOEST) for its alumni and friends.*

Chair: Greg Moore

Editors: GG Relations & Honors  
Committee

E-mail: [ggdept@soest.hawaii.edu](mailto:ggdept@soest.hawaii.edu)

Phone: (808) 956-7640

FAX: (808) 956-5512

GG web site

## *Back on the Surface of Mars!*

The mood in POST room 723, the GG Lecture Theater, was tense. Gathered there on August 5<sup>th</sup>, 2012, was a small group of space enthusiasts with a fascination for Mars, as well as associated (less interested) spouses, parents, kids, and a lone press photographer from the local newspaper. All had gathered to watch the attempted landing of the *Curiosity* Mars lander. This was NASA's (the National Aeronautics and Space Administration's) eighth attempt to put a robot spacecraft onto the surface of the Red Planet; since 1976, six attempts had been successful and one (in 1999) had failed. This time it was a make or break effort at landing the \$2.6 Billion car-sized *Curiosity* spacecraft onto the surface within the meteorite crater called Gale.

The "Seven Minutes of Terror" associated with the landing, as described in the highly entertaining NASA video<sup>1</sup>, represented the most adventurous attempt yet made to reach the surface of Mars. In just ten minutes during the final approach to the surface, *Curiosity* had to decelerate from about 21,250 km/hr to a safe 2.5 km/hr. To accomplish this, the spacecraft first used an aeroshell reminiscent to those used by the Apollo missions that returned astronauts from the Moon, and then deploy a supersonic parachute. For the final few minutes of flight, the equivalent of a jet-backpack (fondly called the "Sky Crane") would control the descent speed and lower rover on three nylon cords just before touchdown. The only concern was that the entire system had never been tested as a whole because of the impossibility of duplicating on Earth the thin Martian atmosphere and gravity. Even understanding the ultimate fate of the spacecraft was uncertain, because it was unclear if important relay spacecraft would be able to provide real-time updates on the landing.

But everything worked! The live television coverage ticked off one critical function of the spacecraft after another as first communications satellites came on-line, we were then told that the aeroshell had automatically oriented itself to safely enter the atmosphere, and that the parachute opened exactly on time. The TV commentator was giving an estimate for accuracy in the landing site being incredibly <2 km from the target point after a journey of more than 560 million kilometers when the Entry, Descent, and Landing Team calmly informed us that the Sky Crane had been deployed. The rover was descending on the cables, and in short order that the wheels had touched the surface. And the crowd went wild in POST 723 (and elsewhere at NASA)!!

<sup>1</sup><http://www.hawaii.edu/news/2012/08/03/uh-manoa-holds-mars-rover-landing-viewing-event/>

### *Our First Look at Gale Crater*

Gale Crater is ~155 km in diameter, and the floor lies at an elevation that is 4.4 km below the datum on Mars. The site was selected partly for the safety of the site but also because there is a peak (informally called Mount Sharp) in the middle of the crater that rises over 5 km above the floor. It is believed that Mount Sharp comprises a thick stack of layered sediments. Numerous fan-like features can also be seen that are strongly suggestive of fluvial

activity run down the inner walls of the crater. These features were immediately evident in the first images beamed back to earth in the two days following the landing (Fig. 1). The area around the landing site has far fewer large rocks than seen at the *Viking* and *Pathfinder* sites, but orbital data indicates that the drive up Mount Sharp will become increasingly challenging due to steeper slopes and rougher terrain.



*Figure 1: Image taken from Curiosity on its second day on Mars. The spacecraft is in the bottom of the frame. The inner wall of Gale Crater is on the horizon. NASA/JPL image.*

### *Science at Gale*

*Curiosity* carries a radioisotope power system that generates electricity from the heat of the plutonium's radioactive decay. This power source gives the mission an operating lifetime of at least a full Martian year (687 Earth days), and it will enable the rover to drive a few tens of kilometers. The rover will be able to roll over obstacles up to 75 cm high and travel at speeds up to 100 meters per hour. This performance will be important because the ultimate

goal of *Curiosity* is to drive up the lower portions of Mount Sharp, where satellite observations suggest that layers of sediments were laid down in the presence of abundant water.

*Curiosity* has some great science objectives<sup>2</sup>, and carries ten different science instruments to search for biomarkers from their physical and chemical properties within the strata. From orbit, layers of clay- and sulfate-bearing strata have been identified and these will be studied in detail. To study these strata,

*Curiosity* will use an instrument package that includes a laser for remote sensing of rock composition and a microscopic imager to look at particle shape, color, and cross-sections of strata and bedding plane surfaces.

#### *The SOEST-Mars Connection*

Since the late-1970's, our faculty and graduate students have been fascinated with Mars. Some of the earliest spectral measurements of Mars were made by Tom McCord, Bob Singer and Roger Clark. Ash from the summit of Mauna Kea on the Big Island has a color very similar to Mars soil and was a valuable analog material for their studies. More recently, Jeff Taylor, Peter Englert and Joe Boyce have all been science team members of instruments flown on the Mars Odyssey (2001) spacecraft. Other past or present faculty members such as Fraser Fanale, Vicky Hamilton, Scott Anderson, Sarah Fagents and Pete Mougini-Mark have all focused their careers on studying Mars. Our former graduate students have done equally well with Jim Bell (UH/GG MSc, 1989; PhD 1992), who is now a professor at Arizona State University, serving as the lead scientist in charge of the Panoramic Cameras that for the "eyes" of the two Mars Exploration Rovers that have been driving across the planet since 2004. Through Jim's efforts, the *Spirit* and *Opportunity* rovers have produced stunningly beautiful views of Mars that Jim has published for everyone to enjoy<sup>3</sup>. With the *Curiosity* landing on Mars, SOEST can now add another Mars scientist to its list, because Scott Rowland is a member of the Mars Hand Lens Imager (MAHLI), which is one of the key instruments on the lander. Scott will focus his volcanology skills on the analysis of the fine particles to be imaged by MAHLI,

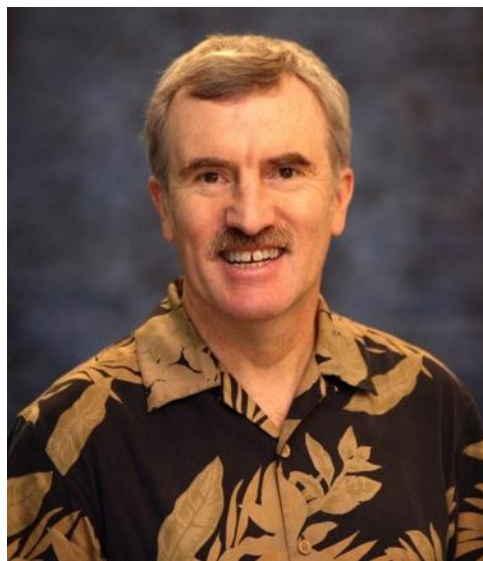
as well as participate in much of the planning for operating the instrument.

The mission of *Curiosity* may last for a decade. We wish Scott and the rest of the team every success in making fascinating new discoveries about Mars over the coming years. Let the exploration begin!

---

<sup>2</sup>Grotzinger, J.P. *et al.* (2012). Mars Science Laboratory mission and science investigation. *Space Science Review*, doi 10.1007/s11214-012-9892-2.

<sup>3</sup>James F. Bell, III (2006). *Postcards from Mars*, ISBN 0525949852, New York, 196 pp.



*Author: Pete Mougini-Mark is Director of the Hawai'i Institute of Geophysics and Planetology, SOEST*

\* \* \*

## ***GG's New Proposed Degree Program: Master's in Geoscience***

*by Garrett Ito*

GG is proposing to create the Masters of Geoscience (MGeo), a professional Master's degree program for students who seek careers in geoscience-related industries. Unlike the M.S. degree, the MGeo will emphasize coursework in applied geology and geophysics and provide options for training in business, economics, and management. Technical writing and oral presentation will be emphasized. Rather than a research thesis, MGeo students will do a work project as a volunteer, intern, or as an employee of a local company or agency, followed by a written report and oral presentation. For individuals with a B.S. in geology and geophysics, the MGeo will be an efficient path to a Master's degree as it can be completed with only one additional year of study. Anyone with a B.S. in any field, or a B.S. or B.A. in geology and geophysics can apply. Thanks very much to all who have contributed ideas and support for this proposed degree. Please let us know if you are interested in applying yourself or interested in hosting a talented MGeo as a volunteer or intern in your company!

## Message from the Chair

Greetings everyone!

As we are about to begin the 2012 academic year, I would like to welcome all of our new undergraduate and graduate students. Here is a quick summary of some high points of the 2011 academic year:

The Department continues to thrive, with increasing funding and numbers of published papers – many thanks to the hard-working faculty!

This year we were able to replace some aging equipment (courtesy of a large fund match from the Dean) – we bought a new sledge hammer seismograph system, 6 new student computers, 3 new projectors for our classrooms and upgraded the Hydrogeology Lab teaching equipment. We are also about to install a new A/V system in our main lecture/seminar room (POST 723).

In news about the Faculty, we congratulate Clint Conrad for promotion to Associate Professor with tenure.

We were shocked and saddened this spring when we learned that one of our Senior undergraduates, Kristina Taylor, passed away after a tragic swimming accident. She was awarded a posthumous BS degree, which was accepted by her husband Jon, who was deployed with the US Army in Afghanistan at the time of her accident. She will be missed!

One of our alums, Michael Jackson, continues to be a strong supporter of our Field Trip fund – we thank him for his generous support, along with a matching contribution from his company, Noble Energy. Thanks to the others of you who have made contributions to the Department! Your gifts make a real difference for our students and our program. If you have not already done so, please consider a (tax deductible) contribution to one of the Department's funds (see the last page of this Newsletter for a copy of the form).



Greg Moore, Chair

The new year is off to a successful start with Prof. Scott Rowland heading off to Houston as part of the NASA's Mars Curiosity Rover science team. Prof. Ken Rubin will join a cruise to the Lau Basin in September to study tectonic-volcanological-hydrothermal-ecological linkages at active extensional volcanoes in nascent-spreading areas of the rear arc and back arc, and I will join the Japanese drilling ship *Chikyu* as co-chief scientist in October and December to continue drilling a hole into the Nankai Trough seismogenic zone.

I hope you will all visit the GG website <http://www.soest.hawaii.edu/asp/GG/index.asp> on a regular basis. You will find posted there job opportunities, special announcements, curricular plans for the next 5 years, and profiles of all GG members.

\* \* \*

## SOEST Open House was held on October 21-22, 2011



An estimated 6,600 visitors came to participate in the SOEST Open House 2011. 500 volunteers assisted children, teachers and adults who visited many of the 44 exhibits offered throughout SOEST on the UH campus. As always, one of GG's biggest hits was the explosive eruption (left photo), a safe demonstration of an explosive eruption fueled by liquid nitrogen, during which in less than 1 second, an explosion carried 20 gallons of water 10 meters high. Visitors of all ages enjoyed studying collections of minerals, rocks, and fossils (right photo). Photographs by Marcie Grabowski.





## Degrees, Awards & Honors

### Undergraduates

<b>Timothy Ashton</b>	<i>BA Summer 2011</i>
<b>Mauri Fabio</b>	<i>BA Fall 2011</i>
<b>Emilie Grau</b>	<i>BA Fall 2011</i>
<b>Travis Richardson</b>	<i>BA Spring 2012</i>
<b>Jennifer Beyer</b>	<i>BS Spring 2012</i>
<b>James Bishop</b>	<i>BS Spring 2012</i>
<b>Ramsey Darling</b>	<i>BS Spring 2012</i>
<b>Adam Dizol</b>	<i>BS Spring 2012</i>
<b>Samantha Jacob</b>	<i>BS Spring 2012</i>
<b>Tricia John</b>	<i>BS Spring 2012</i>
<b>Kristine Kosinski</b>	<i>BS Spring 2012</i>
<b>Miles Kreisberg</b>	<i>BS Spring 2012</i>
<b>Adonara Mucek</b>	<i>BS Spring 2012</i>
<b>Kristina Taylor*</b>	<i>BS Spring 2012</i>

\* Posthumous degree



**GG "Sweet Success" party- Spring 2012 - (L-R) Greg Moore (GG Chair), Jennifer Beyer, James Bishop, Adonara Mucek, Lindsey Spencer, Adam Dizol, Samantha Jacob, Kristine Kosinski.**

### Masters of Science

**Asdis Benediktsdottir** – *Detailed Tectonic Evolution of the Reykjanes Ridge During the Past 15 MA using Magellan, a New Tool for Modeling Magnetic Anomalies (Advisor: R. Hey, Summer 2011)*

**Michaela Conley** – *Seismic Shear-Wave Structure of the Upper mantle Beneath the Mohns Ridge (Advisor: R. Dunn, Summer 2011)*

**Kayla Holleman** – *Impact of Flux, Residence time and Nutrient Load of Submarine Groundwater Discharge on Coastal Phytoplankton Growth in Coastal Waters of Hawai'i (Advisor: C. Glenn, Fall 2011)*

**Svetlana Natarov** – *Constraining Poiseuille Flow in the Asthenosphere using Depth-Dependence of Azimuthal Seismic Anisotropy (Advisor: C. Conrad, Fall 2011)*

### Doctor of Philosophy

**Carrie Brugger** – *Crystallization of Hydrous Rhyodacite Magma During Continuous Decompression (Advisor: J. Hammer, Fall 2011)*

**Michael Chandler** – *Tectonic History of the Greater Ontong Java Plateau and Errata-Based Correction of Marine Geophysical Trackline Data (Advisor: P. Wessel, Fall 2011)*

**Jacque Kelly** – *Identification and Qualification of Sub-marine Groundwater Discharge in the Hawaiian Islands (Advisor: C. Glenn, Summer 2012)*

### Student Awards

#### Agatin Abbott Memorial Award

*Presented to the outstanding senior, annually, in memory of department faculty Agatin Abbott. Adonara Mucek*

#### Fred M. Bullard Fellowship

*Endowed by Thais Freda Bullard in memory of her father, Fred M. Bullard, a pioneer in the studies of Volcanology and general Geology & Geophysics: Emily First, Malin Klawonn, Elise Rumpf, Dana Brodie, Kendra Lynn, Gabrielle Weiss*

#### J. Watumull Scholarship

*Awarded annually to the department's outstanding graduate student from an endowment from the Watumull Foundation. Haunani Kane*

#### Other Fellowship, Scholarships & Awards

**Alice Colman** – *Evan Research Fellowship in Oceanography* **Christine Waters** – *The Manoa Experience Arts Competition Grand Prize, October 2011: <http://manoa.hawaii.edu/ovcaa/contest/> & DURRIDGE Company Scholarship 2012*

### Faculty – Promotions, Awards & Honors

**Clinton Conrad** – *Associate Professor*

**Paul Wessel** – *2012 AGU Fellow*

**Robert Dunn, Scott Rowland, Ken Rubin, John Sinton** – *2012 GSA Fellows. Scott Rowland* – *Chancellor's 2012 Citation for Meritorius Teaching.*

**Ken Rubin** – *NSF/RIDGE 2000 Distinguished Lecturer for 2011. Brian Schubert* – *Exceptional Reviewer 2011, GSA Bulletin.*

## **Distinguished Alumnus: Will Sager**



*Will Sager (UH MS 1979, PhD 1983) Professor of Geological Oceanography, Texas A&M University*

I am currently busy with several projects, both basic and applied in nature. I am writing from the R/V Melville from the South Atlantic, where we are studying the origin and evolution of the young end of Walvis Ridge. My co-PIs are Anthony Koppers (Oregon State University, geochronology) and Cornelia Class (LDEO, geochemistry). We will try to understand why Walvis Ridge changes from a large volcanic ridge to several trails of small seamounts at its young end. The accepted hypothesis is that, similar to Hawai'i, it formed as the African plate drifted over the Tristan Hotspot. But the Walvis Ridge has changes in morphology and leads to two active volcanoes, Tristan and Gough Islands, separated by 400 km. My role is to collect magnetic data and better trace the magnetic lineations because one hypothesis for the changes in morphology is interaction of the hotspot with the Mid-Atlantic Ridge, whose positions will be shown by the magnetic anomalies.

I am also working on a second cruise to Shatsky Rise on the R/V Marcus Langseth. This cruise gives us a chance to finish the multichannel seismic (MCS) lines that were planned for our initial cruise in 2010, but which were incomplete owing to misfortune on the cruise. Unfortunately, that cruise starts while I am on the Melville, so I am sending a bunch of students in my stead. The goal of that research is to examine the structure of the main edifice of Shatsky Rise to better understand how it formed. Already,

MCS lines shot on the previous cruise show that this volcanic edifice is a central volcano of the size of Arkansas.

Another project is one with my former student, Masako Tominaga, currently a post-doc at WHOI and her advisor, Maurice Tivey. This cruise was on the R/V Thompson in October-November 2011 and the goal was to use the WHOI Sentry AUV to collect near-bottom magnetic data over Jurassic "tiny wiggles" magnetic anomalies. In previous cruises, we examined the tiny wiggles over seafloor created by the Pacific-Izanagi spreading ridge, but this new project is to collect a comparable data set from the Pacific-Farallon anomalies, the idea being that common signatures seen in both sets of anomalies will demonstrate which wiggles are caused by the magnetic field and which are local noise.

I am also working with Tominaga and Tivey on an instrument development proposal to build magnetometers into surface drifters, such as those used routinely by physical oceanographers. The idea is that we can get magnetic anomaly data over the oceans much more cheaply than using an expensive ship. A geophysicist would release a swarm of relatively inexpensive drifters over an area of interest and let the currents carry the drifters over the study area. Only a short amount of ship time would be needed.

I am wrapping up several other projects. One is a geophysical study of Ninetyeast Ridge from a cruise on the R/V Revelle in 2007. We collected low-order MCS data in several locations. What is very interesting is that we found faulting and deformation everywhere we looked. The Ninetyeast Ridge is located in a zone of intraplate deformation where the Indo-Australian plate is breaking into three smaller plates. Thrust faulting and folding has been noted previously west of Ninetyeast Ridge and south of India. Our data show that the ridge is pervasively cut by active faults. In the north, it appears that the faults are transpressional where compression oblique to Ninetyeast Ridge has reactivated old spreading-ridge related faults. In the middle, it looks like the faults change to mostly strike-slip. And in the south, the faulting is much less severe, but appears extensional. The other project is a study of a grid of industry 2D MCS data from the northwestern Gulf of Mexico. The idea was to look at the buried salt bodies to understand a change in morphology from the Louisiana continental slope to the Texas slope. In addition, we were looking for Bottom Simulating Reflectors (BSR) as indicators of gas hydrate. Although gas hydrates have been found in the Gulf of Mexico, the BSR, which are classic indicators

of gas hydrate, are rarely observed. We find lots of evidence for gas, but almost no BSRs, which we attribute to the dominance of fine-grained impermeable sediments and the high and variable heat flow caused by the buried salt bodies. Finally, I am working on wrapping up work for IODP Expedition 324, which was a study of Shatsky Rise. As scientist, I have a student studying the paleomagnetism of the basalt flows as an indication of their timing. And as co-chief scientist, I am working on contributing to several publications and organizing sessions at AGU and a book for GSA.

\* \* \*

## ***Paul Wessel becomes 2012 AGU Fellow***

**Paul Wessel** has been elected the American Geophysical Union's 2012 Fellow. No More than 0.1 percent of total members are elected annually, this year it was 61 individuals who will be recognized at the Honors Ceremony at the 2012 AGU Fall Meeting to be held 3-7 December, in San Francisco. Paul was nominated by Dr. David Bercovici, the Frederick William Beinecke Professor of Geophysics and Chair of the Department of Geology and Geophysics at Yale University. These are some of the words he used to describe Paul's excellence: "Paul has been working for years on lithospheric physics and dynamics, in particular the nature of lithospheric elastic flexure in response to internal stresses and loads. This work mostly focused on two very important aspects, in particular flexure at fracture zones near ridges, and flexure in response to hotspot/volcanic loading (especially in and around Hawai'i). Paul was one of the first to sort out the effect of the flexural response to thermal stresses since the lithosphere on both sides of a fault have cooled different amounts leading to different levels of curling. His papers on the Hawaiian swell were seminal in that they provided robust constraints on the lithospheric elastic thickness near Hawai'i. Moreover, the time-dependence of the flexural response to a moving and accumulating Hawaiian load showed that there are natural sea-level variations due to islands riding over the flexural bulge and trough that are not due to climate change or tsunami or what have you.

Paul Wessel's most recent scientific activity was unequivocally a revolution in the fields of plate tectonics, plate kinematics and plate reconstructions. In particular, his "hotspotting" technique has been a major breakthrough, a completely new paradigm in how plate motions are inferred. In essence, Paul found that the reverse trajectories of seamounts and islands

that optimize their intersection localization will yield the absolute (i.e., hotspot-centric) plate motion. This required no radiometric dating of island lavas, or magnetically inferred isochrons, or earthquake focal planes, etc. It required merely excellent location of seamounts from satellite data and a reasonably powerful workstation to run through the optimization search. Of course, the utility of this method also required Paul to develop an algorithm for locating tens of thousands of seamounts from satellite data, which in itself lead to a *Science* paper and new breakthroughs. But in the end, this method proved astoundingly successful. I fondly remember when Paul and Loren Kroenke used this method to make a new prediction for the enigmatic origin of the Louisville Seamount chain; this prediction was different from the traditional interpretation, but almost simultaneously with their work, anomalous volcanism was detected at exactly the location of their suggested origin. This hotspotting work has been controversial to say the least, but that is an absolute requirement of something that is so revolutionary. Recently, the enormous value of his method has become more widely accepted and is being used in a wide array of studies.

Paul has also made numerous contributions in the development of data analysis techniques in marine geophysics. These have varied widely, but in the end are intimately linked to his development of GMT. There are few people in our business who do not at least know of GMT and more than likely use it religiously, not only for graphics but for data analysis and processing.

Finally, Paul has assumed major leadership and service roles both nationally and within his university. What AGU should itself most appreciate is his unusually long service on the Information and Technology Committee; this is no small contribution given the huge "electronic" changes that have occurred at AGU both in terms of membership services as well as publications in the last 10 years..."

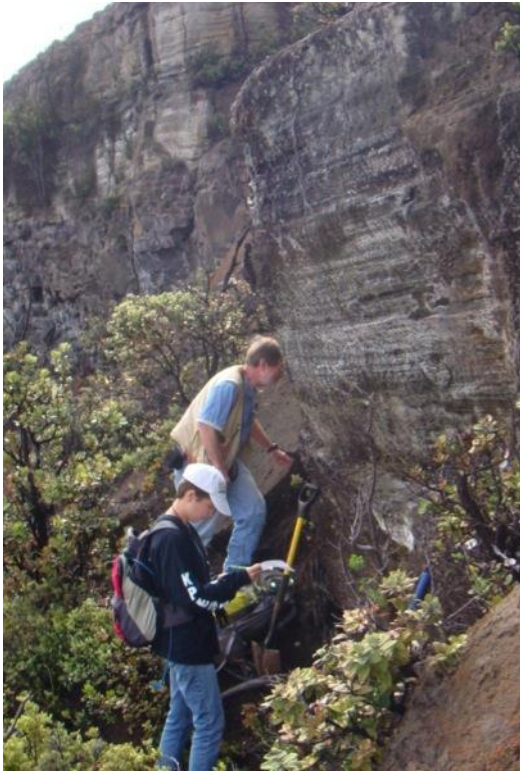




## 2011-2012 GG Research and Teaching Highlights

### VGP

For **Michael Garcia** this year has been the culmination of several long-term research projects. Papers have been submitted and in most cases published in scientific journals. These projects

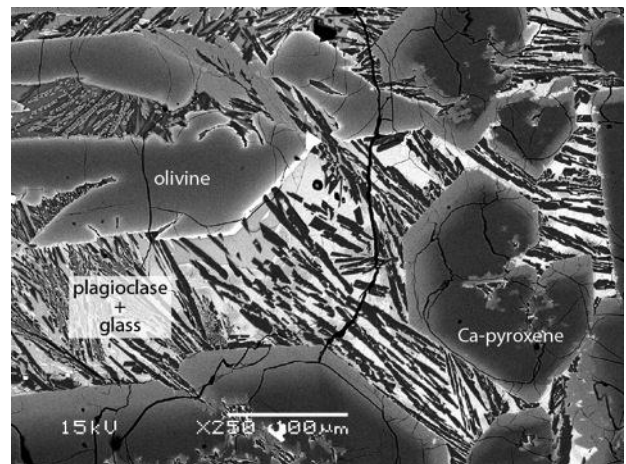


*Adonara Mucek (front) studying the composition of rocks on Kilauea.*

included Mahukona Volcano, the hidden Hawaiian volcano. This study was a collaborative project with GG professor Garrett Ito and his former student Ashton Finders, and scientists at other institutions. Also, work on submarine Mauna Loa volcano has been published or submitted on the geochemistry and age of its lavas. A new NSF grant allows Garcia to continue work on the ongoing summit and rift zone eruption of Kilauea. A new NSF grant has just been approved to determine ages and lava composition for samples from the leeward Hawaiian Ridge to more fully understand the origin and evolution of this classic feature. One issue is why the output of the Hawaiian hotspot has apparently increased dramatically (300%) in last 30 million years. UH undergraduate Adonara Mucek and Garcia have been working on a cooperative project with Don Swanson of USGS Hawaiian Volcano Observatory to study the composition of glasses from explosive

eruptions of Kilauea that occurred from about 1500-1800 AD. Yes, Kilauea has had an explosive history that Garcia is helping to understand.

**Julia Hammer's** experimental petrology group grew in size and broadened in scope, with major research effort continuing to be devoted to the kinetics of magma crystallization. The variety of volcanic settings being examined is equalled in diversity by the lab group members studying them: Waianae basalt (Hidemi Ishibashi, visiting from Japan), Mexican basaltic andesite (Tom Shea, GG Assist. researcher), Hualalai oceanite (Benoit Welsch, visiting from France), Alaskan rhyodacite (Gabriele Lanzafame, visiting from Italy), Maui ankaramite (Samantha Jacob, GG undergraduate), and even the crust of Mars (Emily First, MSc candidate). With all the research occurring at magmatic temperatures, the Experimental Petrology lab is possibly the warmest room in POST. Congratulations to Carrie Brugger-Schorr, who earned her PhD and took a faculty position at Northern Arizona University.



*Back-scattered electron micrograph of an experimental sample produced by Emily First, who is attempting to simulate the texture of meteorite Y980459. Emily's study is part of a continuing NASA-funded effort to understand intense magnetic anomalies in the martian crust by constraining the material properties of relevant igneous rocks.*

2011 brought **Bruce Houghton's** physical volcanology group much happiness with the March Kamoamo eruption on Kilauea and continued activity at Halema`uma`u. Carolyn Parcheta, Samantha Weaver



and Bruce helped HVO to document the at-fissure aspects of Kamoamoa's short fissure-fed eruption.



*Samanatha Weaver (UH) and Tim Orr (HVO) kneel beside the newly formed spatter rampart at Kamoamoa on 23 March 2011, measuring the grain size of the erupted scoria.*

The group also started a new long-term study of explosive eruptions of Hekla, *Grímsvötn* and Eyjafjallajökull volcanoes in Iceland. The 2011 fieldwork involved Maria Janebo, Rebecca Carey and Bruce working with Icelandic colleagues (including affiliate faculty and UH alum Thorvaldur Thordarson and sabbatical visitor Magnús Tumi Guðmundsson) to catalogue the at-vent products of the 2010 and 2011 eruptions.



*Briefing session (sponsored by Marlboro), during 2011 fieldwork on summit glacier of Eyjafjallajökull volcano.*

**Scott Rowland** taught GG 104, 461, 130, 305, and oversaw the GG101 labs with the able help of TAs Sarah Glancy, Ben Czeck, Emily First, Maria Janebo, and Sarah Maher. His research consisted of slow but steady improvement of the FLOWGOMOTO lava model, with Harold Garbeil and Rob Wright of HIGP, and Andy Harris of France. The big deal is the Curiosity rover, on which Scott is one of >300 Co-Investigators. Curiosity landed at Gale Crater, Mars,

on August 5. Scott will be at the Jet Propulsion Laboratory in Pasadena for the first 3 months of this 2-year mission. Scott was heard on NPR where he talked about the Mars rover mission "Curiosity" on Hawai'i Public Radio's "The Conversation" which aired on Tuesday, July 17, 2012 (Scott's part starts at ~38:30): <http://www.hawaiipublicradio.org/content/conversation-tuesday-july-17th>

**Ken Rubin's** research over the past academic year included a rapid response study of the timing of the 2011 submarine eruption at Axial Volcano (on the Juan de Fuca Ridge), with colleagues from NOAA-PMEL, MBARI and UW. This surprising eruption at the site of a regional scale observatory in the Ocean Observatories Initiative will figure into plans for the upcoming observatory, which Ken is participating in. Ken also participated in an expedition at sea in the NE Lau basin (his 4th since 2009), with an international team headed by HIGP faculty member Fernando Martinez, along with GG graduate students Jonathan Sleeper and Reagan Austin. The expedition, conducted in collaboration with Nautilus Minerals Inc., made multiple exciting discoveries, including the sampling of a molten sulfur pond at Niua submarine volcano (see photo), and collected a diverse group of lavas, some of which will form part of Sarah Glancy's Masters research. The Isotope Laboratory also saw many changes, with the retirement of John Mahoney, and departures of Doug Pyle and Katharina Pahnke. The Department is actively conducting searches to replace two of these faculty positions.



*Regan Austin (left) and Jonathan Sleeper (right) cutting thin section billets on the R/V Kilo Moana fantail during the Nov 2011 NE Lau Basin expedition. Photo by Bob Embley of NOAA/PMEL.*



*Different views once-molten sulfur collected on cruise KM119a by Rubin, Martinez and others, including spun yellow sulfur frozen onto the chains of the dredge bag (upper left), grey botriodal sulfur glass (upper right), the chilled sulfur pond upper crust (lower left), and sulfur impregnated rhyolite pumice (lower right).*

**John Sinton**, Mary Tardona, Doug Pyle and Deb Eason participated in a cruise of the *R/V Kilo Moana* using the ROV Jason II to Ka'ena Ridge off NW O'ahu. Results of this project appear to confirm that there is a previously unrecognized volcano at Ka'ena Ridge that forms the first emergence of the island of O'ahu, predating both Wai'anae and Ko'olau. Alice Colman, Ken Rubin and Sinton continue to work on volcanic eruptions along the Galápagos Spreading Center and Eason, Sinton and Garrett Ito are studying the effects of rapid deglaciation on mantle melting in Iceland. Sinton continues to serve as a Governor's appointee to the State of Hawai'i, Natural Area Reserves Commission.

**MEG**

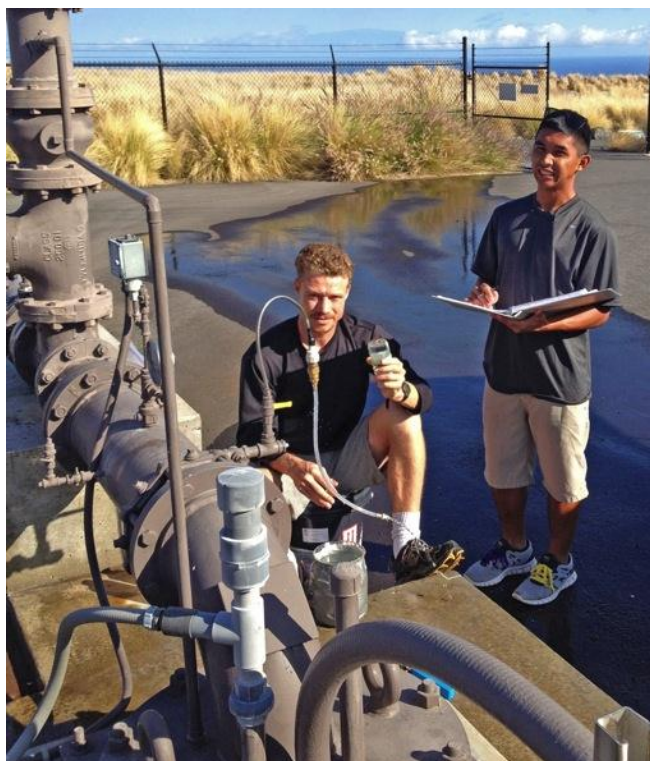
**Henrieta Dulaiova** and students Christine Waters, Jacque Kelly (Ph.D. 2012) and Kim Mayfield have been studying groundwater discharge to the coastal zone and its affect on coastal chemical balances across

the Hawai'i Islands. Dulaiova has also been involved in monitoring radioactive releases from the severed Fukushima nuclear power plant. Postdoc Jan Kamenik and visiting student Kamila Stastna (Czech Technical University) have been working hard providing timely results about radiation levels around Hawai'i. The team was also part of a fast response cruise on UH's R/V KOK near Japan in June 2011.

**Aly El-Kadi's** hydrology group (Alan Mair, Sue Tillery, Rohit Goswami and Bob Whittier) worked on a number of projects. A drinking water source vulnerability analysis was conducted for the State of Hawai'i's source-water assessment program (SWAP) focusing on wells on Oahu and on Maui. Another study developed models to simulate groundwater and nutrient flow for the Kiholo and Kaloko-Honokohau National Historical Park Watersheds, where submarine groundwater discharges to the near coastal environment. The modeling results are used to identify



the impact of land-use on the coastal environment. A third study is assisting the Climate Adaptation Partnership for the Pacific (CAPP), Pacific Regional Integrated Science and Assessment (RISA) with integrating flexible processes for building adaptive capacity to climate change in diverse island settings. Finally, the group participated in the tracer test done at the Lahaina Wastewater Reclamation Facility, Maui. The test is aimed at providing critical data about any hydrological connection between the injected wastewater effluent and the coastal waters, confirming the locations where injected effluent discharges into the coastal waters, and determining a travel time from the injection wells to the coastal waters. **Craig Glenn** and **Henrieta Dulaiova** have also been involved in the latter project as well as in groundwater studies on the Big Island and at several sites on Maui and Oahu.



*Joe Fackrell (left) and George Bugarin (right) sampling groundwater wells in Kona. Joe is working on his Ph.D. with Craig Glenn and he is conducting research into the geochemical properties and evolution of groundwater in West Hawai'i and on Maui.*

**Hope Jahren** completed her Leopold Leadership Fellowship at the Woods Institute for the Environment at Stanford University and has returned to lead her



*New growth chambers, custom built by Bill Hagopian (Jahren lab), are being used by Master's student Benjamin Czeck to test growth responses of sweet potato to rising carbon dioxide levels.*

growing lab. Benjamin Czeck joined the lab as a Master's student the past fall and is working to better understand how root crops will respond to rising carbon dioxide levels. An additional four people joined the lab in May: Erik Gulbranson (Postdoc at University of Wisconsin-Milwaukee), Stephanie Salisbury (MS, Virginia Institute of Marine Sciences), Nancy Parker (MS, University of Wisconsin-Madison), and Tyler Gorham (BS, University of Mount Union). We would also like to congratulate Caleb King for his acceptance into the PhD program for Marine Sciences at the University of North Carolina! After 3 years working in the lab, he will be missed!



*Members of Hope Jahren's lab collected 50 million-year-old plant fossils in Alaska to learn more about the Arctic Eocene paleoclimate (left to right: Caleb King, Brian Schubert, and Bill Hagopian).*

**Brian N. Popp** continues his isotope biogeochemical studies focusing on the role of ammonia oxidation and nitrogen fixation in the marine nitrogen cycle and on



various food web studies. Current research with Joy "Leilei" Shih (Oceanography Ph.D. Student) includes understanding of the importance of ammonia oxidation and denitrification associated with sponges on the nitrogen budget of reefs in Kaneohe Bay and in the Florida Keys. We are using amino acid compound specific nitrogen isotope analyses to study the trophic ecology of reef fish with Christina J. Bradley (Oceanography Ph.D. Student), sea turtles with Karen E. Arthur (GG postdoctoral researcher) and zooplankton with Cecelia Hannides (GG postdoctoral researcher). The trophic positions derived from isotopic analyses of amino acids are also being used by C. Anela Choy (Oceanography Ph.D. Student) to examine mercury bioaccumulation in pelagic fishes and by Natalie Wallsgrove (Oceanography M.S., December 2011) to examine bioaccumulation of ciguatoxins in Hawai'i reef fishes.



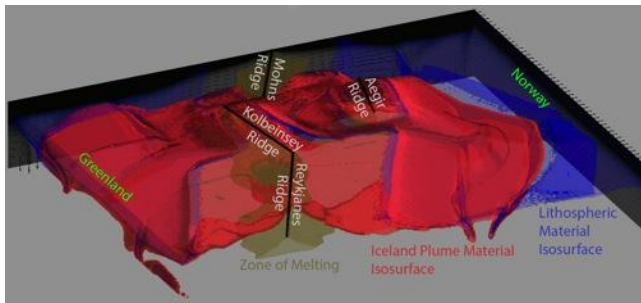
*Natalie Wallsgrove (left) and Brian Popp (2<sup>nd</sup> from left) collecting pelagic fishes along with students and crew members aboard the R/V Kilo Moana for food web and mercury analyses.*

**Greg Ravizza's** lab has enjoyed the company of two long-term visitors, and taken on a new graduate student this year. Dr. Nathalie Vigier, on sabbatical from CRPG in Nancy, France, brings her extensive expertise in Li isotope geochemistry. Dr. Birger Schmitz, from the University of Lund in Sweden – and adjunct faculty here at UH, is a world expert in the isolation and characterization of extraterrestrial matter from the sedimentary record. Greg and his new graduate student, Jessica Zaiss, have benefited greatly from Birger's and Nathalie's collaborative efforts to investigate changes in ocean chemistry that resulted from Chicxulub impact event at the Cretaceous-Tertiary Boundary. While KT boundary work has been the focal point of most of Greg's research during the past year, new projects on the inorganic geochemistry of organic-rich shales have been spinning up as well – thanks in large part to the hard work of Denys VonderHaar.

**Steven Stanley** has been recalculating the magnitudes of major marine mass extinctions, eliminating background extinction by a new method and obtaining lower values than have traditionally been quoted. These calculations are at the genus level. Using the rarefaction method to estimate the magnitude of the terminal Permian crisis at the species level and correcting for the effects of clustering, he has come up with an estimate of 82%, which is much lower than the frequently cited numbers of 90 or 95%. This work will be incorporated in a paper on mass extinctions Steve has been asked to contribute to one of the anniversary issues of the *GSA Bulletin*. He contributed a chapter "Geobiology of the Phanerozoic" to a book entitled *Fundamentals of Geobiology* edited by Knoll, Canfield, and Konhauser and published this year. Steve has also written two chapters on the functional morphology and evolution of the Bivalvia for the second edition of the bivalve portion of the Treatise on Invertebrate Paleontology, summarizing an area of research in which he began his career. "It has been nice to have had a chance to provide these, my final general statements, on this subject, but my chapters have now been in press for two years!" he said. Ready to submit is a paper linking the dramatic evolutionary radiation of lucinid bivalves very late in Cretaceous time (after remaining at very low diversity for 350 million years) to the origin and expansion of seagrasses and mangroves, which now provide the lucinids with their favored habitats. During his annual pilgrimage to Maryland, Steve has been visiting the University of Maryland to make use of Bill McDonough's laser ablation mass spectrometer system to determine the mineralogy (aragonite versus calcite) of some extinct taxa via trace elements in their fossil skeletons.

#### **GT**

**Garrett Apuzen-Ito** is spear-heading the proposal for the MGeo, Professional Masters of Geosciences degree (page 3). His research over the past year has been on how variations in mantle composition influence convection and spatial patterns in magmatism at the Hawai'ian (with post-doc Maxim Ballmer) and Galápagos (with GG graduate and now GSA Fellow Todd Bianco) hotspots. Garrett is also working on mantle convection beneath the Iceland hotspot with Robert Dunn and M.S. student Samuel Howell. The diagram (page 13) shows a 3D perspective view of one of Sam's models, which predicts that the Iceland mantle plume has filled most of the upper mantle beneath the ocean basin between Norway and Greenland.



**Janet Becker** is continuing her research on water level effects on wave driven inundation in the Marshall Islands (NSF). One aspect of this project has been to study the effects of reef flat excavation pits on wave transformation in Majuro with Murray Ford (Univ. of Auckland) and Mark Merrifield (OCN). Graduate student Anne-Christine Pequignet (OCN) will defend her doctoral dissertation this summer entitled “Transformation of Wave Energy across the fringing reef of Ipan, Guam”, which describes observations and analysis of large wave events collected for the Pacific Island Land Ocean Typhoon experiment (Army Corp of Engineers).

**Rhett Buttler** has been conducting research in Hawai‘i following the 2011 great Tohoku earthquake and tsunami in Japan. This research is focused on the potential for great ( $M > 9$ ) earthquakes in the Aleutian Islands, and the concomitant potential for huge tsunamis in Hawai‘i.

**Clint Conrad**, published papers on several topics this year, including one that explains the geographical distribution of great earthquakes in terms of the sedimentary and tectonic character of subduction zones. Graduate student Svetlana Natarov published a paper with Clint about the relationship between seismic anisotropy and mantle flow beneath the tectonic plates, and successfully completed her Master's degree in December. Svetlana will continue working in GG towards a PhD in the coming years. Postdoc Maxim Ballmer developed numerical models of “horizontal plumes” that travel beneath the lithosphere to produce volcanism. This newly described mechanism may explain intraplate volcanism in the south Pacific (including the Pukapuka, Hotu-Matua, and Sojourn ridges) and in the western United States. Postdoc Joost van Summeren has used numerical models of global mantle flow to constrain the primary driving forces of plate tectonics. Joost, working with **Eric Gaidos**, also used similar models to characterize the interior dynamics of exoplanets (planets orbiting other stars). Finally, Clint received an NSF-CAREER award to study the solid earth's influence on sea level change,

which will guide his research efforts in the coming years.

**Robert Dunn** continues work in the Lau backarc basin with graduate research assistant Dana Brodie and postdoctoral scholar Ryuta Arai. For her research, Dana was awarded a Bullard Fellowship for 2012. Graduate student Michaela Conley published the bulk of her thesis on Mohns Ridge mantle structure in 2011 and graduated in the same year. Robert and postdoctoral scholar Alejandro Gallego are working with Garrett Ito on a joint geodynamic/seismic project concerning the Reykjanes Ridge. Participating in Robert's regular group meetings is graduate student Silke Ballmer, who is working with Cecily Wolfe (HIGP) to examine Big Island seismic structure via seismic interferometry. Last year Robert and Fernando Martinez published "Contrasting crustal production and rapid mantle transitions beneath back-arc ridges" in the journal *Nature*. Robert has a month-long seismic experiment planned for next year along the Mid-Atlantic Ridge. Finally, Robert became a fellow of the Geological Society of America this year.

**Neil Frazer** continues to work with PhD candidates Tiffany Anderson, who is developing methods for estimating shoreline change rates, and Malin Klawonn, who is inferring volcanic plume structure from tephra deposits. Since the last newsletter Neil has published a mathematical model for epidemics of sea lice on farmed fish and is currently working on a related model for parasite transfer from farmed fish to nearby wild fish, an important issue in ocean conservation.

**Steve Martel** has continued work on sheeting joints (“exfoliation joints”), with two publications in 2011-2012. The first, in *Geophysical Research Letters*, describes critical flaws in the most commonly cited explanation for sheeting joints – erosion of overburden – and shows instead that sheeting joints are a response to strong compressive stresses parallel to surfaces that are convex in at least one direction. This paper was spotlighted in *EOS* and *Physics Today*. The second paper, co-authored with Greg Stock of Yosemite National Park, and Brian Collins and Ed Harp of the U.S. Geological Survey, applies and extends the results of the first paper to shed light on a series of rockfalls in Yosemite Valley, California. Steve also examined the slope above homes in Kalihi Valley that were struck by boulders in a widely-publicized rockfall during April 2012.

**Greg Moore** and his students continued their studies of the Japanese subduction zones last year. During

August-September, graduate students Jess Barnes and Brian Boston joined a Japanese research cruise to collect seismic reflection data across the region of the Japan Trench that ruptured during the 2011 Tohoku earthquake. They joined in on-board data processing and got a good introduction to Japanese culture. Our work continues on the Nankai Trough 3D seismic data set that we collected in 2006. We are now getting ready for the next drilling expedition in the NanTroSEIZE transect, on which Greg will be one of the co-chief scientists.

**Paul Wessel** continues to work on plate tectonic projects, now with his new student Sarah Maher. They are trying to constraint absolute motion of the Africa plate, which is a linchpin in the global plate circuit. Sarah will be spending 6 weeks with Dietmar Müller's EarthByte group in Sydney working on the integration of our absolute plate motion and the GPlates global rotation model. Paul continues to spearhead the development of the Generic Mapping Tools (GMT); we expect to release GMT 5 this summer.

\* \* \*

## GG Picnic and Softball Challenge 2012

by Jonathan Weiss

Fun and food was had by all at the GG Spring Picnic and Faculty/Student Softball Challenge on April 21, 2012 at Lanikai Park. The Faculty reclaimed the Johnny Geeangee Memorial Trophy for the first time since 2008 by solidly beating the Grads 33-19. As usual, due to a less than stellar faculty turnout, the eventual victors padded their team with friends and family including Charles "The Ringer" Conrad and Jon "Grease Monkey" Avery. It was probably these non-faculty Faculty team members that made the difference in addition to John Sinton and Steve Martel putting their bodies on the line.

Burgers and hot dogs were sold to raise funds for the UH Geophysical Society and potluck included drinks and pupus. Many thanks to those of you who came out. Until next year...



*The ceremonial passing of the Johnny Geeangee Memorial Trophy from the students to the faculty. Standing (left to right): Michael Garcia, Clint Conrad, Jess Zaiss, Bill Hagopian, Charles Conrad, Steve Martel, Leland, Jon Avery, Brian Schubert, Brian Popp, Patrick Gasda. Kowtowing (left to right): Jonathan Weiss, David Trang, Sam Howell, Brian Boston, Regan Austin, Dana Brodie, Sarah Maher*



## ***Remembering Kristina Wynkoop Taylor***

*by Samantha Jacob (GG BS 2012)*

Her life was a blessing, her memory will be a treasure, she was loved beyond words and will be missed beyond measure! As the school year ends we look back and reflect on the memories, accomplishments, and friends we made throughout the year. Among those fond memories we remember our fellow classmate Kristina Nicole Wynkoop Taylor. Kristina was born in Michigan on January 1st, 1985 and sadly passed away on February 23th, 2012. She graduated from Murray County High School in Georgia and was on track to graduate this semester with her Bachelor of Science in Geology and Geophysics. Kristina was always interested in gems and their healing powers. She was an avid rock collector and even talked her husband into bringing her some rocks from Afghanistan. Originally she was going to major in archeology, but decided to switch to geophysics when her husband was transferred here in spring 2010. The fact that her senior thesis project combined archeology and geology just made her ecstatic.

Kristina was fun, outgoing, hard working, and super friendly. She and I spent many late nights talking, studying, and coloring maps. She was my study buddy and best friend. After a long day of studying, we would sometimes walk to Yogurtland. She was always excited to see what new flavors they had. Kristina never turned down sweets and walking to Yogurtland allowed our brains to relax a little and our bodies to thaw out from the freezing cold classrooms in POST. She was an angel sent to be my rock buddy and I would not be who I am today without her. I will miss her gorgeous smile and mischievous ways so very much.

Our time with Kristina may have been short, but we can learn a lot from the way she lived her life. One of the things she taught me was not to sweat the small stuff. But a mid-term or final in upper level geology courses is a big thing that should not be taken lightly. Even in times

when she was nervous about passing an exam, she would have a smile on her face and encouraging words to say. She knew life was precious and we shouldn't waste our time being angry or stressed.



*Top: Best friends Sammie Jacob (left) and Kristina Taylor (right). They were also co-presidents of the GG Club in 2012. Bottom: Kristina studying rocks.*

The class of 2012 graduated in May and remembered our beloved friend Kristina. Aloha Kristina, your spirit will always be with us.

\* \* \*



*A stone for Kristina Wynkoop Taylor has been placed in the Mojave Desert by her classmates during their GG 305 field trip. Photo by Scott Rowland.*

\* \* \*



*On May 12, 2012, Army Sgt. Jonathan Taylor, Kristina Taylor's husband received her Posthumous geology diploma during the University of Hawai'i spring commencement ceremony. Photo by Leona Anthony.*



## *Outstanding Senior*

In memory of department faculty member Dr. Agatin T. Abbott, each spring, an award is given to an outstanding graduating senior based on his or her academic record. The 2012 recipient is Adonara Mucek. "Ado" has been a dynamic leader inside and outside the classroom, earning the highest GPA of the 2012 graduating class and serving as Secretary of the Geology Club and as a SOEST Ambassador. She also pursued a research project and completed a senior thesis in petrology-volcanology with the guidance of Michael Garcia. In recognition of her academic achievements and research promise, Ado is receiving a Garmin GPS unit from the Department. We wish her well as she embarks on graduate studies in volcanology at Oregon State University.

*Adonara Mucek holding the Agatin T. Abbott Award plaque that now holds also her name*



\* \* \*

## *Who says Geologists can't do Art?*



*Christine A. Waters, MS student in GG, writes geology-themed poems and stories. Her poem "This Angle Theta" was inspired by a Structural Geology lecture. With her collection of poems Christine won the Grand Prize of the Manoa Experience Arts Competition in October 2011.*

This Angle Theta  
separates the normal from the "plain"  
in sheets stricken by their own geometry  
a curve makes new the awfully mundane  
in 60s and 120s, the world sees straight lines (mostly)  
and eats existing dimensions, unseen, alive  
reality constrained by observational limits  
and mathematics -  
Expand your mind!  
variables exist outside your number magick  
and may change the Earth you THINK you KNOW.



## *Alumni News*

### **1962 (GG's first undergraduate class)**

**Fris Campbell** writes: "After graduation I remained at UH as a graduate student. I started with an assistantship under Ralph Moberly working on cataloging Hawai'i's shorelines. In the summer of 1963 I received a fellowship from WHOI to spend the summer in Woods Hole studying Geology and Geophysics, a program that ultimately led to WHOI partnering with MIT and Harvard in offering a graduate program. The summer at WHOI led to my spending the year of 1964 on the staff at WHOI working on the International Indian Ocean Expedition. I returned to UH just after the arrival of George Wollard and was part of the growth spurt of HIG in the late 60's. I eventually got my Masters Degree and stayed on the staff at HIG. I was there for 25 years in various positions. When I retired as an Associate Geologist I joined Don Hussong and several others in forming Sea Floor Surveys International, an ocean mapping company that became one of the primer fiber optic cable survey companies in the world. We did well and were bought out in 1995 by Fuguro World Wide, now probably the largest offshore survey company in the world. We started SSI in Hawai'i and Don moved the headquarters and part of the staff to Seattle in 1991 to be closer to some of our US and European customers. At that time I was Vice President and maintained an office in Hawai'i until just before the Fuguro takeover when I moved the Hawai'i office to Seattle. I remained with Fuguro SSI as Vice President until I retired at the end of 2002 and moved back to my home in Kailua. Since I retired I go in to SOEST once in a

while to visit with old friends and to attend seminars that are of interest. I also participate in the annual SOEST World Series of Poker and won it for the second time three years ago."

**Floyd McCoy** At UH he started working on a shoreline project with Ralph Moberly and then with Macdonald on the remote Manu'a islands in Samoa. The latter was his graduate fieldwork that resulted in an MS degree. After getting an MS, he took a job at Woods Hole Oceanographic Institution doing underwater photography and deep-sea sampling and participated in numerous cruises. He then moved on and finished his PhD at Harvard in 1974 with a thesis on Quaternary Deep-Sea Sedimentology & Stratigraphy of the East Mediterranean. He took a post-doc position at the Smithsonian with Dan Stanley. Floyd then spent 12 incredible years at Lamont-Doherty participating on cruises on what seemed like every research ship then in the American, Israeli, and Italian fleets, more DSDP legs, field work in Greece. Later he was a visiting professor in Milano and worked at WHOI. He returned to Hawai'i to take a position at WCC and affiliate status at the department. His current fieldwork focuses on geoarchaeology at archaeological sites on Crete where these prehistoric communities were impacted by the huge eruption at Santorini (Thera) in the late Bronze Age – and now more and more spin-offs to other sites from other time periods. Also he had been doing more sea-floor studies in Greece with his Greek colleagues using their ship while they search for ancient shipwrecks. In Hawai'i he is looking at tsunami deposits and local geology.

### **1968**

**Nirendra Maske** (MS) commented on his sadness a number of years

ago when he was no longer allowed to work above 15,000 feet. He is now retired, and visits Hawai'i and the Mainland periodically to visit family and long-time faculty.

### **1991**

**Rajandra Shrestha** (PhD) voluntarily retired early as Acting Director from the Department of Mines and Geology and now works with the Integrated Water and Hazard Management Programme (IWHM) of the International Centre for Integrated Mountain Development (ICIMOD). His two published books with IWHM are titled 1) Formation of Glacial Lakes in the Hindu Kush-Himalayas and GLOF Risk Assessment and 2) Glacial Lakes and Glacial Lake Outburst Floods in Nepal. [in electronic form at [www.books.icimod.org/publications](http://www.books.icimod.org/publications).]

### **1997**

**Chris Okubo** (BS) writes: I am a geophysicist with the US Geological Survey in Flagstaff, AZ. My current research focuses primarily on characterizing the mechanics of faulting and off-fault damage in clastic sedimentary deposits that are analogous to materials known or inferred to occur on Mars. Much of my time is spent mapping faults in the Colorado Plateau and Snake River Plain and testing materials in the laboratory. I also oversee a group focused on mapping faulted and folded sedimentary deposits on Mars and conduct mission operations for the HiRISE camera on-board the Mars Reconnaissance Orbiter.

**Dave Blewett** (MS&PhD) is a Participating Scientist with NASA's MESSENGER mission to Mercury and the Dawn mission to asteroid Vesta. He and his wife **Gina Ling** (UH GG PhD 1996) both work at the Johns Hopkins University Applied Physics Lab (APL) in

Maryland. Dave is in the planetary exploration group and Gina does defense-related work. Their son Derek graduated from Mid-Pacific Institute high school in 2006, the University of Pennsylvania in 2010, and finished a master's in electrical engineering at Stanford in 2012. He now works for a Silicon Valley startup.

### 1999

**Aaron Pietruszka** (PhD) is an appointed research scientist at USGS Denver.

### 2001

**Karl Hibbitts** (PhD) is a Planetary Scientist at the Johns Hopkins University Applied Physics Laboratory. He has twin boys, age six.



*Eva Ng, 2003 GG graduate, sent this photo of Aaron DeLoach (2010) and Mark Higley (2011) putting their geology skills to work measuring dikes as part of a survey for a future sewer tunnel.*

### Postdocs:

**Todd Bianco** (PhD) writes: My wife and I are sadly leaving Providence, RI, but we are excited to move to Washington, DC in September 2012, where I will serve as the GSA/USGS Congressional Science Fellow. This is a one-year fellowship during which time I will

### 2003

**Kimi Artita** (BS) writes: I just completed my PhD from Southern Illinois University Carbondale in Engineering Science focusing on watershed-scale management of stormwater using evolutionary algorithms. I program in Python and R all the time, and I credit my computer skills to all those GG classes using MATLAB! My husband Mike just took a faculty position in the Biological Sciences Department at Clemson University in South Carolina, and we are relocating there this summer with our boys Aidan (6) and Brendan (3). We've been living in the metro Philadelphia area for the last three years where I've been working full

time as a consulting hydrologist/water resources engineer for the Philadelphia Water Department.

### 2008

**Lisa Swinnard** (MS) quit her mining geology job working in the Arctic of Canada and has spent the last 5 months traveling in New Zealand. She hopes to start a new job in Perth, Australia next month.

### 2006

**Chris Gandy** (MS) and wife Katie had new son, Grayson Erick, on 12/12/11. Chris works for the US Army Corps of Engineers. Last year he was Technical Manager of the subsurface investigation for the expansion of the Arlington National Cemetery and oversaw about 10.5 Mil in environmental restoration contracts and provided technical oversight for the cleanup of several petroleum and lead contaminated sites throughout the southeastern US. Chris is a huge hockey fan. His team, the Capitals is in the playoffs this year.

### 2007

**Brett Denevi** (PhD) is a Planetary Scientist in the Space Department of The Johns Hopkins University Applied Physics Laboratory

### 2009

**Josh Cahill** (PhD) is in the planetary exploration group of the Johns Hopkins University Applied Physics Laboratory.

### 2010

**Jared Marske** (PhD) has been appointed as 2-year Post-Doc at Carnegie Institution of Washington.

**Karen E. Arthur** is now a Visiting Research Fellow in the Department of Evolution, Ecology and Genetics, Research School of Biology, Australian National University. Karen was a postdoctoral researcher in the Department of Geology and



Geophysics working with me from 2009 to 2011.

**Julie Bowles**, postdoctoral researcher 2006-2007 is leaving the Institute for Rock Magnetism (Univ. Minnesota) to take a tenure-track faculty position at University of Wisconsin.

**Staff:**

**Elizabeth Gier** who was the Manager of the SOEST Stable Isotope Biogeochemistry Laboratories in GG from 2008 to 2011 is now a researcher in **Matthew McCarthy's** laboratory at the University of California, Santa Cruz. Matt was a former SOEST Young Investigator who worked in the SOEST Stable Isotope Biogeochemistry Laboratories. **Natalie J. Wallsgrove**, who completed a MS degree in Oceanography at UH under Prof. Popp's supervision, is now the new Manager of the Stable Isotope Biogeochemistry Laboratories.



*GG graduates who came back to talk with our current undergrads about life after graduation. Left to right are Penny Larin (2006, now with the NOAA Pacific Services Center), Mark Higley (2011, now with Yogi-Kawong Engineers), and Jocelyn (Rayray) Tamashiro (1996, now with the US Navy Environmental Branch).*

\* \* \*

***Farewell to John Mahoney and Doug Pyle***



*After 26 years of excellent service as a professor of geochemistry John Mahoney retired on December 31, 2011. The Department organized a farewell luncheon in the Outrigger to recognize his contributions to science, teaching and life at GG.*



*Doug Pyle spent 10 years in the department as a Specialist running the SOEST Isotope Laboratory. He resigned as of April 31, 2012 to accompany his wife at a US diplomatic post in Nicaragua.*

## *Field Trips*

Scott Rowland taught GG 104, 101L, 461, 130, and 305 in 2011-2012. Field trips are essential parts of his classes. Here is Scott's photo journal of some of these trips:



*In 2012 the GG 305 class was bigger than usual, and consisted of students from Hawai'i, all over the U.S., and Norway. Kristina, we miss you!*



*This is the gang at the start of the first day of Mojave Desert mapping, Resting Spring range, CA.*





*And here they are at the end, a little tired, dusty, tanned, sweaty, and smart. Mahalo to John Sinton for helping out in the Mojave Desert.*



*Between the start and the end was plenty of looking at rocks and maps, scratching of heads, etc.*



*After the mapping there was time to enjoy the desert winds.*



*And the traditional Badwater jump (hard to get 12 people to jump all at the same time).*





*GG 104 students traveled to Ka'ena Pt. to look at limestone deposits.*



*Near Ka'ena Pt., GG 104 students collected pōhaku to make traditional stone implements.*





*GG 104 and GG 101L students learned about wetland geology and agriculture at Waipao. Mahalo to Mahi LaPierre and the staff of Papahana Kuaola for their kōkua.*



*GG 104, GG 101, and GG 101L students raveled to Kilauea in October. There was no accessible active lava, so we had to get excited by stationary geologic features instead.*





*GG 103 students hiked to active lava flows on the coastal plain in April.*

Aly El-Kadi is the instructor for GG 455 Hydrogeology class, which includes field trips that emphasize the local hydrogeological conditions of Hawai'i. In the Spring of 2012, the class visited Haiku and Kalauao Springs, Wahie Tunnel, Halawa Shaft, Board of Water Supply (BWS) facilities, among others.



*The class at the gate of the Halawa Shaft: From left: Siri Anne Strand, Cecilie Tellefsen, Thea Karoline Aamodt, Maiken Haugvaldstad, Natalie Soltvedt, James Bishop, Simen Raudstein, Aly El-Kadi, and Eirik Styve.*



*Inside the Halawa Shaft. Our tour guide (Glenn Oyama, BWS, also a graduate student with El-Kadi), forefront, right, is among the group.*



*Students measured the water flow rate in the stream with water originating from the Haiku spring.*





*Students visited a watercress farm that feeds on Kaluaao spring water near Aiea.*



*The class at the gate of the Waihee Tunnel in the Windward side of Oahu.*

