



## Chair's Message

Welcome to the Fall 2004 issue of *Hana O Ke Kai*.

The department welcomes nine new students this semester, bringing the student population to 33, which is the highest over the last decade. In addition, the department is hosting six exchange students from the Norwegian University of Science and Technology, adding to the diversity of our student body. The Accreditation Board for Engineering and Technology (ABET) has informed the university of the continuing accreditation of the Ocean and Resources Engineering program. The

ABET Final Statement states that the program is a valuable resource to the university and the state and its excellent faculty is committed to delivering a high quality graduate program and helping individual students achieve their educational and career goals. Other program strengths include high level of research funding and active participation of the cooperating and affiliate faculty in the education program. The Statement also points out the need to better assess the survey results in order to demonstrate achievement of program outcomes. The department will begin

the next cycle of program assessment and revision next spring. We will soon re-convene the advisory panels and mail out survey questionnaires to our alumni and the employers of our recent graduates. I encourage your participation in this important process. Your timely responses to our surveys or direct comments to me will provide useful data for program assessment and help



define the future direction of the education program.

*Kwok Fai Cheung*

## Editor's Corner

With this issue of *Hana O Ke Kai*, I will be putting the

ORE newsletter together for the fifth time. It is time to step down from the editorship and let my colleagues continue with the responsibility of providing an excel-

lent source of communication with the alumni and friends of the department. I have enjoyed working with many of you in publishing *Hana O Ke Kai* and am grateful to many alumni and friends of the department, as well as the faculty, staff and students, for their time and

effort in helping to publish the Newsletter. I hope that you have enjoyed reading it as much as I enjoyed publishing it. I'll see you around.

Mahalo Nui Loa.

*R. Cengiz Ertekin*

Inside this issue:	
<a href="#">STUDENTS' VOICE</a>	2
<a href="#">PROJECT NEWS</a>	2
<a href="#">WHERE AM I?</a>	3
<a href="#">COMPANY PROFILE</a>	4
<a href="#">GRADUATES OF THE DEPARTMENT</a>	5
<a href="#">MEETINGS CALENDAR</a>	5
<a href="#">PROJECT NEWS</a>	6
<a href="#">MARINE SCIENCE FELLOWSHIP</a>	6
<a href="#">OPEN FACULTY POSITION IN ORE</a>	7
<a href="#">ORE ENRICHMENT FUND GIFT FORM</a>	7
<a href="#">SOME RECENT PUBLICATIONS</a>	8
<a href="#">ALUMNI NEWS</a>	8

Did you know that you can receive ORE newsletters electronically?

Visit <http://www.ore.hawaii.edu/>

and click the "Newsletters" link.

- Editor—Cengiz Ertekin
- Contributors— Kwok Fai Cheung, Andrew Clark, Edith Katada, Vasco Nunes, Geno Pawlak, Raymond Rojas, Michael Schmicker, Scott Sullivan, John Wiltshire

Send subscription inquiries, address changes, news, and article contributions to: [HanaOKai@ore.hawaii.edu](mailto:HanaOKai@ore.hawaii.edu) or mail them (see the last page for the address)

## Students' Voice

I would like to start by sending, on behalf of the ORE students, best wishes to the newlyweds Ikaika and Lisa Kincaid. The two just got back from Italy and Ikaika is right now finishing his Master's Thesis as he will be defending it at the end of this semester. We wish him all the success in his career.

Congratulations to ORE alumnus, Raymond Rojas and Aveshenda-Lynn Burke who are getting married this coming December in Guam. Raymond was kind enough to invite the ORE department and friends to the wedding ceremony, which will be held on December the 19<sup>th</sup>. He will also be visiting Oahu at the end of this year. Congratulations also to Yoshiki Yamazaki who successfully defended his Master's Thesis on the "Forecast of Tsunamis from the Japan-Kuril- Kamchatka Source Region," and is now full steam ahead on his PhD pursuit. As I write

these words, Danny Merritt is aboard the NOAA R/V Hi'ialakai to conduct a scientific expedition to the Northwestern Hawaiian Islands. The ORE department wishes him and the whole crew a safe and successful trip and you can learn more about this in the expedition website located at [http://hawaiianatolls.org/research/NW\\_HIRAMP2004/index.php](http://hawaiianatolls.org/research/NW_HIRAMP2004/index.php).

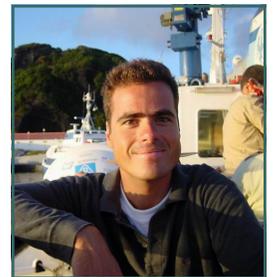
Guided once again by ORE alumnus Dr. Warren Bucher, the ORE Capstone design class will be studying this semester the controversial Waikiki Natatorium Project. This past summer we also had a visit from Prof. Tim Stanton and Prof. Stephen Monismith from Stanford University along with some of their graduate students. The visit consisted of three weeks of field observations in the Kewalo basin that included an underwater autonomous vehicle, dye releases and whole array of oceanographic instruments. Despite the occa-

sional equipment malfunction, stranded boats and the Coast Guard, the experiment was a solid success.

Our department continues to see a growing number of new students and so I take this opportunity to welcome all of them. This semester we have new representatives from the USA, Norway, Mexico, India and the P.R. of China. The nine new students are: Alex Sanchez Barba, Suvabrata Das (returning), Liang Ge, Kerry Halford, Micah Maxwell, Shailesh Namekar, Graham Whittemore, Robert Woodring, and Yongyan Wu.

A hui hou,

Vasco Nunes  
Student  
Representative

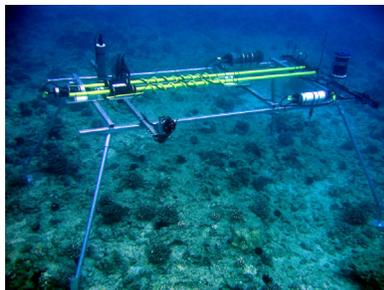


## Project News

### Continuing Project: Wave Boundary Layer Processes over an Irregular Bottom, PI, G. Pawlak.

A series of field observations were carried out in summer 2004 as part of an ONR-funded research into the effects of high roughness on wave dissipation and boundary layer processes. The ORE Kilo Nalu nearshore reef observatory began operation in July on the south shore with the deployment of an offshore node providing Ethernet and power connections to a shore station at Kakaako via a fiber optic cable. The observatory presently supports real-time collection of wave and current data at the study site.

As part of observations carried out jointly with researchers from the Naval Postgraduate School, the Rough



Rough Boundary Profiler (RBP) deployed at the Kilo Nalu observatory. The automated profiler moves instrument packages along a 3 m track allowing resolution of the near-bed spatial structure.

Boundary Profiler (RBP) was deployed at the observatory in August. Instrumentation included a bi-static doppler profiler and a laser scanning altimetry system to obtain a high resolution spatial view of the near-bed flow and bed morphology.

A dye dispersal study was carried out at the Kilo Nalu site in July, in collaboration with researchers from Stanford University. The experiment included deployment of an array of 9 wave/current measurement stations over a broad region of the reef. The purpose of the dye study was to examine wave-current

interactions over the rough reef boundary through its effect on dispersal mechanisms. Dye was released offshore at depth using an automated source, under varying current and wave

forcing. The dye cloud was tracked using a fluorometers-equipped REMUS autonomous underwater vehicle. ORE students Marion Bandet and Vasco Nunes participated in the field observations.

### New project: Coastal Form Drag and Eddies, PI: G. Pawlak.

This newly funded NSF study to be carried out jointly with researchers at U. Washington, follows up on earlier research that highlighted the role of large scale roughness such as headlands in coastal circulation. The previous study, also funded by NSF, used data from a series of field observations to explore circulation patterns around a headland and showed that form drag dominated over frictional drag by over a factor of 20.

The new project, involving numerical and laboratory experiments along with data analysis from the earlier field observations, aims to extend our understanding of these flows to improve the predictive skill of coastal numerical circulation models.

# Where am I?

(September 13, 2004)

Dear Edith,

Thanks for your e-mail and concern. It is always nice to hear from you. We are OK. Charley didn't affect us, but we took the direct hit from Frances. I live in Vero Beach, Florida, where Frances came ashore. Fortunately for us, by the time she got there, she was downgraded to a Category 2 (sustained winds of 90-95 mph; we had gusts up to about 115 mph). We rode it out as I have a downstairs bunker built for just such situations. Most of the damage done at our ranch was

trees blown down and broken in half - unfortunately many big beautiful and old oak trees... fortunately none landed on any structures. We still don't have power restored (10 days and counting) but I have installed a 6.5 kW back-up generator wired into the house so have fans, lights, refrigerator, stove, hot water... everything but AC. I have enough propane to last another couple of weeks (and we may need it - back in the sticks where we are, we'll be the last ones they get to.) For reasons not clear to me, there has been a ban on all sales of alcohol and firearms since the storm - good thing I had a well stocked bar and larder for these... chainsaws work better when lubricated by many cases of beer, and I just keep piling up the shot looters in the back forty; I'll let CSI sort 'em out.

Looks like Ivan is going to pass us by, so soon I can begin to relax.

My best to all at OE/SOEST.

Andy

Andy



Andy Clark (PhD '95)

(September 27, 2004)

Dear Edith,

Only two weeks later. This really stinks. Ivan did indeed pass us by (or nearly so) - he did come close enough to have dumped a foot or so of rain though. I had pumped down my lake, ponds and cypress swamp in preparation for Frances but that little piece of Ivan managed to bring them all back to their brims. Then, seemingly out of nowhere Jeanne, the hurricane that had been aimlessly wandering around in the Bahamas, circled back and wound itself up for another sucker-punch; yep, a direct path straight to Vero Beach (again). We rode

this one out also, though for a while it looked like it might intensify to a Category 4 storm - usually not a good idea to hang around for one of those. Fortunately, by the time it hit shore I think it was either a low 3 or high 2 - much more intense and higher winds than Frances, but also much more quickly moving (Frances kind of parked over us for about 20 hours pummeling with 80 mph winds - Jeanne skated right on through but with more like 110 mph sustained and much higher gusts).

When morning came, in spite of the ferocity of the storm, the devastation wasn't as shocking - Frances had knocked down most all the weaker stuff so Jeanne just left us with one big 40 acre lake where before we had dry land. Fortunately, the day before the storm I had rented a monster 6"

diesel tow-behind mud pump to try to suck my ponds/lake back down before Jeanne. While I didn't have time before the storm to do much good, afterwards all the roads



leading into my place were cut through with raging rivers (where before there had been none) so with no way to get out, a big pump and plenty of diesel, I moved about 5 million gallons of water over the next few days and reclaimed my place. Power was restored much quicker this time (Frances had knocked down most of the rotten poles as well as nearby limbs, all of which have been repaired in the interim) so I think we had only 3 or 4 nights on the generator - didn't even make it through my stockpile of booze and ammo this time. Life is good.

My best to all at OE/SOEST.

Andy ([Aclark01@harris.com](mailto:Aclark01@harris.com))

*Eds.- Andy Clark (PhD '95) is founder and president of Harris Corporations' subsidiary Maritime Communication Services ([www.mcs.harris.com](http://www.mcs.harris.com)) that provides broadband satellite communication links to ships, buoys, ocean observing systems and remote terrestrial sites. His maritime career spans thirty*

*years, and includes working in the offshore oil industry and serving as Engineering Director of Harbor Branch Oceanographic Institution. Dr. Clark is a licensed Professional Engineer (P.E.), Adjunct Professor of*

*Ocean Engineering at Florida Atlantic University, is on the Board of Trustees at Florida Institute of Technology's (Florida Tech), and serves on the Board of the Link Foundation. He holds both U.S. and international patents for unique unmanned underwater vehicle (UUV) systems and has authored or co-authored more than forty technical publications and articles. He is a Fellow and the immediate past president of the Marine Technology Society ([www.mtsociety.org](http://www.mtsociety.org)), and was recently appointed by the Secretary of the Navy to serve on the nation's Ocean Research Advisory Panel. In 2003, he received the Lockheed-Martin Medal for Ocean Science & Technology.*

# Company Profile

**N**avatek, Ltd. was founded in 1979 and operates out of offices in Honolulu,

Hawaii with 45 employees. It is a wholly-owned subsidiary of Pacific Marine, founded in 1944, with 400 employees and annual revenues of \$102 million. Parent company Pacific Marine is also majority partner in Pacific Shipyards International LLC, the State's largest commercial ship repair and construction company.

Navatek's primary government customer is the U.S. Navy's Office of Naval Research (ONR). Since its founding, Navatek has been a leader in researching, developing and deploying innovative, advanced ship hull designs. The company designed and built the first commercial U. S. Coast Guard-certified **SWATH** vessel. Later,



*MIDFOIL* was the first vessel to demonstrate the benefits of Navatek's patented underwater lifting body technology. In June 2004, the U.S. Navy completed successful sea trials on an \$18-million, 160-foot,

320-ton technology demonstrator craft called *Sea Flyer*, which incorporates Navatek's underwater lifting body technology (see the picture below).

Navatek's "lifting body" ship combines in one design both the high speed of a hydrofoil and the exceptional rough-water stability of a SWATH ship. The technology is applicable to both military and commercial ships. Navatek's lifting body technology has been supported by the Office of Naval Research and the Navy's Chief of Naval Operations for risk reduction for the Navy's latest warship design, the Littoral Combat Ship (LCS). Commercially, the Navatek technology is expected to eventually appear in new commercial ferry designs that will go faster and ride smoother than existing ferry ships.

Navatek's research team has expertise in hydrodynamics and advanced hull design, as well as experience in all aspects of vessel design. We maintain our own shipyard

facilities and demonstration vessels supported by a staff whose breadth of experience spans vessel design, ship and boat construction, and commercial vessel operations. Navatek is a world leader in the application of computational fluid dynamics (CFD) to the design of ship hulls and underwater lifting bodies.

Navatek employs panel codes and a RANS (Reynolds Averaged Navier Stokes) code to perform these analyses. Unique to Navatek is a history of large-scale verification sea trials that have provided considerable

insight into the strengths and weaknesses of commercially available CFD tools. With support from the U.S. Navy, Navatek leases and operates a 128 processor computer cluster, which is located in our R&D office, to conduct our research.

Currently, there are two UH interns (who are graduate students in the ORE Department) working at Navatek: **Graham Whittemore** is conducting data reduction on the intensive data we collected on the *Sea Flyer* during her sea trials, and **Jordon Cheifet** is working as a technical writer, helping prepare internal project documentation and external progress reports. A third graduate student at UH's ORE department working for Navatek is **Greg Wong** who is the Marine Engineer and Ship Captain.

Finally, an alumnus of the ORE Department, **Gabriel Zee** (MS '76, PhD '80) is Vice-President of Contracts, and Manager of the ENDEAVOR Project at Navatek, Ltd. For more information on the company, please visit [www.navatekltd.com](http://www.navatekltd.com).

*Michael Schmicker*  
Vice-President, Navatek, Ltd.  
Eml: [schmicker@navships.com](mailto:schmicker@navships.com)



The sea trial of *Sea Flyer* (Courtesy of Michael Schmicker of Navatek, Ltd.).



Vice-President Eric Shiff of Navatek, Ltd showing the lifting body under the ship. He served as a Program Manager responsible for the ONR-funded HYSWAC program which involved conversion of an existing Navy SES vessel to a Hybrid Small Waterplane Area Craft through the addition of a 170-ton Navatek underwater lifting body (Courtesy of Michael Schmicker of Navatek, Ltd.).

Navatek teamed with Lockheed Martin to jointly build SLICE, a 30 knot, 105-foot fast SWATH hull form variant.

# Graduates of the Department

---

## MS Degree (Fall 2000– Summer 2004)

Aug 2000	Caron, Chad	Numerical Study of the 1946 Alaskan Tsunami and Run-up in Hilo Bay, Hawaii
Aug 2000	Bossuyt, Arnaud	Seamless Sampler for Use in Underwater Vents
Aug 2000	Martino, Chris	Wave Transformation & Breaking over an Artificial Reef
Aug 2000	Yang, Liquan	A Circulation Study of Hawaiian Fishponds
Dec 2000	Velasco, Victor	Evaluation and Cost Comparison of Anti-Siltation Systems and Traditional Dredging Methods
Dec 2000	Romanoski, Lisa	Bioreactor Toolkit
May 2001	Gregory, Todd	Transfer and Transportation of a High Pressure/Temperature Hydrothermal Fluid Sample
May 2001	Hutto, Lara	A Comprehensive Guide to Shipboard Waste: Environmental Consequences, Regulations, and Management Options
May 2001	Rojas, Ray	Development of a Comprehensive Storm Wave Inundation Model
May 2002	Patterson, Ennis	Analysis of District Cooling in Hawaii Using Deep Ocean Water
Aug 2002	Bregman, Ronald	Status and Assessment of Ocean Energy Resource Systems
May 2003	Blinde, Geoffrey	Static and Dynamic Analyses of a Swath Ship Structure
May 2003	Ramsey, Melanie	Basic Component Design of Research Submersibles
Aug 2003	Douyere, Yann	Analysis of Harbor Oscillation with a Boussinesq Model
Aug 2003	Winsley, Jon	Review and Design of NOAA Fisheries Honolulu Laboratory Underwater Imaging Tow Vehicles
Aug 2003	Woo, Kristen	Advanced Marine Vehicle Products Database a Preliminary Design Tool
Dec 2003	Hahn, Eric	Coastal Engineering Reconnaissance and Planning in Support of Major Amphibious Operations
Dec 2003	Zhou, Hongqiang	Hydrodynamic Response of an Advanced Marine Vehicle in Waves
Aug 2004	Yamazaki, Yoshiki	Forecast of Tsunamis From the Japan-Kuril-Kamchatka Source Region
Aug 2004	Yang, Jinghai	Time Domain, Nonlinear Theories on Ship Motions

## PhD Degree (Fall 1998– Summer 2004)

Dec 1998	Liu, Xiaoqing (Charles)	Dynamics of Long, Flexible Pipes during Surface Towing and Drift Loads on Flexible Floating Structures
Dec 1999	Padmanabhan, Balakrishna	Intake/Discharge Effects on the Hydrodynamics of Floating Bodies
May 2000	Sundararaghavan, Hari	Analysis of Oil Containment Failure and Spreading
Dec 2000	Chandrasekera, Carmela	Linear Refraction - Diffraction Model for Steep Bathymetry
Aug 2001	Amal Phadke	Hydrodynamics of Fluid-Filled Membrane in Gravity Waves
Aug 2003	Smith, David	Effect of Particle Shape on Grain Size, Hydraulic, and Transport Characteristics of Calcareous Sand
Aug 2004	Tang, Liujuan	Cylindrical Liquid-Liquid Jet Instability

## Meetings Calendar



### 2004

- ◆ *November 9-12, MTS Oceans 2004/Techno-Ocean 2004, Kobe, Japan [www.oceans-technooceans2004.com](http://www.oceans-technooceans2004.com)*
- ◆ *December 13-17, AGU [Fall Meeting](#), San Francisco, CA*

### 2005

- ◆ *12-17 June 2005, 24th Int. Conf. on Offshore Mech. and Arctic Eng., Halkidiki, Greece, [www.asmeconferences.org/omae05](http://www.asmeconferences.org/omae05)*
- ◆ *June 19-24, 2005, 15th Int. Offshore & Polar Eng. Conf. & Exhibition, Seoul, Korea, [www.isopec.org](http://www.isopec.org)*

## Project News

---

### A DEEP-OCEAN MASS SPECTROMETER TO MONITOR HYDROCARBON SEEPS AND PIPELINES

Gary M. McMurty (PI), John C. Wiltshire (Co-PI), Arnaud Bossuyt (RA)

*Funding : National Science Foundation*

New developments in instrumentation for ocean environmental engineering are allowing unprecedented levels of trace contaminant measurement in the deep-ocean. With funding from the US National Science Foundation (NSF), our engineering design team constructed a new mass spectrometer-based in situ analysis system for work in the deep ocean environment over prolonged deployment periods. Our design goals were a depth capability of up to 4,000 m water depth (400 bars hydrostatic pressure) and autonomous operation for periods of up to six months to a year, depending upon type of external battery system used or other deployment circumstances, e.g., availability of a power cable or fuel cell power source. We chose a membrane introduction mass spectrometry (MIMS) sampling ap-

proach, which allows for dissolved gases and volatile organics introduction into the MS vacuum system. The MIMS approach and the hydrophobic, silicon-coated membrane chosen both draw upon our previous experience with this technology in the deep ocean. The membrane has been tested to 400 bars in a series of long-term hydrostatic pressure tests, which extends the 200-bar working depth rating of this membrane by a factor of 2. Long-term deployment capability of the moderately powered, approximately 100 W system, was accomplished by power management of the embedded computer system and custom electronics, with Windows-based and custom software now fully developed and bench tested.

The entire system fits within a 6.5 inch outside diameter pressure housing that is approximately five feet long. It consists of a 1 to 200-amu range quadrupole mass spectrometer equipped with Faraday and electron multiplier detectors, compact turbo-molecular and backing diaphragm vacuum pumps, internal rechargeable batteries, and internal waste vacuum chamber. Sample routing past the MIMS is accomplished by computer-controlled solenoid valves. We designed the pressure housings of both 6AL4V and type 2 titanium alloys that are rated to working depths of >4000 m and are essentially corrosion proof over long-term deployments. We designed and integrated a fail-safe valving system for both rapid response to high-pressure MIMS failure and a pressure-switch circuit and high-pressure solenoid valve to detect

and protect against slow leaks of the MIMS. To route sample waters to the MIMS-based instrument, we also designed and built a rugged plastic plenum that couples to the face of the sampler head, the latter of which consists of the MIMS inlet and a full-ocean rated thermister temperature probe, with operational range from -5 to 50 degrees C. These developments offer considerable innovation over currently available sampling systems in the deep sea environment.

**Did you know that you can receive the announcements of ORE seminars electronically? Just visit <http://www.ore.hawaii.edu/OE/seminars.html>**

We are currently bench testing the response of the system to various standard gas satu-

ration partial pressures in water, including helium, nitrogen, argon, methane and propane. For this work we are using a nearly-identical, bench-type quadrupole mass spectrometer, and a custom-built MIMS for bench work. The goals are to determine instrument sensitivity, background, clearing time or sample hysteresis, and the effect, if any, of mass/charge ratios upon these parameters. Determination of varying temperature and pressure effects upon the MIMS and acquired spectra are also planned. At sea testing is being done in collaboration with the Hawaii Undersea Research Laboratory. A dedicated 400-m trial deployment is scheduled for December with the Pisces submersibles. A follow-up Alvin dive program to monitor hydrocarbon-rich cold seeps off the Costa Rica active margin will begin in June, 2005.

---

## Marine Science Undergraduate Research Fellowship

SeaGrant MSURF (Marine Science Undergraduate Research Fellowship) summer student, Melinda Swanson, (U Wisconsin-Superior) working with ORE professor Geno Pawlak,

carried out a study on the correlations between turbidity and wave and current forcing on Oahu's south shore. Melinda's research examined methods for tracking water quality variations and identified timescales and potential local sources of turbidity changes in the near-

shore environment. Melinda was chosen from among all UH MSURF fellows to present her work at the upcoming 2005 ASLO conference in Salt Lake City. Her work will be the subject of an article submitted to the Journal of Young Investigators.

# OPEN FACULTY POSITION in ORE

**OCEAN and RESOURCES ENGINEERING: The University of Hawai'i Department of Ocean and Resources Engineering** invites applications for a full-time, general funds, tenure-track Assistant Professor position (appointment at the associate or full professor level will be considered in cases where the applicant has a proven record of outstanding research and teaching), to begin approximately August 1, 2005, subject to position clearance. The University of Hawai'i is a Carnegie doctoral/research-extensive university with a strong emphasis on research and graduate education. Accordingly, the successful applicant is expected to develop an externally funded research program that leads to publication in leading scholarly journals. Candidates also must show a strong commitment to teaching excellence and mentoring. Applicants must have a strong background in ocean engineering with expertise in one or more of the following

areas: coastal engineering, offshore engineering, and ocean resources engineering. While this description represents our primary interest, outstanding applicants in complementary areas, such as structural engineering and naval architecture, are encouraged to apply. The successful candidate will join a strong ocean engineering program at the University of Hawai'i. Available computer facilities are extensive, including access to the Maui High Performance Computing Center. The Department has an excellent working relationship with the local ocean engineering industry and with State and Federal funding agencies. The Department offers M.S. and Ph.D. degrees. For more information on the department please visit [www.ore.hawaii.edu](http://www.ore.hawaii.edu). An earned B.S. and Ph.D. in Ocean Engineering or a closely related engineering field, such as Mechanical Engineering, Civil Engineering or Naval Architecture, are required, and current professional engi-

neering registration, or the ability to obtain registration, is desirable. Applicants should submit (by mail only) a résumé, detailed statement of research and teaching interests, and the names, addresses, phone numbers and e-mail addresses of at least three references to: Prof. R. Cengiz Ertekin, Chair of ORE Faculty Search Committee, Department of Ocean and Resources Engineering, University of Hawai'i at Mānoa, 2540 Dole Street, Holmes Hall 402, Honolulu, HI 96822. Inquiries: phone (808) 956-7572, fax (808) 956-3498, e-mail: [admin@ore.hawaii.edu](mailto:admin@ore.hawaii.edu). Review of applications will begin on November 30, 2004 and will continue until the position is filled. Applications postmarked by November 30, 2004 are assured of receiving full consideration. Position number 83802. The University of Hawai'i is an Equal Employment Opportunity/Affirmative Action institution.

## Your Gift to the ORE Enrichment Fund

**THE ORE ENRICHMENT FUND**  
**(The University of Hawaii**  
**Foundation**  
**Account # 123-7310-4)**

**Yes, I'll support**

**My gift\* is:**

- \$10,000    \$5,000    \$3,000  
 \$1,000    \$500    \$300  
 \$100    \$50    \$\_\_\_\_\_

My check is enclosed payable to:

**The University of Hawaii Foundation**

A matching gift program is offered through my (or my spouse's) employer,  
\_\_\_\_\_ (form enclosed)

The gift is in memory/honor of \_\_\_\_\_

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

E-mail: \_\_\_\_\_

Please do not include my name in the ORE Enrichment Fund Donor Report  
(I would like to be an anonymous donor).

**Please mail your check and this form to:** c/o ORE Enrichment Fund Administrator, Department of Ocean and Resources Engineering, University of Hawaii at Manoa, 2540 Dole Street, Holmes Hall 402, Honolulu, HI 96822, USA  
**Eml:** [admin@ore.hawaii.edu](mailto:admin@ore.hawaii.edu), **Tel:** +1 (808) 956-7572, **Fax:** +1 (808) 956-3498

\* Your gift is tax-deductible to the extent allowed by law (please consult your tax advisor)



## DEPARTMENT OF OCEAN AND RESOURCES ENGINEERING

School of Ocean and Earth Science and Technology  
University of Hawaii at Manoa  
2540 Dole Street, Holmes Hall 402  
Honolulu, Hawaii 96822-2303, USA  
Tel: +1 (808) 956-7572  
Fax: +1 (808) 956-3498  
Eml: [admin@ore.hawaii.edu](mailto:admin@ore.hawaii.edu)  
URL: <http://www.ore.hawaii.edu>

To obtain copies of previous issues of *Hana O Ke Kai*, please visit the above URL and then click the "Newsletter" link.



**Engineering the Oceans since 1966!**



## Some Recent Publications (To receive copies, please contact the faculty member)

- ◆ Edwards, K. A., P. MacCready, J. N. Moum, **G. Pawlak**, J. Klymak, and A. Perlin (2004) "Form Drag and Mixing due to Tidal Flow past a Sharp Point," *J. Phys. Oceanogr.*, 34, 1297-1312.
- ◆ **Kim, J.W.** and Bai, K.J. (2004) "A New Complimentary Mild-slope Equation," *J. Fluid Mech.*, Vol. 511, pp. 25-40.
- ◆ Mansour, A.E. and **Ertekin, R.C.** (2004), Editors, "*Proceedings of the 15<sup>th</sup> International Offshore Structures Congress*," ISSC 2003, San Diego, 11-15<sup>th</sup> August, Volume 3, Elsevier, Amsterdam.
- ◆ Zhou, X., Hon, Y.C., and **Cheung, K.F.** (2004). A grid-free, nonlinear shallow-water model with moving boundary. *Engineering Analysis with Boundary Elements*, 28(8), 967-973.

## Alumni News

**Raymond Rojas (MS '01)** is working at INTEC Engineering, based in Houston, and he's specializing in ocean resource development with an emphasis in marine survey and pipeline routing for the offshore oil and gas industry. Last year he helped to install a pipeline across Long Island Sound to deliver natural gas to New York City, and developed a shore crossing for an oil pipe-

line in Ecuador. This year he is involved in the design of a gas transmission system offshore Angola. This INTEC project is attempting to cross an active submarine canyon by intersecting two horizontal extended reach wells and pulling a pipeline through the wellbore. His upcoming projects include a survey offshore of West Africa but first, Raymond has a big step to take on his wedding in December (see "Students' Voice"

in this issue. Eml: [raymond.rojas@intecengineering.com](mailto:raymond.rojas@intecengineering.com)

**Scott Sullivan (MS '71)** received his MS in 1971. He worked for 8 years as a coastal engineer for the US Army Corps of Engineers from 1972 to 1980. He founded Sea Engineering, Inc. in 1973 with three other UH OE grads, and since 1980 has been full time with Sea Engineering as vice president. He has worked on coastal projects from California to Malaysia and most inhabited islands in between.

Eml: [scotts@seaengineering.com](mailto:scotts@seaengineering.com)

**We need your help!  
Please give a gift to the  
ORE Enrichment Fund to  
support our programs if you  
have not done so this year.  
Thank you...**