



**OCEANS
2007**
MTS / IEEE

VANCOUVER B.C. CANADA "Sea-Eagle"

On the Edge of

Tomorrow

September 29 – October 4, 2007

Vancouver Convention & Exhibition Centre

Vancouver, BC, Canada

www.oceans07mtsieevancouver.org

**FINAL
PROGRAM**

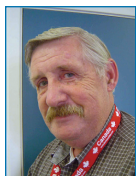
ORGANIZING COMMITTEE



Conference Chair
Dr. James McFarlane



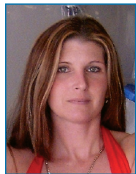
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Welcome from the Conference Chair



Welcome to Vancouver to explore the “Edge of Tomorrow” at the MTS / IEEE-OES Conference. Learn about BC’s Neptune and Venus projects, which will usher in a new era in gathering data to understand the oceans.

This Conference features a partnership of engineering / technology and scientific researchers. Vancouver, having a history of discovery and innovation in ocean systems and technology, is the home of many pioneers in these fields. We believe that our location at an international crossroads, equally distant from Europe and Asia, coupled with facilities and associated marine community and infrastructure provide the underpinning for a first class Oceans 2007.

*Dr. James McFarlane
Conference Chair
MTS-IEEE Oceans 2007 Vancouver*

Welcome from the Technical Chair



I would like to cordially welcome all participants from around the world to the Oceans 2007 MTS / IEEE Conference in Vancouver, B.C. Canada. With the abstract submissions exceeding 500 this year, the international review committee was excited with the level of innovation

and diversity that was presented. This year, the Ocean Vehicles section had the highest number of submissions followed by the Observation Platform section. The technical review process could not have happened without the dedicated efforts of our volunteer experts from around the world who diligently took the time to review the abstracts from their field.

I hope that you will find the presented abstracts and papers to be exciting and inspiring, and I look forward to seeing you all in Vancouver.

*Michael Wrinch
Technical Program Chair
MTS-IEEE Oceans 2007 Vancouver*

Welcome to Vancouver

The MTS/IEEE-OES Oceans 2007 Vancouver Committee is looking forward to welcoming you to Super Natural British Columbia. Dazzling ocean and mountain views, dense forest, lush parkland and stretches of coastline create an atmosphere that blends the natural beauty of the outdoors with the cosmopolitan bustle of contemporary urban life.

Vancouver is a dynamic and multicultural city located in a spectacular natural environment. No wonder it was voted "Best City in the Americas" by Conde Nast Traveler magazine for three years in a row. Regardless of what time of year you visit you can enjoy both indoor and outdoor activities from the relaxing to the extreme. You can also enjoy world class shopping, gourmet dining, exceptional live entertainment & theatre and exciting sporting events.



The Vancouver Convention and Exhibition Centre

Located in the Vancouver harbour, the award-winning VCEC provides excellent conference facilities while offering delegates one of the most beautiful settings and breathtaking views. With easy access to all downtown Vancouver has to

offer, sites like historic Gastown and Stanley Park, to the many fine restaurants and world-class shopping, are only steps away.

Famous for its "Five Sails" – a landmark in the city of Vancouver – the VCEC opened in July 1987 after originally being the Canada Pavilion at the EXPO 86 World Fair. Construction is currently underway to expand the facility to nearly triple the existing space, in preparation to serve as the broadcast and media centre for the 2010 Olympic and Paralympic Winter Games.

Useful Information

Vancouver Convention & Exhibition Centre

999 Canada Place

Tel: 604-689-8232

Fax: 604-647-7232

Hyatt Regency Vancouver

655 Burrard Street

Tel: 604-683-1234

Fax: 604-689-3707

Fairmont Waterfront

900 Canada Place

Tel: 604-691-1991

Fax: 604-691-1999

Marriott Vancouver Pinnacle

1128 West Hastings Street

Tel: 604-684-1128

Fax: 604-298-1128

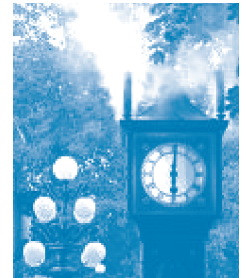
Renaissance Vancouver

Hotel Harbourside

1133 West Hastings Street

Tel: 604-689-9211

Fax: 604-689-4358



Useful Information (cont'd.)

Time Zone: Pacific Standard Time (PST)

12:00 Noon in Vancouver =

12:00 Noon in Los Angeles

3:00 pm in Toronto/New York

8:00 pm in London, UK

Currency:

The official currency is the Canadian Dollar. Foreign currencies can be readily exchanged at banks, currency exchange bureaus and your hotel front desk at varying rates of exchange (\$1.00 CAD = \$0.93 USD approx.). Many businesses accept U.S. currency and traveler's cheques in addition to major credit cards (VISA, Mastercard and American Express).

ATM Machines:

Automatic Teller Machines (ATM's) are located in many locations throughout the city and accept cards with Plus, Interac, & CIRRUS symbols.

Transportation:

Public transit – Vancouver, Burnaby, and the North Shore are easily accessible via public transit (Translink) onboard buses (both gas & trolley), Skytrain & Seabus. Fares depend on the time of day and the zone you are traveling in. More information, including a useful 'trip planner' can be found on their website www.translink.bc.ca.

Taxicabs:

Taxis are readily available in front of all major hotels.

Yellow Cab: 604-681-1111

Vancouver Taxi: 604-871-1111

Airlines:

Air Canada: 1-888-247-2262

Alaska Airlines: 1-800-252-7522

American Airlines: 1-800-433-7300

Continental Airlines: 1-800-231-0856

Northwest Airline: 1-800-225-2525

United Airlines: 1-800-231-0856

WestJet: 1-800-538-5696

Harbour Air Seaplanes: 604-274-1277

Tourism Information:

From the Vancouver Convention Centre you are within strolling distance to many Vancouver sites including Stanley Park & the Vancouver Aquarium, Gastown, Chinatown, the Vancouver Art Gallery, Granville Island, as well as many great restaurants and shops.

And just a short distance away, you can enjoy a skyride to Grouse Mountain, Capilano Suspension Bridge, Museum of Anthropology, Vancouver Maritime Museum or take a drive to Whistler or a ferry to Victoria.

For more information, please contact the Tourism Vancouver Information Desk located next to the Registration/Hospitality Desk in the Convention Centre Lobby or their main office:

Tourism Vancouver

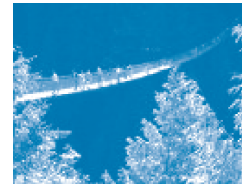
Plaza Level – 200 Burrard Street at the corner of Canada Place (steps away from the Convention Centre) Tel: 604-683-2000

www.tourismvancouver.com

www.seegastown.com

www.grousemountain.com

www.tourismwhistler.com



General Conference Information

Registration / Hospitality Desk Hours

The Registration Desk is located in the lobby of the Vancouver Convention Centre and will be open as follows for registration and general inquiries.

Sunday, September 30	2:00 pm – 4:00 pm
Monday, October 1	7:00 am – 6:30 pm
Tuesday, October 2	7:00 am – 5:30 pm
Wednesday, October 3	7:00 am – 5:00 pm
Thursday, October 4	7:00 am – 12:00 pm

Tutorial Hours

Monday, October 1

Tutorials T1, T2, T3, T4	8:30 am – 12:00 pm
Tutorials T5, T8, T9	1:00 pm – 4 :30 pm
Tutorials T6, T7	8:30 pm – 4 :30 pm

Exhibit Hall and Student Poster Competition

The Exhibit Hall will be open and Student posters will be on display in the Exhibit Hall ABC during the following times:

Tuesday, October 2	9:45 am – 6:30 pm*
Wednesday, October 3	9:00 am – 5:00 pm
Thursday, October 4	9:00 am – 3:00 pm

(*includes exhibitor reception 5:15 pm – 6:30 pm)

Speaker Centre

The Speaker Centre will be located in Meeting Room 6.

Sunday, September 30	3:00 pm – 6:00 pm
Monday, October 1	7:00 am – 7:00 pm
Tuesday, October 2	7:00 am – 7:00 pm
Wednesday, October 3	7:00 am – 7:00 pm
Thursday, October 4	7:00 am – 5:00 pm

Business Centre

A business centre is located in Canada Place, "R" Level (Restaurant Level).

Phone 604 713 1695 . Fax 604 713 1699

panpacific@eprintit.com

Open from Monday to Friday 8:00 am to 6:00 pm

Coat Check

A coat check is located in the lobby of the Convention Centre and will available throughout the conference.

Internet Café / Internet Access

The Internet Café is located in the Exhibit Hall ABC. You are welcome to use this at any time during the official opening hours of the Exhibit Show (see above). Wireless internet access is also available in public areas at the VCEC.

Language

The official language of Oceans 2007 Vancouver is English and all presentations must be given in English. NO simultaneous interpretation service will be provided.

Coffee Breaks

Coffee breaks will be available throughout each Conference Day in the Exhibit Hall for all attendees.

Lunches

Lunches (which are included in the full conference registration fee) will also be provided on 2 of 3 conference days in the Ballroom.

Hosted by IEEE – Tuesday 2nd 12:00 – 1:15 pm

Hosted by MTS – Wednesday 3rd 12:00 – 1:15 pm

General Conference Information (cont'd.)

Messages

Messages received by the Organizers for delegates will be posted on the message board located in the convention center lobby. Messages between delegates may also be left on this board.

Mobile Phone

Please ensure that your cellular phone, pager, etc., is turned off or to silent/vibrate mode during all technical sessions.

Security

Please wear your name badge (which will be issued to you at the Registration Desk) at all times. This will ensure your admittance to the technical sessions and the Exhibition Hall.

Tickets for Social Events

You have been issued a package containing your name badge and tickets you have ordered for social events (including lunches) when you initially check-in at the Registration Desk.

Please ensure that you bring the appropriate ticket to all social events!

If you have not requested/purchased a ticket, a limited number of tickets will be available to purchase on-site at the Registration Desk, based on space availability.

Tourism Vancouver

A tourist information desk will be located next to the Registration Desk to provide information and brochures for attractions in the Vancouver area.

Monday, October 1	8:30 am – 5:00 pm
Tuesday, October 2	9:30 am – 5:00 pm
Wednesday, October 3	9:30 am – 3:00 pm
Thursday, October 4	8:30 am – 3:00 pm

Wheelchair Access

The VCEC is fully accessible by wheelchair users. Elevators are located in the Convention Level Lobby.

Social Events

All social events are reserved for delegates with a full registration package or for those who have purchased individual tickets. Extra tickets can be purchased from the Registration Desk.

Monday, October 1

Ice Breaker Reception in Meeting Room 1 VCEC
6:00 pm – 7:30 pm

Join fellow delegates for a cocktail and the opportunity to meet old friends and make new ones at this informal get together.

Dress Code: Business Casual

Tuesday, October 2

IEEE Awards Lunch in Ballroom, VCEC
12:00 pm – 1:15 pm

Exhibitors Reception in Exhibit Hall, VCEC
5:15 pm – 6:30 pm

Wednesday, October 3

MTS Awards Lunch in Ballroom, VCEC
12:00 pm – 1:15 pm

Gala Reception in the Pan Pacific Hotel Atrium
6:30 pm – 9:30 pm

The Pan Pacific Hotel is adjacent to the VCEC, and features stunning views of Burrard Inlet and the North Shore mountains.

Enjoy the tastes of BC.

Dress Code: Business Attire

A limited number of tickets may be available from the Registration Desk on Monday & Tuesday, however availability cannot be guaranteed.

Keynote Speakers

Dr. Christopher R. Barnes Director, NEPTUNE Canada



Chris Barnes represents the University of Victoria on the NEPTUNE Executive Team. He was Director of the School of Earth and Ocean Sciences at the University of Victoria for the past decade and is also a Professor in that School.

After being awarded his Bachelor of Science from the University of Birmingham (1961) and his Ph.D. from the University of Ottawa (1964), he received an academic appointment at the University of Waterloo in 1965. He served as Chair of Earth Sciences at Waterloo from 1975 to 1981.

In a similar position at Memorial University (1981-87), he established the Centre of Earth Resources Research. From 1987-1989, as Director General, Sedimentary and Marine Branch, Geological Survey of Canada, he was responsible for the offshore Frontier Geoscience Program.

Chris has been a member of the Science Council of British Columbia and its Ocean Sector Committee, and a member of Ocean Drilling Program committees. He has been President of the Pacific Marine Technology Centre Society and Vice President of the Canadian Ocean Frontiers Research Initiative and has served as a Board member of the Institute for Pacific Ocean Science and Technology. He is currently co-leader of the West Coast team in SSHRC/NSERC's Coasts Under Stress Project.

Other organizations in which Chris has served as president are the Geological Association of Canada, the Canadian Geoscience Council, and the Academy of Science of the Royal Society

Keynote Speakers (cont'd.)

of Canada. He was Group Chair of both Earth Sciences and Interdisciplinary Committees for the National Sciences and Engineering Research Council of Canada (NSERC), and is a member of the Canadian Nuclear Safety Commission. He served three terms as Chair of the Council of Chairs of Canadian Earth Science Departments.

His research focuses on understanding the Early Paleozoic world using the principal tools of conodont micropaleontology, stratigraphy, and some geochemistry. He has published over 100 refereed papers on sedimentary geology and paleobiology.

Chris is an Associate Member of the Earth System Evolution Program of the Canadian Institute for Advanced Research. He is a Fellow of the Royal Society of Canada (RSC), and was appointed to the Order of Canada. He has received the J. Willis Ambrose Medal and the Past Presidents Medal of the Geological Association of Canada (GAC), and the Bancroft Award (RSC).

The Honourable BJ Penn Assistant Secretary of the Navy



Mr. Penn was appointed Assistant Secretary of the Navy (Installations and Environment) on 1 March 2005. In his position Mr. Penn is responsible for formulating policy and procedures for the effective management of Navy and Marine Corps real property, housing, and other facilities; environmental protection ashore and afloat; occupational health for both military and civilian personnel; and timely completion of closures and realignments of installations under base closure laws. Mr. Penn is responsible for 81 Navy and Marine Corps installations around the world, which are the workplace for 773,686 people, and include 86,000 buildings, 4.5 million acres, with a plant value of \$212 billion.

Mr. Penn began his career as a Naval Aviator. He amassed over 6500 flight hours in sixteen different types of aircrafts. His significant leadership assignments include: Commanding Officer, VAQ 33, Battalion Officer at the U.S. Naval Academy, Air officer in USS America, CO NAS North Island, and Deputy Director of the Navy Office of Technology Transfer & Security Assistance.

Mr. Penn was born and raised in Peru, IN. He received his BS from Purdue University and his MS from The George Washington University. He has received certificates and honors such as EA 6B Pilot of the Year in 1972, certificate in Aerospace Safety from the University of Southern California and in National Security for Senior Officials from the Kennedy School, Harvard University.

Keynote Speakers (cont'd.)

Richard W. Spinrad, P.h.D.
Assistant Administrator,
National Oceanic and
Atmospheric Administration



Dr. Spinrad is the Assistant Administrator of the National Oceanic and Atmospheric Administration (NOAA) in the Office of Oceanic and Atmospheric Research (OAR). He is a native of New York City, and a graduate of the Johns Hopkins University (B.A.). Dr. Spinrad has broad experience in marine science, technology, operations and policy. During his career he has worked in a wide range of positions in government, academia, industry and non-governmental organizations.

Spinrad earned an M.S. in physical oceanography and a Ph.D. in marine geology from Oregon State University. As a research scientist at Bigelow Laboratory for Ocean Sciences he developed and published concepts critical to our understanding of the relationship between water clarity and marine biological productivity. Spinrad served as President of Sea Tech, Incorporated during that company's development of several now-standard oceanographic sensors. He went on to manage oceanographic research at the Office of Naval Research (including serving as the Navy's first manager of its ocean optics program), eventually becoming the Division Director for all of the Navy's basic and applied research in ocean, atmosphere and space modeling and prediction. In 1994 Dr. Spinrad became the Executive Director of the Consortium for Oceanographic Research and Education (CORE) where he led the development of the National Ocean Sciences Bowl for High School Students, and he co-authored,

with Admiral James D. Watkins, "Oceans 2000: Bridging the Millennia", which served as the guiding document for the establishment of the National Oceanographic Partnership Program (NOPP). In 1999 Spinrad became the Technical Director to the Oceanographer of the Navy. In this position he provided leadership and guidance for the development of the U.S. Navy's oceanographic and meteorological operational support to Naval forces. Currently, Spinrad serves as the United States permanent representative to the Intergovernmental Oceanographic Commission of UNESCO, and co-chairs the White House Joint Subcommittee on Ocean Science and Technology.

Rick Spinrad is the President of The Oceanography Society, and served as Editor in Chief of Oceanography magazine; he has served on numerous professional committees of organizations including the National Academy of Sciences and the American Meteorological Society. Spinrad also served on the faculties of the U.S. Naval Academy and George Mason University. He has spent over 300 days at sea conducting research, and has published more than 50 scientific articles. Spinrad is the editor of a textbook on ocean optics and several special issues of marine science journals.

In 2003 Spinrad was awarded the Department of Navy Distinguished Civilian Service Award, the highest civilian award that can be given by the Navy Department, and he has received a Presidential Rank Award. Dr. Spinrad lives in Falls Church, Virginia with his wife Alanna and two beagles.

Keynote Speakers (cont'd.)

David Welch
President
Kintama Research Corporation



David Welch is the president of Kintama Research Corporation and chief architect of the Pacific Ocean Shelf Tracking project (POST), which has formed the basis for the global Ocean Tracking Network. He is also an adjunct professor at the University of Victoria and the University of British Columbia.

David received a B.Sc. in Biology and Economics from the University of Toronto in 1977 and a Ph.D. in Oceanography from Dalhousie University (Halifax, Nova Scotia) in 1985. He also spent two years as a Research Associate at the Ocean Research Institute (University of Tokyo). After joining the Canadian Department of Fisheries and Oceans' Pacific Biological Station in 1985 as a post-doctoral fellow, he was appointed head of the High Seas Salmon Program in 1990. During the next decade he was responsible for studying the ocean biology of Pacific salmon, and provided some of the first compelling evidence for a potentially profound impact of global warming on Pacific salmon in the ocean. He was the Chief Scientist for the Census of Marine Life's project POST from 2000-2005.

David's company is currently prime contractor to the west coast POST array consortium. David was responsible for developing the original concept of building large scale marine tracking arrays to resolve long-standing problems in marine fish population management, particularly as applied to Pacific salmon. He founded Kintama in 2000 to begin evaluating sensor technology for this purpose and to develop the technical strategy needed for building large-scale seabed arrays.

Through the construction of POST many of the technical and scientific concepts underlying continental-scale marine tracking arrays have been proven feasible and important. The POST array has been demonstrated to allow the direct and nearly flawless measurement of movements and survival of individual fish greater than about 12 cm in length over vast stretches of the continental shelves. In a follow-on phase, it is intended for this architecture to also host a wide range of physical oceanographic instrumentation, leading to an integrated ocean observing system that includes the fish tracking sensors. As a result, the marine science community is now on the brink of being able to conduct direct quantitative experimental studies in the ocean on fish of the kind that transformed chemistry and physics one and two centuries ago and should radically change the way scientific research in coastal seas is conducted.

Dr Welch is the author of over 150 primary scientific papers and technical reports. He has previously acted as scientific spokesman for the World Wildlife Fund on the issue of global warming, and has been invited to testify on the results of his research on the ocean biology of Pacific salmon at the U.S. Senate. Dr Welch speaks fluent Japanese and lives on Vancouver Island in Nanaimo, British Columbia.

Keynote Speakers (cont'd.)

Captain(n) K.E. Williams, MSM, CD Assistant Chief of the Maritime Staff (A/CMS)



Captain (Navy) Williams was born on 20 September 1956, in the city of Chilliwack, British Columbia, Canada.

Captain (Navy) Williams graduated from the Canadian Forces Officer Candidate School in August 1976. Since joining the navy he has served on three ships on the Atlantic coast HMCS OTTAWA, HMCS PRESERVER, HMCS ATHABASKAN and in HMCS SASKATCHEWAN, and HMCS ALGONQUIN on the Pacific coast as well as the Operations Officer Fourth Destroyer Squadron and Executive Officer Sea Training Pacific. He was appointed to command of HMCS WINNIPEG in January 2001 and led the ship through two extended Persian Gulf deployments.

He has completed five staff tours in National Defence Headquarters (NDHQ) Ottawa. In 1989 Captain (Navy) Williams was assigned to NDHQ as the Operational Requirements Manager for the NATO Frigate Replacement Project (NFR 90). Upon termination of the project he was appointed to the staff of Chief of Maritime Operations and Doctrine, as the Fleet Operations and Readiness Officer. In May 1991, he was selected for exchange duties with the United States Navy and served on the Staff of Commander, U.S. Second Fleet/NATO's Striking Fleet Atlantic as the Fleet Anti-Submarine Warfare Operations Officer. In 1993 Captain (Navy) Williams returned to NDHQ to the Directorate of Naval Requirements as the Navy's Command, Control Communications and Information (C3I) and Space Surveillance Requirements Officer. In 1998 he was assigned

as a Section Head to the Directorate of Maritime Strategy and on completion of his command tour in 2003 he returned to Ottawa as the Director of Maritime Strategy where he was responsible for future Maritime force development, as well as principle contributor to development of the Maritime Security elements of Canada's National Security Policy. In Jan 2005 he was seconded to Chief of the Defence Staff to assist in the development of the new Defence Policy Statement. In July 2005 he was appointed as Director of Defence Analysis follow by appointment to Director General Strategy, July 2006. Where he is now charged with the strategic guidance and coordination for the Canadian Forces.

On 1 June 2007, he was promoted to Commodore and assumed duties of Assistant Chief of the Maritime Staff 21 June 2007.

Tutorials

All tutorials will take place on Monday, October 1 for either a half day in the morning, half day in the afternoon or the entire day.

Half-day Morning Program,

8:30 am – 12:00 pm

T1, T2, T3, T4

Half-day Afternoon Program,

1:00 pm – 4:30 pm

T5, T6, T9

Full-day Program,

8:30 am – 4:30 pm

T7, T8

Meeting Room 11

T1 – AUV Technology and Application Basics

By William J. Kirkwood, BS, MS – Associate Director of Engineering at the Monterey Bay Aquarium Research Institute (MBARI) – Monterey Bay, California, USA

AUV Application Basics is a short course that provides an overview of current AUV technologies and operations. The objective is to provide a basic understanding of what available AUV systems provide and the best practices for their use. The class is targeted at scientists interested in using AUVs for oceanographic applications. The attendee will gain basic understanding of AUV types, technologies, terminology, and navigation techniques, including discussion of the comparative strengths of AUVs and alternative methods of data collection. The attendee will also be provided an understanding of trade-offs in AUV operations, including power estimation, endurance considerations, and mission structure to acquire the desired data sets. Key points are illustrated by applications and results

from the Monterey Bay Aquarium Research Institute's (MBARI) Dorado AUV and other AUV operations. Topics include: Basic AUV technology, AUV at-sea Operation, Payload Considerations, Mission Planning, Upper and Mid-Water AUV missions, Benthic and Mapping AUV missions, Data Collection and Reduction, AUV Integration into Sampling Networks, and a look at coming AUV advances. The interactive format, using the materials provided, allows the attendee discussion time for relevance and demonstration purposes regarding real or potential AUV plans.

Intended Participants:

This class is intended for scientists interested in applying AUVs to particular problems, persons interested in AUV applications and the impact of AUV technology, as well as graduates in oceanographic fields seeking a broad understanding regarding the application of AUV platforms.

Meeting Room 12

T2 – Acoustic Seabed Classification with Multibeam and Sidescan Images

By Dr. Jon Preston, PhD – Senior Scientist at Quester Tangent Corporation, Sidney, BC, Canada

Acoustic seabed classification is the organization of the sea floor and shallow subsurface sediment into discrete classes based on information in the echoes. Geoacoustic sediment properties such as grain size and porosity are not available from acoustic backscatter alone, but the survey area can be segmented into regions of similar acoustic character. Systematically exploiting details in backscatter is the basis of acoustic segmentation.

This tutorial presents theory and applications of image-based acoustic classification, from the early papers through to recent applications. The acoustic principles of classifying with echoes from single beams at normal incidence are presented

first, since they relate to the principles of image classification. Near nadir, the amplitudes and shapes of sonar echoes are rich in sediment information. Away from vertical incidence, echoes carry sediment information in their amplitudes and their noise characteristics, but not in their shapes. Echoes from imaging sonars, with their wide horizontal beamwidths, become rasters in sonar images, so noise in these echoes becomes image texture. Macro-roughness such as sand waves and changes in sediment also contribute to texture. Image amplitude and texture are both heavily influenced by sediment type and are exploited for segmentation.

Sonar calibration is not necessary for image-based acoustic classification. Image amplitudes are made consistent throughout a survey, but remain in relative, not absolute, units. Since calibrating imaging sonars is challenging, the ability to use systems that need only be consistent offers cost-effective practical classification for military and civil purposes.

Topics in this tutorial include:

- Quality control, suppressing system artifacts.
- Compensating images for beam patterns and grazing angle effects.
- Features that capture amplitude and texture characteristics.
- Classification with amplitude: backscatter, backscatter vs. grazing angle.
- Classification with texture: Pace, Haralick, fractal, wavelet.
- Differences between classifying multibeam and sidescan images: resolution, using bathymetric data for compensation, benefits of images stitched together from backscatter in beams.

- Supervised classification, training sets.
- Unsupervised classification, PCA, manual and automated clustering.
- Using non-acoustic data to relate acoustic classes to sediment geoacoustic properties.
- Categorical interpolation.
- Maps with acoustic classes in similarity colours.

The techniques presented in this tutorial are wide ranging, and do not concentrate on a selected technical approach. Participants in this tutorial can expect to gain a thorough understanding of the principles and practice of image-based sediment classification.

Meeting Room 18

T3 – Signal Processing Methods for Underwater Acoustic Communications

By Dr. Milica Stojanovic, MS, PhD – Principal Scientist at the Massachusetts Institute of Technology & Guest Investigator at the Woods Hole Oceanographic Institution Lee Freitag, BS, MS – Senior Engineer at Woods Hole Oceanographic Institution

Wireless information transmission through the ocean is one of the enabling technologies for the development of future ocean-observation systems, whose applications include gathering of scientific data, pollution control, climate recording, detection of objects on the ocean floor, and transmission of images from remote sites. Implicitly, wireless signal transmission is crucial for control of autonomous underwater vehicles (AUVs) which will serve as mobile nodes in the future information networks of distributed underwater sensors. Wireless communication provides advantages of collecting data without the need to retrieve instruments, and maneuvering underwater vehicles and robots without the burden of cables.

Acoustic wireless communications are governed by three factors: limited bandwidth, time-varying multipath propagation, and low speed of sound in the ocean. Together, these factors result in a communication channel of poor quality and high latency, thus ironically combining the worst properties of mobile radio and satellite channels. In addition, because acoustic propagation is best supported at low frequencies, efficient underwater acoustic systems are inherently ultra-wide-band. To achieve high information throughput on these channels, coherent modulation/detection techniques must be considered because of their bandwidth efficiency. Signal processing methods for underwater acoustic channels are based on the principles similar to those for radio communications; yet, they differ substantially due to the amount of time-spreading introduced by the channel, as well as frequency-spreading introduced by the system mobility.

Bandwidth-efficient underwater communications have been a topic of extensive research over the past decade, resulting in the development of first high speed underwater acoustic modems. In this lecture, we focus on signal processing methods for adaptive equalization, digital synchronization, and multichannel combining for bandwidth-efficient underwater communication systems. We also address methods for multiple-access underwater communications, which form the basis of future underwater wireless communication networks, and discuss the need for scalable network architectures that provide efficient use of channel resources by a large number of AUVs. Finally, we outline the principles used in today's real-time implementation of these techniques. The performance of various techniques is discussed through

a series of experimental results, which include transmission over distances ranging from a few kilometers in shallow water to hundreds of kilometers in deep water, at highest bit-rates demonstrated to date.

Meeting Room 19/20

T4 – Outline for Workshop on Airborne Hyperspectral Imaging

By Herb Ripley – President of Hyperspectral Imaging Limited (HIL)

This half day workshop will focus on understanding basic hyperspectral technology and will cover what one should know when getting ready to undertake a hyperspectral project. Project planning will be covered in detail with emphasis on what pitfalls to avoid in order to end up with favorable results. The workshop will include examples from several recent projects undertaken by Mr. Ripley's firm.

Meeting Room 11

T5 – Sonar Signal / Image Processing and Communication

By John Gann – Founder of Chesapeake Technology, Inc.

This half-day workshop will offer in-depth instruction and training on the latest features in SonarWiz.MAP Chesapeake's full featured sidescan and sub-bottom data acquisition and mosaic system. The morning session will be a complete tutorial on all of the features of SonarWiz.MAP followed by an afternoon break-out session with the trainer. This is a hands-on class for seasoned users as well as newcomers, so bring your laptop and be prepared to learn new things about your next favorite application. The limited class size will offer a chance for personalized instruction and training

on real-time acquisition and post-processing of sidescan and sub-bottom data.

What You Will Learn:

Real-time Mosaic Processing Techniques

- Gain knowledge on how to quickly configure a real-time sonar survey.
- Configuring navigation sensors, fathometer and magnetometer.
- Try out the survey line planning and management tools.
- Master base map and map overlay tools.
- Utilize the built-in QC controls

Mosaic Post-Processing Techniques

- Ascertain ways to produce high-quality GIS compatible mosaics, web sites and reports.
- Understand the geodesy options
- Try out the point, polyline and polygon feature digitizing tools
- Master the contact capture, analysis and reporting tools
- Produce high-resolution mosaics in GIS compatible format

Sub-bottom Data Processing

- Acquiring sub-bottom data
- Generating image sections from SEG-Y and other industry file formats
- Picking 3-D acoustic reflectors and saving in CAD, GIS and ASCII formats

One-on-one break out sessions with Chesapeake engineers

- Come prepared with questions about features that have puzzled you. Bring your own data, if you would like.

Meeting Room 19/20

T6 – High Frequency Over-the-Horizon Radar Applications I Oceanography By Dr. Klaus-Werner Gurgel, PhD – Research Scientist at the University of Hamburg, Institute of Oceanography, Germany and Adjunct Professor at the Division of Meteorology and Physical Oceanography of the Rosenstiel School of Marine and Atmospheric Science, Miami, FL, USA

During the last decade, High-Frequency (HF) radar remote sensing of oceanographic parameters became more and more important. These radar systems are able to monitor large areas of the ocean, far behind the horizon. HF radar networks are currently being installed along the east- and west-coasts of the US to form the future monitoring systems. This tutorial is split into three parts:

A. Basic Physics of HF Radar:

Electromagnetic wave propagation, both groundwave and skywave, dependency on ionospheric conditions, scattering processes at the ocean surface, algorithms to derive surface current, ocean waves, and wind direction.

B. Technical Solutions:

Range resolution by Frequency Modulated Continuous Wave (FMCW) modulation and by pulses, azimuthal resolution by beam forming and by direction finding; advantages and limitations of the different technologies; algorithms to reduce the impact of Radio Frequency Interference (RFI).

C. Application of HF Radar Monitoring Systems:

How to set up a monitoring system by combining fine-scale ocean current models with HF radar measurements by data assimilation as demonstrated within the European project "European Radar Ocean SEnsing" (EuroROSE); algorithms required for HF radar

networks; ship detection and tracking algorithms for HF radars.

Meeting Room 8

T7 – End User Application of Underwater Cable and Connectors

By Brock Rosenthal – President & Founder of Ocean Innovations, LaJolla, CA., USA

Kevin Hardy – Director of Engineering at DeepSea Power & Light, San Diego, CA, USA

Cal Peters – Director of Engineering for Falmat, San Marcos, CA, USA

Andrew Gardner – Sales Manager for Impulse Enterprises, San Diego, CA, USA

Underwater cables and connectors provide system flexibility, ease of service, and other design advantages for undersea equipment. This one-day short course will help end-users identify and prioritize critical decisions that will lead to the best connector and cable system for their defined application. Leaders in underwater cables, connectors, and testing will present a straightforward full day session to help both end-users and manufacturers achieve success by speaking the same language. Attendees leave with a working knowledge and ability to specify underwater cable and connectors for their harsh environment applications, learning from experiences in the factory and field. Course notes will be provided, and technical reference material will be provided to all attendees on CD.

Topics to be covered include:

- application and field requirements
- mechanical design
- materials
- electrical design

- cable construction
- bonding
- EM terminations, breakouts
- writing specifications, existing references
- QA/QC
- testing
- thoughts on “interchangeability”
- pricing and delivery
- Advanced designs: Ethernet, fiberoptic, underwater mateable

Oceans2007 exhibitors involved in underwater cables and connectors will be invited to have tabletop displays and discuss applications with attendees at breaks.

Meeting Room 13

T8 – Bayesian Signal Processing

By Dr. James Candy, BSEE, MSE, PhD – Chief Scientist for Engineering and former Director of the Center for Advanced Signal & Image Sciences at the University of California, Lawrence Livermore National Laboratory, CA, USA

In the real world, systems designed to extract signals from noisy measurements are plagued by errors evolving from constraints of the sensors employed, by random disturbances and noise and probably, most common, by the lack of precise knowledge of the underlying physical phenomenology generating the process in the first place. Methods capable of extracting the desired signal from hostile environments require approaches that capture all of the “a priori” information available and incorporate them into a processing scheme. This approach is typically model-based employing mathematical representations of the component processes involved. In this short course we develop the Bayesian approach to statistical signal processing in a tutorial fashion including the “next generation”

of processors that have recently been enabled with the advent of high speed/high throughput computers. The course commences with an overview of Bayesian inference from batch to sequential processors. Once the evolving Bayesian paradigm is established, simulation-based methods using sampling theory and Monte Carlo realizations are discussed. Here the usual limitations of nonlinear approximations and non-Gaussian processes prevalent in classical nonlinear processing algorithms (e.g. Kalman filters) are no longer a restriction to perform Bayesian inference. Next, importance sampling methods are discussed and shown how they can be extended to sequential solutions. With this in mind, the concept of a particle filter, a discrete nonparametric representation of a probability distribution, is developed and shown how it can be implemented using sequential importance sampling/resampling methods to perform statistical inferences yielding a suite of popular estimators such as the conditional expectation, maximum a-posteriori and median filters. Finally, a set of applications are discussed comparing the performance of the particle filter designs with classical implementations (Kalman filters). Participants will be introduced to a variety of statistical signal processing techniques coupled with applications to demonstrate their capability.

Course Outline:

1. Introduction
2. Background into Bayesian approach
3. Monte Carlo (MC) methods for Bayesian inference
4. Sequential Bayesian processor (SBP)
5. Model-based signal processing: (Kalman filters)
6. Bayesian approach to state-space processors

7. Simulation-based MC approach to SBP
8. Particle filtering for SBP
9. Performance analysis
10. Applications: towed array, normal-modes in shallow water, etc.
11. Summary

Meeting Room 18

T9 – Signal Waveform Design for Underwater Acoustic Communications

*By Dr. Charalampos C. Tsimenidis, PhD – Lecturer in Communications in the School of Electrical, Electronic, and Computer Engineering
Bayan Sharif, BS, PhD – Professor of Digital Communications and Head of the School of Electrical, Electronic and Computer Engineering*

The tutorial will cover design of signalling waveforms that are suitable for utilisation in underwater acoustic (UA) modems. These will include PN sequences with low auto and cross-correlation properties, chirp design, in conjunction with pulse shaping and modulation schemes such as orthogonal frequency division multiple access (OFDM), direct sequence and multi-carrier code division multiple access (DS- and MC-CDMA). The tutorial will also address underwater channel modelling and simulation methodologies that are useful in evaluating “dry” performance of UA systems. Furthermore, the design of receiver algorithms will be considered that utilise adaptive receive arrays, carrier-phase and symbol timing recovery, Doppler compensation and multi-user detection methodologies. The tutorial is suitable for modem engineers with limited or no experience in this area to assist them in the design of UA based communication systems.

Technical Program

Tuesday, October 2

08:15 – 09:45

Opening Plenary – Ballroom BC

Chair: Dr. James McFarlane, International Submarine Engineering Ltd.

Welcome Address – 08:15 – 08:40

Honorable Richard Neufeld,
Minister of Energy, Mines and Petroleum Resources

Mr. James T. Barbera, Sr.,
President, IEEE Oceanic Engineering Society

Mr. Bruce Gilman
President, Marine Technology Society

Keynotes – 08:40 – 09:40

Department of Navy – Sustaining our Environment, Protecting our Freedom
– Honorable B.J. Penn, Assistant Secretary, US Navy

Opportunities for Marine Advanced Technology: On the Edge of Tomorrow –
Dr. Richard W. Spinrad, Assistant Administrator, Office of Oceanic & Atmospheric Research (NOAA)

09:45 – 10:10AM
Coffee Break, Exhibit Hall

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 10

VAN.121 Venus and Neptune Ocean Observatories/Neptune I

Chairs: Barnes, C.; Wilcock, W.

- 10:15AM **070426-004** – The NEPTUNE Canada Communications Network
Stephen Lentz
- 10:35AM **070511-006** – The Implementation of the NEPTUNE Canada backbone network
Peter Phibbs, Stephen Lentz
- 10:55AM **070511-010** – Deep Sea Cabled Infrastructure Observatories – Design Criteria and Philosophy for Shore-end Cable Stations
Robert Jones
- 11:15AM **070514-050** – NEPTUNE Canada Regional Cabled Observatory: Science Plan
Mairi Best, Brian Bornhold,
S. Kim Juniper, Chris Barnes

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 11

3.1 Automatic Control

Chairs: Stilwell, D.; Waldmann, C.

- 10:15AM **070427-004** – Resolved Acceleration Control of Underwater Vehicle-Manipulator Systems Using Momentum Equation
Takashi Yatoh, Shinichi Sagara
- 10:35AM **070531-022** – Coordinated Operation of Autonomous Underwater And Surface Vehicles
Anibal Matos, Nuno Cruz
- 10:55AM **070601-008** – Making AUVs Truly Autonomous
Per Espen Hagen, Oivind Midtgaard,
Oistein Hasvold

Technical Program (cont'd.)

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 12

10.41 Autonomous Underwater Vehicles/Design

Chairs: Manley, J.; Hobson, B.

- 10:15AM **070424-004** – Team Planning for Unmanned Vehicles in the Risk-Aware Mixed-Initiative Dynamic Replanning System
John Wilde, Dino DiBiasi,
Margaret Nervegna
- 10:35AM **070427-021** – Re-analysis of the “Akron” Airship Pressure Data to Design Pressure Measurement Experiments on an Underwater Vehicle
Farhood Azarsina, Christopher Williams,
Don Bass, Neil Bose
- 10:55AM **070430-025** – Toward a Neurobiological Agent Architecture for AUVs
Kaylani Merrill, Thomas Bean,
Dean Edwards, Michael O’Rourke
- 11:15AM **070511-013** – Using Single Propeller Performance Data to Predict the Performance of a Counter-Rotating Pair
Jessica Jacobson, Wayne Neu,
John Hennage, Ryan Williams,
Clinton Jones
- 11:35AM **070411-002** – The Deepglider: A 4000-Meter Glider for Oceanographic Research
T. Osse, Charles Eriksen

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 3

6.1 Oceanography: Physical, Geological, Chemical, Biological

Chairs: White, S.; Crout, R.

- 10:15AM **070513-005** – Toward Applying Automatic Control to Assist Coastal Land-Water Management in the Mekong Delta
Tho Nguyen, Linda Bushnell
- 10:35AM **070423-010** – 3D Flow and Sediment Transport Modelling at the Reversing Falls, Saint John Harbour, NB
Vincent Leys
- 10:55AM **070531-032** – Nonhydrostatic Hindcasts of High Amplitude Internal Waves in the Mid-Atlantic Bight, Patrick Gallacher
Michael Schaferkötter, Will Avera
- 11:15AM **070510-002** – Real Time Currents in the Harbors of the Great Lakes – A Pilot Project
Karen Earwaker
- 11:35AM **070531-055** – The Ocean Studies Institute’s Ocean Observing Program:
Richard Pieper, Sam Kelly

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 2

5.3 Numerical Modeling and Simulation

Chairs: Subramanian, V.; Pruessner, A.

- 10:15AM **070427-010** – High Frequency Acoustic Propagation Using Level Set Methods
Sheri Doran, Andrew Fredricks
- 10:35AM **070427-011** – An Augmented Reality Architecture for the Creation of Hardware-in-the-Loop and Hybrid Simulation Test Scenarios for Unmanned Underwater Vehicles
Benjamin Davis, Pedro Patron, David Lane

Technical Program (cont'd.)

- 10:55AM **070501-007** – Chesapeake Inundation Prediction System (CIPS): A Regional Prototype for a National Problem
Barry Stamey, Fred Klein
- 11:15AM **070509-005** – Application of Decision-Free Techniques for the Prediction of Significant Wave Height, Javad Mahjoobi, Amir Shahidi

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 1

2.81 Acoustic Communication/ Signal Processing I

Chairs: Stojanovic, M.; Mitra, U.

- 10:15AM **070531-043** – Performance Analysis of Multichannel Lattice Equalization in Coherent Underwater Communications
Joao Gomes, Antonio Silva, Sergio Jesus
- 10:35AM **070423-009** – MMSE-Lattice Sequential Equalization of Underwater Acoustic Channels
Dale Green, Mohamed Damen
- 10:55AM **070530-018** – Environmental Equalizer for Underwater Communications
Antonio Silva, Sergio Jesus, Joao Gomes
- 11:15AM **070430-009** – A New Vector Sensor Receiver for Underwater Acoustic Communication
Ali Abdi, Huaihai Guo, Patchara Sutthiwan
- 11:35AM **070531-085** – Multi-Sensor Speech Enhancement Using Modified LP Residual for underwater speech communications
Hyung-Jun Ju, Chan-sub Park, Ki-man Kim, Jong-tae Bae, Seok-soon Choi

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 7

1.1 Sonar and Transducers

Chairs: Foote, K.; Soukup, R.

- 10:15AM **070603-003** – Investigation of Paralyne Coatings Over Polyurethane Encapsulated Acoustic Transducers
Thomas Howarth, Thomas Nigrelli, Jeffrey Szelag
- 10:35AM **070429-001** – A Study of Data Analysis for A Low-Cost Bathymetry System Using Fishing Echo Ssounders
Katsumori Hatanaka, Masashi Toda, Masaaki Wada
- 10:55AM **070409-001** – A Digital Thin Line Towed Array for Small Autonomous Underwater Platforms
Venugopalan Pallayil, Mandar Chitre, Parijat Deshpande
- 11:15AM **070501-006** – Broadband Transduction Implementation and System Impact
Thomas Montgomery, Richard Meyer, Eric Bienert
- 11:35AM **070506-001** – Phase-Mode Circular Multi-channel Hydrophone with Super Directivity
Yixin Yang, Wei Jiang

Tuesday, October 2, 10:15AM – 12:00PM

Room: Meeting Room 8

9.2 Ropes and Tension Members

Chairs: Murrin, D.; Murray, D.

- 10:15AM **070222-001** – Reduced-Recoil-Risk Rope Test Method
John Flory
- 10:35AM **070514-026** – Design and Testing of a Snap Load Alleviator for a Submarine Rescue Vehicle Handling System
Andreas Huster, Adrian Dayani, David Lo

Technical Program (cont'd.)

- 10:55AM **070604-005** – OMNI-Max Anchor Development and Technology
John Shelton
- 11:15AM **070530-008** – Forensic Techniques for Investigating Causes of Fiber Rope Failures
Jeff Nichols, Steve Banfield, John Flory

12:10 – 1:15PM
IEEE Awards Lunch, Ballroom

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 10
VAN.122 Venus and Neptune Ocean Observatories/Neptune II
Chairs: Best, M.; Barnes, C.

- 1:15PM **070430-027** – The Deployment of A Long-Term Seafloor Seismic Network on the Juan de Fuca Ridge
William Wilcock, Paul McGill, Emilie Hooff, Douglas Toomey, Hemalinee Patel, Debra Stakes, Andrew Barclay, Tony Ramirez, Robert Weekly
- 1:35PM **070503-001** – Regional Cable Observatory Solutions
Neville Hazell, Antoine Lecroart, Jean-Francois Marcerou
- 1:55PM **070514-046** – Developing in the dark: Software Development and Quality Assurance for the VENUS/NEPTUNE Canada Cabled Observatories
Murray Leslie, Benoit Pirenne, Daisy Qi

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 11
10.12 Vehicle Design/Sub Surface
Chairs: Trevorrow, M.; Hardy, K.

- 1:15PM **070514-017** – PRMS Hull and Transfer Skirt Design and Experimental Validation
Larry Goland, Craig Schoof, David Lo
- 1:35PM **070530-026** – Identification of A Simplified Auv Pitch-axis Model for Control Design: Theory and Experiments
Daniel Stilwell, Jan Petrich, Wayne Neu
- 1:55PM **070601-013** – Development of a Biomimetic Motion Control System Using CPG
Takayuki Matsuo, Kazuo Ishii

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 12
10.43 Autonomous Underwater Vehicles/Systems
Chairs: Neu, W.; Osse, T.

- 1:15PM **070426-003** – Wind-up AUVs: Combined Energy Storage and Attitude Control Using Control Moment Gyros
Blair Thornton, Tamaki Ura, Yoshiaki Nose
- 1:35PM **070430-006** – Battery Systems for Maritime AUVs
Arden Johnson
- 1:55PM **070515-001** – The Development of An AUV Docking Station for Ocean Observatories
Brett Hobson, Robert McEwen, James Bellingham, Jon Erikson, Farley Shane, Thomas Hoover, Lance McBride
- 2:15PM **070501-004** – Inductive Power System for Autonomous Underwater Vehicles
Tim McGinnis, Chris Henze, Karl Conroy

Technical Program (cont'd.)

- 2:35PM **070402-001** – BP's AUV Development program, Long Term Goals – Short-Term Wins
David Saul, Ioseba Tena

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 3

4.7 Operational Observation

Chairs: Crout, R.; White, S.

- 1:15PM **070430-036** – AUV Operations at MBARI
Duane Thompson, Doug Conlin
- 1:35PM **070425-003** – Utilization of Lidar and NOAA's Vertical Datum Transformation Tool (VDatum) for Shoreline Delineation
Stephen White
- 1:55PM **070530-014** – NOAA National Ocean Service Remote Sensing Applications and Concept of Operations
Marie Colton, Steven Raber, Rebecca Love

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 2

5.4 Marine GIS and Data Fusion

Chairs: Mader, G.; Kazeminezhad, M.

- 1:15PM **070510-009** – Time-Series Data Exchange Using the Geography Markup Language
Daniel Martin, John Ulmer, James Boyd
- 1:35PM **070514-011** – Geospatial Video Monitoring of Nearshore Benthic Habitats of Biscayne Bay (Florida, Usa) Using The Shallow-Water Positioning System (SWaPS)
Diego Lirman, Greg Deangelo

- 1:55PM **070530-024** – VDatum and Strategies for National Coverage
Edward Myers, Kurt Hess, Zhizhang Yang, Jiangtao Xu, Adeline Wong, David Doyle, Jason Woolard, Stephen White, Bang Le, Stephen Gill, Gerald Hovis

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 1

2.82 Acoustic Communication/

Signal Processing II

Chairs: Li, W.; Ju, H.

- 1:15PM **070514-019** – MIMO-OFDM Over An Underwater Acoustic Channel
Baosheng Li, Shengli Zhou, Milica Stojanovic, Lee Freitag, Jie Huang, Peter Willett
- 1:35PM **070531-057** – Orthogonal Space-Time Block-Differential Modulation over Underwater Acoustic Channels
Fengzhong Qu, Liuqing Yang
- 1:55PM **070423-005** – Real-Time Image and Status Transmission from A UUV during A Ship Hull Inspection in A Port Environment Using A High-Speed High-Frequency Acoustic Modem
Pierre-Philippe Beaujean
- 2:15PM **070430-041** – The SSBL Positioning for The AUV with Data Transmission
Yoshitaka Watanabe, Hiroshi Ochi, Takuya Shimura

Technical Program (cont'd.)

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 7

1.8 Ocean Noise

Chairs: Ebrahim, A.; Stanic, S.

- 1:15PM **070509-010** – Measurements of Ambient Noise during Extreme Wind Conditions in the Gulf of Mexico
Joal Newcomb, Mark Snyder,
Wesley Hillstrom, Ralph Goodman
- 1:35PM **070516-001** – Ambient Noise Classification in the Gulf of Mexico
Mark Snyder, Peter Orlin
- 1:55PM **070606-002** – A Summary of Existing and Future Potential Treatments for Reducing Underwater Sounds from Oil and Gas Industry Activities
Jesse Spence

Tuesday, October 2, 1:15PM – 3:00PM

Room: Meeting Room 8

9.21 Marine Riser Systems

Chairs: Flory, J.; Shelton, J.

- 1:15PM **070503-004** – An Advanced Measurement System for Vortex-Induced-Vibrations Characterization in Large-Scale Risers
Martin Ordonez, Maximiliano Sonnaillon,
David Murrin, Neil Bose, Wei Qiu
- 1:35PM **070503-005** – Numerical Investigation of the Influence of Span-Wise Force Variation in Circular Cylinders Undergoing Vortex Induced Vibrations at High Reynolds Number
David Murrin, Julio Militzer,
Neil Bose, Rubens Campregher

- 1:55PM **070503-006** – High Mode VIV Experiments on Large-Scale Riser
David Murrin, Martin Ordonez,
Gillian Stone, Neil Bose, Wei Qiu

3:00 – 3:25PM
Coffee Break, Exhibit Hall

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 10

VAN.11 Venus and Neptune Ocean

Observatories/Venus

Chairs: Olmi, E.; Irish, J.

- 3:30PM **070427-015** – The VENUS Cabled Observatory: Engineering Meets Science on the Seafloor
Richard Dewey, Adrian Round,
Paul Macoun, Jaklyn Vervynck,
Verena Tunnicliffe
- 3:50PM **070427-023** – The Ocean Technology Test Bed – An Underwater Laboratory
Alison Proctor, Colin Bradley,
Emmett Gamroth, Jeff Kennedy
- 4:10PM **070511-011** – Observatory Cable Laying System
Keith Shepherd, Reuben Mills,
Keith Tamburri
- 4:30PM **070524-002** – Underwater Window: High Definition Video on VENUS and NEPTUNE
John Roston, Colin Bradley,
Jeremy Cooperstock

Technical Program (cont'd.)

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 11

10.11 Vehicle Design/Surface

Chairs: Hardy, K.; Lo, D.

3:30PM **070413-001** – The Towed Torpedo Emulator (TOTEM) System
Mark Trevorrow, Richard Fleming

3:50PM **070430-007** – Combining Data Collection from Unmanned Surface Vehicles with Geospatial Analysis: Tools for Improving Surface Water Sampling, Monitoring, and Assessment
Andrew Casper, Michael Hall,
Robert Stetson, Barnali Dixon, Eric Steimle

4:10PM **070531-083** – Development of a Biomimetic Fin Actuator Using Electroconductive Polymer
Kimikazu Sugiyama, Kentaro Yamato,
Kazuo Ishii, Keiichi Kaneto

4:30PM **070531-091** – An Open Source Parametric Propeller Design Tool
Kathryn D'Epagnier, Hsin-Lung Chung,
Michael Stanway, Richard Kimball

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 3

6.3 Hydrography/Seafloor Mapping/Geodesy

Chairs: Zilkoski, D.; Colton, M.

3:30PM **070503-008** – QTC DEEP – A ROV-Mounted Single Beam Acoustic Seabed Classification System for High Resolution Mapping
Stephen Bloomer, Ben Biffard,
Jon Preston, N. Chapman

3:50PM **070530-021** – A Case Study on Hydrographic Survey Processing with Ellipsoidal Altitude
Peter Canter, Corey Collins, Doug Lockhart

4:10PM **070531-042** – Assessing 155 Years of Hydrographic Survey Data for High Resolution Bathymetry Grids
Adeline Wong, Marcus Cole,
John Campagnoli

4:30PM **070604-003** – Rapid Swath Mapping of Reef Ecology and Associated Water Column Chemistry in the Gulf of Chiriqui, Panama
Richard Camilli, Oscar Pizarro, Luis Camilli

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 2

7.1 Imaging and Vision

Chairs: Caimi, F.; Morales, R.

3:30PM **070404-002** – Rediscovery of the USS Macon – First Archaeological Survey Within the Boundaries of the Monterey Bay National Marine Sanctuary
Christopher Grech

3:50PM **070430-001** – An AUV-deployable pulsed laser line scan (PLLS) imaging sensor
Fraser Dalgleish, Frank Caimi,
Walter Britton, Carl Andren

4:10PM **070506-002** – Application of A Real-Time Underwater Surveillance Camera
Katherine Lam, Robin Bradbeer,
Paul Shin, Paul Hodgson, Kenneth Ku

4:30PM **070511-012** – Enhancement of Underwater Video Mosaics for Post-Processing
Yuri Rzhonov, Fan Gu

Technical Program (cont'd.)

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 1

2.83 Acoustic Communication/Channel Modeling and Estimation

Chairs: Beaujean, P.; Arabshahi, P.

- 3:30PM **070531-027** – Dynamic Channel Tracking Using Modified EM Algorithm and its Least Squares Extension
Weichang Li, James Preisig
- 3:50PM **070502-004** – A Simple Sparse Channel Estimator for Underwater Acoustic Channels
Urbashi Mitra, Cecilia Carbonelli
- 4:10PM **070531-020** – Time-Varying Underwater Acoustic Channel Modeling for Moving Platform
Sung-hoon Byun, Sea-moon Kim, Yong-kon Lim, Woojae Seong
- 4:30PM **070508-006** – Frequency-Domain Channel Estimation and Equalization For Single Carrier Underwater Acoustic Communications
Yahong Zheng, Chengshan Xiao, T.C. Yang, Wen-Bin Yang
- 4:50PM **070430-039** – Capacity of a Relay Acoustic Channel
Milica Stojanovic

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 7

2.11 Sonar Signal Processing I

Chairs: Candy, J.; Kraeutner, P.

- 3:30PM **070529-004** – Matched Field Noise Suppression based on Matrix Filter
Bo Lei, Kunde Yang, Yuanliang Ma

- 3:50PM **070424-005** – Acoustic Dopplergram for Intruder Defense
Tsih Yang
- 4:10PM **070426-014** – An Adaptive Algorithm for Amplitude and Phase Measurements Based on Multiple Samples
Xiaodong Xiong, Adam Zielinski
- 4:30PM **070508-011** – Acoustic Classification with Single-Beam Echosounders: Processing Methods and Theory for Isolating Effects of the Seabed on Echoes
Benjamin Biffard, Jon Preston, N Chapman

Tuesday, October 2, 3:30PM – 5:15PM

Room: Meeting Room 8

3.51 Buoy Technology/Design

Chairs: Paul, W.; Cole, R.

- 3:30PM **070504-003** – Monitoring and Controlling System Performance In the Pioneer Buoy
Donald Murray, Thomas Consi
- 3:50PM **070510-001** – A fast response capability within NOAA/NOS/CO-OPS
Patrick Burke, Tammy Graff
- 4:10PM **070510-003** – Design of a Subsurface Moored Acoustic Array in Deep Water
Warren Bartel, Mark Greise
- 4:30PM **070531-023** – Development of A Self-Contained, Satellite Based, Moored Surface Buoy Position Tracking Device
Clifford Merz, Robert Weisberg, Graham Tilbury, Patrick Smith, Chad Lembke, Jason Law, Rick Cole, Jeff Donovan, Douglass Myhre

Technical Program (cont'd.)

Wednesday, October 3

08:15 – 09:45

Plenary – Ballroom BC

On the Edge of Tomorrow: Delivering the Navy Canada Needs – Commodore K.E. Williams, Assistant Chief of the Maritime Staff Canada

Neptune and Venus: On the Edge of Tomorrow – Dr. Chris Barnes, Professor Emeritus, University of Victoria, Earth & Ocean Sciences

The Pacific Ocean Shelf Tracking Array (POST): Biology on the Edge of Tomorrow – Dr. David Welch, President, Kintama Research Corporation

Oceans 2008 Quebec City – Dr. Ferial El-Hawary, BH Engineering Systems

International Collaboration on Ocean Technology Projects Sponsored by Industry Canada

10:15 a.m. – 11:55 a.m.

Wednesday, October 3, 2007

Meeting Room 15

This session will focus on challenges and successes in creating cross border private sector and research institution partnerships to deliver ocean technology solutions for private and public sector clients.

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 10

VAN.14 Ocean Observatories – Cabled

Chairs: Hazell, N.; Bannon, R.

- 10:15AM **070430-018** – The U.S. National Science Foundation's Ocean Observatories Initiative at Preliminary Design
Holly Given, Susan Banahan, Stuart Williams
- 10:35AM **070430-032** – Implementing a New Paradigm in Ocean Observing: A View from the COOLroom
Oscar Schofield, Scott Glenn, Robert Chant, Josh Kohut, Janice McDonnell
- 10:55AM **070522-002** – Development and Installation of Networked Undersea Measurement Systems Using the Advanced Telecom Computing Architecture (ATCA)
John Walrod

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 11

10.13 Vehicle Design/Sub Surface and Profiling

Chairs: Casper, A.; Bachmayer, R.

- 10:15AM **070531-003** – Traction Properties of the Wheels of an Underwater Crawler on Different Soils
Christoph Waldmann, Lutz Richter
- 10:35AM **070514-047** – A Vehicle for Science and Exploration – Bringing Offshore Industry Advances and Experience to the Oceanographic Community
Brent Evers, Justin Manley

Technical Program (cont'd.)

- 10:55AM **070531-075** – Design of a Modular, Compact, Multi-Role Remotely Operated Vehicle for Sheltered Water Operations
Pranay Sinha, Kurt Stiehl, Rangel Dokov, Olayemi Oyeboode, Edward Huo, Stephanie Chin, Rachel Price, Richard Larson
- 11:15AM **070531-093** – High Brightness Light Emitting Diodes for Ocean Applications
Kevin Hardy, Mark Olsson, John Sanderson, Ken Steeves, Brian Lakin, Jon Simmons, Peter Weber

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 12

10.42 Autonomous Underwater Vehicles/ Performance

Chairs: Hobson, B.; Manley, J.

- 10:15AM **070427-018** – Preliminary Model Tests for the Design of a Gliding Deep Water Elevator
Chris Roman, Todd Gregory
- 10:35AM **070511-014** – Echo Mapper, an Air-Transportable Seabed Mapping AUV
Donald Hussong, J. Blackinton
- 10:55AM **070420-002** – Assessing Design Tradeoffs in Deploying Undersea Distributed Sensor Networks
Russell Costa, Thomas Wettergren
- 11:15AM **070424-002** – Automated Coordinator Synthesis for Mission Control of Autonomous Underwater Vehicle
Siddhartha Bhattacharyya, Ratnesh Kumar, Lawrence Holloway, Sekhar Tangirala

- 11:35AM **070427-019** – Design and initial in-Water Testing of Advanced Non-linear Control Algorithms onto an Unmanned Underwater Vehicle (UUV)
Vladimir Djapic, Jay Farrell, Paul Miller, Rich Arrieta

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 3

3.31 Oceanographic Instrumentation and Sensors I – Development

Chairs: Griffin, S.; Yeo, R.

- 10:15AM **070502-006** – Low-Cost, Data-Logging Salinity Sensor
Thanh-Tung Pham, David Burnett, LaDonna Handugan, Damon Frashure, Chun Chen, Linda Bushnell, Lauren Sullenberger, Alan Trimble, Jennifer Ruesink
- 10:35AM **070511-009** – Laser Raman Spectroscopic Analyses of Dissolved Gases
Sheri White
- 10:55AM **070514-029** – Development of an Active, Large Volume, Discrete Seawater Sampler for Autonomous Underwater Vehicles
Larry Bird, Alana Sherman, John Ryan
- 11:15AM **070531-049** – A Suspended Particle Rosette Sampler for Investigating Hydrothermal Plumes
John Breier, Chris Rauch, Chris German

Technical Program (cont'd.)

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 2

7.5 Holography, 3D Imaging, and E&M Sensing

Chairs: Watson, J.; Dagleish, F.

- 10:15AM **070430-016** – Analysis of In-Situ Microscopic Organism Behavior in Data Acquired Using a Free-Drifting Submersible Holographic Imaging System
Don Pfitsch, Edwin Malkiel, Makibi Takagi, Yury Ronzhes, Stephen King, Jian Sheng, Joseph Katz
- 10:35AM **070531-033** – Rapid extraction of 3D Regions of Interest from Digital Holograms
Weichang Li, Nick Loomis, Qiao Hu, Cabell Davis
- 10:55AM **070601-020** – Advanced System for Underwater Visual Inspection
Rogelio Morales
- 11:15AM **070502-005** – Demonstration of a Novel Man-Portable Magnetic STAR Technology for Real Time Localization of Unexploded Ordnance
Roy Wiegert, John Oeschger, Eric Tuovila
- 11:35AM **070529-003** – Using Magneto-Resistive Sensors to Monitor Animal Behaviour: A Case Study Using Limpets
Pushkar Wadke, Michael Burrows, David Meldrum, Andrew Davies

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 1

2.84 Acoustic Communication Networks

Chairs: Stojanovic, M.; Chen, W.

- 10:15AM **070426-010** – Underwater Acoustic Communications Performance Modeling in Support of Ad Hoc Network Design
Warren Fox, Payman Arabshahi, Sumit Roy, Nathan Parrish
- 10:35AM **070507-004** – Optimizing the Transmission Range in an Acoustic Underwater Network
Arnau Porto Dolc, Milica Stojanovic
- 10:55AM **070502-002** – A Detailed Simulation Study of the UWAN-MAC Protocol for Underwater Acoustic Networks
Paolo Casari, Fabio Lapicciarella, Michele Zorzi
- 11:15AM **070530-005** – A Novel Framework to Simulate Wireless Maritime Communication Networks
Wen Su, Peng-Yong Kong, Jaya Shankar, Haiguang Wang, Yu Ge, Chee-Wei Ang
- 11:35AM **070427-022** – An Improved Location-Aware Routing Protocol for Mobile Underwater Acoustic Networks
Edward Carlson, Pierre-Philippe Beaujean, Edgar An

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 7

2.12 Sonar Signal Processing II

Chairs: Zielinski, A.; Ellis, T.

- 10:15AM **070508-007** – Propagation-Invariant Classification of Signals in Channels with Dispersion and Damping
Greg Okopka, Patrick Loughlin

Technical Program (cont'd.)

- 10:35AM **070601-005** – Underwater Wideband Source Localization Using the Interference Pattern Matching
Seung-Yong Chun, Se-Young Kim, Ki-Man Kim
- 10:55AM **070531-056** – Underwater Broadband Target Localization Using the Interference Pattern of Spectrogram Estimated by Three Sensors
Se-Young Kim, Seung-Yong Chun, Ki-Man Kim
- 11:15AM **070430-012** – Maximum Likelihood Estimates and Cramer-Rao Bounds for Map-Matching Based Self-localization
Ashwin Sarma
- 11:35AM **070602-001** – Rethinking Forward-Looking Sonar for AUV's: Combining Horizontal Beamforming with Vertical Angle-of-Arrival Estimation
Paul Kraeutner, Blair Brumley, Hongkai Guo, Joe Giesemann

Wednesday, October 3, 10:15AM – 12:00PM

Room: Meeting Room 8

3.52 Buoy Technology/Performance

Chairs: Cole, R.; Paul, W.

- 10:15AM **070629-001** – Development of a Real-Time Water Quality Buoy for the Fraser River Estuary
Anthony Ethier, Jeannette Bedard
- 10:35AM **070427-012** – Study of a Three-Point Mooring of an Aquaculture Feed Buoy
James Irish, Stanley Boduch, Judson Decew, Walter Paul

- 10:55AM **070427-013** – Practical Use of Personal Buoy System for Fishery Using Sensor Network Technologies
Masaaki Wada, Katsumori Hatanaka, Masashi Toda
- 11:15AM **070514-003** – A User Friendly Program for Estimation of Environmental Force Acting on a Floating Structure and the Mooring Lines Load Based on a Labview Programming Environment
Tamer Abd el-Aziz

12:00 – 1:15PM
MTS Awards Lunch, Ballroom

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 10

3.41 Systems and Observatories I – IOOS & Local

Chairs: Klein, F.; O'Reilly, T.

- 1:15PM **070426-008** – Building a U.S. Integrated Ocean Observing System
Krish Narasimhan
- 1:35PM **070501-008** – NOAA's New IOOS Program
Zdenka Willis
- 1:55PM **070514-012** – Building the Regional Component of the Integrated Ocean Observing System
Eugene (Geno) Olmi, Thomas Malone, Robin Jamail
- 2:15PM **070430-019** – A Technique for Optimizing the Placement of Oceanographic Sensors with Example Case Studies for the New York Harbor Region
Peter Rogowski, Rustam Stolkin

Technical Program (cont'd.)

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 11

10.22 Vehicle Navigation/Positioning

Chairs: Issac, M.; Evers, B.

- 1:15PM **070430-004** – Underwater Vehicle Positioning Based on Time of Arrival Measurements from a Single Beacon
Thomas Casey, Brian Guimond, James Hu
- 1:35PM **070511-002** – Integrated Navigation System for Remotely Operable Vehicle for 6000 metre Water Depth
Ananda Gidugu, Vandavasi Jayakumar, Shijo Zacharia, Sethuraman Ramesh, Srinivasan Ramji, Alexander Nosov, Vladimir Kuznetsov, Sergey Dremuchev, Konstantin Kuznetsov, Alexander Paramanov
- 1:55PM **070531-071** – Collaborative Localization for Fleets of Underwater Drifters
Diba Mirza, Curt Schurgers
- 2:15PM **070514-052** – A study on the Estimation Method of Noise Covariance for Underwater Navigation Systems
Hang Choi, GyungNam Jo, Dong Seo, T Ura
- 2:35PM **070518-001** – Real-Time Path-Planning of an AUV Based on Characteristics of Passive Acoustic Landmarks for Visual Mapping of Shallow Vent Fields
Toshihiro Maki, Hayato Mizushima, Hayato Kondo, Tamaki Ura, Takashi Sakamaki, Masao Yanagisawa

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 12

VAN.71 Homeland Security I

Chairs: Acker, T.; Gross, P.

- 1:15PM **070422-001** – Underwater Protection System
Arne Lovik, Arnt Bakken, Tor Knudsen
- 1:35PM **070427-016** – Sensor Repositioning to Improve Undersea Sensor Field Coverage
Zie Kone, Errol Rowe, Thomas Wettergren
- 1:55PM **070430-024** – Probabilistic Analysis of a Passive Acoustic Diver Detection System for Optimal Sensor Placement and Extensions to Localization and Tracking
Rustam Stolkin, Ionut Florescu
- 2:15PM **070513-011** – Marine Automated Identification System (AIS) Data Analysis for Enhanced Coastal Security: An Oil Spill Tracking Application
Kurt Schwehr, Philip McGillivray

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 3

3.32 Oceanographic Instrumentation and Sensors II – Performance

Chairs: Harris, M.; Bermudez, L.

- 1:15PM **070430-002** – Monitoring the Spring Bloom in an Ice Covered Fjord with the Land/Ocean Biogeochemical Observatory (LOBO)
Scott McLean, Marlon Lewis, John Cullen, Steven Adams, Scott Feener, John Andrea, Ken Johnson, Hans Jannasch, Luke Coletti, Steve Fitzwater, Casey Moore, Andrew Barnard, Adam Comeau

Technical Program (cont'd.)

- 1:35PM **070430-013** – Improvements in Upward Looking Sonar-Based Sea-Ice Measurements: A Case Study for 2007 Ice Features in Northumberland Strait, Canada
David Fissel, John Marko, Edward Ross, Vincent Lee, John Egan, Rene Chave
- 1:55PM **070430-031** – Tsunami Detection Systems for International Requirements
Robert Lawson
- 2:15PM **070511-005** – Operational Performance of the Second Generation Deep-ocean Assessment and Reporting of Tsunamis (DART II)
Richard Bouchard, Shannon McArthur, William Hansen, Kevin Kern, Lea Locke
- 2:35PM **070601-003** – Surveying the Underside of an Arctic Ice Ridge Using a Man-Portable Gavia AUV Deployed through the Ice
Richard Yeo

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 2

1.42 Acoustic Oceanography I

Chairs: Foote, K.; Francis, D.

- 1:15PM **070426-012** – Acoustic Monitoring of the Juvenile Pink Salmon Food Supply and Predators in Prince William Sound, Alaska
Richard Thorne, Gary Thomas
- 1:35PM **070430-011** – Inverted Echo Sounder on a Cabled Observatory
David Lemon, Rene Chave, Murray Clarke, Richard Dewey, Paul Macoun
- 1:55PM **070507-006** – Integrating Passive and Active Acoustics for the Assessment of Fish Stocks
Gary Thomas, Thomas Hahn, Richard Thorne

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 1

2.85 Acoustic and Optical Communication and Sensors

Chairs: Arabshahi, P.; Fox, W.

- 1:15PM **070509-009** – Exploiting the Bandwidth-Distance Relationship in Underwater Acoustic Networks
Paolo Casari, Milica Stojanovic, Michele Zorzi
- 1:35PM **070510-010** – Packet Scheduling for Multihopped Underwater Acoustic Communication Networks
Wanshi Chen, Urbashi Mitra
- 1:55PM **070427-017** – Phase Coherent Digital Communications for Wireless Optical Links in Turbid Underwater Environments
Brandon Cochenour, Linda Mullen, Alan Laux
- 2:15PM **070430-044** – Energy-Efficient Joint Source-Channel Coding for Optical Wireless Underwater Networks
Balakrishnan Srinivasan, Volkan Rodoplu
- 2:35PM **070529-006** – Optics near the Snell Angle in a Water-to-Air Change of Medium
Harold Suiter, Nicholas Flacco, Paul Carter, Kelvin Tong, Ryan Ries, Meir Gershenson

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 7

2.13 Sonar Signal Processing III

Chairs: Kim, S.; Loughlin, P.

- 1:15PM **070604-006** – An Optimal Subspace Projection for Signal Detection in Noisy Environment
Philippe Courmontagne, Nicolas Vergnes, Claude Jauffret

Technical Program (cont'd.)

- 1:35PM **070430-026** – Echosounder Depth Tracking with the Extended Kalman Filter
Timothy Ellis, James McNames, Lisa Zurk, Josef Lotz, Jean-Louis Ecochard
- 1:55PM **070531-046** – On the Design of Direct Sequence Spread-Spectrum Signaling for Range Estimation
Brian Bingham, Ballard Blair, David Mindell
- 2:15PM **070426-016** – A Precise Acoustic Distance Measuring System for Tectonic Plate Motion
Li Zhou, Adam Zielinski, Paul Kraeutner
- 2:35PM **070426-015** – Variable Step Size Adaptive Sub-Sample Delay Estimation Using A Quadrature Phase Detector
Yan Shi, Li Zhou, Adam Zielinski

Wednesday, October 3, 1:15PM – 3:00PM

Room: Meeting Room 8

6.82 Mineral Resources I

Chairs: Wiltshire, J.; Scott, S.

- 1:15PM **070711-001** – The Role of Subsea Geophysical Exploration for SMS Deposits
Peter Kowalczyk, Eric Jackson
- 1:35PM **070206-001** – Contrasts of Fluid Chemistry, Isotope Compositions and Temperature in Modern Seafloor Hydrothermal Systems
Nikolay Bortnikov
- 1:55PM **070418-001** – Economic Validation Analyses of Japan's Proposed Nodule, Crust, and Kuroko-type SMS Mining in 2006
Tetsuo Yamazaki
- 2:15PM **070402-002** – Considerations in Marine Sand Mining and Beach Nourishment
Carl Hobbs

- 2:35PM **070404-001** – High Bandwidth Optical Networking for Underwater Untethered TeleRobotic Operations such as Mining
Greg Baiden, Yassiah Bissiri

3:00 – 3:25PM
Coffee Break, Exhibit Hall

Wednesday, October 3, 3:30PM – 5:30PM

Room: Meeting Room 10

3.42 Systems and Observatories II –

Local/Regional

Chairs: Holt, S.; Dawson, J.

- 3:30PM **070427-014** – A Moored Array for Measuring Internal Solitary Waves for SW06
James Irish, James Lynch, John Kemp, Timothy Duda, Arthur Newhall
- 3:50PM **070430-045** – A Wireless Internet-Based Observatory: The Real-Time Coastal Observation Network (ReCON)
Steven Ruberg, Ronald Muzzi, Stephen Brandt, John Lane, Terrence Miller, Jefferson Gray, Stephen Constant, Elwood Downing
- 4:10PM **070512-005** – The Great Lakes Urban Coastal Observing System (GLUCOS): Results of First Deployments in Coastal Lake Michigan
Thomas Consi, Greg Barske, Harvey Bootsma, Thomas Hansen, John Janssen, Jesse Kipp, Val Klump, Robert Paddock, Don Szmania, James Waples
- 4:30PM **070514-038** – Satellite Link Management for an Ocean Observing Network
Thomas O'Reilly, Mark Chaffey, Robert Herlien, Kent Headley, Brian Kieft, Karen Salamy

Technical Program (cont'd.)

- 4:50PM **070531-060** – A Coastal Ocean Prediction System for Tampa Bay, Florida
Mark Luther, Steven Meyers,
Sherryl Gilbert, Vembu Subramanian,
Michelle McIntyre, Monica Wilson,
Heather Holm, Amanda Linville

Wednesday, October 3, 3:30PM – 5:30PM

Room: Meeting Room 12

VAN.72 Homeland Security II

Chairs: McGillivray, P.; Stolkin, R.

- 3:30PM **070514-037** – The Application of Sector Scanning Sonar and Multibeam Imaging Sonar for Underwater Security
Peter Gross, Phil Andrew
- 3:50PM **070519-001** – Maritime and Port Security Demonstration Project Workshop
Gary Garnett, John Leggat,
Ian Parker, John Bell
- 4:10PM **070531-054** – Understanding the Underwater UXO Problem
Andrew Schwartz

Wednesday, October 3, 3:30PM – 5:30PM

Room: Meeting Room 3

3.33 Oceanographic Instrumentation and Sensors III – Observations

Chairs: Puleo, J.; White, S.

- 3:30PM **070427-009** – Monitoring Suspended Sediment Plumes Using an Acoustic Doppler Current Profiler (ADCP)
Jon Wood, Don Boye
- 3:50PM **070430-034** – Full-scale Measurements of High-Speed Passenger Ferry Performance and Wake Signature
Phil Osborne, David Hericks, Jessica Cote

- 4:10PM **070531-087** – Getting More Mileage out of Dissolved Oxygen Sensors in Long-term Moored Applications
Carol Janzen, David Murphy,
Nordeen Larson

- 4:30PM **070605-002** – WQM: A New Integrated Water Quality Monitoring Package for Long-Term In-Situ Observation of Physical and Biogeochemical Parameters
Cristina Orrico, Casey Moore,
David Romanko, Alex Derr,
Andrew Barnard, Carol Janzen,
Norge Larson, David Murphy,
Rob Johnson, Jesse Bauman,
Jesse Bauman

Wednesday, October 3, 3:30PM – 5:30PM

Room: Meeting Room 2

1.41 Acoustic Oceanography II

Chairs: Francis, T.; Foote, K.

- 3:30PM **070529-005** – Acoustic Inversion of the Cold Water Filaments off the Southwest Coast of Portugal
Paulo Felisberto, Sergio Jesus, Paulo Relvas
- 3:50PM **070531-040** – Online Community Coastal Fish Observing System
Thomas Hansen, Jesse Kipp, John Janssen
- 4:10PM **070531-050** – Using Ocean Acoustics to Improve Large Shallow-Water Soliton Simulations
Stanley Chin-Bing, Alex Warn-Varnas,
David King, Ivan Christov

Technical Program (cont'd.)

Wednesday, October 3, 3:30PM – 5:30PM

Room: Meeting Room 7

2.7 Sonar Imaging and Classification

Chairs: Abraham, D.; Soukup, R.

- 3:30PM **070423-001** – 3D Sidescan with a Small Aperture – Imaging Microbialites at Pavilion Lake
Geoffrey Mullins, John Bird
- 3:50PM **070511-007** – Underwater Acoustic Imaging by Diversity Techniques
Kun-Chou Lee, Lan-Ting Wang, Jyun-Gu Ou
- 4:10PM **070412-001** – Reliable Seabed Characterization for MCM Operations
Enrique Coiras, Vince Myers, Benjamin Evans
- 4:30PM **070426-013** – Parametrical and Textural Analysis of Sidescan Sonar Images of the Seafloor
Jaroslaw Tegowski, Adam Zielinski, Aleksandra Kruss
- 4:50PM **070506-001** – Phase-Mode Circular Multi-channel Hydrophone with Super Directivity
Yoon Yang

Wednesday, October 3, 3:30PM – 5:30PM

Room: Meeting Room 8

6.81 Mineral Resources II

Chairs: Scott, S.; Wiltshire, J.

- 3:30PM **070417-001** – Autonomous Underwater Vehicles And Their Application in Deep-Sea Mining
Yiping Li, Kuichen Yan

- 3:50PM **070425-007** – Integrated Deep-Ocean Mining Ship-to-Seafloor Systems: Developments for Manganese Nodules and Crusts
Jin Chung

- 4:10PM **070514-006** – Periodic Gait Plans for Locomotion on Natural Terrain by a Submersible Walking Dredger/Miner
Sritama Sarkar, Neil Bose, Mridul Sarkar

- 4:30PM **070425-002** – Design and testing of Control and Positioning System for Underwater Mining Machine
M.A. Atmanand, A. Ramadass, Ramji Rajesh, Ramesh Renganayahi, Muthukrishna Babu, Raju Abraham, Deepak Raphael

- 4:50PM **070514-045** – Subsea Excavation of Seafloor Massive Sulphides
Eric Jackson, Don Clarke, Melanie Devaux

6:30 – 9:30PM
Gala Reception,
Atrium Pan Pacific Hotel

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 9

3.43 Systems and Observatories III – International

Chairs: Ruberg, S.; Bennett, R.

- 8:00AM **070424-001** – The ANTARES Submarine Neutrino Telescope
Patrick Lamare
- 8:20AM **070502-001** – SmartBay, Ireland: Design and Planning for a Cabled Ocean Observatory off the West coast of Ireland
James Ryan, Caitriona Nic Aonghusa, Eoin Sweeney
- 8:40AM **070514-016** – ESONET: A Network to Integrate European Research on Sea Observatories
Roland Person

Technical Program (cont'd.)

- 9:00AM **070531-053** – Latest Generation Subsea Observatory Standards – A Systems Architecture Review
John Flynn, Stewart Barlow, Will Mudge

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 11

10.23 Vehicle Navigation/Testing

Chairs: Maki, T.; von Ellenrieder, K.

- 8:00AM **070512-002** – Validation of a Subsea Navigation Analysis Program
Louis Larkin, Sekhar Tangirala
- 8:20AM **070525-004** – Manoeuvring Trials with the MUN Explorer AUV: Data Analysis and Observations
Manoj Issac, Neil Bose,
Christopher Williams, Ralf Bachmayer,
Sara Adams, Moqin He, Tristan Crees
- 8:40AM **070601-006** – Implementation of a Cooperative Navigation Algorithm on a Platoon of Autonomous Underwater Vehicles
Darren Maczka, Daniel Stilwell
- 9:00AM **070529-008** – Partners in Data Management: Creating a National Channel Framework Database by the National Oceanic and Atmospheric Administration and the US Army Corps of Engineers
Christopher Libeau

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 12

9.11 Ocean Energy/Wave

Chairs: Li, Y.; Tyce, R.

- 8:00AM **070430-015** – Ocean Surface Wave Energy Harnessing Development at Stevens Institute of Technology
Michael Rafferty, Rustam Stolkun
- 8:20AM **070511-004** – Float-Counterweight Wave Energy Conversion Device
Keisuke Taneura, Kesayoshi Hadano,
Pallav Koirala, Makoto Takahashi
- 8:40AM **070610-002** – The Use of Sea Waves for Generation of Electrical Energy: A Linear Tubular Asynchronous Electrical Generator
Marco Trapanese, Rosario Miceli

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 3

3.21 Current Measurement

Technology I – Sensors

Chairs: Williams, A.; Crout, R.

- 8:00AM **070514-020** – 3D Flow Visualization in the Bottom Boundary Layer of the Coastal Ocean
William Nimmo Smith
- 8:20AM **070426-007** – Directional Wave Measurements from a Subsurface Buoy with an Acoustic Wave and Current Profiler (AWAC)
Torstein Pedersen, Eric Siegel
- 8:40AM **070413-002** – Effects of Transducer Geometry and Beam Spreading on Acoustic Doppler Velocity Measurements near Boundaries
Vadim Polonichko, John Romeo

Technical Program (cont'd.)

- 9:00AM **070514-044** – Eastern Gulf of Mexico Circulation Study: Overview of the Study Goals and Objectives, Measurements Obtained, and Preliminary Results
Jeff Cox

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 2

8.83 Marine Education and Outreach/Curricula

Chairs: Fiolek, A.; Meeson, B.

- 8:00AM **070423-012** – Certification for Oceanographic Professionals: A Needs Assessment Study
Deidre Sullivan, Leslie Rosenfeld, Tom Murphree
- 8:20AM **070428-002** – Mathematics of Aquatic Ecosystems – A Curriculum: Integration of Math Instruction Using a Sequence of 16 Aquatic Ecosystem Projects
Robert Jakus
- 8:40AM **070502-003** – Using Observing System Data in STEM Education
Liesl Hotaling
- 9:00AM **070529-009** – The Role of The Gulf of Mexico Coastal Ocean Observing System (GCOOS) In K-12 Education: Applying the Technology in Classroom Curricula
Tami Wells, Sharon Walker, Mike Spranger
- 9:20AM **070605-003** – The NOAA Ship Okeanos Explorer: Live to Scientists and Educators Ashore
Paula Keener-Chavis, John McDonough, Catalina Martinez, Fred Gorell

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 1

1.6 Bioacoustics

Chairs: Isakson, M.; Foote, K.

- 8:00AM **070511-001** – Long Duration Real-Time Observation of Irrawaddy Dolphins in Chillika Lagoon
Tomoki Inoue, Tamaki Ura, Harumi Sugimatsu, Junichi Kojima, Rajendar Bahl, Sudarsan Panda, Sandeep Behera, Takashi Sakamaki, Hideyuki Takahashi, Muntaz Khan, Sudhakar Kar, Chandrasekhar Kar, Bishnu Behera
- 8:20AM **070513-013** – Beam Pattern Estimation of Clicks of a Free-Ranging Ganges River Dolphin
Rajendar Bahl, Harumi Sugimatsu, Junichi Kojima, Tamaki Ura, Sandeep Behera, Tomoki Inoue, Tetsuo Fukuchi
- 8:40AM **070531-012** – Vocalization-Based Individual Classification of Humpback Whales Using Support Vector Machine
Suleman Mazhar, Tamaki Ura, Rajendar Bahl
- 9:00AM **070501-005** – Coral Fish Shoal Detection from Acoustic Echograms
Josef Lotz, Lisa Zurk, James McNames, Timothy Ellis, Jean-Louis Ecochard

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 7

2.2 Array Signal Processing and Array Design

Chairs: Pizarro, O.; Qi, Z.

- 8:00AM **070508-001** – Array Modeling of Active Sonar Clutter
Douglas Abraham

Technical Program (cont'd.)

- 8:20AM **070514-002** – A Passive Sonar System for Searching Acoustic Beacons in Deep Sea
Junichi Kojima, Kazuhiko Nitadori,
Tetsuo Fukuchi
- 8:40AM **070514-001** – Beampattern Optimization Based on Predicted Array Manifold
Chao Sun, Bo Yang
- 9:00AM **070513-014** – Design Broadband Beamformers via Interpolation Techniques
Chao Sun, Qi-li Guo, Yi-xin Yang
- 9:20AM **070531-089** – Cramer-Rao Bound for Bearing Estimation with Bias Correction
Wen Xu

Thursday, October 4, 8:00AM – 9:45AM

Room: Meeting Room 8

8.7 Ocean Resources

Chairs: A, A.; Yamazaki, T.

- 8:00AM **070423-003** – The Romanian Marine Ecosystem – Important Source for the Pharmaceutical Industry
Rodica Sirbu, Tania Zaharia,
Simion Nicolaev, Alexandru Bologna
- 8:20AM **070423-004** – The Inventory of the Marine Habitats on the Romanian Littoral with Significance in Marine Conservation and Exploitation
Tania Zaharia, Rodica Sirbu,
Simion Nicolaev, Dragos Micu
- 8:40AM **070427-001** – The Ocean Sunrise Project – Seaweed Bioethanol Production System for Japan
Masahito Aizawa, Toshitsugu Sakou,
Masaya Atsumi, Ken Asaoka

- 9:00AM **070604-002** – Characterizing Marine Hydrocarbons with In-Situ Mass Spectrometry
Richard Camilli, Anthony Duryea

Charting the Course for Ocean Science: An Ocean Research Priorities Plan and Implementation Strategy

Town Meeting

10:15 a.m. – 11:55 a.m.

October 4, 2007

Meeting Room 16

The goal of *Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy* is to provide the guidance to fortify and expand the scientific foundation to improve society's stewardship and use of, and interaction with, the ocean. The Joint Subcommittee on Ocean Science and Technology (JSOST) developed this unique document, working in conjunction with its Committee on Ocean Policy partners and the broad ocean science community. The Administration's Ocean Action Plan, developed in response to the U.S. Commission on Ocean Policy report, called for the development of this national ocean research priorities plan and implementation strategy. *Charting the Course for Ocean Science* presents national research priorities that address the most compelling issues in key areas of interaction between society and the ocean (societal themes): Stewardship of Natural and Cultural Ocean Resources, Increasing Resilience to Natural Hazards, Enabling Marine Operations, The Ocean's Role in Climate, Improving Ecosystem Health, and Enhancing Human Health. Given the importance of our waterways - including the open ocean, coasts, coastal watersheds, and Great Lakes - to societal well-being, quality of life, and the economy, the research priorities of *Charting the Course for Ocean Science* focus on understanding

Technical Program (cont'd.)

critical processes and interactions and applying that understanding toward responsible use of the ocean environment. In addition to twenty (20) long-term research priorities, the document also outlines four near-term priorities (2-5 years) developed to initiate rapid progress towards the long-term efforts: Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events; Comparative Analysis of Marine Ecosystem Organization; Sensors for Marine Ecosystems; and Assessing Meridional Overturning Circulation Variability: Implications for Rapid Climate Change.

Addressing the ocean research priorities will require a national and international effort involving many sectors of the ocean community, from state, local, and tribal governance to academic institutions to nongovernmental organizations. The involvement of end users of scientific information, including resource managers, public policy-makers, and individual citizens, will enhance the impact and value of research efforts. The implementation strategy strives to provide guidance and advocate for a collaborative approach, rather than stipulating specific federal-agency actions or budgets, detailing timelines for activities, or mandating how other sectors should respond to the research priorities independent of federal collaboration—activities that are best defined in specific project plans. A well-planned and robust federal effort will provide the leadership, focus, and resources against which non-federal efforts can be better leveraged. Implementing this strategy will lay the foundation for the multi-sector collaboration that is needed.

Thursday, October 4, 10:15AM – 12:00PM

Room: Meeting Room 9

3.44 Systems and Observatories IV – Cabled

Chairs: O'Reilly, T.; Flynn, J.

- 10:15AM **070427-024** – Deployment of the Junction Unit for Off-Toyohashi Cabled Observatory
Kenichi Asakawa, Tada-Nori Goto, Takashi Yokobiki, Ryoichi Iwase, Eiichiro Araki, Masataka Kinoshita, Junichi Kojima, Yukihiko Fujii, Yasuharu Okatake, Yoshio Taguchi
- 10:35AM **070430-040** – Underwater Cables and Connected Observatories
Ken du Vall
- 10:55AM **070509-007** – An Automated Visual Event Detection System for Cabled Observatory Video
Danelle Cline, Duane Edgington, Jerome Mariette
- 11:15AM **070531-051** – Undersea Distributed Networked System: An Enabling Power and Communications Infrastructure Technology
Robert Bennett, Stephen Evangelides, Jay Morreale, Darryl Symonds, Joshua Henson, Jeffrey Wilson
- 11:35AM **070531-076** – The Approach to Cyberinfrastructure for the Ocean Observatories Initiative
Matt Arrott, Alan Chave, Ingolf Krueger, John Orcutt, Alex Talalayevsky, Frank Vernon

Technical Program (cont'd.)

Thursday, October 4, 10:15AM - 12:00PM

Room: Meeting Room 11

10.32 Vehicle Performance I

Chairs: Trembanis, A.; Jakuba, M.

- 10:15AM **070430-008** – Theoretical Passive Sonar Performance of a Cluster of UUV Towed Line
Samuel Smith, Igal Bilik, Jeffrey Krolik
- 10:35AM **070514-043** – Designing A Vertical/ Horizontal AUV for Deep Ocean Sampling
Jonathan Byron, Robert Tyce
- 10:55AM **070531-019** – A Graphical Mission Specification and Partitioning Tool for Unmanned Underwater Vehicles
Gary Giger, Mahmut Kandemir, John Dzielski
- 11:15AM **070514-048** – Initial Deployments of the Benthic Rover, an Autonomous Bottom-Transecting Instrument Platform for Long-Term Measurements in Deep Benthic Environments
Paul McGill, Alana Sherman, Brett Hobson, Richard Henthorn, Andrew Chase, Kenneth Smith
- 11:35AM **070713-001** – Autonomous Underwater Vehicle (AUV) Fest 2007
Phillip Bernstein

Thursday, October 4, 10:15AM - 12:00PM

Room: Meeting Room 12

9.12 Ocean Energy/Currents and Wind

Chairs: Hotta, J.; Nair, S.

- 10:15AM **070524-003** – Analysis of Turbine Hydrodynamic Interactions – A Preliminary Investigation
Ye Li, Sander Calisal

10:35AM **070430-033** – Offshore Wind Resource Potential of the United States
Donna Heimiller, Steve Haymes, Marc Schwartz, Wait Musial

10:55AM **070501-009** – Navigation Simulation of a VLMOS for Wind Power Generation
Junpei Hotta, Ken Takagi, Takeshi Kinoshita, Susumu Tanaka, Hiroshi Yamaguchi, Masaru Tsujimoto, Hideo Okamura, Takashi Uehiro

Thursday, October 4, 10:15AM - 12:00PM

Room: Meeting Room 3

3.22 Current Measurement Technology II – Current Observations

Chairs: Cox, J.; Polonichko, V.

- 10:15AM **070524-001** – National Data Buoy Center (NDBC) Processing, Display, and Observation of Near-Bottom Currents Acquired by Oil and Gas Companies in the Northern Gulf of Mexico
Richard Crout
- 10:35AM **070509-012** – ADCP Deployments near Offshore Structures
Jerry Mullison, Darryl Symonds
- 10:55AM **070514-024** – Submerged Jet Currents in the Gulf of Mexico
Shejun Fan, Gus Jeans, Chris Yetsko, Lie-Yauw Oey
- 11:15AM **070530-027** – Measurements of Waves and Current in Support of Coastal Projects on Nantucket and Martha's Vineyard
Albert Williams, Archie Morrison
- 11:35AM **070509-008** – Comparison of Non-hurricane and Hurricane Induced Inertial Oscillations in Deep Water of Gulf of Mexico
Chunyan Li, Masamichi Inoue, Richard Crout, Larry Rouse, Susan Welsh, Eddie Weeks

Technical Program (cont'd.)

Thursday, October 4, 10:15AM – 12:00PM

Room: Meeting Room 2

8.82 Marine Education and Outreach/Partnerships

Chairs: Olson, B.; Keener-Chavis, P.

- 10:15AM **070530-011** – Establishing and Sustaining Effective Partnerships between the Ocean Research, Technology and Education Communities for the 21st Century
Susan Cook, Susan Haynes, Leslie Peart
- 10:35AM **070531-052** – International Polar Year 2007-2008: Resources on Polar Research in the NOAA Central Library Network
Anna Fiolek
- 10:55AM **070601-009** – Integration of Industrial Mentors into the Teaching of a Naval Architecture Design Course
Jon Mikkelsen, Dan McGreer, Wade Carson
- 11:15AM **070604-004** – An Integrated Approach to Promoting An Interest in Marine Technology in British Columbia
Taco Niet, Alastair Champion, Johan Fourie
- 11:35AM **070530-022** – More Than One-Way to Catch a Fish: Use of Effective Translation Models for Ocean Science to Promote Ocean Literacy
Blanche Meeson, Janice McDonnell, Chris Parsons

Thursday, October 4, 10:15AM – 12:00PM

Room: Meeting Room 1

1.31 Sound Propagation and Scattering I

Chairs: Duda, T.; Field, R.

- 10:15AM **070508-008** – Phase Space Approach and Approximations for Wave Propagation
Leon Cohen, Patrick Loughlin

- 10:35AM **070426-005** – Modeling of Reflection Coefficient Fluctuation from Measured Seafloor Roughness
Nicholas Chotiros, Marcia Isakson, James Piper, Mario Zampolli
- 10:55AM **070423-007** – Measurements of the Bottom Loss Magnitude and Phase from 4 to 80 kHz and 7 to 77 degrees grazing at the Experimental Validation of Acoustic modeling techniques (EVA) Sea Test
Marcia Isakson, Nicholas Chotiros, James Piper, Mario Zampolli
- 11:15AM **070430-038** – Application of Radiative Transfer Theory to Acoustic Propagation in the Ocean Bottom
Jorge Quijano, Lisa Zurk

Thursday, October 4, 10:15AM – 12:00PM

Room: Meeting Room 7

2.6 Pattern Recognition and SAR

Chairs: Candy, J.; Xu, W.

- 10:15AM **070430-021** – Automated Change Detection in an Undersea Environment Using a Statistical Background Model
Zhi Qi, Jeremy Cooperstock
- 10:35AM **070531-028** – Detection of Short-Tethered Objects with Interferometric Synthetic Aperture Sonar
Oivind Midtgaard, Torstein Sabo, Hayden Callow
- 10:55AM **070430-005** – Detecting Class-Independent Linear Relationships within an Arbitrary Set of Features
Ashwin Sarma
- 11:15AM **070430-020** – Passive Acoustic Detection of Modulated Underwater Sounds from Biological and Anthropogenic Sources
Rustam Stolkin, Sreeram Radhakrishnan, Alexander Sutin, Rodney Rountree

Technical Program (cont'd.)

- 11:35AM **070531-013** – Bathymetric Capabilities of the HISAS Interferometric Synthetic Aperture Sonar
Torstein Sabo, Bjornar Langli,
Hayden Callow, Erik Hammerstad,
Roy Hansen

Thursday, October 4, 10:15AM – 12:00PM

Room: Meeting Room 8

6.7 Pollution Monitoring

Chairs: Camilli, R.; SIRBU, R.

- 10:15AM **070423-002** – Research on Brine Discharges to the Sea
Antonio Ruiz, Manuel Antequera,
Javier Gonzalez
- 10:35AM **070425-008** – Development of Spilled Oil Chasing Autonomous Buoy System
Hidetaka Senga, Naomi Kato,
Asuka Ito, Hiroki Niou,
Muneo Yoshie
Isamu Fujita, Kazuyuki Igarashi,
Etsuro Okuyama
- 10:55AM **070505-001** – Ocean Outfall Mapping Using an Autonomous Underwater Vehicle
Haibo Niu, Tahir Husain,
Brian Veitch, Neil Bose,
Sara Adams, Moqin He, Kenneth Lee
- 11:15AM **070530-003** – The Characteristics of Correlation between Inflowing Pollutant Loads and Water Quality Change in the Gwangyang Bay of Southern Coast, Korea
JinHyuk Kim, In-Cheol Lee, HwaHun Kong,
Han-Sam Yoon, Heon-Tae Kim

- 11:35AM **070530-028** – A Systematic Approach to Marine Debris Reduction Efforts and Education in New Hampshire
Jenna Jambeck, Lisa Damiano,
Zachary Magdol, Amy Merten,
Jennifer Kennedy

12:00 – 1:15PM
Lunch on own

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 9

5.5 Information Management

Chairs: Godin, M.; Howe, B.

- 1:15PM **070426-009** – C-MIST: An Automated Oceanographic Data Processing Software Suite
Armin Pruessner, Paul Fanelli,
Christopher Paternostro
- 1:35PM **070430-030** – RCOOS and Ocean Information Tools for Decision Makers
David Jones, Stuart Maclean
- 1:55PM **070528-001** – Adaptive Data Delivery for Underwater Sensor Networks
Peng Sun, Winston Seah
- 2:15PM **070531-069** – Improvements in Data Management Practices within the West Florida Shelf Coastal Ocean Monitoring and Prediction System
Vembu Subramanian, Mark Luther,
Robert Weisberg, Jeff Donovan,
Jeremy Atkins

Technical Program (cont'd.)

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 11

10.33 Vehicle Performance II

Chairs: Tyce, R.; Smith, S.

- 1:15PM **070429-009** – Investigation of Under-Ice Thermal Structure: Small AUV Deployment in Pavilion Lake, BC, Canada
Alexander Forrest, Harry Bohm, Bernard Laval, Eggert Magnusson, Richard Yeo, Martin Doble
- 1:35PM **070513-003** – Experiences with the Operation of a Commercially-Available Deep-Water AUV
Jeffrey Williams, Vernon Asper, Glenn Taylor
- 1:55PM **070514-033** – Longitudinal Control Design and Performance Evaluation for the Nereus 11,000 m Underwater Vehicle
Michael Jakuba, Dana Yoerger, Louis Whitcomb
- 2:15PM **070411-001** – Composite Pressure Hulls for Autonomous Underwater Vehicles
T. Osse, Timothy Lee

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 12

8.1 CZM and Marine Life/Ecosystems

Chairs: Kamal, A.; Cuevas, K.

- 1:15PM **070525-005** – Mapping of Submerged Aquatic Vegetation Using Unmanned Underwater Vehicles in Near-Shore Regions
Mark Jones, Lee Miller, Dana Woodruff, Dan Ewert

- 1:35PM **070531-086** – Selection of Marine Protected Areas for Conserving Estuaries Using Surrogate Approach
Mohammad Shokri, William Gladstone, Andrew Keperť
- 1:55PM **070430-014** – Effects of Electromagnetic Fields on the Bioluminescence of Dinoflagellates
Cornell Chun, Ethan Chun
- 2:15PM **070514-007** – A Control System Development for Submersible Sea Cage Systems
Levente Molnar, Daniel Toal
- 2:35PM **070510-004** – Deep-sea Fish Behavioral Responses to Disturbance by Underwater Vehicles
Franz Uiblein, Pascal Lorange

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 3

3.24 Current Measurement Technology III – Wave Observations

Chairs: Mullison, J.; Williams, A.

- 1:15PM **070423-006** – Data Quality and Sampling Requirements for Reliable Wave Measurement with HF Radar
Lucy Wyatt, Jim Green, Andrew Middleditch
- 1:35PM **070514-023** – National Data Buoy Center 1.8-meter Discus Buoy, Directional Wave System
Chung-Chu Teng, Theodore Mettlich, Joel Chaffin, Robert Bass, Charles Bond, Charles Carpenter, Richard Dinoso, Mark Hellenschmidt, Landry Bernard

Technical Program (cont'd.)

- 1:55PM **070525-002** – The Autonomous Measurement of Waves Propagating Across the Arctic Ocean
Jeremy Wilkinson, Pushkar Wadke, David Meldrum, Duncan Mercer, Martin Doble, Peter Wadhams
- 2:15PM **070531-008** – Simultaneous Measurement of Waves Outside and Inside Harbor and 3-D Movements of Moored Vessel
Nobuyoshi Kouguchi, Masaaki Hamada, Yun-ja Yoo, Takashi Kubota, Kimio Tatsumi, Akihiro Ikawa

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 2 8.81 Marine Education and Outreach/Demonstrations Chairs: Cook, S.; Niet, T.

- 1:15PM **070430-022** – Braitenbergian Experiments with Simple Aquatic Robots
Rustam Stolkin, Richard Sheryll, Liesl Hotaling
- 1:35PM **070530-019** – ROVs in a Bucket
Douglas Levin, Krista Trono, Christine Arrasate
- 1:55PM **070531-058** – Camera System-on-a-Chip Design with Undergraduates
Brita Olson
- 2:15PM **070514-031** – A New School of Ocean Technology at the Marine Institute
Dwight Howse
- 2:35PM **070601-010** – MATE's 2007 ROV Competition: Celebrating IPY by Challenging Students to Design and Build ROVs for Operation in Polar Environments
Jill Zande

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 1 1.32 Sound Propagation and Scattering II Chairs: Soukup, R.; Francis, T.

- 1:15PM **070531-016** – Characterization of the Variability of the Ocean Acoustic Environment
Josette Fabre, Steven Dennis
- 1:35PM **070531-037** – Characterization of the Range Dependence of an Ocean Environment to Reduce Acoustic Estimation Time
Steven Dennis, Josette Fabre
- 1:55PM **070426-006** – Acoustic Propagation in Turbulent Layers
Robert Field, Ewa Jarosz, James Mowm
- 2:15PM **070503-002** – Broadband Acoustic Transmission Measurements in Surface Ship Wakes
Steve Stanic, Edgar Kennedy, Bob Brown, Ralph Goodman, Jerald Caruthers

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 7 4.6 Airborne and Satellite Ocean Color, Radar, and SAR Chairs: Atkinson, L.; Hansen, R.

- 1:15PM **070425-001** – Aerosol Impact on Remote Sensing in the Coastal Atmosphere Surface Layer
Gennady Kaloshin
- 1:35PM **070509-001** – A critical Overview of Bistatic Scattering from Oceans Surface
Fabrice Comblet, Ali Khenchaf

Technical Program (cont'd.)

- 1:55PM **070510-005** – An Efficient Algorithm for the Radar Recognition of Ships on the Sea Surface
Kun-Chou Lee, Lan-Ting Wang,
Jihh-Sian Ou, Chih-Wei Huang
- 2:15PM **070531-034** – Sea clutter Measurement with Airborne Synthetic Aperture Radar
Vincent Gras, Rene Garello,
Christophe Sintès

Thursday, October 4, 1:15PM – 3:00PM

Room: Meeting Room 8

9.31 Offshore Structures

Chairs: Powell, J.; Wiltshire, J.

- 1:15PM **070514-034** – The Finite Element Analysis of ‘Loadshare’ for the Installation of Pipe-in-Pipe Flowline by S-Lay and J-Lay Methods
Jason Sun, Paul Jukes, Ayman Eltahir
- 1:35PM **070530-025** – An Analysis of Sub Sea Electric Power Transmission Techniques from DC to AC 50/60 Hz and Beyond
Michael Wrinch, Marcelo Tomim, Jose Marti
- 1:55PM **070531-044** – Three-Dimensional Analysis of Momentary Liquefaction near Submarine Pipelines
Behnam Shabani, Dong-Sheng Jeng
- 2:15PM **070331-001** – Large Scale Ocean Based Ice Structures For Habitats, Storm and Flood Protection and Industrial, Energy and Transport Applications
James Powell, John Powell
- 2:35PM **070429-003** – Physical and Chemical Deterioration Characterization of Concrete Reefs in Tongyeong Coastal Waters, Korea
Ho-Sang Kim, Chang-Gil Kim,
Dongwoo Woo, Won-Bae Na,
Yeon-Sun Ryu, Byung-Gul Lee

3:00 – 3:30PM Coffee Break
South Foyer, Near Meeting Room 1

Thursday, October 4, 3:30PM – 5:30PM

Room: Meeting Room 9

5.1 Data Access, Custody, Retrieval, Visualization, and Assimilation

Chairs: Pruessner, A.; Colton, M.

- 3:30PM **070510-007** – Data Exploration for Multidisciplinary Research
Michael Godin, James Bellingham
- 3:50PM **070529-001** – System Design and Implementation for the Management of Voyage Data of Vessels
Jian-Jia Chen, Shou-Yao Chou,
Ming-Ho Huang
- 4:10PM **070531-001** – The Ocean Appliance: Complete Platform Provisioning for Low-Cost Data Sharing
Bill Howe, Nicholas Hagerty,
Ethan Van Matre, David Maier,
Antonio Baptista, Charles Seaton,
Charles Seaton
- 4:30PM **070531-030** – Large Area Photo-Mosaics Using Global Alignment and Navigation Data
Jordi Ferrer, Armagan Elibol,
Olivier Delaunoy, Nuno Gracias,
Rafael Garcia
- 4:50PM **070531-064** – 4DVAR assimilation of ADCP Data with the Navy Coastal Ocean Model Using the Cycling Representer Method
Scott Smith, Hans Ngodock, Gregg Jacobs

Technical Program (cont'd.)

Thursday, October 4, 3:30PM – 5:30PM

Room: Meeting Room 3

3.23 Current Measurement Technology IV – HF Radar

Chairs: Wyatt, L.; Morrison, A.

- 3:30PM **070509-011** – Estimates of Radial Current Error from High Frequency Radar Using MUSIC for Bearing Determination
Thomas Cook, Tony de Paolo, Eric Terrill
- 3:50PM **070510-008** – Properties of HF RADAR Compact Antenna Arrays and Their Relation to the Quality of MUSIC Algorithm Results
Tony de Paolo, Tom Cook, Eric Terrill
- 4:10PM **070513-004** – Surface Current Mapping in the Lower Chesapeake Bay
Larry Atkinson, Teresa Garner, Jose Blanco
- 4:30PM **070514-028** – Surface Current Measurements During Safe Seas 2006: Comparison and Validation of Measurements from High-Frequency Radar and the Quick Release Estuarine Buoy
Regan Long, Don Barrick

Thursday, October 4, 3:30PM – 5:30PM

Room: Meeting Room 2

10.6 Remotely Operated Vehicles

Chairs: Orrico, C.; Waldmann, C.

- 3:30PM **070514-005** – 5th Generation ROV Technology – FCV 3000 ROV System
Jim Mann, Jackson Chang
- 3:50PM **070514-025** – Sea Trials on the New US Navy Submarine Rescue System
Harald Grob, Alicia Brady

- 4:10PM **070531-062** – A fault-Tolerant Fuzzy-Logic Based Redundancy Resolution Method for Underwater Mobile Manipulators
Serdar Soyly, Bradley Buckham, Ron Podhorodeski
- 4:30PM **070531-063** – Robust Control of Underwater Vehicles with Fault-Tolerant Infinity-Norm Thruster force Allocation
Serdar Soyly, Bradley Buckham, Ronald Podhorodeski

Thursday, October 4, 3:30PM – 5:30PM

Room: Meeting Room 1

1.33 Sound Propagation and Scattering III

Chairs: Fabre, J.; Duda, T.

- 3:30PM **070507-005** – Measurements of the Turbulent Microstructure of a Buoyant Salinity Plume Using Acoustics
Marcos Sastre-Cordova, Louis Goodman, Zhankun Wang
- 3:50PM **070523-003** – Observations from Demonstrations of Several Commercial Diver Detection Sonar Systems
Anna Crawford, D. Vance Crowe
- 4:10PM **070531-026** – Robustness of Target Strength of an Immersed, Hollow Ceramic Flotation Sphere of Non-constant Thickness
David Francis, Philip Atkins, Kenneth Foote
- 4:30PM **070531-025** – Robustness of Target Strength of an Immersed, Hollow Ceramic Flotation Sphere of Constant Thickness
David Francis, Kenneth Foote, Philip Atkins

Student Poster Program and Competition

The Student Poster Program and Competition has been an integral and important part of the OCEANS Conferences since 1989. The program is designed to foster and promote student involvement in technical societies and conferences and to provide a forum for the student to interact with marine professionals. It is open to engineering and science graduate and undergraduate students of any tertiary level university or college worldwide. The posters on display have been selected from 53 submitted abstracts from schools in Asia, Africa, Europe and North America. The program has been supported by a grant from the US Navy Office of Naval Research. The posters will be judged by a panel of judges and prizes will be awarded at the Gala Reception. The posters will be on display in the Exhibition area throughout the OCEANS Conference. They will be on display from 2:00 – 5:00 PM on Tuesday and all day on Wednesday and Thursday. Students will be at their posters during breaks and free periods. You are invited and encouraged to view the posters and talk with the students. The roster of students and poster titles are:

1. **Mahmoud Aildadi** – University of British Columbia
“Numerical Investigations of the Effects of Towing Tank Walls on Vertical Axis Tidal Turbine”
2. **Ryan J. Bell** – College of Marine Science, St. Petersburg, FL
“Simultaneous Pressure-Corrected Dissolved Gas Profiles in the Gulf of Mexico Determined using an In-Situ Membrane Inlet Underwater Mass Spectrometer”
3. **Jonathan Byron** – University of Rhode Island
“Designing a Vertical/Horizontal AUV for Deep Ocean Sampling”

4. **Yin-Jun Chen** –
National Chia-Yi University, Taiwan
“Ordered CSMA: A collision-free MAC protocol for underwater acoustic networks”
5. **Karen Leigh Dreger** –
University of South Florida, St. Petersburg, FL
“Unmanned Surface Vehicles for Seagrass Monitoring”
6. **Arthur C.R. Gleason** –
University of Miami, Florida
“Automated classification of underwater multi-spectral imagery for coral reef monitoring”
7. **Matthew Kai Johnson-Robertson** –
University of Sidney, NSW, Australia
“Generating Visually Consistent Benthic Surface Meshes Using Visual Features”
8. **Windell Jones** – University of Hawaii at Manoa
“NUROV: The Network-controlled Underwater Remote Observation Vehicle”
9. **Thibaut Lurton** – ENST Bretagne, France
“A Simulation of the Synthetic Aperture Rada Observation of a Manufactured Object in Sea Clutter using Finite Differences”
10. **Hayato Mizushima** – The University of Tokyo
“Autonomous recognition of bubble plumes for navigation of underwater robots in active shallow vent areas”
11. **Donald T. Murray** –
UW-Milwaukee Great Lakes WATER Institute, WI
“Monitoring and Controlling System Performance In the Pioneer Buoy”
12. **Paul Rigby** – Australian Center for Field Robotics – University of Sidney, Australia
“Effective Benthic Surveys with Autonomous Underwater Vehicles”

13. **Marcos Manuel Sastre** – UMASS School of Marine Science and Technology
"Measurements of the turbulent microstructure of a buoyant salinity plume using acoustics: Field observations and theory validation"
14. **Nayrah Shalout** – National Institute of Oceanography and Fisheries, Alexandria, Egypt
"The distribution of CO₂ partial pressure and air-sea CO₂ flux in El-Mex Bay, Alexandria, Egypt"
15. **Sergio Rui Silva** – Porto University, Portugal
"An Autonomous Boat Based Synthetic Aperture Sonar"
16. **Andrea Verena Striz** – Franklin Olin College of Engineering, Needham, MA
"Design, Construction and Field Testing of an Autonomous Surface Craft for Engineering and Science Education"
17. **Moinuddin Syed** – Blekinge Tekniska Hogskola – Karlskrona, Sweden
"K omega beamforming implementation on ibm cell processor"
18. **Daniel G. Walker** – MIT, Cambridge, MA
"XAUV: A Modular Highly Maneuverable Autonomous Underwater Vehicle"
19. **Yonggang Wang** – Harbin University, Harbin, China
"Adaptive Modulation in OFDM for Underwater Acoustic Communication"
20. **Chris Watts** – University of Glasgow, Scotland
"Biomimetic Propulsions Systems for Mini-Autonomous Underwater Vehicles"
21. **Michelle Weirathmueller** – University of New Hampshire, Durham, NH
"Acoustic Positioning and Tracking in Portsmouth Harbour, New Hampshire"

Exhibitor Booth List

200	TSS / MECCO
201	Deep Ocean Engineering / MECCO
202	Deep Sea Power and Light / MECCO
203	Blueview Technologies / MECCO
205	Tritech / VideoRay / MECCO
207	Sensor Tech / MECCO
209	Sea Con® Brantner & Associates, Inc.
212	Marine Magnetics Corp
213	L-3 Communications, MariPro Inc.
214	Oceans News and Technology
215	Lower Fraser River First Nations
216	Fugro Pelagos, Inc.
218	Quester Tangent
219	Naval Meteorology & Ocean Command
221	Naval Meteorology & Ocean Command
222	IMAREST
223	NOAA
224	ORE
225	NOAA
300	MSI - Material System Inc.
301	South Bay Cable Corp.
302	Aanderaa Data Instruments
303	AXYS Technologies
304	Electrochem Commercial Power
308A	Kongsberg Maritime
308B	Naval Undersea Warfare Center
308C	SERDP/ESTCP
308D	Excell Battery
308E	Satlantic Inc. / Webb Research
308F	WETSAT, Inc.
308G	CLS America, Inc.
313	Subconn
314A	Oceanworks International

Exhibitor Booth List (cont'd.)

314B	NEPTUNE Canada / Alcatel-Lucent
314C	Technopole maritime du Québec / Multi-Electronique (MTE) Inc.
314D	Global Marine / VENUS Project
314E	ROPOS - Canadian Scientific Submersible Facility
315	MacArtney
317	Ocean Server Technology
319	Quester Tangent
320	EDO
322	Marine Technology Reporter
323	Kongsberg Defense and Aerospace-Naval Defense
324	Seamor Marine Ltd.
325	Marine Technology Society (MTS)
400	SeaBotix, Inc.
401	J. Teague Enterprises / Global Dynamix Inc.
402	Ampex Data Solutions
403	HELZEL Messtechnik GmbH
404	Martec METOCEAN Data Systems
405	ASL Environmental Sciences
420	AMETEK (formally known as Seacon Phoenix)
421	EDO
422	Laurentian University
423	Chelsea Technologies
424	Shark Marine Technologies
425	Oceanology International 2008
501	Sidus Solutions
502	D & A Instruments
502	Nortek, USA
502	Sea-Bird Electronics
502	Sequoia Scientific

503	PREVCO Subsea Housings
505	Applanix Corporation
508	Hawaii Ocean Science & Technology
508	Enterprise Honolulu
508	CEROS
508	Ocean Imaging Consultants
516A	Sound Metrics Corp.
516B	Remote Ocean Systems
521	Applied Microsystems
523	Spawar Systems Center
525	Spawar Systems Center
702	Sound Ocean Systems
602	Energy Sales
602	Evans-Hamilton
602	Glostern Associates
602	Markey Machine
602	Measurement Technology Northwest
602	Paroscientific
602	University of Washington
602	Washington State Department of Community, Trade and Economic Development
602	Williamson & Associates
612	Imagenex Technology Corp.
702	Biosonics
702	SAIC-Bremerton
702	Sound Ocean Systems
708	Lockheed Martin
716A	Teledyne Marine
716A	Teledyne Benthos
716A	Teledyne DG O'Brien
716A	Teledyne ODI
716A	Teledyne RD Instruments
716B	Roper Resources Ltd.

Exhibitor Booth List (cont'd.)

716B	Seaeye Marine Technology
800	Falmat
802	C.B. Technology Ltd.
808A	Focal Technologies
808B	Xeos Technologies
808C	ODIM Brooke Ocean
808D	Hawboldt Industries
808E	Open Seas Instrumentation, Inc.
808F	Cobham Tracking and Locating
808G	ROMOR Atlantic Ltd.
808H	Cellular Robotics
808I	Nuytco Research Ltd.
808J	Nuytco Research Ltd.
814A	Canal Geomatics
814B	Oceans 2009 Spring
814C	Aquatic Informatics
814D	MAST - Marine Systems and Technology
814E	Knudsen Engineering Limited
814F	Marport
814G	CCMC
814H	Northstar Technical
814I	NavSim
814J	City of St. John's
820	Nexans Norway
822	Geometrics
824	RESON, Inc.
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903	Applied Signal Technology, Inc.
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1003	Sea Technology
1005	InterOcean Systems
1012	International Transducer Corp
1014	McQuest Marine Sciences Limited
1014	Ixsea Inc
1016	L-3 Communications, Klein Associates
1016	Valeport Ltd.
1018	AGO-Environmental Electronics
1021	Ocean Science
1022	Airmar
1023	Oceans 2009 Fall
1100	Oceans 2008 Fall
1101	Oceans 2008 Spring
1102	BC Ministry of Energy, Mines and Petroleum Resources
1103	Phoenix International, Inc.
1113	DASCO Equipment, Inc.
1114	Alec Electronics
1115	DASCO Equipment, Inc.
1116	Alec Electronics
1117	Electrovaya
1119	Monitor Instruments (Woods Hole Oceanographic Institution)
1123	Smart Medical Corp.
1125	International Ocean Systems

Exhibitor Profiles

A.G.O. Environmental Electronics Ltd.

Booth: 1018

Email: info@agoenvironmental.com

A.G.O. designs, and manufactures portable oceanographic winch and wire payout systems, slipping assemblies, pressure cases, subsea green lasers, high power solid state lights, subsea camera systems, STING system, and custom cabling.

Manufacturer's rep for 3H Subsea electro/mechanical connectors, General Oceanics, Nobska, and SIS.

Aanderaa Data Instruments, AS

Booth: 302

Email: richard.butler@AADI.no

Aanderaa announces a breakthrough in Remote Observing Systems. Our Seaguard Host® and expanding line of distributed Smart Sensors marks a turning point in Hydro-Acoustic, Optical, Electro-Chemical, Pressure, and Temperature and Meteorological measurements.

Oceanographic Institutes, Universities, Hydrographers', Navies, Oil & Gas, Harbours', Water Authorities, Electric Utilities trust AADI for reliable robust products.

Airmar Technology

Booth: 1022

Email: JBauchat@airmar.com

Airmar Technology Corporation specializes in design and manufacture of ultrasonic transducers for marine and air-ranging applications. Many of our transducer configurations offer both broad bandwidth and high sensitivity. Airmar's

objective is to offer the highest quality sensors at an affordable price. Applications include hydrographic survey, meteorology, flow-sensing, altimeters, and acoustic backscatter.

Alcatel-Lucent Submarine Networks

Booth: 314B

Email: richard.nilsson@alcatel-lucent.com

Alcatel-Lucent provides communications solutions to telecommunication carriers, Internet service providers and enterprises for delivery of voice, data and video applications to their customers. Alcatel-Lucent offers a complete range of submarine cable network solutions, based on repeatered and unrepeatered systems. The submarine network solutions offered can be tailored to each customer's specific requirements with full turnkey delivery. With over 150 years of expertise, Alcatel-Lucent has laid over 450,000 km of submarine networks. ALSN operates from its headquarters office in Nozay, France and has representations in UK, Asia and the Americas.

Alec Electronics Co. Ltd.

Booths: 1114 & 1116

Email: ikeuchi@alec-electronics.co.jp

Number 1 in Japan! At Alec, we make great oceanographic sensor that simply work and we back them up with support that surprises and delights our clients. Why not try our CTDs, current meters, water quality and bio-optic sensors for your next project?

AMETEK-Sea Connect Products

(formerly Seacon Phoenix, Inc.)

Booth: 420

Email: pchristina@seaconphoenix.com

AMETEK Sea Connect Products (formerly SEA CON@ Phoenix, Inc.) provides underwater cable and connector solutions for commercial and military programs. Products include Gigabit Ethernet connectors, hull penetrators, glass to metal seals, underwater mateable power and fiber optic designs.

Ampex Data Systems

Booth: 402

Email: john_hardy@ampexdata.com

Ampex Data Systems designs, develops and manufactures high-performance solid state and hard-disk recorder systems for use in harsh environmental conditions. This includes submersibles, UAVs, rotary & fixed wing aircraft.

Our newest product the miniR700 is specifically designed as a small, light-weight multi-sensor data acquisition system that is completely reconfigurable to meet changing sensor and system payloads.

Applanix

Booth: 505

Email: info@applanix.com

Applanix, a wholly owned Trimble subsidiary, develops, manufactures, sells, and supports precision products that accurately and robustly measure the position and orientation of surveying vehicles and onboard sensors for operations in dynamic environments. Applanix supports their air,

land, and sea customers around the world with exceptional service, anywhere at anytime.

Applied Microsystems

Booth: 521

Email: mike@appliedmicrosystems.com

Applied Microsystems Ltd. is a manufacturing company serving the oceanographic, hydrographic and geophysical industries since 1974. Products include instruments and sensors for profiling, in-situ and real-time measurement of sound velocity, fresh and seawater conductivity, salinity, temperature, depth, tides, waves, dissolved oxygen, pH, Redox, turbidity, ocean floor sediment temperature gradients and other specialized parameters. Instrument types include; CTD's, Sound Velocimeters, loggers, profilers, real-time probes, multi-sensor chains and in-situ mass spectrometer for chemical detection.

Applied Signal Technology, Inc.

Booth: 903 & 905

Email: melissa_nelson@appsig.com

Applied Signal Technology, Inc. (AST) is a leader provider of advanced digital signal processing products, systems, and services in support of intelligence, surveillance, and reconnaissance for the U.S. and allied governments and select industrial partners.

AST's Ocean Systems Division will feature PROSAS-R4I, a low size, weight, and power synthetic aperture sonar (SAS) system that can be mounted on 12.75-inch diameter and larger towed or autonomous undersea vehicle platforms. The flexible system provides wide-area, high resolution undersea imaging for military and commercial applications such as covert mine hunting and reconnaissance, anti-submarine warfare, oil/gas/geophysical survey, and harbor security.

Exhibitor Profiles (cont'd.)

Aquatic Informatics Inc.

Booth: 814C

Email: ed@aquaticinformatics.com

Aquatic Informatics Inc. (AI) is the developer of AQUARIUS Time Series software, the leading marine/lake/river monitoring and data analysis platform. AQUARIUS has been developed specifically for water scientists and supporting technical staff who need to increase productivity in handling vast amounts of near continuous and real-time data while eliminating data uncertainty and errors caused by both sensor malfunction and human intervention.

ASL Environmental Sciences, Inc.

Booth: 405

Email: cmquade@aslenv.com

ASL offers a range of advanced state-of-the-art upward looking sonar products including the Ice Profiling Sonar for accurate long term measurements of ice keels, the Acoustic Water Column Profiler for monitoring the abundance and movements of zooplankton and the IRIS underwater data logger for Imagenex 881 sonars.

AXYS Technologies, Inc.

Booth: 303

Email: info@axys.com

AXYS Technologies Inc. (AXYS) of Victoria, BC Canada has acquired more than 30 years experience in remote environmental monitoring solutions. As an industry leader specializing in the measurement of directional wave, current, and meteorological data, AXYS has provided environmental monitoring solutions to clients throughout the world.

BC Offshore Oil and Gas Branch

Booth: 1102

Email: ron.smyth@gov.bc.ca

The British Columbia Offshore Oil and Gas Branch, an agency of the Government of BC, is mandated to enable responsible development of the BC offshore. The Branch is developing a regulatory and fiscal model through protocol arrangements with First Nations and local governments. The booth provides an update on west coast developments.

Biosonics

Booth: 702

Email: sales@BioSonicsInc.com

Biosonics manufactures the most advanced portable Digital Scientific Echosounder System, the DT-X, for the assessment and monitoring of underwater habitats. In use throughout the world in oceans, lakes, and rivers, the BioSonics DT-X and related computer software are used for detection, measurement, monitoring, and analysis of marine and aquatic bathymetry.

BlueView Technologies/MECCO

Booth: 203

Email: grant.fletcher@blueviewtech.com

BlueView Technologies provides affordable state-of-the-art compact sonar solutions for Surface Vessel, ROV, UUV and diver applications. Using cutting-edge multi-beam imaging sonar technology, the ProViewer delivers a quantum leap in performance over conventional sonar systems. BlueView's High definition real-time streaming imagery dramatically increases safety, efficiency and mission success during hull and pier inspection, and other commercial and recreational applications.

Exhibitor Profiles (cont'd.)

C.B. Technology Ltd.

Booth: 802

Email: cbtechbc@telus.net

C.B. Technology draws on an extensive knowledge base of thermoplastic engineering to solve our clients' demanding applications. Devlon thermoplastics can withstand the toughest conditions possible with outstanding results. Some offshore applications include:

- Subsea: ROV and Launch Recovery Systems
- Oil & Gas: Centralizers, Clamping Systems, Rig Components and Pipe Laying Systems

CCMC

Booth: 814G

Email: ncater@ccmc.nf.ca

CCMC was established in 1989 as a not-for-profit Canadian corporation. CCMC has, since its inception, invested in numerous small businesses in the Canadian ocean technology sector, helping them achieve commercial success through innovation.

CCMC is the catalyst and project leader for SmartBay, demonstrating Canadian ocean technology in Placentia Bay, Newfoundland.

CLS America, Inc.

Booth: 308G

Email: dpotts@clsamerica.com

CLS America provides service with Argos and other satellite systems, for global data and location reporting. Very low-power transmitters available. New features include two-way communications, increased data rate. Data via Web

access or other delivery means. Visit our website: www.clsamerica.com or call: 301-925-4411

Canadian Scientific Submersible Facility

Booth: 314E

Email: operations@ropos.com

The Canadian Scientific Submersible Facility is a not-for-profit corporation specializing in underwater scientific support. CSSF has worked closely with industry and Universities internationally to research, video, explore and maintain equipment in ocean depths from 20m to 5000m. Innovative solutions for underwater tasks have been the hallmark to CSSF's success.

Canal Geomatics, Inc.

Booth: 814A

Email: jeff@canalgeomatics.com

Canal Geomatics Inc. offers the most technologically advanced GPS positioning and wireless solutions in the industry. Representing Canadian manufacturers such as NovAtel and HemisphereGPS along with Magellan and Kyocera our goal is to supply the best solutions possible – tailored to the specific needs of each client.

Cobham Tracking & Locating Ltd.

Booth: 808F

Email: info@seimac.com

For over 25 years, professionals in life critical situations around the globe have relied on Seimac brand products.

Now part of Cobham Tracking & Locating Ltd., we continue to design, manufacture, and market:

- Novatech Beacons & Flashers
- COSPAS-SARSAT Beacons
- Direction Finders
- Datum Marker Buoys and more

Exhibitor Profiles (cont'd.)

D&A Instruments

Booth: 502

Email: john@D-A-Instruments.com

The company manufactures, sells, and services optical and acoustic sediment-monitoring instrumentation for all environments. Its products include: OBS-3+ and OBS-5+ turbidity and suspended solids monitors for clear and muddy water. The OBS-3A logging multi-parameter system and the OBS-4OEM micro turbidity sensor, fiber optic laboratory systems, gravel-transport sensors, and data loggers.

DASCO Equipment, Inc.

Booths: 1113 & 1115

Emails: dasco@eastlink.ca or
dastewa@atfglobal.net

DASCO Equipment Inc., incorporated August 1987, is a Manufacturer's Representative for Marine & Oceanographic equipment throughout Canada.

Products for sale &/or lease include ADCPs, ROVs, Sonars, UnderWater connectors, Cameras, Water Level & Wave instrumentation, Acoustic Tracking & Modems.

Contact: David A. Stewart, P. Eng.

Tel: 902-566-9285

Web Site - <http://dasco.eastlink.ca>

Deep Ocean Engineering, Inc. / MECCO

Booth: 201

Email: mgilson@deepocean.com

Deep Ocean Engineering, Inc. is a technology-based engineering and manufacturing company that provides integrated robotic solutions for

various underwater applications in harsh and diverse operating environments. Deep Ocean designs, builds and tests its ROV's from its plant in California. Deep Ocean has been in continuous operation for twenty five years and has sold more than 530 ROV systems in over thirty countries worldwide.

DeepSea Power & Light / MECCO

Booth: 202

Email: info@deepsea.com

DeepSea Power & Light was founded in 1983 with the goal of providing high quality, innovative products to the oceanographic community. In the last 24 years DeepSea's product line has grown to include underwater video cameras, state of the art underwater lights, hollow seamless ceramic SeaSpheres, pressure relief valves and pressure compensated batteries.

EDO

Booths: 320 & 421

Email: n/a

Look to EDO Electro-Ceramic Products for your ceramic component, value added assemblies or system requirements. For over 50 years EDO has been proud to supply the best piezoelectric ceramic available to industry leaders in underwater detection and surveillance, ultrasonics, medical, oil and gas and others. Join them... Look to EDO.

Electrochem Commercial Power

Booth: 304

Email: kwilliams@electrochempower.com

Electrochem Commercial Power is a world-leading manufacturer of lithium cells and battery packs for extreme environment applications. Our

Exhibitor Profiles (cont'd.)

products excel under the harshest of conditions, including severe shock, vibration, and operating temperatures. Electrochem is trusted worldwide as the most reliable, most durable and longest lasting cells and battery packs.

Energy Sales

Booth: 602

Email: tim@energy-sales.com

Since 1972 we have been providing OEM's with high quality battery products and services. We are a specialized value-added distributor of the most widely accepted brands of primary and secondary batteries and related products, including nickel cadmium, nickel metal hydride, lithium ion, and many other chemistries. We manufacture high quality battery packs made to custom specifications.

Enterprise Honolulu

Booth: 508

Email: mritchie@enterpisehonolulu.com

Enterprise Honolulu is a non-profit economic development organization that is focused on attracting, retaining and growing innovation and technology businesses throughout Hawaii. Funded by Hawaii's private sector, Enterprise Honolulu works to improve Hawaii's business climate and global competitiveness, in collaboration with government agencies and other business associations.

Evans-Hamilton

Booth: 602

Email: jeff@evanshamilton.com

Evans-Hamilton Inc. is known for our excellence in applied oceanography and marine instrumentation. Evans-Hamilton is dedicated to solving marine problems through the use of classical and innovative data acquisition systems, modern data analysis techniques, and numerical models of coastal and oceanic processes. EIII provides a complete range of physical oceanographic, geophysical, and environmental consulting service.

Excell Battery Co.

Booth: 308D

Excell Battery Co. is a 22 year old company specializing in the manufacture of sophisticated lithium and lithium-ion battery packs. Using cells from the world's best manufactures, Excell produces batteries for oceanographic, communications, medical, petroleum, and many other industries. Based in the Vancouver area, Excell has branch manufacturing facilities in Toronto, Calgary and Houston, TX.

Falmat, Inc.

Booth: 800

Email: sales@falmat.com

Falmat is an internationally recognized leading manufacturer of custom electro-mechanical, electro-optical and instrumentation cables for all sub sea applications. Cable solutions include: ROV, diver, video, lighting, magnetometer, side scan sonar, tow and fiber optic. Falmat offers single and multi-layered steel armored cables and braided haired fairing in short production runs.

Exhibitor Profiles (cont'd.)

Focal Technologies Corp. Moog Components Group – Halifax Operations

Booth: 808A

Email: focal@moog.com

Focal Technologies Corp. designs and manufactures rotary products and Video/Data Multiplexers. The rotary products include Fiber Optic Rotary Joints, Electrical Slip Rings and Fluid Rotary Unions. These products are worldwide leaders in cable handling systems for ROVs, FPSO turrets, seismic streamers and other underwater applications.

Fugro Pelagos, Inc.

Booth: 216

Email: reitzen@fugro.com

Fugro Pelagos is a leading provider of high-resolution hydrographic survey and seabed mapping services. The company provides integrated solutions involving advanced technologies, such as multibeam bathymetry, multibeam backscatter “snippets” imagery, airborne hydrographic LIDAR, AUVs, and GIS. FPI provides innovative technical approaches that raise the quality and productivity of seafloor mapping.

Geometrics

Booth: 822

Email: sales@geometrics.com

Geometrics, a member of the OYO Corporation, manufactures, sells and services portable geophysical instruments for land, marine, and air investigations of the subsurface. Geometrics’ product line includes proton precession and cesium magnetometers, high-resolution seismographs, and electrical conductivity imaging

and resistivity systems. Geometrics’ instruments are used around the world for natural resource exploration, geotechnical and environmental assessments, ordnance detection, locating archeological and treasure sites and teaching and research.

Global Dynamix, Inc./

J. Teague Enterprises, LLC (USA)

Booth: 401

Websites: www.g-dynamix.com
www.jteagueenterprises.com

Global Dynamix Inc. is a recognized worldwide broker of high performance products used in both the Aerospace and Hydrospace communities. We have developed a reputation of excellence by living up to our motto of “New Horizons, No Boundaries.”

J. Teague Enterprises, LLC is a manufacturer’s agent representing Global Dynamix. With over 37 years experience in the marine technology industry, we stand ready to serve our clients with individualized professional services customized to meet their entire needs. “Anytime, Anywhere.”

Global Marine Systems Limited

Booth: 0314D

Global Marine, an independent marine engineering company, has been in business for over 150 years and continues to be the pre-eminent provider of submarine cable installation and maintenance services. The company is a market leader in marine cable installation and maintenance for telecommunications, scientific research, oil, gas, utilities and renewable energy sectors.

Exhibitor Profiles (cont'd.)

Glosten Associates

Booth: 602

Email: jlredgar@glosten.com

The Glosten Associates is a full service consulting firm of naval architects, marine engineers and ocean engineers. Founded in 1958, the firm's design experience includes research vessels, tugs, barges, cruise vessels, passenger/car ferries, workboats, and special-purpose platforms. Glosten has a staff of 58 associates including 23 professionally licensed engineers.

Government of Canada

Booth: 2007 Oceans Canada Pavilion

Website: www.Canada.gc.ca

The Government of Canada is proud to support and participate in Oceans 2007. We are committed to ensuring that our oceans and waterways are preserved, protected and offer prosperity for all Canadians. Canada's ocean technology companies are world leaders, exporting their dynamic products and services around the globe.

For more information, please visit the Oceans Canada Pavilion.

Government of Newfoundland & Labrador – Department of Innovation, Trade & Rural Development

Booth: 814J

Email: doneill@gov.nl.ca

Website: www.gov.nl.ca

The Department of Innovation, Trade and Rural Development is the lead agency for creating and maintaining a competitive economic environ-

ment that encourages and supports private sector growth and long-term sustainable employment opportunities for the people of Newfoundland and Labrador.

Hawaii Ocean Science & Technology

Booth: 508

Email: ecorbin@dbedt.hawaii.gov

Hawaii's Ocean Science & Technology industry offers outstanding advantages for those looking for cutting-edge research, products and services. Hawaii is a leader in a wide variety of areas including ocean engineering, software development for cable laying and design, deep ocean water applications, remote sensing, ship design and ocean bottom surveying.

Hawboldt Industries Ltd.

Booth: 808D

Email: dan.gibson@hawboldt.ca

Hawboldt Industries was founded in 1906 to support the Atlantic fishery. While the company has maintained its roots in the fishing industry, it has developed into a world-class manufacturer and exporter of custom designed winches and deck gear for Oceanographic, Naval Defence, and offshore Oil & Gas applications.

HELZEL Messtechnik GmbH

Booth: 403

Email: helzel@helzel.com

HELZEL Messtechnik is the German TÜV certified manufacturer of the reliable high-quality ocean current, wave and wind mapping system WERA. The shore-based WERA provides reliable data over long distances (>200 km) with outstanding spatial and temporal resolution. The Helzel team would be pleased to welcome you at booth 403.

Exhibitor Profiles (cont'd.)

IEEE/OES

Booth: 922

Email: kferer@ieee.org

The Oceanic Engineering Society (OES) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) seeks to advance the science and technology of ocean measurement techniques. Its objectives are scientific, literary, and educational in character. The Society strives for the advancement of the theory and practice of electrotechnology applied to the ocean environment. This includes allied branches of engineering and of the related arts and sciences, and the maintenance of a high professional standards among its members and affiliates.

Imagenex Technology Corp.

Booth: 612

Email: imagenex@npsnet.com

Imagenex Technology Corp. was founded in 1988 by pioneers in the development of high resolution sonar. On an international level, Imagenex is an innovative company that designs and manufactures sonar systems and continues to move forward through ground-breaking advances, with continual support for the customer's needs and demands.

IMarEST

Booth: 222

Email: info@imarest.org

The IMarEST is the international membership organisation and learned society for the marine community, established 1889, with 50 branches and over 15,000 members worldwide.

Activities: professional and corporate membership, promoting careers, scholarships and awards, publishing books and trade journals, technical conferences, networking events, employment service and the Marine Information Centre.

Impulse Enterprise

Booth: 901

Email: andyg@impulse-ent.com

Impulse Enterprise is a world leader in the design and manufacture of electrical and optical interconnection systems for harsh environments. From the smallest underwater sensor connector to large, extremely rugged vehicle systems, Impulse is your source for the widest range of high quality, cost effective connection solutions.

International Ocean Systems

Booth: 1125

Email: astrid@divermag.co.uk

International Ocean Systems is a European-based Diver Group magazine with a bi-monthly circulation in excess of 10,000 worldwide. It serves the commercial oceanography market covering the fields of ocean data gathering, underwater surveying, and instrumentation. Readers are predominantly upper management, designers/engineers and scientists.

International Submarine Engineering Ltd.

Booth: 904

Email: info@ise.bc.ca

International Submarine Engineering Ltd. is a 33 year old company specializing in the design, integration and manufacture of Remotely Operated Vehicles (ROV), Autonomous Underwater Vehicles (AUV) and Semi-Submersible Vehicles. ISE's markets are in the Ocean

Sciences, Oil and Gas, Subsea Cables, Accident Investigation and Salvage, Military Applications and Ocean and Port Security.

For further information, contact ISE at either:
1-604-942-5223 or info@ise.bc.ca

InterOcean Systems, Inc.

Booth: 1005

Email: Sales@InterOceanSystems.com

For over 60 years InterOcean Systems has been the world leader in the design and manufacture of high quality oceanographic instruments and systems. Products include the S4A and S4ADWi family of Current Meter and Directional Wave Gauges, WTG/904 Non-Directional Wave/Tide Gauges, Model 111 and 1090E/ED series of Acoustic Releases, Cable Handling Winches of all sizes, and Oil Spill Detection Systems, in addition to turn-key automated data acquisition systems. Our dedication to product reliability and customer service provides you with confidence in any extreme environment.

Ixsea, Inc.

Booth: 1014

Email: info@ixsea.com

At IXSEA, we combine advanced technology, expertise and marine know-how to provide our customers with navigation, positioning and imagery systems and solutions. To sail. To sound. To analyze.

Kongsberg Defense and Aerospace - Naval Systems

Booth: 323

Email: eric.levitt@kongsberg.com

Kongsberg Defense and Aerospace - Naval Systems . Is a leading supplier of Maritime Defense and Awareness related products. Our extensive experience in Maritime Surveillance, Mine Countermeasures, Combat Management systems and Underwater vehicles make Kongsberg the logical choice for any Integrated Port or Harbor Security System. Using proven, field tested and robust systems we can provide cost effective solutions for any size project.

Kongsberg Maritime

Booth: 308A

Email: john.gillis@kongsberg.com

Advanced and reliable marine electronics:

Subsea

- Echo sounders for seabed mapping and fish research.
- Sonars for ROV, harbour defence, survey and search & recovery.
- HUGIN Autonomous Underwater Vehicle
- Underwater tracking & positioning.
- Underwater cameras.
- Motion sensors, DGPS and Helideck monitoring.

Ship control

- Dynamic positioning, machinery and propulsion control
- Training simulators

Exhibitor Profiles (cont'd.)

Knudsen Engineering Ltd.

Booth: 814E

Email: judith@knudsenengineering.com

Recognized for innovation, high performance products and dedicated customer support, Knudsen Engineering Limited (KEL) manufactures single beam echosounders for a wide range of applications including survey, navigation, dredging and scientific research. Stop by Booth 814E to see the Knudsen product showcase including their new, next generation Sounder and Chirp Series.

L-3 Communications Klein Associates, Inc.

Booth: 1016

Email: Klein.Mail@L-3com.com

L-3 Communications Klein Associates, Inc. is the leading provider of high resolution Side Scan and Multi-bean sonar systems, fully Integrated Bridge and Communications equipment, and Waterside Security and Surveillance Systems.

L-3 Communications MariPro

Booth: 213

Email: Nazeeh.Shaheen@L-3com.com

L-3 Communications MariPro located in Santa Barbara California has a rich history spanning nearly half a century in design, fabrication, manufacture, test, installation, operation and maintenance of cabled sensor systems for maritime acoustic tracking ranges, noise measurement, hydroacoustic monitoring, surveillance and the emerging ocean science market for cabled ocean observatories.

Laurentian University: Dr. Greg Baiden

Booth: 422

Email: gbaiden@laurentian.ca

Dr. Greg Baiden, Canadian Research Chair, conducts research in the Robotics & Automation field for numerous industries. His work on an Optical Communication System has brought him to the Oceans industry. The technology is a high speed, high capacity, wireless communication system that enables the teleoperation of untethered underwater devices.

LinkQuest, Inc.

Booth: 900

Email: sales@link-quest.com

LinkQuest Inc. is a leading manufacturer of precision acoustic instruments for offshore oil exploration, construction, drilling, survey, environmental study and other oceanographic applications. Major product lines include the best-selling high-speed underwater acoustic modems and TrackLink USBL acoustic tracking systems, FlowQuest acoustic current profilers, and NavQuest Doppler velocity Logs.

Lockheed Martin

Booth: 708

Email: Tracy.L.McNeil@LMCO.com

Headquartered in Bethesda, Md., Lockheed Martin employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

Marine Magnetics / MECCO

Booth: 212

Email: info@marinemagnetics.com

Marine Magnetics designs and manufactures high sensitivity marine magnetometers and gradiometers. Products include SeaSPY, SeaQuest and Explorer systems that are in use around the world by salvage companies, archaeologists, pipeline and cable route surveyors, universities, Navies and in mineral and oil and gas exploration.

All of our products are fully digital and have been integrated with leading side scans and deep tow systems.

Marine Technology Reporter

Booth: 322

Email: momalley@marinelink.com

With the industry's largest BPA audited circulation, Marine Technology Reporter is the definitive international information magazine for the marine, oceanography, and marine engineering industries. MTR sponsors the OceanTech Expo, a unique, industry-led exposition featuring new equipment, training and demonstrations of the most current technology. Providence R.I. USA September 2-5, 2008.

Marine Technology Society

Booth: 325

Email: membership@mtsociety.org

Website: www.mtsociety.org

The Marine Technology Society is an international, not-for-profit professional society of ocean engineers, technologists, policy makers, the military, and educators. Founded in 1963, the society

fosters education, networking, and information-sharing through conferences, workshops, local section meetings and technical committees. The society publishes a bimonthly newsletter, a monthly electronic newsletter and a quarterly, peer-reviewed journal.

Markey Machine

Booth: 602

Email: info@markeymachinery.com

The Markey Machinery Company, Incorporated is a world wide supplier of winches, capstans, windlasses and auxiliary marine grade deck machines.

Markey machines are engineered for their application and installation aboard vessels such as harbor tugs and ocean going multihulls. Maritime companies choose the reliability of a Markey-crafted winch to work on their most powerful ship escort vessels.

Marport Canada, Inc.

Booth: 814F

Email: kkenny@marport.com

Marport Canada Inc. is a leading developer of software defined acoustic technology for commercial fisheries, offshore energy, science and defence. We design and manufacture sensors, sounders, sonars, visualization software and bridge display instruments. Applications include subsea sensing, data acquisition, underwater wireless communications and acoustic imaging. Visit www.marport.com for more information.

MAST (Maritime Systems & Technology) 2007

Booth: 814D

Email: warrene@eievents.biz

MAST (MARitime Systems & Technology) is the annual global conference and trade-show

Exhibitor Profiles (cont'd.)

launched and run by senior-level international maritime security and defense leaders from government, R&D, and industry.

MAST offers its unique, diverse international audience, unparalleled opportunities to discuss and debate maritime security and defense capabilities, concepts and see demonstrations of enabling technologies.

The next annual MAST events will take place in Genoa, Italy (14th to 16th November 2007) and Cadiz, Spain (12th to 14th November 2008)

MATE

Booth: 902

Email: info@marinetech.org / www.marinetech.org

The Marine Advanced Technology Education (MATE) Center is a national partnership of organizations and individuals working to improve marine technical education and, in this way, prepare the future workforce for marine science and technology occupations. Funded by the National Science Foundation, the MATE Center is headquartered at Monterey Peninsula College.

McQuest Marine Sciences Limited

Booth: 1014

Email: email@mcquestmarine.com

McQuest Marine Sciences Limited specializes in marine geophysics and hydrography, with 27 yrs of expertise. McQuest's unique capabilities help provide custom tailored services to government, historical societies, engineering firms, port authorities and research facilities world wide.

Measurement Technology Northwest

Booth: 602

Email: daveh@mtnw-usa.com

Measurement Technology NW's popular LCI displays are used to control and monitor speed, payout, and tension (both cable and chain) in single/multi winch systems used for equipment deployment, barge positioning, fixed-place mooring, towing and ship assist activities, dredging, and wherever accurate and reliable line control is required.

MECCO, Inc.

Booths: 200-203, 205, 207, 209

Email: mecco@meccoinc.com

Mecco, Inc. sells and leases marine equipment in Western North America and Hawaii. We will be featuring products from the following companies: Blueview Technologies, Deep Ocean Engineering, DeepSea Power & Light, Edgetech, Envirotech, Falmouth Scientific, Franatech, Falmat, Hypack, ORE Offshore, Remontec, Seacon, Sensor Tech, Tecnadyne, Trittech, TSS and VideoRay.

METOCEAN Data Systems

Booth: 404

Emails: sales@metocean.com or

emily@metocean.com

METOCEAN is a manufacturing and development company located in Nova Scotia, Canada. METOCEAN has been a world leader in the design of air/ship deployable drifting buoys. METOCEAN has produced thousands of drifting buoys for such programs as WOCE and TOGA. METOCEAN manufactures SAR buoys (SLDMB), oil tracking buoys (Argosphere) and Davis Drifters. METOCEAN also specializes in various ice platforms and acoustic systems for customers worldwide.

Exhibitor Profiles (cont'd.)

Material System Inc.

Booth: 300

Email: rfoster@matsysinc.com

MSI designs and manufactures custom sonar transducers and arrays for a wide range of applications. MSI's piezocomposite technology offers extremely broad bandwidth, high receive sensitivity, high source levels, conformability for curved arrays, and reduced side lobes. The technology has enabled several of the most advanced sonar systems available today.

Multi-Électronique (MTE), Inc.

Booth: 314C

Email: multelec@globetrotter.net

Multi-Électronique (MTE) Inc. is a company specialized in the design and marketing of oceanographic products such as: Buoy, Sub-marine sound recorder, Winch Counter and Sample Counter.

The National Defense Center of Excellence for Research in Ocean Sciences (CEROS)

Booth: 508

Email: rickh@ceros.org

The National Defense Center of Excellence for Research in Ocean Sciences (CEROS) supports innovative approaches to maritime military technology, while leveraging facilities and infrastructure in Hawaii. CEROS accepts proposals through annual Solicitations. Since 1993, the CEROS program has funded over 200 projects at a combined value of over \$90 million.

National Oceanic & Atmospheric Administration (NOAA)

Booths: 223 & 225

Website: www.noaa.gov

The National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce is one of the world's premier scientific and environmental agencies. NOAA conducts research and gathers data and observations about the global oceans, atmosphere, space, and sun, and applies this knowledge to environmental prediction and services that touch the lives of all Americans. NOAA works with government, academia and private sector partners to provide the nation with high quality weather, water, climate and related environmental information.

Naval Undersea Warfare Center, Division Newport

Booth: 308B

Website: www.npt.nuwc.navy.mil

The Naval Undersea Warfare Center (NUWC) is the Navy's full-spectrum research, development, test and evaluation, engineering and fleet support center for submarines, autonomous underwater systems, and offensive and defensive weapons systems associated with undersea warfare. One of the corporate laboratories of the Naval Sea Systems Command, NUWC is headquartered in Rhode Island.

NEPTUNE Canada, University of Victoria

Booth: 314B

Email: elliottl@uvic.ca

NEPTUNE Canada Project, led by the University of Victoria, will install the world's first regional cabled ocean observatory in NE Pacific, 2007-08. The 800 km loop of electro-optic cable will deliver 10kW and 4Gb/sec communication to each

Exhibitor Profiles (cont'd.)

of five seafloor nodes hosting over 200 sensors, in water depths between 100 and 2,800 metres.

Nexans Norway AS

Booth: 820

Email: jon.seip@nexans.com

Nexans Norway is part of the Nexans group, one of the world's leading cable manufacturers with an industrial presence in 29 countries. We manufacture technologically advanced and highly durable cables for control of oil production, seabed equipment and a growing family of ROVs. Nexans manufactures special purpose underwater cables for scientific, defense, seismic and oceanographic applications.

Nortek, USA

Booth: 502

Email: inquiry@nortekusa.com

NortekUSA, a subsidiary company of Nortek AS, was formed in 1998 to provide sales and technical support for the Nortek acoustic Doppler current meters, profilers, and velocimeters used to measure currents and waves in the ocean, lake, river, and laboratory.

Nuytco Research Limited

Booth: 808I 7 808J

Email: nrl@nuytco.com

Website: www.nuytco.com

Nuytco Research Ltd. is a world leader in the development and operation of undersea technology. Nuytco Research designs, builds and operates atmospheric diving suits, submersibles,

remotely operated vehicles, HMI lights and communication systems, as well as specialty equipment for commercial diving.

Oceanology International 2008

Booth: 425

Email: james.coleman@reedexpo.co.uk

Oceanology International (OI) is the world's largest and most respected meeting place for the marine science and ocean technology community. OI is attended by a global community of engineers, scientists, legislators, policy makers and management professionals with responsibility across all of the ocean science and marine technology spectrum. Visit www.oceanologyinternational.com for more information.

Oceanscience

Booth: 1021

Email: info@oceanscience.com

Oceanscience introduces the Underway CTD system. Developed with Seabird, it produces cost-effective, high-quality CTD measurements at ship speeds to 20 knots and to depths over 500 meters. It weighs under 20 kg and can be operated from most vessels.

Oceanscience also manufactures bottom mounts, buoys, and autonomous surface vessels.

OceanServer Technology, Inc.

Booth: 317

Email: sales@ocean-server.com

OceanServer Technology, Inc. manufactures the new Iver2 Autonomous Underwater Vehicle, and provides OEMs with innovative Lithium Ion battery management solutions, and digital compasses for use in a variety of applications. OceanServer

Exhibitor Profiles (cont'd.)

products are commonly used in embedded applications for the Marine, Scientific and Military markets.

OceanWorks International

Booth: 314A

Email: marketing@oceanworks.com

OceanWorks is an internationally recognized subsea technology company specializing in the design and manufacture of underwater work systems and specialized subsea equipment for military and commercial markets, offering a full range of subsea system engineering, design, analysis, testing, prototype development and project management services.

Ocean News & Technology

Booth: 214

Email: mjmcduffee@ocean-news.com

For more than 25 years, Ocean News & Technology has been the primary news publication in the ocean industry, reporting the latest news, trends, and technology developments in the global marketplace. From Defense, Offshore Oil & Gas, Marine, Ocean Science, Communications, and Diving, ON&T reaches industry leaders around the world.

www.ocean-news.com

Oceanic Imaging Consultants, Inc.

Booth: 508

Email: info@oicinc.com

Oceanic Imaging Consultants, Inc. develops seafloor mapping software and systems that acquire and process sidescan and sub-bottom

sonar imagery, interferometric and multi-beam bathymetry, and associated navigation data. OIC also creates custom configured workstations, and provides consulting and data processing services for interpretation of sonar data and creation of mission products.

OCEANS '09 Spring – MTS/IEEE Biloxi

Booth: 814B

Email: jugan@bellsouth.net

The Oceans 2009 MTS/IEEE Biloxi Conference Committee will have information available about the conference venue, exhibit hall and registration, technical tracks and sessions, and other conference information.

OCEANS '09 Fall – IEEE Bremen,

University of Bremen

Booth: 1023

Email: Waldmann@marum.de

The University of Bremen/MARUM is going to organize the OCEANS conference in Europe in 2009. With about 200 employees and a highly advanced scientific/technical infrastructure MARUM belongs to the major European research center in Marine Geosciences. Modern conference facilities will provide an attractive framework to make the conference a successful event.

ODIM Brooke Ocean

Booth: 808C

Email: sales@brooke-ocean.com

Manufacturers of advanced data collection systems including: Moving Vessel Profiler(MVP), SeaHorse wave-powered profiler, Free Fall Cone Penetrometer(FFCPT), Laser Optical Plankton Counter(LOPC). ODIM Brooke Ocean supplies launch/recovery systems for payloads including

Exhibitor Profiles (cont'd.)

AUVs, towbodies, CTD rosettes, diving suits. Other products: slip-ring winches, metering sheaves, towbodies, custom ISO vans, E-M cable lubrication systems.

Open Seas Instrumentation, Inc.

Booth: 808E

Email: dan@openseas.com

Open Seas manufacturers streamlined buoys for instrument moorings, ADCP moorings buoys, trawl resistant bottom mounts for ADCPs, zooplankton multiple net systems and oceanographic swivels. Our BIONESS datalogger is ideal for net systems. It includes stepper motor drivers and deck software with real-time display and CTD graphing.

ORE Offshore

Booth: 224

Email: greg@ore.com

ORE Offshore designs, develops, and manufactures acoustic products, instruments and systems for the cost-effective acquisition of underwater data including applications in the marine, estuarine and coastal environments. It has responded to the needs of the scientific, Naval and offshore communities for over 30 years by providing equipment such as the USBL positioning systems, Acoustic Releases, and Transponders.

Paroscientific

Booth: 602

Email: support@paroscientific.com

Paroscientific is the world leader in precision pressure measurement products. Our product line is composed of transducers, transmitters and depth sensors. These products are used in unique appli-

cations such as: underwater construction, seabed surveying and mapping, oil platform installation, Remotely Operated Vehicles (ROV's), water level measurement behind dams (China Three Gorge Project) and Tsunami detection systems.

Phoenix International, Inc.

Booth: 1103

Email: TJanaitis@phnx-international.com

Phoenix provides underwater operations, engineering, and project management services to offshore oil & gas, defense, and other ocean agencies and industries. Six regional offices provide expertise in wet and dry hyperbaric welding, conventional and atmospheric diving,

ROVs, and tooling. Our capabilities support subsea tieback; infield development; underwater inspection, maintenance and repair; construction; search & recovery; and submarine rescue.

PMI Industries

Booth: 920

Email: sales@pmiind.com

Cable products and engineered solutions to cable problems; reliable terminations and protection accessories (EVERGRIP™ Termination, CABLE-GRIP™ Termination, DAM/BLOK™ Electrical Splice Kit, EVERFLEX™ Bending Strain Relief, DYNAHANGER™ Suspension System); factory tested and fabricated cable systems; specialized testing of cable, components and systems; maintenance and repair of operational equipment.

Polymer Corporation

Booth: 1001

Website: www.polymercorporation.com

Polymer Corporation manufactures precision plastic parts in low volumes. Our unique Liquid

Exhibitor Profiles (cont'd.)

Resin Casting (LRC™) process allows Polymer to manufacture complex plastic parts to exacting standards and with excellent cosmetics. Typical marine applications are Electronic Encapsulations, Antennas, Underwater Vehicle components, Canisters, Rebreather components, Clear Lenses, and Hand Held Cases.

PREVCO Subsea Housings

Booth: 503

Email: jhead@prevco.com

PREVCO Subsea specializes in Subsea Enclosures, Junction boxes, vent plugs, pressure relief valves and accessories to meet your underwater equipment needs. Our designs are fully tested and ready to fabricate now! Some designs are available from stock. With a PREVCO Housing, you get a complete system for one low price.

Quester Tangent

Booths: 218 & 319

Email: celliot@questertangent.com

Quester Tangent designs and manufactures software and hardware products that allow users to acquire, monitor, validate and process large amounts of data in either historical or real-time. Established as a standard for acoustic seabed classification, innovation of the core technology is now leading to applications in medical imaging and airborne LIDAR mapping.

RBR Ltd.

Booths: 921 & 923

Email: info@rbr-global.com

RBR has manufactured precision instruments for over 30 years. RBR supplies equipment for oceanography, limnology and cryospheric studies, including CTD, thermistor arrays and wave and tide gauges. The modular range of data loggers features high accuracy and flexible channel choices in small size and lightweight packages. Recent introductions include a very small temperature recorder, flexible data buoy controller, vented tide gauge, and the highest accuracy salinometer for portable use.

Remote Ocean System (ROS)

Booth: 516B

Email: beto@rosys.com

ROS is an industry leader in the design and manufacturing of reliable, technologically advanced HD cameras, lights (LED's) and pan & tilts utilized in the most severe oceanographic, industrial, commercial and military environments.

Beto Campos

Remote Ocean System (ROS)

Accounts Manager

619-884-1813 cell

RESON, Inc.

Booth: 824

Email: manderson@reson.com

RESON is the world leader in the manufacture of underwater acoustic systems, with global presence and service facilities around the world. Ever since 1976, RESON's unique series of SeaBat multibeam sonar systems, NaviSound Single-beam

Exhibitor Profiles (cont'd.)

echosounders, PDS2000 survey software and related hydrographic equipment have made RESON a respected partner for customers in the dredging, hydrographic, marine research, navel, and offshore oil and gas sectors.

ROMOR Atlantic Limited

Booth: 808G

Email: romor@romor.ca

ROMOR, your Ocean Solutions Specialists; providing sales, ocean instrumentation, technology consulting, marketing, training, maintenance, importing and exporting since 1984.

McLane provides the oceanographic community advanced time-series sampling instruments for physical and bio-geochemical ocean research.

Applied Acoustics Engineering is a major manufacturer of subsea acoustic navigation and positioning equipment and Marine Seismic equipment.

Roper Resources Ltd.

Booth: 716B

Email: Chris@RoperResource.com

Providing Remotely Operated Equipment for use in Hostile Environments

Roper Resources Ltd. Represents the following companies:

Hafmynd – Gavia AUV
Imagenex Technology Corporation
Inuktun Services Ltd.
Lynn AB
Saab Seaeye Marine Ltd.
Seabotix Inc.

Sidus Solutions Inc.
Symphotic Tii Corporation
WSM Inc.

Roper Resources Ltd. will be showcasing the Gavia AUV, Falcon ROV and the Lynn T 38 Visual Enhancement Technology.

SAIC – Bremerton

Booth: 702

Email: Richard.s.chwaszczewski@saic.com

SAIC is a leading provider of scientific, systems integration and technical services and solutions to all branches of the U.S. military, agencies of the Department of Defense, the intelligence community, the U.S. Department of Homeland Security and other U.S. Government civil agencies, as well as to customers in the selected commercial markets.

SERDP/ ESTCP

Booth: 308C

Email: Michelle.Paine.ctr@osd.mil

The Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) are the Department of Defense's (DoD) environmental technology programs. SERDP and ESTCP address environmental matters of concern to DoD through funding for basic and applied research and development and demonstration/validation of technologies.

Satlantic, Inc./Webb Research

Booth: 308E

Email: sales@satlantic.com

Satlantic Inc. designs and manufactures optical sensors for the measurement of light, nutrients

Exhibitor Profiles (cont'd.)

and chlorophyll fluorescence in aquatic environments. We also offer complete end-to-end instrument platforms for water quality research and monitoring.

Webb Research designs and manufactures scientific instruments for oceanographic research and monitoring. We specialize in autonomous drifters and profilers; underwater gliding vehicles; and moored underwater sound sources.

SeaBotix, Inc.

Booth: 400

Email: info@SeaBotix.com

SeaBotix manufactures underwater remotely-operated vehicles (ROVs) including the Little Benthic Vehicle (LBV) and Little Benthic Crawler (LBC). Both systems perform a multitude of tasks including sensor deployment, diver assist, hazardous environment intervention, and hull inspection. Every LBV includes a standard 24-Month Limited Warranty. Visit www.SeaBotix.com or call 619-239-5959.

SEA CON® Brantner & Associates, Inc./MECCO

Booth: 209

Email: seacon@seacon-usa.com

The SEA CON® Group of companies specialize in the manufacture of underwater electrical connectors, fiber optics and cable systems. With a standard range consisting of over 2,500 products, supported by a design and engineering capability that is second to none, the SEA CON® Group lead the way in connector technology.

Sea-Bird Electronics Ltd.

Booth: 502

Email: seabird@seabird.com

Sea-Bird Electronics, Inc. is the largest manufacturer of marine instruments for measurement of salinity, temperature, pressure, dissolved oxygen, and related oceanographic variables. Major products include Conductivity/Temperature/Depth (CTD) profilers, multi-bottle in-situ water samplers, moored CT recorders, wave/tide recorders, dissolved oxygen sensors and thermosalinographs. Customers include research institutes, engineering firms and navies throughout the world.

Seaeeye

Booth: 716B

Email: n/a

Saab Seaeeye offer a range of electric ROVs to fulfil almost any requirement and have over 20 years worth of experience in the industry and will be happy to discuss. We will be exhibiting the latest Seaeeye Falcon ROV of which over 115 of these powerful systems have been sold world-wide.

Sea Technology magazine

Booth: 1003

Emails: seatechads@sea-technology.com or oceanbiz@sea-technology.com

Published monthly for more than 43 years, Sea Technology magazine is circulated in more than 110 countries and is the worldwide information leader for marine business, science, engineering, diving, and offshore applications for commercial and military marine markets.

Exhibitor Profiles (cont'd.)

Sensor Technology, Inc./MECCO

Booth: 207

Email: techsupport@sensortech.ca

Sensor Technology is the largest Canadian producer of piezoelectric materials. Sensor Technology is also a fully integrated manufacturer of underwater acoustic devices. Utilizing in house piezo electric material, Sensor Technology has become a leader in the production of hydro-phones, transducers, actuators and associated electronic systems.

Shark Marine Technologies, Inc.

Booth: 424

Email: sales@sharkmarine.com

Since 1984 the acronym ROV at Shark Marine Technologies Inc., has stood for Remotely Operated Versatility. As a manufacturer we have made significant advancements in underwater imaging equipment, remotely operated vehicles and multiple survey systems. In our services we provide consultation, software development, custom manufacture, hydrostatic testing, equipment rentals and on-site operations.

Sidus Solutions, Inc.

Booth: 501

Email: info@sidus-solutions.com

Specializing in SUBSEA camera, robotic-positioning, and lighting systems, Sidus services and manufactures complete, integrated security and surveillance solutions for any subsea application. Sidus equipment, operational to depths of 6500 meters, is available as stand-alone systems or integrates with existing systems. Sidus also provides concept

design through engineering and technical support.

SonTek/YSI

Booth: 1002

Email: cdelfin@sontek.com

Websites: www.sontek.com
www.ysi.com

SonTek/YSI, advancing environmental science in over 100 countries, manufactures acoustic Doppler instrumentation for water velocity measurement in oceans, rivers, harbors, estuaries, and laboratories.

YSI's Integrated Systems & Services is a complete system integrator. On-site engineering and manufacturing produce monitoring buoys, telemetry systems, vertical profiling platforms, PAR products, and custom solutions.

Sound Metrics

Booth: 516A

Email: info@soundmetrics.com

Sound Metrics Corp. is located in Lake Forest Park, WA, USA. The company manufactures very high resolution multibeam lens-based sonars used for inspection, security applications, and fisheries management. The products are rated to depths 300m, 1000m, and 3000m. For additional information please see www.soundmetrics.com

Sound Ocean Systems, Inc.

Booth: 702

Email: inquiries@soundocean.com

Website: www.soundocean.com

SOSI manufactures oceanographic data buoys, bottom platforms, dataloggers, controllers, moorings, submersible diesel generators, winches,

Exhibitor Profiles (cont'd.)

launch & recovery systems, towed bodies, leak detectors, underwater GPS receivers, cable burial systems, ocean mining systems, marine security systems. SOSI also provides contract engineering, design, and project management services to meet customer requirements.

South Bay Cable Corp.

Booth: 301

Email: bill@southbaycable.com

Manufacture of Custom Electrical, Optical and Mechanical Cables, celebrating our 50th year of manufacturing leadership. Our highly engineered cables have been tested to the most demanding environments and applications including: Geophysical, Oil, and Undersea Exploration to Naval Defense – Towed Arrays, Video Pipe Inspection, Coastal Engineering and Remotely Operated Vehicles.

SPAWAR Systems Center San Diego

Booths: 523 & 525

Emails: sol.fink@navy.mil or

janel.c.canfield@saic.com

The Marine Navigation Division of SPAWAR Systems Center San Diego provides advanced navigation solutions for the warfighter. Our integrated navigation systems provide distributed real-time Positioning, Navigation and Timing information for shipboard weapon and combat support systems. Our ocean survey system provides highly accurate bathymetric navigation charts for GPS independent navigation.

Subconn, Inc.

Booth: 313

Email: mike@mjstew.com

Subconn is the designer and innovator of the Subconn line of wet mateable connectors. The Subconn series has become the industry standard for oceanographic instrumentation and marine applications. The product line features 1 to 16 pin configurations rated for full ocean depth. In addition to the standard connectors, Subconn offers connectors for high power, coax, ethernet, & penetrator applications.

Technopole maritime du Québec

Booth: 314C

Email: n/a

Technopole maritime du Québec is a network in oceans sciences and technologies who builds bridges between researchers, entrepreneurs, innovators and experts to convert marine know-how into high added value products, goods and services. We want to create a stimulating environment for the sustainable development of marine resources.

Teledyne Marine

Booth: 716A

Website: www.teledynemarine.com

Teledyne Marine is a growing coalition of premium undersea technology companies assembled by Teledyne Technologies. Teledyne Marine currently includes:

- Teledyne Benthos provides a wide array of oceanographic instrumentation and sensor solutions for use in marine environments. Products include acoustic releases, acoustic modems, hydrophones, geophysical survey systems, and ROVs. (www.benthos.com)

Exhibitor Profiles (cont'd.)

- Teledyne D.G. O'Brien incorporates the unmatched reliability of glass-to-metal seals into optical and electrical solutions. (www.dgo.com)
- Teledyne Geophysical Instruments designs and manufactures high-quality, marine seismic exploration products. (www.teledyne-gi.com)
- Teledyne ODI (Ocean Design Inc) designs and manufactures subsea electrical, fiber optic, hybrid and high power interconnect systems. (www.odi.com)
- Teledyne RD Instruments is the industry's leading manufacturer of acoustic Doppler products for current profiling, waves measurement, and precision navigation applications. (www.rdinstruments.com)

Trelleborg CRP, Inc.

Booth: 1000

Email: crpsales@trelleborg.com

Trelleborg CRP has the largest and most advanced syntactic foam manufacturing facility in the world and produces a range of syntactic foam products including ROV buoyancy, mooring buoys and drilling riser buoyancy modules. The facility is geared to high volume production of products servicing the oil, gas and telecommunications industries.

Tritech International Limited / VideoRay / MECCO

Booth: 205

Email: info@tritech.co.uk

Website: www.tritech.co.uk

Tritech International Ltd started trading in 1990 with the aim of producing the finest, innovative range of sub-sea products. Tritech specialises in

producing high performance acoustic sensors, video cameras and mechanical equipment for professional, underwater markets and remains industry leader in providing sensors and tools for ROV and AUV markets.

TSS International Ltd./MECCO

Booth: 200

Email: sales@tssusa.com

TSS International are specialists in the design and manufacture of marine navigation systems for surface and subsea applications. The company also manufactures electromagnetic detection systems for determining the location, relative position and burial status of offshore pipelines, umbilicals and subsea telecommunications and power cables.

University of Washington – School of Oceanography

Booth: 602

Email: schwartz@ocean.washington.edu

The School of Oceanography, part of the College of Ocean and Fisheries Sciences at the University of Washington, explores the world and its complex ecological systems. The School seeks to understand those processes which shape our oceans by understanding a much broader set of intellectual horizons. Our research and education opportunities attract those with a passion for learning.

Valeport Limited

Booth: 1016

Email: sales@valeport.co.uk

Established in 1969, Valeport are the UK's leading manufacturer and of Oceanographic and Hydrographic instrumentation, which include Current Meters, Tide gauges, Wave Recorders,

Exhibitor Profiles (cont'd.)

CTD's, Environmental Monitoring Stations, Loggers and more. Engineering solutions for your monitoring challenge.

VENUS Project, University of Victoria

Booth: 314D

Email: venus@uvic.ca

VENUS is a Canadian cabled ocean observatory project situated in Saanich Inlet and the Strait of Georgia. Submerged instruments, hydrophones, and cameras transmit data from the sea floor directly to an ocean data-base and archive at the University of Victoria. This real-time and archived ocean data is freely available on the internet for all to access.

Washington State Department of Community, Trade and Economic Development

Booth: 602

Email: billk@cted.wa.gov

Washington State Department of Community, Trade and Economic Development's Marine Industry program is designed to assist the marine industry's small and medium sized companies grow domestically and to expand access into international markets.

WETSAT, Inc.

Booth: 308F

Email: sales@wetlabs.com

Satlantic and WET Labs combined forces to help provide better technical solutions to the complex and demanding requirements for long-term ocean monitoring. Our mission is to provide a common front door for the research and monitoring communities to a wide range of capabilities for integrated observing systems and long term water quality monitoring.

Williamson & Associates

Booth: 602

Email: mikew@wassoc.com

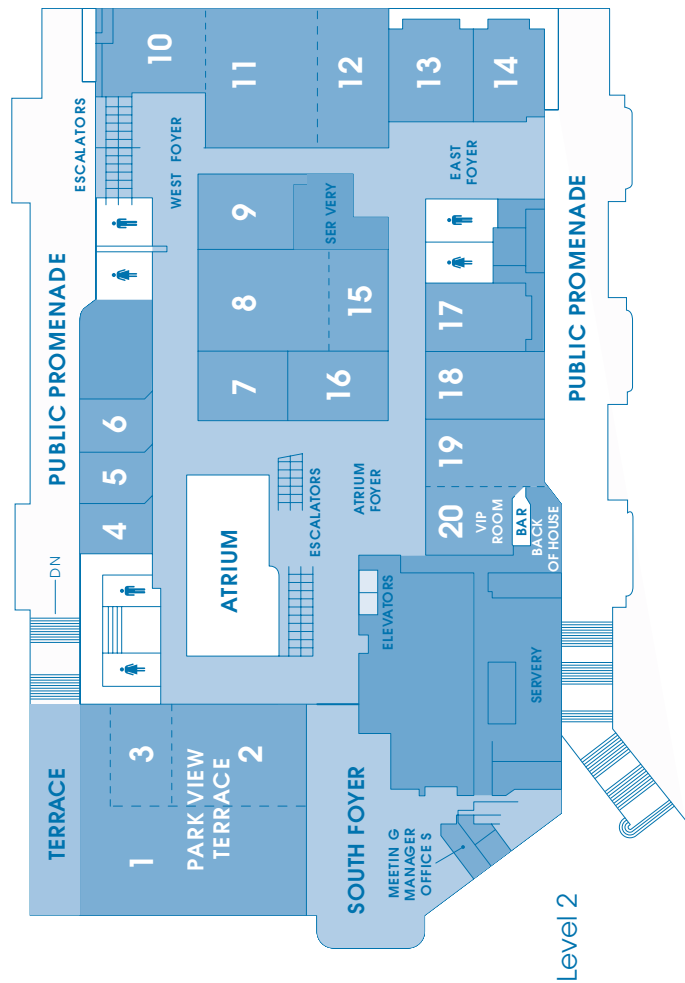
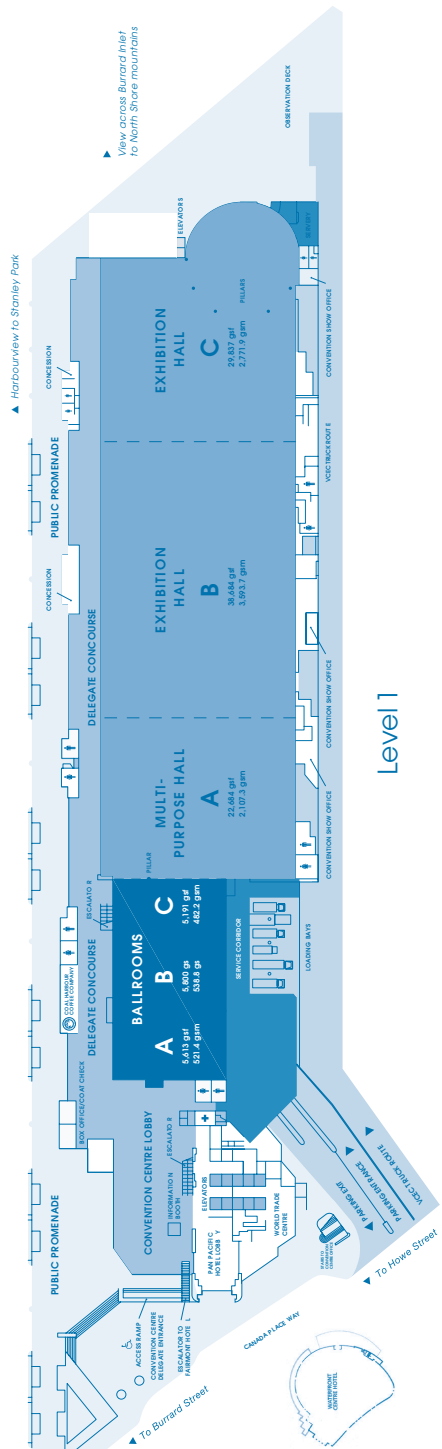
With principal offices in Seattle, Washington USA, Williamson & Associates, Inc. is an innovative, diversified geophysical & geotechnical firm providing expert personnel and state of the art equipment for a wide variety of scientific and ocean engineering applications.

Xeos Technologies, Inc.

Booth: 808B

Email: paul@xeostech.com

Xeos Technologies are data telemetry specialists providing marine location beacons using the Iridium satellite system's Short Burst Data and GPS. These low power, long life beacons are designed for surface buoys, subsurface moorings, bottom sensor nodes, profilers and autonomous vehicles. Xeos also has developed dial-up, direct internet and modem to modem applications using Iridium.



Vancouver Convention and Exhibition Centre: Exhibition Map

2007 MTS Awards/Fellows

Compass Distinguished Achievement Award:

Andrew M. Clark

Compass International Award:

TSS (International) Ltd.

Lockheed Martin Award for Ocean Science and Engineering:

John Orcutt

MTS Outstanding Service Award:

James D. Case

MTS Outstanding Committee Award:

Buoy Technology

MTS Outstanding Student Section Award:

Massachusetts Institute of Technology (13Seas)

Fellows:

Landry J. Bernard III

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Herbert T. Ripley

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D'INNOVATION !
DES PARTENAIRES PRÈS DE VOUS !

