

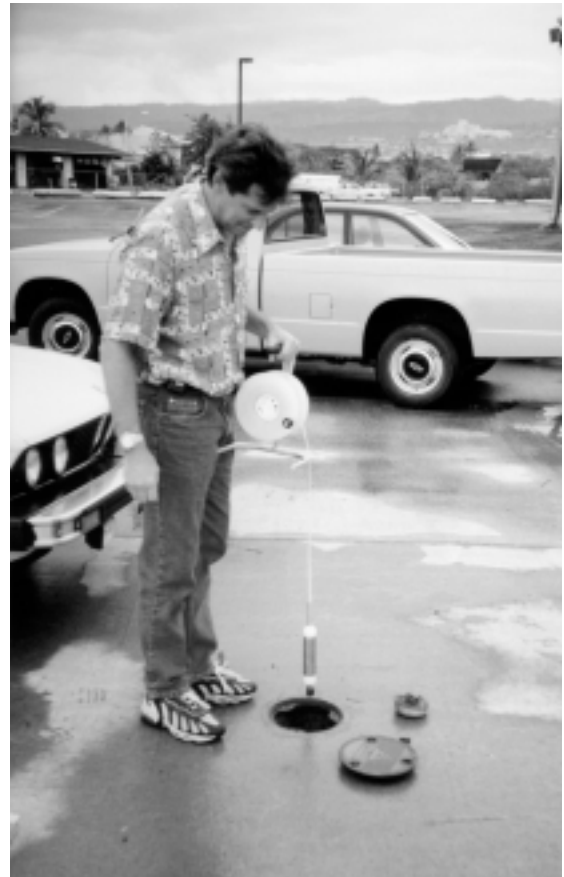


Hydrological Research Emphasizes Hawaiian Water Problems

The subject of hydrology concerns issues related to occurrence, distribution, movement, and quality of water. Hydrogeology (or groundwater studies) addresses the same issues, but with emphasis on the relationship of geologic materials and water. Hydrology is an interesting subject, not only for researchers, state and local agencies, and practitioners, but also for the general public. Obviously water is an essential part of life, with added importance for an island of limited water resources. To further appreciate the subject, consider the following facts.

1. Saline ocean water comprises 97.2% of water on earth and ice-caps and glaciers hold 2.14%. That leaves a balance of less than 1% usable fresh water. Groundwater is about 0.61% of the total water, which is most of the usable fresh water.
2. Groundwater provides about 99% of Hawaii's domestic water and about 50% of all fresh water used in the state.
3. Hawaii pumps about 500 million gallons annually from groundwater, which is only 3% of the average total rainfall. However, much of the rainfall ends up in the ocean or returns back to the atmosphere via evapotranspiration. Water conservation is an important issue, especially with less than average rainfall over the past few years.
4. Water quality is a critical issue because potability is often a requirement.
5. Sources of contaminants include point and non-point sources. Point sources include leaking aboveground and underground storage and transportation facilities of chemicals. Examples of non-point sources are agricultural practices and urban runoff.
6. Federal and state law requires testing the water for residents for different type of contaminants. An annual report should be prepared and mailed to consumers to show that water is safe to drink. The report shows the origin of water (e.g., groundwater), source name (e.g., well name), and contaminants (if exist) and their concentrations. The report should include the maximum contaminant level (MCL), which is the highest level of a contaminant that is allowed in drinking water.
7. Examples of trace chemicals in Hawaii's wells are DBCP, EDB, TCP, and PCE. Water in drinking water wells is treated to reduce the contaminant level to acceptable levels (below the MCL).

Current hydrogeology research in the department emphasizes assessment of subsurface and surface water quantity and quality for Hawaii. Active research projects are described below.



Michael D. Knight, Senior Geologist/Hydrogeologist with URS, is helping in the field study dealing with diesel contamination. Mike, a G&G alumnus, obtained his Masters and Ph.D. degrees in 1985 and 1989, respectively. His M.Sc. and Ph.D. advisor was George Walker. URS, an international environmental and engineering company, has been hired for the project, which includes well drilling and soil bore logging. Mike has been a project manager for a variety of environmental, geological, hydrological, geophysical, and volcanological studies throughout the Pacific and Circum-Pacific region. His work included developing potable water sources, managing environmental assessments, modeling groundwater and chemical transport, and assessing hazardous wastes sites at military facilities in Hawaii and Guam. URS has hired many UH graduates and is actively recruiting new hires in the geoscience field.

(continued on page 2)

Hawaii Water Resources Assessment

This study will delineate each water source within each public water system (PWS). There are approximately 138 PWS's statewide that are comprised of about 457 drinking water sources, of which about 420 are groundwater sources and 37 are surface water sources. We will also conduct an inventory of potential and existing sources of contamination for each water source within each public water system. The inventory will identify existing and potential contamination sources and associated chemical and microbial contaminants based upon field reconnaissance surveys, review of agencies data, and review of existing monitoring data. The study will also determine the relative risks to the water supply from each potential contaminant source located within the source water protection area.

Assessment and Protection Plan for the Nawiliwili Watershed (Kauai)

The Nawiliwili Harbor and its adjacent bay are located on the southeast coast of Kauai, two miles from Lihue. The bay is a well-developed embayment of 333 acres. Streams flow through forest, agricultural, pasture, and other lands picking up nonpoint pollutants. A rock quarry located on the Nawiliwili Stream is a major contributor of sediment to the bay. The study will include three phases. Phase 1 will require validating and documenting existing environmental data. Phase 2 will identify current sources of pollution and contamination in the watershed. Phase 3 will prepare a restoration and protection plan for the watershed.

Nuhou Kanaka Puka

Nuhou Kanaka Puka which means "alumni news" in Hawaiian is published annually by the Department of Geology and Geophysics of the School of Ocean and Earth Science and Technology for its alumni. Throughout the year we'd like to hear from you. Contributions of photos, news items, monetary donations, and especially changes in addresses may be sent to Alumni Relations, Department of Geology and Geophysics, University of Hawai'i, 1680 East-West Road, POST 713A, Honolulu, Hawai'i 96822.

Chairman: Paul Wessel
Editor: Alison Houghton

E-mail alisonh@soest.hawaii.edu
Phone (808) 956-6055
Fax (808) 956-5512
Website www.soest.hawaii.edu/GG/

Diesel Contamination in a Near-Shore Environment

This project deals with the field assessment and modeling of diesel contamination and remediation in a site on Oahu. Extensive field collection addresses both dissolved and free product migration in the site. Modeling will define remediation strategies for the site.

Flood Mitigation

This project concerns the hydrological assessment of the Ke Iki Road Subwatershed, Oahu. The objective is to develop a strategy for flood mitigation through the use of data collection and modeling.

Employment Opportunities

Employment opportunities are greater in the environmental area than in other areas of earth science. They exist in government offices, such as the Department of Health, Department of Land and Natural Resources, and the Board of Water Supply. Other opportunities are available in consulting environmental companies. Many of our graduates have chosen hydrology-related careers. The following are biographical sketches of some of our recent graduates. By no means is the list complete, and we apologize to anyone that we have missed.



- **Dave Davis (BS 1996).** Dave has been employed at ESN Pacific, Honolulu, Hawaii, since 1997. He is an operations manager, head geologist, health and safety officer, and head driller. ESN Pacific is a small environmental company based in Seattle, Washington, that has an excellent reputation for quality, efficiency and professionalism in Hawaii. The company owns an in-house laboratory that analyses soil, water, and air samples for contaminants that are related mainly to petroleum products, herbicides, and pesticides. The company also collects these samples with a qualified staff of geologists, who operate drill rigs and other sampling equipment. The company is a subcontractor for most of their 125 base clients, who are mainly environmental consultant firms.
Dave's duties include overseeing field operations, maintaining equipment and inventory, leading public relations with clients, developing marketing strategies, overseeing health and safety of the company and employees, training field employees, operating drill rigs in the field, and collecting samples.
- **Stephen B. Gingerich (Ph.D. 1995).** Steve came to G&G from Pennsylvania in 1990 and worked under Frank Peterson until 1992 studying the hydrology of

Roi-Namur Island on Kwajalein Atoll in the Marshall Islands. This work was completed while he was a co-op student with the US Geological Survey. After completing his Masters degree, he stayed on as a Research Assistant working with Frank Peterson and Aly El-Kadi on modeling the hydrothermal system of Kilauea's East Rift Zone. He was rehired in a student co-op position by the USGS in March 1995 and received his PhD in December of 1995. He has been employed full-time since then by the USGS as a Research Hydrologist. He is the Hawaii District's Ground-Water Specialist and also the Micronesian Projects Team Leader. According to Steve, one of the benefits of working as the USGS has been travel to project sites around the Pacific including the most of the Hawaiian Islands, the Marshall Islands, American Samoa, Guam, the CNMI, and Diego Garcia in the Indian Ocean as well as occasional trips to the Mainland. He is currently working on groundwater modeling in northern Guam and a study of the importance of fog recharge in the cloud forests of East Maui.

When not working, Steve enjoys playing volleyball, body boarding, hiking, and teasing his two kids Ian (5) and Liah (3) and their mom, Annette.

- **Gina Ling (Ph.D. 1996).** Gina obtained her Ph.D., with Aly El-Kadi as her advisor. Her study included assessing nitrate contamination in Central Oahu due to agricultural practices. The study included both field data collection and modeling. After graduation, she worked for Earth Tech., an environmental consulting firm, for 10 months. Since then she has been employed as a geologist for the Department of Health, office of Hazard Evaluation and Emergency Response. She provides technical support to all of the remedial project managers in her office while managing some remedial projects herself. The technical issues that she has dealt with include statistical analysis, sampling design, contaminant fate transport modeling studies in subsurface and groundwater.

Besides her regular work, Gina is involved with Phoenix Dance chamber to promote Chinese culture and dance. She is teaching Chinese folk dance to young girls at age from 3 to 10.

- **Robert B. Whittier (M.Sc. 1997).** Bob left the university, prior to completing his master's in December of 1996, to take a job with The Environmental Company, Inc. (TEC), a local consulting firm. His first major responsibility was operating an air quality monitoring system for Puna Geothermal Venture (PGV) on the Island of Hawaii. According to Bob, traveling to the Big Island three times a week gave him an opportunity to complete his thesis and graduate in December of 1997, with Don Thomas as his advisor. His thesis, which investigated the transport of soil-gas radon from the soil to the atmosphere, provided a solid foundation for air quality monitoring. His involvement with the PGV proj-

ect has evolved to include noise and water quality monitoring as well. At TEC, he has been the field geologist for an environmental remediation



project at two large U.S. Air Force fuel storage facilities. The project included long-term groundwater and soil-gas monitoring; characterizing the surface and groundwater hydrology of these sites; drilling borings for sample collection, and groundwater monitoring and bio-venting well installation; bio-remediation of the most heavily contaminated areas; and computer modeling of groundwater flow, contaminant transport, and natural attenuation of the site contamination.

Currently he splits his time between TEC and the UH Water Resources Research Center (WRRC). He works with Aly El-Kadi as a groundwater modeler on a statewide wellhead protection area delineation project.

- **Delwyn S. Oki (Ph.D. 1997).** Delwyn obtained his Ph.D. degree from the Department of Geology and Geophysics in the summer of 1997 under the advice of Frank Peterson. Since his graduation, he has been employed as a hydrologist with the Hawaii District of the Water Resources Division, U.S. Geological Survey. According to Delwyn, the academic training he received in the Geology and Geophysics Department provided him with the necessary background to undertake studies using numerical groundwater modeling as a tool to (1) understand complex groundwater flow systems, (2) evaluate groundwater availability, and (3) estimate the hydrologic effects of withdrawals on groundwater resources. In addition to groundwater modeling, he has been involved with studies related to (1) estimation of recharge and evaluation of the importance of recharge on groundwater availability, (2) understanding how borehole flow can affect salinity profiles from deep open wells, (3) estimating hydraulic characteristics from the early-time oscillatory water-level response in pumped wells, and (4) streamflow and base flow characteristics from long-term data in Hawaii.

In addition to graduate students, a number of our undergraduates have joined the environmental field. These include Bryan Matsunobu (1996), Karen Combs (2000), Erica Muse(nee Klohn)(2000), who are all employed with ESN. Jamie Anderson (2001) is employed with AMEC. Debra Pardee (1999) is employed at URS

Aly El-Kadi

Message from the Chair

Since our last Alumni Newsletter (1998), the Geology & Geophysics Department has undergone many changes. The year 2000 marked the departure of several senior faculty members, either by retirement or recruitment. David Bercovici, Department Chair at the time, was recruited to Yale; Rodey Batiza accepted a position as Program Manager of Marine Geology & Geophysics at the National Science Foundation; while Jill Karsten moved via the Office of Naval Research to join the staff of the American Geophysical Union. Steve Self was offered a Chair in Volcanology at the Open University in Durham, UK. Johanna Resig retired after 35 years of service to the University, and Cliff Todd joined the staff at Dow Corning. The “bleeding” continued into 2001 as long-time Isotope Lab Specialist Khal Spencer was lured away to the Los Alamos National Lab. While there were many reasons for the numerous and sudden departures, it is clear that the economic prospects of the state and the University as well as the prolonged poor performance of the UH administration played major roles.

Thus, before the year ran out I found myself appointed new Chair of the Department. While I wish the circumstances could have been different, I am honored to serve the GG family of faculty, students, staff, and alumni that I now have been associated with for 12 years. While we continue to miss these colleagues and friends, we also realized that this situation presented an unprecedented opportunity to revitalize the department. With full support from our dean, Barry Raleigh, we launched four recruitment searches in geobiology, paleoceanography, geophysics, and volcanology, as well as two searches for Specialists to replace Todd and Spencer. Over the last year, few of us can remember any length of time during which we were NOT interviewing job applicants or attending their seminars. However, all of this collective effort has paid off big-time: We had outstanding applicants for all vacancies and found ourselves in the fortunate position of having to choose among the very best. For every unfilled position our first or second candidate accepted our offers. We have already had the pleasure of welcoming Kent Ross, new Assistant Specialist for the Microprobe, and Eric Gaidos, new Assistant Professor of Geobiology, to the department. Next year we will grow rapidly following the arrivals of Julia Hammer (Asst. Professor of Volcanology), Garrett Ito (Asst. Professor of Geophysics) and Greg Ravizza (Asst. Professor of Paleocyanography). The Isotope Lab Specialist search is still ongoing. Part of our success in hiring stems from the support of Dean Raleigh in helping us negotiate additional support for career couples. Thus, we were able to offer partial support for Robert Dunn (Asst. Researcher in Geophysics) and Kathleen Ruttenberg (jointly supported by the Oceanography Department).

Finally, we teamed up with HIGP to successfully prevent Andy Harris from leaving us for volcanologically speaking

less-active Pittsburgh. Combined, these new arrivals represent far more than a shot in the arm for the department; collectively they represent an entire new arm. Given the quality of the recruited faculty I believe the department’s (and hence SOEST’s) future remains very bright.

The new assistant professors arrive in the nick of time to save the department from old age. This summer our last remaining assistant professors were promoted to associate professors with tenure. Hats off to Janet Becker and Ken Rubin for clearing that hurdle with good humor and by a solid margin. We are confident that the new runners will gracefully clear the same hurdles in due course.

The current terrorist crises pose numerous challenges to the State of the Hawaii and its University. While we are fortunate to have a new UH president who by all accounts will be an incredible force for positive change, we worry that a prolonged slowdown in tourism will eventually affect the funding level of higher education in the state. Thus, any additional funds we are able to bring in will help us in maintaining a functioning and world-class department. Therefore, we ask you for your continued support. Tax-deductible donations to the department can be made through the University of Hawaii Foundation and we have several funds managed by UHF. The Geology & Geophysics fund gives us flexibility in discretionary spending, and having this fund allowed us to treat the prospective job applicants with much Aloha contributing, I believe, to the high acceptance rate by our first-choice candidates. There are also the William T. Coulbourn fund for grants to graduate students in marine geology and geophysics, and the Gordon Macdonald fund to support graduate student research on Hawaiian volcanoes. If you are willing to make a contribution, contact the University of Hawaii Foundation at (808) 956-8849 or at www.uhf.hawaii.edu. This academic year has already seen a lot of activity as the department continues to develop its own assessment of student learning procedures. Part of the process is to remain in better and more frequent contact with potential employers of our graduates as well as our alumni. Many of you have been generous with your time, answering a questionnaire sent to recent alumni earlier this fall. We will strive to make our program more responsive to the needs of the community while maintaining a relevant curriculum supported by the highest quality of teaching and research.

Our students deserve no less and it is our job to see to it that they succeed both academically and in the job market.

Paul Wessel



Departmental farewell to Dave Bercovici (right) and Steve Self (center) with Paul Wessel, Department Chair (left)

Confirmation of Degrees

UNDERGRADUATES

Jamie Anderson (Spring 2001, Bachelor of Science)
 Randy Arakawa (Spring 2000, Bachelor of Science)
 Karen Combs (Spring 2000, Bachelor of Science)
 Christopher Frost (Fall 1998, Bachelor of Science)
 James Ikaika Kincaid (Fall 1998, Bachelor of Science)
 Melissa Ito (Fall 2000, Bachelor of Science)
 Erica Klohn (Spring 2000, Bachelor of Arts)
 Kelly Kolysko-Rose (Fall 1999, Bachelor of Science)
 Elaine Lampitoc (Fall 1999, Bachelor of Science)
 Dennis Lynch (Fall 1998, Bachelor of Science)
 Nicholas Mitchell (Fall 1998, Bachelor of Science)
 Loni Moala (Spring 2001, Bachelor of Science)
 Tina Mueller (Spring 2000, Bachelor of Arts)
 Andrea Nelson (Spring 2000, Bachelor of Science)
 Brandee Pang (Summer 1999, Bachelor of Science)
 Malia Pickering (Summer 2001, Bachelor of Science)
 Juanita Redfern (Summer 1999, Bachelor of Science)
 Reid Shigemasa (Summer 1999, Bachelor of Arts)
 Alina Stauffer (Fall 1999, Bachelor of Science)
 Thomas Vana (Spring 2001, Bachelor of Science)
 Georgiana Young (Fall 2000, Bachelor of Science)

Andrew Gascho non-thesis (advisor: R. Hey, Summer 1999)
 Charles Hibbitts The Surface Distribution of Non-Ice Volatiles on Callisto (advisor: T. McCord, Fall 1998)
 Joseph Ingnoli The Utilization of Airborne Thermal Hyperspectral Imaging for Geologic Mapping (advisor: P. Lucey, Fall 1999)
 Ebitari Isoun A Remote Sensing Study of Coral Reefs: Kailua Bay, Oahu (advisor: C. Fletcher, Summer 2001)
 Lisa Kinsey Impact Melts in Enstatite Chondrites (advisor: G. J. Taylor, Spring 1999)
 Jason Langley Processes of Normal Faulting and Surface Deformation Along the Koae Fault System, Hawaii (advisor: S. Martel, Fall 2000)

MASTER OF SCIENCE

<p>Theodore Brattstrom non-thesis (advisor: G.J. Taylor, Summer 2000)</p> <p>Stefano Baffi Velocity and Attenuation Dispersion in Carbonate Sediments, Kaneohe Bay, Oahu (advisor: R. Wilkens, Summer 1999)</p> <p>Sirit Coeppicus Atmospheric Deposition of Fixed Nitrogen and Base Cations and the Volcanic Source of Fixed Nitrogen and the Thurston Lava Tube, Hawaii (advisor: F. Mackenzie, Spring 1999)</p> <p>Michael Davis Volatiles in Glasses from Mauna Loa Volcano, Hawaii: Implications for Degassing, Contamination and Growth (advisor: M. Garcia, Spring 2001)</p> <p>Jennifer Engels Collapse of Seafloor Volcanic Terrain: A Key Process in the Formation of the Upper Oceanic Crust (advisor: M. Edwards, Summer 2001)</p>	<p>Stephen Leslie A Multichannel Seismic Investigation: The Frontal Hawaiian Moat and the Submarine East Rift Zone of Kilauea Volcano, Hawai'i (advisor: G. Moore, Summer 2001)</p> <p>Susannah Mistr Pattern Formation in a One-Dimensional Reaction-Advection Diffusion System: Applications to Coral Reefs (advisor: D. Bercovici, Fall 1999)</p>
--	--

(continued on page 6)





Jordan Muller Topographic and Gravitational Stresses: Effects on Translational Landslide Rupture Surface Growth and the Propagation of Dikes Beneath Volcanoes (advisor: S. Martel, Spring 1999)

Zoe Norcross Large-Scale Alongshore Meanders on a Carbonate Beach Substitute for Seasonal Morphology in Response Wave State (advisor: C. Fletcher, Summer 2001)

Debra Pardee Cross-Sectional Areas of Mid-Ocean Ridge Axes Bounding the Easter and Juan Fernandez Microplates (advisor: R. Hey, Fall 1999)

Steven Quane Geologic and Magmatic History of the Lower East Rift Zone of Kilauea Volcano, Hawaii Based on Drill Core from SOH 1 (advisor: M. Garcia, Summer 1999)

Kirti Sharma Cooling and Crystallization of Pahoehoe Lava Flows from Kilauea Volcano, Hawai'i (advisor: G. J. Taylor, Spring 2001)

Selima Siddiqui Geomorphology and Structure of Taal Volcano and the Macolod Corridor, Philippines from Remote Sensing and Digital Terrain Data (advisor: P. Mougini-Mark, Fall 1998)

Kirsten Zellmer A Three-Plate Kinematic Model for Lau Basin Opening (advisor: B. Taylor, Summer 2000)

DOCTOR OF PHILOSOPHY

R. Scott Calhoun The Sediment Budget of Hanalei Bay, Kauai, Hawaii (advisor: C. Fletcher, Fall 1999)

Jacqueline Caplan-Auerbach Seismic and Acoustic Studies of Lo'ihi Volcano and Southeast Hawai'i (advisor: F. Duennebieer, Spring 2001)

Thomas Gorgas In-Situ Geophysical Measurements in Marine Sediments: Applications in Seafloor Acoustics and Paleooceanography (advisor: R. Wilkens, Spring 2001)

Eric Grossman Holocene Sea Level History and Reef Development in Hawaii and the Central Pacific Ocean (advisor: C. Fletcher, Summer 2001)

Jodi Harney Carbonate Sedimentology of a Windward Shoreface: Kailua Bay, Oahu, Hawaiian Islands (advisor: C. Fletcher, Fall 2000)

Charles Hibbitts Carbon Dioxide and Sulfur Dioxide on the Surfaces of the Galilean Satellites Ganymede and Callisto (advisor: T. McCord, Summer 2001)

John Hinrichs Near-Infrared Spectral Dependence on Temperature for Mafic Minerals, Meteorites, and Lunar Soils: Implications for Asteroid and Lunar Science (advisor: P. Lucey, Fall 2000)

Zinzuni Jurado-Chichay Volcanology of Magaone Subgroup Tephros, Okataina Volcanic Center, New Zealand (advisor: G.P.L. Walker, Summer 2000)

John D. Kronen, Jr. Marine Sedimentary Deposits at Different Temporal and Spatial Scales: Investigation of Repetitive Systems Influenced by Climate and Sea Level (advisor: R. Wilkens, Fall 1998)

Yucheng Pan Magmatic Processes in the Oceanic Crust—A Petrologic Approach (advisor: R. Batiza, Spring 2001)



Zhanxiong Peng	Geochemical Studies of the Northwestern, Central, and Northeastern Deccan Traps, India: Source, Petrogenesis, and Relations to Southwestern Deccan Stratigraphy (advisor: J. Mahoney, Fall 1998)
Chris Peterson	Remote Sensing Studies of Anorthosite and Other Highland Lithologies of Earth Moon (advisor: B.R. Hawke, Spring 1999)
Aaron Pietruszka	The Short-Term Geochemical Evolution of Kilauea Volcano, Hawaii (1790- 1998) (advisor: M. Garcia, Spring 1999)
Clark Sherman	Accretion and Diagenesis of a Submerged Pleistocene Reef, Oahu, Hawaii (advisor: C. Fletcher, Spring 2000)
Xinhua Sun	Inversion of Acoustic Waveforms for Velocity and Attenuation (advisor: N. Frazer, Fall 1999)
Maria Luisa Tejada	Geochemical Studies of Pacific Oceanic Plateaus: The Ontong Java Plateau and Shatsky Rise (advisor: J. Mahoney, Fall 1998)
Ronnie Torres	Vent-Derived and Deposit-Derived Pyroclastic Flows and Ignimbrites: Examples at Pinatubo Volcano, Philippines (advisors: P. Mouginitis-Mark and S. Self, Summer 2001)
Zhiyong Zhao	Deformation and Dewatering of the Subducting Plate and Evolution the Decollement Zone Under the Northern Barbados Accretionary Prism: Insights from 3-D Seismic Reflection Data (advisor: G. Moore, Fall 1998)

Student Awards

Agatin Abbott Award

Presented to an outstanding senior each year in memory of department faculty Agatin Abbott.

Juanita Redfern (1999)
 Masako Sugimoto (2000)
 Georgiana Young (2001)

William T. Coulbourn Fellowship in Marine Geology

Endowment by friends and family in memory of department alumnus and faculty member William T. Coulbourn.

Geoffrey Garrison (1999, 2000, 2001)
 Jodi Harney (1999)
 Ole Kaven (2000)
 Zoe Norcross (2001)
 Kierstin Swanson (1999)

Harold T. Stearns Fellowship

Endowed by longtime department friend Harold T. Stearns for the purpose of supporting student research on geological and geophysical problems in Hawaii and the Pacific Basin.

Geoffrey Garrison (2000, 2001)
 Eric Haskins (2001)
 Zoe Norcross (2001)
 Kierstin Swanson (1999)

J. Watumull Scholarship

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

Eric Bergmanis (2001)
 Jennifer Engels (2001)
 Geoffrey Garrison (1999)
 Eric Kendrick (2000)
 Margaret Milman (2000)

ARCS Foundation Award

This award is sponsored by a nation-wide group of women who raise nearly \$100,000 annually for university students nation-wide.

John Rooney (2000)

New Faculty and Staff

Rob Dunn

Rob Dunn's research interests include the constitution and dynamics of the mantle and the formation of crustal magmatic systems whose origins are related to mantle processes. Recent work includes seismic tomography studies of the northern and southern East Pacific Rise, seismic anisotropy, crustal porosity, bathymetric surveying methods, and surface wave propagation and modeling. Rob joins our department in January '02 (coming from Brown University). He attained a PhD in Geophysics from the University of Oregon and holds a BS in Aerospace Engineering and Mechanics from the University of Minnesota.



Once in Hawaii, Rob will pursue a research program to study mantle dynamics and lithospheric rifting in a variety of settings, from mid-ocean ridges to continental rifts, and will develop seismic methods for exploring these regions at both crustal and mantle depths. Because the nature of extension and magmatism varies dramatically with spreading rate and magma flux, he is interested in mid-ocean ridges and rifting in a variety of geographic locations, including the fast spreading East Pacific Rise, the super-fast spreading southern East Pacific rise, the slow spreading Mid-Atlantic Ridge, sub aerial sections of ridge in Iceland, exposed sections of oceanic crust and mantle found in ophiolites (Oman), and the Red Sea rift. One of his goals is to compare and contrast magmatism at a variety of settings to better understand what controls the generation of melt and its transport to volcanic features on Earth's surface. Along these lines, two new projects he brings to Hawaii include: (1) A three-dimensional seismic tomography study of the crust and uppermost mantle beneath the slow-spreading Mid-Atlantic Ridge. The goal of this project is to investigate the manner in which mantle derived melt is fed to slow spreading ridges and contrast it with similar work from the fast-spreading northern East Pacific Rise. (2) A surface wave tomography study of upper mantle seismic structure beneath the super-fast spreading southern East Pacific Rise. This project will use short-period surface waves to investigate the transition between the deep and shallow portions of the mantle upwelling zone and magmatic system beneath the southern EPR, a region that has been difficult to study with conventional body wave or surface wave data.

Rob will also continue research on a mantle imaging experiment that is designed to determine variations in the mantle melt supply along a section of the northern East Pacific Rise and correlate these variations with the morphology of the ridge. The first results of this project were published recently in *Science*.

Eric Gaidos

Eric Gaidos joined the Department of Geology and Geophysics this fall as Assistant Professor of Geobiology. Eric hails from the Division of Earth and Planetary Sciences of the California Institute of Technology and, previously, from the NASA Jet Propulsion Laboratory in California. As a biologist, his interests include the functioning and genomic basis of ecosystems, particularly microbial ecosystems, their evolution over Earth history, their effect on Earth geochemistry and climate, and their role in extreme climate events including the Neoproterozoic low-latitude "Snowball" glaciations. As a planetary scientist he studies the behavior of liquid water on Mars and Europa (a satellite of Jupiter), the implications for the search for life on those worlds, and the possible formation of Earth-like planets around other stars.



He is establishing an integrated experimental and computational laboratory to carry out his research and will be active in teaching Earth History courses as well as developing a Geobiology curriculum. He is the Principal Investigator of a NSF Biocomplexity project that will search for microbial life in an ice-covered caldera lake in the Grimsvotn volcano on Iceland. He is also the lead investigator in a long-term, collaborative project to characterize the environment around young, nearby stars that are analogs to the ancient Sun and early solar system, and looks forward to using the world-class telescopes on Mauna Kea in that effort.

Eric received his B.S. from Caltech in 1988 and his M.S. and Ph.D. from MIT in 1991 and 1996. A native of Oregon, Eric is highly outdoor-inclined and is eager to pursue his favorite non-academic pursuits (scuba diving, hiking, long-distance running, and bicycling) on Hawai'i.

Julia Hammer

Julia Hammer attained a B.A. from Dartmouth College (1993) and holds a Ph.D. in Geological Sciences from the University of Oregon (1998), where she studied magma crystallization and vesiculation processes in natural and analog materials with Kathy Cashman and Michael Manga. After receiving her degree, Julia traveled and worked as a consultant at the New Zealand Institute of Geological and Nuclear Sciences in Taupo, NZ for several months. An NSF Postdoctoral Fellowship allowed her to expand research approaches to include experimental petrology, and has been with the Geochemistry & Petrology group at Brown University as a Research Associate since 1999.



Arriving on campus in January 2002, Julia will establish a laboratory for studying geologic materials at high tempera-

tures (600-1200 °C) and at pressures corresponding to a depth range in the Earth's crust of 0-30 km (1 atmosphere and 1000 MPa). In addition to experimental methods, Julia uses field and analytical techniques to study the physics and chemistry of magmas as they accumulate in crustal storage regions, undergo mixing and re-equilibration, and ascend to the surface during volcanic eruptions. Her current and recent research projects at Novarupta (in the Valley of Ten Thousand Smokes, AK), Mt. Pinatubo (Philippines), and Merapi Volcano (Java, Indonesia) are aimed at gaining a better understanding of subsurface plumbing systems and magma transport dynamics. She has also delved into research in the Taupo Volcanic Zone (New Zealand), Vesuvius (Italy), and Mt. St. Helens (WA). She looks forward to expanding her research program to include Hawaii, other parts of the Alaskan and Indonesian arcs, the Kamchatka Peninsula (Russia), and volcanic processes occurring on other planets with collaborators and students.

Andy Harris

Andy Harris' route to UH was via a BA. Hons., Geography, Exeter University (U.K.): 1988; MSc., Remote Sensing, Image Processing and Applications, Dundee University (Scotland): 1992 and his PhD., Earth Sciences, The Open University (U.K.): 1996. His research interests include remote sensing of volcanoes, lava flow cooling & emplacement, Strombolian and fumarolic activity

Current Research projects include: Use of TM, ETM+, GOES and AVHRR satellite data to monitor and measure volcanic activity; Design and installation of ground-based, real-time thermal monitoring systems; Field-based measurements of lava flow cooling; Construction and application of lava flow emplacement models; Measurement and analysis magma supply rates and lava effusion rates; Field and satellite-based analysis of river aggradation downstream of active lava domes; Field-based measurements of conduit processes at Stromboli; Field-based measurements of fumarolic activity at Vulcano; Study of sulfur flow emplacement mechanisms and deposits.



Garrett Ito

Garrett Ito, while an undergraduate student at Colorado College, stowed away on a geophysical research cruise to study seamounts in the western Pacific. Not surprisingly, this cruise sparked Garrett's early interest in marine geophysics, which he now brings to the Geology department. Garrett graduated from Colorado College with a major in Physics and then spent a year at Lawrence Berkeley Laboratory working with an astrophysics group looking for supernovae. Though the group found two exploding stars during his stay at Berkeley, Garrett's found the real light when he entered grad-



uate school in the MIT/Woods Hole Joint Program in Oceanography. There he returned to the western Pacific with his general's project advisor Marcia McNutt, which spurred his interest in the crustal accretion of oceanic plateaus. Garrett's main thesis topic, however, was on the interaction between hotspots and mid-ocean ridges. Advised by Jian Lin,

Garrett's thesis combined studies of regional gravity and topographic anomalies with numerical models of 3D mantle convection to study the mantle dynamics of hotspot ridge interaction. After completing his Ph.D. in 1996 Garrett accepted a post-doctoral fellowship at the University of Hawaii. There, he continued his work on plume-ridge interaction but also pursued further studies of oceanic plateaus and began a new research direction involving laboratory experimentation. Garrett returned to the U.S. mainland in January 2000 to join the Geology faculty at UC-Davis as an assistant professor in geophysics.

Garrett's current research interests are on the mantle and lithospheric processes associated with hotspot volcanism on Earth. His recent work on oceanic plateaus has focused on the accretion of the largest igneous edifices on Earth. His work has included using subsidence records and marine gravity anomalies to understand the growth history three Cretaceous plateaus. This work has broader relevance to understanding the nature of the mantle sources as well as how the eruptions of these plateaus may have impacted global climate during the Cretaceous period. As more relevant to the Quaternary, the experimental work that Garrett began at Hawaii deals with magma transport through the mantle. Magma transport is the critical link between volcanism observed at the surface and dynamics of the mantle source. By injecting fluid into gelatin, Garrett simulates the formation and interaction of dikes; and in conjunction with numerical models he can make simple predictions of how dike interaction can focus magma from the source to the surface. Finally, Garrett continues geophysical and theoretical research on plume-ridge interactions. He is also currently working on numerical models of the time-dependence of plumes. Such time dependence is evident in prominent V-shaped crustal ridges that extend several hundreds of km south of Iceland onto the North Atlantic seafloor.

Kent Ross

D. Kent Ross joined the Department of Geology and Geophysics in April, 2001, as an Assistant Specialist in Electron Microprobe and X-ray Fluorescence Spectrometry. Kent is taking over the reins from Clifford Todd, who left the Department for a position at DOW Chemical last year. He will be offering a course in electron microprobe methods annually.

(continued on page 10)

Kent was at the University of Houston, Texas Center for Super-conductivity, applying skills obtained in geochemistry research to problems in materials science, solid state chemistry and solid state physics. His efforts there were focused on using electron beam methods, electron probe and scanning electron microscopy, in research in superconductivity and the crystal chemistry of novel synthetic perovskites for use in fuel cells.



Kent is an igneous petrologist and high-temperature geochemist. His work has focused on the use of major and trace element crystal and rock chemistry as a tool to understand magma evolution in basaltic magma chambers. Kent's research efforts in geology are concentrated in Mid-Ocean Ridge magmatism, and plutonic rocks from layered intrusions. He has worked on plutonic rocks from the Mid-Atlantic Ridge, the Stillwater Complex in Montana, an Archean ultramafic-mafic layered intrusion and the Duke Island ultramafic complex, an arc-related layered intrusion in southeastern Alaska.

Kent's current research includes geochemical and petrological studies of abyssal peridotites - mantle samples from Mid-Ocean Ridges, and ongoing geochemical studies of oceanic gabbroic rocks. These efforts are aimed at under-

standing the melting processes that produce mid-ocean ridge basalts (MORB), post-melting processes that modify abyssal peridotites, and the fractionation of MORB in magma chambers. Kent uses electron and ion probes to determine mineral compositions and X-ray fluorescence and neutron activation analysis to determine major and trace element compositions of rocks. Last year, Kent was a cruise participant on the R.V. Atlantis and dove in the research submersible ALVIN. The cruise was investigating tectonic and magmatic processes at the Mid-Atlantic Ridge at 30°N. The cruise resulted in the discovery of a new type of hydrothermal vent system with venting chimneys up to 60 meters in height. These vent chimneys are built from carbonate, rather than sulfide, which is typically found in ocean ridge hydrothermal vent fields.

Kent received his BSc from Ohio State University in 1982 and later pursued graduate studies at the University of Houston, where he was granted an MSc in 1988 and then the PhD, in 1994.

Arlene Sullivan (staff)

Arlene Sullivan appears to have found her niche in the MEG Group. She joined us in April coming from Electrical Engineering and quickly acclimated to the new POST facilities and that wonderful view from her 7th floor office window, any discomforts have been offset by that neat group on the 7th floor.

UHM Community Service Award Recipient

Charles "Chip" Fletcher, professor in the Department of Geology and Geophysics, is the recipient of the Robert W. Clopton Award for Outstanding Service to the Community. Fletcher has been educating politicians and the public about the impact of coastal erosion for over a decade. His vision, volunteerism and devotion to coastal geology have influenced the current change in government and our communities regarding the proper stewardship of our shores.



The Clopton award recognizes a UH Manoa faculty member who has accepted a socially significant role as an intellectual leader and exemplar beyond the campus and who has applied academic expertise to the improvement of the community.

Fletcher worked on developing various coastal policies for the state, sometimes without compensation. He worked on the Coastal Erosion Management Plan, which was adopted by the state Board of Land and Natural Resources and serves to guide coastal policy. He was also instrumental in developing the state shoreline hardening policy.

When the county of Kaua'i proposed to build a seawall on a sandy beach to save a golf course, the club turned to Fletcher. He proved that there was no data supporting the county's claim that the golf course was in danger, and the project has been put on hold indefinitely. On Maui, the director of planning, the county council and the planning commission agreed to redesign the shoreline permit rules to increase setback, enact a dune grading ordinance and allocate significant funds to purchase sensitive coastal lands for protection from development.

Fletcher is committed to the community around him. He has been able to improve our community through scholarship, dedication and perseverance.

Faculty News

Janet Becker's current research includes developing dynamical models of the interaction of ocean waves and beaches in an effort to understand the formation of regular sea-bed morphologies such as sand bars and beach cusps. Janet also studies how seafloor topography affects solutions of theoretical models of the general ocean circulation .

Pat Cooper, Interim Associate Dean, Seismologist. Her research includes resource assessment: 3-component, short-period data set obtained in Puna geothermal region, Hawaii, inverted for p- and s-wave velocity structure. Also she is looking at velocity structure, locations and source mechanisms of earthquakes and shear-wave polarization to be related to geothermal reservoir characteristics.

Fred Duennebier's research interests are in earthquake seismology, with particular interest in instrumentation of the ocean floor using cabled observatories. Fred and engineers at SOEST have installed two observatories connected to shore in Hawaii. One, HUGO- the Hawaii Undersea Geo-Observatory, was installed in 1997 on Loihi volcano with a fiber-optic cable to shore. It operated for six months but the cable failed in the rough volcanic terrain. (<http://www.soest.hawaii.edu/HUGO/hugo.html>). The Hawaii-2 Observatory (H2O), located about half way between Hawaii and California, is connected to a decommissioned telecommunications cable. H2O is a joint project with IRIS and Woods Hole Oceanographic Institution. Data from H2O come to SOEST in real-time, and are transmitted to the IRIS earthquake center in Seattle. (<http://www.who.edu/science/GG/DSO/H2O/index.html>) A similar observatory is being considered for installation at the Hawaii Ocean Time-Series site for ocean monitoring at Station Aloha, north of Oahu. This observatory would utilize the ANZCAN cable between Hawaii and Canada.

Aly I. El-Kadi is a hydrogeologist. His recent research covers application and assessment of various types of groundwater models; modeling and field assessment of multiphase flow and transport of hydrocarbons; numerical modeling; flow and transport in field soils; databases and geographic information systems; bioremediation in tidal aquifers; contamination by agricultural and cesspool sources. His current research projects include: Field analysis and modeling of diesel contamination and remediation in a site on Oahu; Identifying current pollution levels and identifying sources of contamination for the Nawiliwili Watershed, Kauai (aimed at developing a restoration and protection plan for the watershed); Assessing water resources in Hawaii to delineate water sources within each public water system. (includes data collection, modeling, and global and geographic information systems); Hydrological evaluation of the Ke Iki Road

Subwatershed, Oahu to develop a strategy for flood mitigation through the use of data collection and modeling.

Pow-foong Fan is teaching Geology of the Hawaiian Islands and the Freshman Seminar. In teaching GG103 in the afternoon he has become very popular with the UH- Athletics Department who have filled his course with their students. His research involves the energy and mineral resources of Asia.

Chip Fletcher and the Coastal Geology Group are conducting research projects on two fronts: Historical Shoreline Dynamics and Geologic History of Hawaiian Reefs. We are focused on finishing the mapping of Maui beaches this year and the construction of a public erosion data repository, see the coastal homepage and use the Maui Erosion link (http://www.soest.hawaii.edu/coasts/cgg_main.html). Our reef work has shifted to the Island of Molokai. There we are using a combination of long and short coring techniques to determine the age and accretion history of the south shore fringing reef.

Neil Frazer's current work is in the area of finite-frequency tomography. In tomography, as everybody knows, a problem arises when there are no rays through a particular block. Finite-frequency tomography is even more difficult because it has been thought to require a knowledge of both source and receiver spectra. These two problems appear to have been overcome in Neil's new theory, and he's pretty excited about it, boring anyone who'll listen. His other interests include the collapse of coastal fisheries (go figure) and humpback whale song, which he believes to be a form of sonar.

Mike Garcia's research is focused on the magmatic processes within active Hawaii volcanoes, especially Kilauea and its current eruption. He is also involved in examining the evolution of the Hawaiian plume by drilling with the Hawaii

(continued on page 12)





Scientific Drilling Project and by examining thick sections of lavas exposed by landslides on the submarine flanks of Mauna Loa. Additional projects include evaluating the magmatic history of Koolau Volcano and the giant landslide that removed ~40% of the volcano.

Craig Glenn's research interests are in the areas of paleoceanography, stratigraphy and sedimentology, submarine groundwater discharge, sedimentary petrology, low temperature geochemistry, light-stable isotope geochemistry and inorganic-organic chemical interactions as applied to studies of the deposition and diagenesis of carbonate, orthochemical and organic-rich sediments and rocks. His more recent studies include the sea level and sequence stratigraphic history of the Great Barrier Reef; authigenic mineralization off the Great Barrier Reef; studies of authigenic mineralization (particularly phosphate mineralization) occurring today beneath the upwelling system off the coast of Peru; using P concentrations and C /O stable isotopes, Sr and Nd radiogenic isotopes, and Cd and REE analyses for correlating and investigating phosphorus accumulation and burial rates and water mass migrations of the Upper Cretaceous of the southern Tethyan margin (Egypt, Israel, Jordan); the climatic and Holocene sedimentation history of a isolated anoxic pond on the Ewa Plain; and studying the flux and pollutant effects of submarine fresh groundwater discharge into coastal embayments in Hawaii. Craig is a Fellow of the Geological Society of America and was recently the lead editor on a book entitled Marine Authigenesis: From Global to Microbial, SEPM Special Publication Number 66, 536p.

Bruce Houghton had a dynamic field trip to Etna with grad student Julia Sable, arriving one day before the onset of the July-August flank eruption and staying for a highly explosive week. Work on the Vesuvius 79AD eruption with Lucia Gurioli has also progressed through new field work and lab analysis of pumice textures. Two new NSF grants will permit work to begin this semester on the explosive precursors to the Karoo flood basalts in South Africa and on eruption process-

es for the 1912 AD Novarupta eruption in Valley of 10 000 Smokes, Alaska.

Patty Lee has been very busy, keeping track of the undergrads via the Geology Club & department Student Committee, raising travel support for them by printing t-shirts each year, providing muffins & coffee daily, and soda machine returns. In addition she is teaching large classes of GG101 (still looking for the perfect class format) and decorating the blank wall spaces with each semester's posters. At present she is pulling the 2002 SOEST Open House together; organizing and leading the department big island field trip each semester; running a small business & trying to play golf (as time and body permit); and still have some kind of family life! What a challenge!

John Mahoney has been spending too much time at sea, with recent cruises to the Kerguelen Plateau and Broken Ridge in the Indian Ocean, and the Galapagos spreading center and Ontong Java Plateau in the Pacific. This fall, it's the Nazca Ridge. His work on Tibetan ophiolites and the Deccan Traps of India continues, but a planned field expedition to western Pakistan now seems out of the question.

Steve Martel is continuing work with graduate students on how faults develop, combining mapping in the Sierra Nevada and on the island of Hawaii with theoretical mechanical analyses. He has discovered a new way for faults to form that allows a planar fault to acquire a length of several kilometers or more: the "tearing" of solidified dikes. He also has shown that the fracturing near a fault end can and should vary as a function of the size, or scale, of the fault. This is important because many predictions about how faults grow, link, operate, and transmit fluids currently are founded on the assumption that fault processes are scale-independent.

Ralph Moberly continues a small-scale investigation of the composition and fabric of deep-sea siliceous sediments.

Greg Moore's work on subduction zones has focused on the Nankai Trough south of Japan and has included a 3-D seismic reflection cruise (1999) and an ODP drilling leg (2000). He has also been working on the giant landslides off the Hawaiian Islands, including a 2-D seismic reflection cruise (1998) and bathymetric mapping/coring/dredging with the Japanese (2001).

Brian Popp's research programs address processes that shape marine stable isotopic records and also include study of the origins of dissolved gases in seawater and the fate of ammonium in deep-sea hydrothermal plumes. He is determining how growth rate affects carbon isotopic fractionation in naturally occurring alkenone-synthesizing algae and investigating at what depth in the water column the temperature-dependent unsaturation pattern is encoded in alkenones. He is

also investigating how the strong atmospheric greenhouse gases methane and nitrous oxide form in seawater using their stable isotope compositions. He is also involved in a project that examines the fate of hydrothermally injected ammonium into the deep-sea environment. Ammonium is the least studied of metabolically exploitable reduced constituents in hydrothermal plumes and could be a significant substrate for chemolithoautotrophic production of organic carbon. Lastly, he is in the process of upgrading the Stable Isotope Biogeochemistry Facility. The third state-of-the-art stable isotope mass spectrometer will be purchased in 2002 and will be capable of on-line hydrogen isotopic analyses of organic materials as well as the isotopomer distribution of nitrous oxide (i.e., the intramolecular distribution of nitrogen isotopes within the linear NNO molecule). All of the research programs are funded by the National Science Foundation.

Kent Ross's research is presently focused on geochemical and petrological studies of abyssal peridotites and gabbros. Peridotites are the residuum from sub-oceanic ridge melting that produces mid-ocean ridge basalts (MORB). Gabbros are the products of subsurface crystallization of MORB, and enable us to investigate fractionation and evolution of MORB.

Ken Rubin is an Associate Professor in the GG Department who joined the faculty in 1995. His main research and teaching interests are in the geochemistry of earth's surficial environments (both low and high temperature), and the effects and magnitudes of human perturbations to those natural environments. His federally-funded research programs span applications to submarine and subaerial volcanology, coral reef accretion, marine chemistry and shoreline processes. His research group uses mass spectrometry and radioactive counting methods to examine the timescales of natural processes using radioactive isotopes found in nature and the distributions of other chemical elements. The group works in and shares an ultra-clean chemistry facility with professor John Mahoney. He is also actively devoted to our modernized earth sciences curriculum. In the past 5 years he has developed and taught two new upper division courses covering these topics (GG325 Principles of Geochemistry and GG425 Environmental Geochemistry). These courses have proven popular to students both within and without department, routinely drawing roughly 50% of their enrollment from students in the departments of Civil Engineering, Geography, Chemistry and Oceanography. Rubin also enjoys helping out the department and school in numerous ways, including design and maintenance of the both GG and SOEST's web sites and co-running of the department's student computer rooms.

John Sinton's research time currently is split among three major field projects and follow-on petrological studies. These include (1) a mapping and geochemical study of the post-glacial volcanics of Iceland's Western Volcanic Zone, (2) the study of volcanic eruptions along portions of the southern East Pacific Rise, using samples and observations from deep-towed side-scan sonar, and the Alvin submersible, and (3) a study of ridge-hotspot interaction along the Galapagos Spreading Center, using geophysical observations and extensive dredge sampling.



Brian Taylor's research centers on the geomorphology, structure, stratigraphy, magmatism, and tectonics of active continental rifts and trench/arc/backarc systems. It is currently focused on the processes of continental and arc rifting, backarc spreading, and forearc-arc-backarc tectonics/volcanism. He utilizes a multidisciplinary approach, including collection and analysis of underway geophysics and multichannel seismics/OBS, sidescan and bathymetry swathmapping, bottom sampling, and earthquake studies. Current projects (each involving recent or upcoming cruises, and numerous co-I's) include:

- 1) Natural seismicity investigation of active continental breakup in the western Woodlark basin, PNG.
- 2) Deep seismic imaging of active continental extension in the Gulf of Corinth, Greece.
- 3) Tectonic, magmatic and stratigraphic development of conjugate margins of the Gulf of Aden - recent events shifted this cruise and project to the continental margins of western Australia.
- 4) Multi-scale seismic imaging of the Mariana subduction factory.

Paul Wessel has fond memories of doing research before being appointed Chair. Nowadays, he carves out a few pre-dawn hours for research before the full brunt of administrative chores beats him to a pulp. He regenerates overnight from intravenously dispensed Diet Coke and brief sightings of family members. When he does research it is all about absolute plate motions, particularly involving the Pacific plate and its neighbors (he is going with John Mahoney to survey the Nazca Ridge this fall), as well as the ongoing Generic Mapping Tools (GMT) projects.

Cooperating Graduate Faculty News

Bruce Appelgate's research interests include the structure and tectonics of midocean ridges, with an emphasis on the Juan de Fuca, Reykjanes, Kolbeinsey, and Arctic spreading centers. As a member of SOEST's Hawaii Mapping Research Group, he's involved in the collection, processing and interpretation of sonar imagery and swath bathymetry to resolve ocean crustal structure, volcanic processes, sedimentation patterns and plate tectonics processes. Our Group specializes in the development and operation of mapping sonars, especially phase-difference sidescan bathymetry systems like the HAWAII MR1, the DSL-120 and the forthcoming UH 30kHz towed sonar.

Bernard Ray Hawke is currently conducting remote sensing and geologic studies of the Moon and Mercury in order to determine the composition of surface units and to investigate planetary surface processes.

Chuck Helsley retired at the end of 1999 but is still actively involved in research programs on campus. His primary interest these days is offshore aquaculture and he has been the PI of several successful demonstration and research projects in this area during the past three years the most notable of which was the growing of MOI in a large offshore totally submerged cage in 1999 and 2000. This pioneering effort is now being continued by local industrial activities. On a more geological note, he and Barbara Keating have been mapping elevated strandlines on Lanai where beach deposits containing coral and mollusk fragments have been documented to be in place at elevations up to 200 meters above the modern shoreline.

Floyd McCoy's continuing focus of research is the massive eruption of the volcano Thera (Santorini, Greece) in the Late Bronze Age, and the consequent regional effects by tsunami, ash fall, seismic activity, etc., as might be detected at archaeological sites nearby. Additional work is concerned with mapping the pre-eruption topography of the island using geophysical techniques.

Pete Mougins-Mark (HIGP) has a wide range of interests in planetary volcanology, remote sensing and natural hazards. His current research takes him from Mt. Pinatubo in the Philippines and the Galapagos Islands to the volcanoes of Mars. He is a Science Team Member on the Space Shuttle Radar Topography Mission, the European ENVISAT mission, and he heads a NASA inter-disciplinary science investi-



gation into the impacts of volcano degassing at Kilauea and Masaya volcanoes. Pete is also heavily involved in providing scientific oversight of numerous remote sensing initiatives related to work done by the Pacific Disaster Center

Scott Rowland is currently teaching a variety of classes for G&G and doing research at HIGP. His research involves using a variety of remote sensing data sets to study the morphology and activity of Galapagos, Hawai'i, and Indonesia volcanoes.

Ed Scott teaches GG466 Planetary Geology and his research is focussed on meteorites from asteroids and Mars. The goal is to learn about geological processes on small planets especially the role of impacts and to understand how the Earth and other planets formed from a disk of dust and gas 4.56 billion years ago.

Roy Wilkins has, for the past 2 years, been on loan to the Office of Naval Research in Washington. He has been serving as the manager of the Marine Geosciences Program. He will return to U.H. in October, when he will resume working with the Hawaii Scientific Drilling Program in Hilo as well as pursuing studies of sediment physical properties.

Alumni News

1960s

- **Harimohan Bhattathiri ('65)** retired as a Director of College of Education in India
- **Ninendra Khoj Maske (MS'68)** recently retired as a senior divisional geologist and chief of mineral exploration with the Department of Mines and Geology in Lainchaur, Kathmandu. He has now joined the Road Maintenance and Development Project, a joint venture of SMEC (Snowy Mountain Engineering Corporation, Australia) and CEMAT Consultants Pvt. Ltd, Nepal as an engineering geologist.
- **Fris Campbell ('62)** works for Fugro Seafloor Surveys Inc. as a Vice President

1970s

- **Marion Malinowsky (MS'77)** is a geologist/environmental education specialist with the Bureau of Land Management in Colorado.
- **Bruce Schenck (MS'78)** is a system administrator with Omaha Public Power District in Iowa.
- **Donald Markle (BA'72)** is the executive director of South Carolina Electric and Gas.
- Ever since **Laurence Bentley (MS'74)** traded his surfboard for a hockey stick and a pair of cross country skis, many other changes in his life have taken place. He's currently an associate professor at the University of Calgary and he and his wife, Kathryn have three children, Alistair, Meghan, and Ian.
- **Mayo "Gene" Ryder (MS'70)** retired as head of a physical science environmental field program and is now with the U.S. Department of Energy.
- **Mark Odegard (PhD'75)** is vice president for U.S. Operations at Geophysical Exploration Technology (GETECH) in Sugar Land, TX and was a supervisor for the Unocal Potential Field Group prior. His daughter, Liv, graduated from the University of Alabama in December 2000 in public relations and communications and has an antique business (www.getech.com/users/eso/).
- **Stephen W. Wheatcraft ('79)** works for University of Nevada, Reno, as a professor.

1980s

- **Mike Jackson ('80)** now works for Veritas DGC as a Senior Geophysicist having worked for 15 years at Exxon, including 3 years as expat on Sakhalin Island, Russia. Now working mostly with Pemex (Mexican Nat'l Oil Co).
- **David Grooms (MS'80)** is an instructor at Maui Community College.

- **James Coletta (BS'84)** is a staff geologist at Radian International in Utah. He and his wife, Susan Johnston had their first child in 1999.
- **Marc Dexter (BS'87)** left his position as senior geologist with Hawaii International Environmental Services to pursue his own ecotourism company. He is now president of Hawaiian Island Eco-Tours, Ltd., which conducts guided nature tours on Oahu, Maui, Kauai and the Big Island. Marc is also a registered professional geologist who acts an independent consultant for several environmental engineering firms in Hawaii.
- **Vindell Hsu (PhD'81)** now lives in Florida where he is a senior geophysicist at the Air Force Technical Applications Center and conducts seismological research for monitoring nuclear explosions.
- **Brian Iwatake (MS'82)** is an engineer with the Naval Undersea Warfare Center, Rhode Island...
- **Carlos Mortera-Gutierrez (MS'84)** completed his PhD at Texas A&M in 1996 and returned to Mexico City to become a researcher at the National University of Mexico. His research interest is focused on marine geophysics and the subduction processes along the Middle American Trench. He also spent New Years Eve 1999 with **Richard Boshier (MS'82)** while visiting Denver, CO. Richard resides south of Denver with his family and formed a company with his former colleagues from AMOCO to provide internet services to the oil industry...
- **Patricia Cooper (PhD'85)** is the interim associate dean for the School of Ocean and Earth Science and Technology here at UHM. Her daughter, Bonnie, is a junior at Rutgers majoring in chemistry and minoring in physics. Her son, Russ, is a sophomore at the California Maritime Academy...
- **Geary Tagawa (BS'85)** is now in the computer industry but still remembers the good old days of Geology & Geophysics. He and his family reside in Elmendorf, TX...
- **Mrinal Sen (PhD'87)** is a senior research scientist at UT-Austin. Find out more about what he's been up to at his website: www.ig.utexas.edu/staff/mrinal/mrinal.htm...
- **Dennis Lindwall (PhD'88)** is a geophysicist at the Naval Research Lab in Stennis Space Center, MS.
- **Subhashis Mallick ('87)** works for WesternGeco as a Principal Research Geophysicist

1990s

- **Jennifer Parker (BS'93)** is a water resource specialist for the New Mexico Environment Department.
- **Jeff Cotter (MS'90)** is a project manager at CH2M HILL in Honolulu. He works on environmental investigations and remedial actions at Navy and Air Force facilities in the Pacific as well as commercial facilities. In his spare time

(continued on page 16)

he still surfs, windsurfs, paddles, mountain bikes, and snowboards as much as possible.

- Anne and **Adam Klaus (PhD'91)** are proud first-time parents when Marley Ann arrived on October 25, 1999.
- **Bertram Nolte (PhD'95)** is a project scientist with Texaco in Houston.
- **Robert Muse (BA'97)** is employed as a geologist with Brewer Environmental in Honolulu.
- **Delwyn Ching ('93)** works for Edward K. Noda and Associates in Honolulu as an Environmental Engineer and is working on a Master's at UH in Civil Engineering - Environmental Engineer.
- **Yaoling Niu (PhD'92)** is busy with teaching and spending time with students as a senior lecturer at the University of Queensland, Australia. He's also involved with writing proposals, collecting numbers on probe, ICP-MS, ICP-OES, TIMS, and occasionally repairing these machines. When not indoors, he's been able to involve himself with exciting field trips like the one he took to Qilian Mountain to obtain the freshest peridotites.
- **Rajan Sivaramakrishnan ('95)**, works for the Government of India as a Head-Planning & Coordination for the Delineation of the Outer Limits of the Indian Continental Shelf, a project for the United Nations Commission on the Law of the SeasWA.
- **Peter Wegner (BS'97)** resides in Cornish, New Hampshire.
- **Nancy Baker (MS'92)** graduated from Youth With a Mission's School of Biblical Studies in June. After enjoying some time off with family and friends she will teach Bible seminars to church leaders in Malaysia, Thailand, Myanmar and Indonesia. In late December she will be back in Hawaii for rest and reunion with friends through the holiday.
- **Mike Chandler (BS'98)** is employed as an assistant survey technician by NOAA aboard the survey vessel *RUDE*, a 90 foot-long vessel carrying instrumentation such as a

sidescan sonar, multi-beam sonar, echo depth sounder, and DGPS. More information on the *RUDE* can be found at www.pmc.noaa.gov/ru/undex.html.



- **David O'Brien (PhD'90)** is the database manager of all cancer patients in Alaska with the Alaska Department of Health's epidemiology section. He said his work is similar to what he was used to while employed at Exxon. Instead of receiving standardized data from labs on chemical contaminants in soil and groundwater, he now receives standardized data from hospitals on cancer in people.
- **Eric Bergmanis (MS'98)** and **Colleen Parry (BS'98)** were married in summer 1999 at Kualoa on Oahu. Eric is continuing on his PhD in Geology and Geophysics and Colleen is pursuing her MS in Geography. The Bergmanis' had their first child in mid-May 2001.
- **Joseph Ingignoli (MS'99)** is a unit commander in the U.S. Army stationed in Ft. Lewis.
- **Barbara Bruno (PhD'94)** is an assistant professor at Broward Community College in FL.
- **Lester Sacks ('96)** lives in Windsor, California.
- **Kelly Klepinger (BS'97)** is a staff Geologist at Camp Dresser & McKee in California. He and his wife, Myra, have a three-year-old son named Ryan and Tomi was born in mid-May 2001.

2000s

- **Kirsten Zellmer (MS'00)** is a research associate at Lawrence Berkeley Labs in California.
- **Loyc Vanderkluyzen (2000)** is a Graduate student at the University of Lausanne, Switzerland.
- **Marc Holland (2000)** is at RWTH Aachen as a Student.

Investment Gift Towards the Future

The Department is deeply grateful to all its alumni, faculty and friends who have made generous monetary gifts over the past few years. Contributions toward our endowed scholarships allow us to continue offering opportunities for research assistance, purchase software for our computer labs, and continue offering field trips throughout the Hawaiian Islands. Monetary donations can truly provide a difference in the lives of our students. Your contributions may be given toward one of our endowed scholarships or toward the department's discretionary fund. If you would like more information contact Leona Anthony by phone (808 956 8763) or email (lanthony@soest.hawaii.edu)

New SOEST T-Shirts

For the 2001-2002 school year, the SOEST T-shirt is designed to reflect aspects of the school's activities – geology and geophysics, atmospheric sciences, oceanography, marine technology and highlights the new research vessel. These T-shirts will go on sale in November from POST 713.



Your turn!

Help us stay in touch with you. Please update your address and other information using either the form below or online at <http://www.soest.hawaii.edu/GG/alumni-input.html>. We would also like to hear if you've changed jobs, received a promotion, or experienced any notable developments in your professional career or personal life. Please let us know so we can share them with others.

Name _____ Semester & Year Graduated _____

Mailing address _____

Telephone/FAX/E-mail _____

Firm/Organization _____

Notable Developments (continue on back of this sheet if needed) _____

Would you prefer to receive this newsletter by regular mail, e-mail, or via the internet? _____

Would you like to be able to contact other alumni through an alumni homepage at the G&G website? If so, is it okay for us to list your name and e-mail address? _____

Alumni information update form (continued)

Announcements

SOEST at AGU

Check out what is happening at University of Hawaii by looking up our booth # 404 – details of courses, and events including the SOEST reception

SOEST Open House

The 6th biennial SOEST Open House will be held April 19-20, 2002. The traditional October event is being postponed to March due to construction to the POST building. The theme, Extreme Science Hawaii has been selected to carry out this two-day event. The Open House continues to expand in attendance, with the number of display and exhibits, and expenses. Please contact Leona Anthony at 956-8763 or e-mail her

at lanthony@soest.hawaii.edu if you or the business at which you are employed can make a contribution toward this event. We will be in need of the following types of donations: monetary, supplies of sorts, and time. The first day of this two-day event is aimed at accommodating large school groups while the second day is dedicated to families and the general public. Detailed flyers will be mailed out in February 2002.

TGIF Seminar Series

TGIF seminars are held every Friday afternoon at 4.00 pm in POST 723 during the fall and spring semesters. These presentations are vital to keeping us informed about research inside and outside of UH and in stimulating new ideas. For details of past, present and future topics please look up <http://imina.soest.hawaii.edu/GG/TGIF/>

Johanna Resig Retires

For more than forty years of her academic career, Dr. Johanna Resig was accustomed to being the only woman in her group – first as a baccalaureate student at the University of Southern California and later as a staff member at University of Hawaii.

Dr. Resig graduated with a Masters degree from the University of Southern California and was awarded a Fulbright Scholarship to do her PhD at the University of Kiel, in Germany. Her memories of her time there are of standing in frozen sand at the beach, celebrating when the sun appeared, and wearing a heavy loden coat everyday.

The change from this to her appointment as an assistant researcher at the University of Hawaii in 1965 couldn't be more of a contrast. Initially, Dr. Resig worked in the Department of Oceanography, then moved into the Hawaii Institute of Geophysics before taking on the role of research and teaching paleontology, micropaleontology and Earth History in the Department of Geology and Geophysics.

Like many before her and since, Dr. Resig took classes in geology as a lab science requirement for her degree, but found it interesting and stayed with it. This led her to the field of micropaleontology, the study of single-celled protists, and to using them to resolve the ages of strata, and determining such paleo-environmental factors as water depths and climates. Her keen interest in this field led her to discovering a new type of foraminifer, which later was named after her. Her work has had her involved in being part of large collaborative projects on the Ontong-Java Plateau in the equatorial Western Pacific, and the Nazca Plate (off the shores of Peru) as well as in the Ocean Drilling Program. In part because of her research in the Solomon Islands, her most recent shipboard

work in ocean drilling had her doing biostratigraphic dating on the Woodlark Basin near Papua New Guinea, looking into how a new ocean basin is forming through sea-floor spreading.

Paleontology was a required course for the major for many years, and in the late 1970s, between the retirement of a renowned volcanologist and the appointment several years later of another, her teaching evaluation by students were the department's highest. Over her 35 years here, Dr. Resig has seen her department grow, with a tendency for more specialization as topics are divided up more narrowly. There are definitely more female students and faculty, a larger focus on volcanology and a drop in interest in paleontology. This decline may well be due to changes within the oil industry which now tends to employ more geophysicists than paleontologists. In the 1960s it had been very easy for paleontologists to get jobs in the oil industry, using fossils as evidence for the age and environment of sedimentation of the rocks in oil fields.

Paleontologists still have a major role to play in research, as demonstrated in the Ocean Drilling Program. They are able to help other shipboard scientists know the age of the strata they have reached in their drill holes, and are able to assist the other researchers correlate findings between drill holes. The paleo-methods are a much quicker and more immediate aid to researchers at sea because using radioactive decay methods require a land-based laboratory, more room and more expensive equipment.

Now that Dr. Resig is retiring from the School of Ocean and Earth Science and Technology, she intends to continue with the research she already has underway, but hopes to be able to become more involved in volunteer work and her gardening here in Oahu.

Department of Geology and Geophysics
University of Hawai'i at Manoa
1680 East-West Road, POST 701C
Honolulu, Hawai'i 96822

Address Correction Requested