

**FINAL
PROGRAM**

OCEANS '08
MTS/IEEE QUEBEC

Oceans, Poles & Climate: Technological Challenges

Sept. 15-18, 2008

Quebec City Convention Centre
Quebec City, Canada

www.oceans08mtsieeequebec.org

QUÉBEC 1608-2008





Louis Fortier
General Co-Chair



Joe Czika
Technical Co-Chair



André Morin
Executive Chair



Norman Miller
Students Poster Chair



Paul Fortier
Local Arrangements



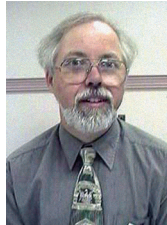
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On the occasion of its 400th anniversary, Quebec City welcomes you to the 2008 edition of the MTS/IEEE Oceans Conference.

From the legendary missions of master mariner Joseph-Elzéar Bernier in the early XXth century to the present day scientific expeditions of the CCGS research icebreaker Amundsen, the most European city in North America has been a gateway for the exploration of the North Atlantic and Arctic Oceans. As usual, the Conference program features the most recent and spectacular engineering advances in the never-ending quest to explore and understand the global Ocean, its ecology, geology, and climatology. In addition, the special sessions will provide a unique overview of the scientific, strategic, and technological challenges raised by the on-going opening of the Arctic Ocean. In the wake of Pytheas of Massilia, who first described the frozen ocean 24 centuries ago, we invite you to join us for Oceans, Poles and Climate: Technological Challenges, a memorable polar edition of the Oceans Conference.

Dr. Louis Fortier

General Co-Chair

Oceans '08 MTS/IEEE Quebec

WELCOME FROM THE TECHNICAL CO-CHAIRS



A very warm welcome to all the participants to the OCEANS'08 MTS/IEEE Quebec Conference! This year the magic number is 400. Quebec City is celebrating its 400th year and OCEANS'08 MTS/IEEE Quebec is hosting nearly 400 papers. The conference theme of "Oceans, Poles and Climate: Technological Challenges" will enable scientists and engineers from all over the world to discuss and debate the technological challenges raised by the study of the on-going transformation of Polar and non-polar oceans. The conference chairs have planned noteworthy plenary sessions where the speakers will talk about the upcoming challenges facing the oceanic community and what steps their organizations are taking to address them. We believe the technical program is one of the best ever with about 120 technical sessions with over a 100 papers on acoustics, 90 papers on underwater ocean vehicles and 130 papers on all manners of remote and in situ sensing. All in all, from our perspective, this is truly a vintage year. We are very pleased that you could join us to share and savor the excitement.

Dr. Joe Czika and Dr. Georges Fournier

Technical Program Chairs,

Oceans '08 MTS/IEEE Quebec

WELCOME TO QUEBEC CITY

Declared a World Heritage Site by UNESCO in 1985, Québec City is the only city in North America to have preserved its original fortifications. Perhaps due to this respect for its one-time protectors, Québec City is recognized as one of the safest urban areas in the world! Founded by French explorer Samuel de Champlain in 1608, Québec City has kept its European flavour: cobblestone streets, sidewalk cafés, museums... Québec City is the ideal leisure and travel destination!

The cradle of French civilization in North America, Québec City is also a bilingual destination that owes its very existence to the St-Lawrence River. Immigrants once came in through the City Port by the thousands and you will find throughout the City their lasting presence and influence.

July 3, 2008 will mark the 400th anniversary of the founding of Quebec City. This milestone constitutes an event in itself. Indeed, few places in North America can point to such a rich history. But there is more to Québec's 400th anniversary than mere historical significance.

It is with this festive spirit in mind that I welcome you all on behalf of the organizing committee. Welcome and Enjoy Quebec City!

André Morin

Executive Chair

Oceans '08 MTS/IEEE Quebec

DID YOU KNOW

- During the 17th and 18th centuries, Québec City was the centre of New France? At the time, it covered all of what is known today as Eastern Canada, the Eastern United States, the Great Lakes and Louisiana, extending from Hudson's Bay in the North to Florida in the South.
- In the early 19th century, the port of Québec experienced a spectacular boom, growing to third largest in North America after New York and New Orleans? Plan to be with us to discover a lot more!

A GASTRONOMIC ABUNDANCE Over a Thousand Restaurants

Québec City is known as the gastronomic capital of North America. The downtown area and its historical district boast the most restaurants per capita on the continent! The choice of restaurants includes many of superior quality, indulging the widest possible range of gastronomic pleasures.

Another great way to experience Quebecers' *joie de vivre* is to partake of the downtown nightlife! Catch a jazz set, taste a local beer directly from the microbrewery, hit the dance floor at one of our many nightclubs... open until 3 a.m.!

OUTDOOR ACTIVITIES Pristine, Natural Surroundings

Just a few minutes from downtown, rediscover the wonders of nature! Surrounded by mountains, lakes and rivers, there is always something exciting to do for anyone who loves great outdoors. In addition, September is a great time of the year to admire the region's magnificent change of colours. White-water rafting, hiking, mountain biking, horseback riding, golfing... the choice is yours! From convention floors to the great outdoors in 20 minutes!

USEFUL ADDRESSES & PHONE NUMBERS

AIRLINES

Air Canada Jazz • www.aircanada.ca

Reservations: 1-888-247-2262

Information: 1-888-422-7533

Continental Express • www.continental.com

1-800-231-0856

Northwest Airlines • www.nwa.com

1-800-345-7458

Porter Airlines • www.flyporter.com

1-888-619-8622

United Airlines • www.united.com

Reservations: 1-800-538-2929 (International)

1-800-864-8331 (Domestic)

WestJet • www.westjet.com

Reservations, Flight status:

1-888-937-8538

1-800-538-5696

CABS

Taxi Coop +1 418 525-5191

Taxi Québec +1 418 522-2001

HOTELS

Château Bellevue

16 rue de la Porte,

Québec (Québec) Canada G1R 4M9

Phone +1 418 692 2573 Fax +1 418 692 4876

Chateau Laurier

1220, Place George-V Ouest,

Québec (Québec) Canada G1R 5B8

Phone +1 418 522 8108 Fax +1 418 524 8768

Delta

690, Boulevard René-Lévesque Est,

Québec (Québec) Canada G1R 5A8

Phone +1 418 647 1717 Fax +1 418 647 2146

Hilton

1100, Boulevard René-Lévesque Est,

Québec (Québec) Canada G1R 4P3

Phone +1 418 647 2411 Fax +1 418 647 6488

Hotel Clarendon

57, rue Sainte-Anne,

Québec (Québec) Canada G1R 3X4

Phone +1 418 692 2480 Fax +1 418 692 4652

Hotel PUR

395, rue de la Couronne,

Québec (Québec) Canada G1K 7X4

Phone +1 418 647 2611 Fax +1 418 640 0666

Loews Le Concorde

1225 cours du Général-De Montcalm,

Québec (Québec) Canada G1R 4W6

Phone +1 418 647 2222 Fax +1 418 647 4710

Manoir Victoria

44, Côte du Palais,

Québec (Québec) Canada G1R 4H8

Phone +1 418 692 1030 Fax +1 418 692 3822

Mariott Courtyard

850 Place D'Youville,

Québec (Québec) Canada G1R 3P6

Phone +1 418 694 4004 Fax +1 418 694 4007

QUEBEC CITY CONVENTION CENTRE

900 Bd Rene-Levesque Est

Quebec, QC G1R, Canada

Phone +1 418 644-4000

CONFERENCE INFORMATION

SCHEDULE

Registration & Hospitality Desk Hours

The Registration Desk is located in the lobby of the Quebec City Convention Centre and will be open for registration and general inquiries according to the following schedule:

Sunday	September 14	8:00 – 17:00
Monday	September 15	7:30 – 18:30
Tuesday	September 16	7:30 – 18:30
Wednesday	September 17	7:30 – 18:30
Thursday	September 18	7:30 – 15:00

Tutorial Hours

Monday, September 15

T1, T2, T3	September 15	8:30 – 16:30
T4, T5, T6	September 15	8:30 – 12:00
T7, T8	September 15	13:00 – 16:30

Exhibit Hall and Student Poster Competition

The Exhibit Hall will be open and Student posters will be on display in the Exhibit Hall (400AB) according to the following schedule:

Tuesday	September 16	10:30 – 18:30*
Wednesday	September 17	8:30 – 17:00
Thursday	September 18	8:30 – 15:00

*Including exhibitor reception from 17:30 onwards.

Coffee Breaks

Coffee breaks will be available throughout each Conference Day in the Exhibit Hall (400AB) for all attendees according to the following schedule:

Tuesday	September 16	10:15 & 15:00
Wednesday	September 17	9:45 & 15:00
Thursday	September 18	9:45

Lunches

Lunches (which are included in the full conference registration fee) are provided on Tuesday and Wednesday. Lunches will be served in room 200AB.

Hosted by MTS – Tuesday, Sept 16	11:45 – 13:30
Hosted by OES – Wednesday, Sept 17	11:45 – 13:30

BUSINESS

Speaker Centre

The Speaker Centre is located in Meeting Room 201AB.

NOTE FOR SPEAKERS: ALL speakers are required to upload their presentations to the central server prior to their talk. They can do so using USB memory sticks (thumb drives), CDs, DVDs or via Internet download.

Sunday	September 14	15:00 – 17:00
Monday	September 15	7:30 – 17:00
Tuesday	September 16	7:30 – 18:30
Wednesday	September 17	7:30 – 18:30
Thursday	September 18	7:30 – 15:00

Business Centre

A mobile business centre will be available for the duration of the event on Level 4 of the Quebec City Convention Centre. The business centre will also double as a mobile concierge and tourism information office.

COMMUNICATIONS

Language

The official language of Oceans '08 MTS/IEEE Quebec is English and all presentations must be given in English. NO simultaneous interpretation service will be provided.

Internet Café / Internet Access

The Internet Café is located in the Exhibit Hall (400AB). You are welcome to use this at any time during the official opening hours of the Exhibit. Wireless internet access is also available for a nominal fee in the Convention Centre.

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., are turned off or put on silent/vibrate mode during sessions.

MISCELLANEOUS

Badges

Please wear your name badge 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 the tickets you have ordered for the tours and social events when you checked-in at the Registration Desk. Please bring the appropriate ticket(s) to all social events. Additional tickets will be available for purchase at the Registration Desk, based on space availability.

Facilities Accessibility

The Québec City Convention Centre's facilities are accessible and designed to meet the needs of all our guests.

- The facilities are adapted to the needs of the mobility impaired and comply with the National Building Code of Canada as well as the American Disability Act
- Telephone device for the deaf
- Restrooms with automatic doors
- Each public floor is wheelchair accessible
- Wheelchairs available upon request
- Adapted elevators and ramps
- Mobile ramp for wheelchairs

- Help and supervision for the mobility impaired during emergencies
- Personalized management service

SOCIAL EVENTS

The following functions are included with full registrations. Additional tickets can be purchased while registering online prior to the event, or at the registration desk.

Events	Sunday Sept. 14	Monday Sept. 15	Tuesday Sept. 16	Wednesday Sept. 17
Opening reception		17:30 Foyer 400		
Exhibitor's reception			17:30 400AB	
MTS Lunch			11:45 200AB	
OES Lunch				11:45 200AB
Banquet				17:30 200AB

TOURISM INFORMATION

A tourist information desk will be located close to the registration desk to provide information, brochures and reservations for attractions in the Quebec area. The information desk doubles as a mobile business centre.

A complete Tourism office is located at:

835, Wilfrid Laurier ave.
Phone: 418-641-6290 or 1-877-783-1608

TRAVEL INFORMATION

STRATEGIC LOCATION

Québec City is easily accessible by plane, car, train and ship. The city acts as a meeting point through its strategic location on North America's north-eastern coast and proximity to main business and research centres. It is about an hour and a half from New York, Detroit or Toronto by plane. It is a less than three-hour drive from Montréal, or 50 minutes by plane.

BY CAR

For delegates from the North-eastern USA, or Eastern and Central Canada, car travel is a viable option. A 4,500-km highway network serves the area and links the city to Eastern, Central and Western Canadian Provinces as well as American Border States. It only takes a few hours to get to Québec City.

BY PLANE

Located 16 km from the city's centre, the Jean-Lesage International Airport welcomes more than 700,000 passengers a year aboard all types of aircraft. Ten or so carriers offer over 300 weekly regular flights to various North American, Southern or European destinations. Travel is convenient with direct flights from Paris, New York, Detroit, Chicago, Cleveland, Montréal, Toronto, Halifax and Ottawa. There are also numerous one-stop flights.

For air travellers, there are many daily flights with only one stop coming from 116 cities from 41 U.S. states, and from all major Canadian cities. There can be as many as 90 departures or more per week with only one stop from a minimum of 80 cities in more than 50 countries, travelling through Paris, London, Detroit, Montréal, Newark or Toronto.

www.aeroportdequebec.com/Html/en-ca/index.shtml

BY TRAIN

Three train stations serve Québec City and its surrounding areas. The Gare du Palais manages some 2,600 train and 25,000 bus departures and arrivals per year. A modern rail network gives access to destinations across the North American continent, allowing for door-to-door shipping, and offers complete intermodal services. [Via Rail Canada](#) offers daily service between Toronto, Ottawa, Montréal and Québec City, and up to five daily connections between Montréal and Québec, for a total of 800 daily seats between the two cities. Via Rail's Priva Service also allows patrons to charter one or more cars.

BY BUS

Québec City features two inter-city bus terminals. The [Orléans Express](#) network serves many cities. Nearly 20 daily departures for Montréal are available with close to 1,000 seats per day per route and correspondence to other carriers.

CUSTOMS/ENTRY

Visitors must show a valid passport and may require an entry visa and other documents. Ask your travel agent or visit:

<http://www.cic.gc.ca/english/visit/index.asp>.

• Note for U.S. Citizens Arriving by Land or Sea.

On June 1, 2009, a new American law known as the Western Hemisphere Travel Initiative (WHTI) will require U.S. citizens 16 years of age or over who re-enter the United States by **land and sea** to have a passport or other appropriate secure document like a NEXUS card.

Until this date arrives, U.S. citizens 19 years and older who enter the U.S. **at land and sea ports** of entry from within the Western Hemisphere will need to present government-issued photo ID, such as a driver's license as proof of identity, along with proof of citizenship, such as a birth certificate or naturalization certificate, or a passport. Children age 18 and under will be able to enter with proof of citizenship. Verbal claims of citizenship and

identity alone will not be sufficient to establish identity and citizenship for entry into the United States.

- **Note for U.S. Citizens Arriving by Air.**

WHTI currently requires anyone, including U.S. citizens, entering or re-entering the United States **by air** to have a passport or a NEXUS card when used at a NEXUS kiosk at designated airports.

SINGLE PARENT TRAVELING WITH CHILDREN

Foreign officials and transportation companies are vigilant concerning documentation for children crossing international borders. Generally, persons younger than 18 years of age could be considered as children. Unless a child is accompanied by both legal parents, the following documentation should be carried by the child or the accompanying adult:

- A valid passport or proof of citizenship for the child
- A legal document proving that the child has the permission of the lawful parent(s) or guardian(s) to travel and includes contact phone information for the parent(s) or guardian(s). Such a document must be specific for each trip. A sample document is provided on the following website:

http://www.voyage.gc.ca/main/before/faq/children_travel-en.asp

CURRENCY

The monetary system in Canada is based on dollars and cents and the currency is the Canadian Dollar. Foreign currencies may be exchanged at the airport, banks and other currency exchange counters throughout the City. Bank debit or credit cards are the most convenient means of getting cash at the many 24-hour-access ATMs. These machines accept cards with Plus, Interac and Cirrus symbols. Most businesses accept U.S. currency and traveler's cheques, as well as major credit cards (Visa, MasterCard, and American Express).

SALES TAXES

There is a 5% Goods and Services Tax (GST) in effect in Canada and a Provincial sales Tax (PST) of 7,5% in the Province of Quebec, for a combined tax rate of 12,875%. This tax is applicable to most items and is generally not refundable.

MEDICAL INSURANCE

Visitors are not covered by Canadian health insurance plans. Check with your personal medical plan before leaving your home country to ensure you have adequate traveling insurance.

LANGUAGE

French and English are Canada's two official languages. French is the predominant language in Quebec City. However, most, if not all, banks, hotels, airline offices, shops, and key visitor attractions in each city have multilingual staff and most citizens will be able to answer in both languages.

ELECTRICITY

The electrical current is the same as in the United States: 110 volts AC at 60Hz. Adapters are required for appliances from other countries.

AIRPORT TRANSFERS

Quebec City is served by the Jean-Lesage International Airport (YQB), located 16 km (10 miles) from the centre of the city. Cab fare from the airport to the city center is a flat CAD \$30. Limousine and Airporter shuttle bus services are also available. All of these services accept major credit cards.

WEATHER

To really experience Quebec City at its finest, visit during the glorious autumn months in September and October. The Canadian maple trees blaze with colour for weeks on end and the skies are often dazzling blue. The so-called

Indian summer arrives early in Québec City. It usually lasts 2-3 weeks from mid/late September to early/mid October. Nature's beauty is very colorful in the fall and a very popular time to visit the province. With average minimum and maximum daily temperatures of 7 and 18°C (45-65°F) in September, you may need a light jacket or sweater to keep warm.

TIME ZONE

Quebec City is in the Eastern Standard Time Zone (-0500 GMT). Daylight Savings Time (DST) is in effect from 2:00 a.m. on March 9, 2008 until 2:00 a.m. on November 2, 2008.

BANKING & ATM MACHINES

Automatic Teller Machines (ATMs) are spread throughout the city and accept cards with the Interac, Plus, and Cirrus networks. Most are in operation 24/7.

Foreign currencies can be exchanged at banks and at foreign currency exchange offices either at the Airport or at other locations throughout the city.

TELEPHONE SERVICE

Quebec City employs two separate area codes: 418 and 581. Calls within the greater Quebec City area are local regardless of the area code. However, you will need to dial all ten digits of the phone number in order to be connected. Check with your cellular service provider to ensure your plan offers roaming/long distance service in Quebec City.

CITY AND AREA TOURS

The following City and area tours and activities are offered. These tours take place on Sunday, Sept. 14 and Monday Sept. 15. Tickets are available for purchase online and will also be available onsite on Sunday Sept. 14.

1- WHALE WATCHING IN CHARLEVOIX (10 hours with lunch)

The Charlevoix Region offers a fascinating panorama. Capes and valleys follow one another along with rivers and brooks. The Charlevoix scenery has seduced painters, poets, writers and musicians for hundreds of years. You also will be impressed. These exceptional characteristics have earned the area the rare recognition of Biosphere Reserve by the United Nations Unesco's in November 1988.

On your way to Charlevoix, you will discover the beauty of the Côte de Beaupré, the coastline just outside Québec. Our guide will point out the best sites and tell you about some of the fascinating facts about the history of the area: Montmorency Falls, the Island of Orleans, and the Basilica of Sainte-Anne-de-Beaupré, the Mont Ste-Anne Ski Resort, Cap Tourmente, and more. A luxury motor coach will take you 200 km (120 mi) north-east of Québec to the Saguenay fjord at the junction of the Saguenay and the St-Lawrence rivers.

This region is a feeding ground for 13 species of whales, amongst which, the blue whale, the most imposing animal on Earth. This gargantuan mammal can attain 25 m (82 ft.) in length. The second-largest cetacean, the fin whale, and the humpback whale can be found there as well. Numerous other species of rorquals can also be seen in the river. In addition to these two giants, you might see porpoises and dolphins. Lastly, you will probably catch a flash of white floating on the waves: these are belugas, the small arctic whales that live in the St-Lawrence year-round.

There, you will board an excursion boat for a whale watching cruise. During your three-hour cruise, experts

will tell you how to recognize the different species and you will learn about these wonderful mammals' habitats and feeding habits. The program includes:

- A guide for the entire program ;
- Transportation by deluxe motor coach ;
- A 3-hour whale watching excursion with description and explanations by an expert marine biologist ;
- Lunch on the excursion boat at 13h00 ;
- Return to Québec at 19h00.

Price/person: CAD \$ 153.50

(Min. 30 people, service and taxes included)

Departure	Sunday and Monday, 9h00 AM
Return	19h00 PM
Total Duration	10 hours

Recommendation : warm and weatherproof clothes, binoculars and/or camera.

2- QUEBEC WALKING THROUGH HISTORY TOUR (5 hours with lunch)

The program starts with a one-hour conference on the highlights of Quebec City's history. Armed with this knowledge, you will walk within the walls of the Old City and make contact with four centuries of history. Your professional tour guide will point out the most interesting sites as only a Québécois can.

This tour includes the following sites: the National Assembly and Parliament Hill, the Plains of Abraham (National Battlefield Park), where two empires from the Old World fought to the finish for possession of the continent and where the two commanding generals, the French Louis-Joseph de Montcalm and the British James Wolfe, were killed. You will visit the Citadel and the Old City, situated within the heavy walls, built to protect it from invading enemy! You will then proceed to Place Royale and the

Petit Champlain, the oldest street in North America. The program includes:

- Start from the Convention Centre ;
- Professional tour-guide ;
- Lunch in one of the typical restaurant of the old city in small groups ;
- Return to your hotel or remain in the old city and come back on your own.

Price/person: CAD \$49.75

(Min. 15 people, service and taxes included)

Departure	Monday, Sept. 15, 9h00 AM
Return	14h00 PM
Total Duration	5 hours

Recommendation : Comfortable shoes.

3- QUEBEC CITY AND AREA AND BUS TOUR (8 hours, with lunch)

- Battlefield Park
- Promenade de Champlain
- First Nation Site
- Montmorency Falls

We will visit the most important sites of the old city to get a good understanding of its history, stopping along the way to get a good view of many spectacular sites. Our bus will then take us along the battlefield and on to the new «Promenade de Champlain» that meanders along the St-Lawrence River. Our ride will take you to the Quebec Bridge, to this day the longest cantilevered bridge span in the world, and considered a major engineering feat. The bridge was declared a historic monument in 1987 by the Canadian and American Society of Civil Engineers.

We will then proceed to the first nation traditional village and historical site. We will have lunch on the site with a

typical first nation menu. Discover the habits and traditional way of living of the first inhabitants.

On way back, we propose a stop at the Montmorency Falls to discover the exceptional views available there. The participants can visit the Interpretation Centre and make their way to the falls walking along the panoramic trail edging the cliffs. At 84 m (274 ft), the falls are 98 ft higher than the Niagara Falls and offer a spectacular view. The program includes:

- A guided tour aboard a luxury bus;
- Professional guide for the duration of the program;
- A visit of the city most important sites;
- A tour of the battlefields;
- A drive along the Promenade de Champlain;
- A visit of the first nation village and historical site;
- Lunch at the First nation traditional restaurant;
- A stop to 82 meters-high Montmorency Falls;
- A visit to the falls and the interpretation centre;
- Return ride to Quebec City.

Price/person: CAD \$ 110.50

(minimum 30 people, service and taxes included)

Departure	Monday, Sept. 15, 9h00 AM
Return	16h00 PM
Total Duration	7 hours

Recommendation : Comfortable shoes.

4- DINNER ON THE ST-LAWRENCE (5 hours)

You will depart from the Convention for a 10-minutes bus ride to the M/V Louis-Jolliet cruise ship, in time for dinner and the subsequent cruise.

When the evening comes, the Louis Jolliet changes into

a cruise ship: 3 dinning areas, each with its own dance floor, plus one large exterior terrace that covers the whole stern of the ship. As on real cruise ships, one has the opportunity of designing the evening as one wishes: a full dinner in one of the restaurants, or a fast snack between two dance sets. Our guide will organize your transportation back to your hotel.

Price/person: CAD \$ 75.50

(Min. 20 people, service and taxes included)

Departure	Tuesday, Sept. 16, 18h00 PM
Return	23h00 PM
Total Duration	5 hours

Recommendation: Warm clothes, camera.

KEYNOTE SPEAKERS

FINDING SUSTAINABLE SOLUTIONS: SOCIETY'S RELIANCE ON MARINE TECHNOLOGY

Craig N. McLean

Deputy Assistant Administrator for Programs and Administration, Oceanic and Atmospheric Research, NOAA (NOAA)



Achieving a sustainable environment is a growing challenge given such real pressures as an increasing global population, growth in coastal development, a changing climate, and growing energy demands – each of these having an interrelated feedback. Such pressures bring about societal impacts that our

technology must measure, forecast, and eventually mitigate. This will provide new opportunities to the technology sector to engineer solutions that guide societal changes. Driven largely by a changing climate, technology development that anticipates, not reacts, to emerging opportunities in energy, carbon disposition, sea level change, resource abundance, and other areas will provide opportunities for the sensor community, the mapping industry, resource engineering, and many other technology sectors. The opportunities for the marine science and technology community are high given that societal, market, and technology demands will accelerate and likely find the marine technology community far more in the center of societal solutions than ever before.

PRESENTER'S BIO

Craig McLean is the deputy for NOAA's Oceanic and Atmospheric Research programs and administration. He is responsible for daily operations and administration of NOAA's research enterprise, and the execution of NOAA programs including the Climate program, National Sea Grant, and Ocean Exploration.

He has previously served in NOAA as Executive Officer of the National Ocean Service, and was the founding

Director of NOAA's Office of Ocean Exploration. McLean served in uniform for nearly 25 years, retiring from NOAA's Commissioned Corps in the grade of Captain after service at sea, underwater, and in operational, legal, and marine resource management positions. McLean served aboard hydrographic, oceanographic, and fisheries research ships and was the first commanding officer of NOAA's largest fisheries research vessel, the 224-foot Gordon Gunter.

A life long diver, he began exploring deep ship-wrecks through decompression diving while in junior high school. These experiences have taken him to the Amazon River searching for freshwater dolphins, and to the RMS Titanic searching for solutions in shipwreck management.

Craig McLean is also an attorney and has practiced marine resource law for NOAA. He has been awarded the Departmental Silver and Bronze Medals, the NOAA Corps Commendation Medal, Special Achievement Medal, and recognized as the NOAA 2005 Senior Leader of the Year. He is a Fellow in the Explorers Club, Chairman of the Marine Law and Policy Committee of the Marine Technology Society, and is Chairman of the Board of the Sea-Space Symposium.

OPTIMAL DESIGN & OPERATION OF THE PACIFIC OCEAN SHELF TRACKING ARRAY (POST)-

David Welch

President, Kintama Research



POST, the Pacific Ocean Shelf Tracking array, is currently the world's largest telemetry system for studying the movements and survival of free ranging fish in freshwater and marine environments, and a key field program under the global Census of Marine Life.

Individual fish carrying a uniquely coded acoustic tag can be monitored as they pass over receiving lines or 'curtains'

of passive receivers that record the date and time of passage. The array now extends over 2,500 km from the Columbia River to Alaska and is currently expanding further north into Washington State (Puget Sound) and south into California. Careful engineering of the array and the high detection efficiencies that result enables a virtually complete census capability for tagged migrating fish.

The presentation will review POST from the twin perspectives of (A) technical operation & maintenance of a large-scale ocean observing system and (B) the scientific performance of the array in addressing key questions concerning management of west coast salmon and sturgeon. The permanent array uses a short range wireless link to allow remote data upload to a surface vessel without physical retrieval of the equipment – resulting in a year-round monitoring capability and substantial efficiency in operations. These units have sufficient battery power to operate on the seabed for up to 7 years before replacement is necessary. In situ equipment performance has met or exceeded target performance levels (<10% operational losses per year from all sources), making continuous operation of the system economically feasible. Scientific performance has been excellent, with very high detection rates for tagged fish crossing individual listening lines (~95%). As a result, relatively small numbers of tagged animals can provide statistically rigorous (precise and accurate) estimates of survival at sea over many months or years, as well as seamless measurements in both freshwater and the coastal ocean.

Current developmental work is focussed on refining operational approaches to running the array and to developing software to redesign the next phase of the array. The original POST array was designed around a particular type of acoustic tag, and using this tag has established that detection efficiencies of ca. 95% on freely-migrating salmon smolts are possible. However, in the past 5 years new types of tags that are both smaller and acoustically quieter have come on the market. As a result of the demand for these tags, POST requires a facelift to continue to be relevant. Kintama's work in this area is in the

area of optimization of the entire array system (number of receivers and subarrays; number of tags and programming) to identify the optimal array configuration. This work provides the critical value of being able to prove that the new array designs are “provably best”, and therefore provide the best possible economic value and highest scientific data yields. The performance of the array also provides the opportunity to begin conducting explicit experiments in the ocean to directly test scientific hypotheses. We will provide several examples to illustrate the methodology and clarify the roles of POST and the global OTN as an important – and unique – coastal monitoring system within the global Census of Marine Life.

PRESENTER'S BIO

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.

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.

USING ADVANCED TECHNOLOGY TO UNDERSTAND THE ENVIRONMENT : EXPLORING THE POLES

James A.R. McFarlane

Vice President, Sound Ocean Systems Inc.



With the polar ice caps receding, it is imperative we understand these previously protected environments before we exploit the resources that are now becoming available. From the early efforts of people like Sir Martin Frobisher who first attempted to travel the Northwest Passage in 1576 and Anthony de la Roché made the first ever discovery of land south of the Antarctic Convergence in 1675 we have been venturing deeper and deeper into these polar regions. In the Canadian Arctic these include: Henry Larsen; St. Roche; Voyage of the Manhattan; Dr. Al Trice, with the Hudson Handler; Panarctic Oils drilled 171 wells; Dr. Alfred Scott McLaren in the USS Queenfish; The use of the AUV Theseus for cable laying; and Dr. Anatoly Sagalevitch's dive.

These first voyages were certainly not technologically advanced but their commitment to exploration was definite. Since this time explorers and researchers have tirelessly worked to find new technologies and research ideologies to explore and understand these inhospitable regions of our planet. Many tools have been employed in polar exploration to date like large Ice Breakers which can only venture into these areas with limited windows of opportunity. Advanced technologies like Autonomous Underwater Vehicles (AUV) are now changing the way we look at these voyages, with the receding ice packs, longer incursion times and proper planning our range of available areas to be explored and understood has broadened greatly. This is not to say the AUV is the only appropriate techno-

logy as ROV's, side scan sonar's and other ship deployed instrument packages do provide valuable data sets required to see the whole picture. The issue of Article 76 of the Law of the Sea to establish jurisdiction also is considered. Thus, a multidisciplinary approach is required to provide the highest chance of success at this important juncture in history. This presentation reviews some of the issues.

PRESENTER'S BIO

James A.R. McFarlane has spent his entire career on or under the water. Mr. McFarlane has been involved and provided leadership in marine operations, development, manufacturing and training programs for over 25 years. He has provided successful program management at a variety of scientific research institutions, for the offshore oil and gas industry, disaster response and military operations. In addition to his diverse offshore experience he has extensive commercial construction experience. Mr. McFarlane is an experienced ROV pilot who has serviced all sub-sea marine industries and provided leadership in the development of new methodologies and equipment for this demanding environment. He regularly manages large diverse projects from submarine development and manufacturing to facilities construction. In addition to his technical experience he has been actively involved in first level scientific research for marine biology, chemistry, geologic and oceanographic programs.

He has also been involved in marine archeology and has an active interest in the historical significance of these finds.

Mr. McFarlane was with MBARI for 15 years holding positions from Chief Pilot to Director of Technical Support. He is and has been for the past 10 years the Chair of the National Science Foundation, National Visiting Committee for the Marine Advanced Technology Center at Monterey Peninsula College. Mr. McFarlane is a member of the Marine Technology Society and a Fellow National of the Explorers Club. Currently he is the Vice-President of Sound Ocean systems, Inc. and the President of EagleNet Sea Farms, Inc.

SPECIAL ADDRESSES

There will be three special addresses during the conference:

ARCTIC SEA ICE IN 2008: STANDING ON THE THRESHOLD

Banquet Opening by Mark C. Serreze, Senior Research Scientist, Cooperative Institute for Research in Environmental Sciences (CIRES)

Wednesday, September 17, 17:30, room 200AB

THE OCEAN TRACKING NETWORK: ADDING MARINE ANIMAL MOVEMENTS TO GOOS

Opening Talk, Ocean Observing Concepts 1, by Ronald Keith O'Dor, Consortium for Ocean Leadership, Washington, DC and Dalhousie University,

Wednesday, September 17, 13:30, room 205A

COOPERATION NOT CONFLICT: THE ARCTIC OCEAN AND THE LAW OF THE SEA

Opening talk, An Ice-free Arctic Ocean 1, by Michael Byer, Canada Research Chair in Global Politics and International Law, University of British Columbia

Tuesday, September 16, 13:30, room 202

ARCTIC SEA ICE IN 2008: STANDING ON THE THRESHOLD

Mark C. Serreze

Senior Research Scientist, Cooperative Institute for Research in Environmental Sciences (CIRES)



Perhaps the most visible sign of global climate change is the Arctic's rapidly shrinking sea ice cover. Sea ice extent in September 2007 was the lowest recorded over the satellite era, and likely the lowest in at least a century. There are growing concerns that as the ice cover continues to thin, it may approach a "tipping point" in which a kick from natural variability initiates especially rapid decay through the ice-albedo feedback. Summer 2007 saw an unusual atmospheric pattern seeming ideal for promoting rapid sea ice loss. Could summer 2007 have been the tipping point? Given this possibility, eyes of the polar community have focused on the unfolding events of 2008. Would ice extent this summer set another record low? Would the North Pole become ice-free? Satellite data revealed that much of Arctic Ocean in spring 2008 was covered by fairly thin, first-year ice, vulnerable to melting out this summer. Coupled with indications of early spring melt, the stage seemed to be set for dramatic summer sea ice losses. Would melt be enhanced by a warm atmospheric pattern like that seen in summer 2007, or would a cooler, more cyclonic pattern develop? Would conditions be unusually cloudy or clear and what would be the impacts of such anomalies on the rate of summer ice melt? To what extent would anomalous heat gains in the ocean mixed layer act as a feedback to hasten summer ice melt? By the time of the Oceans '08 conference in mid September, we should have answers to most of these questions.

PRESENTER'S BIO

Mark Serreze received his BS and MS from the University of Massachusetts, Amherst, in 1982 and 1984, respectively. His MS work, directed by Raymond S. Bradley, focused on

the energy and mass balance of a small ice cap on northern Ellesmere Island in the Canadian high Arctic.

After a brief stint at the Lamont Doherty Environmental Observatory, he entered the PhD program within the Department of Geography at the University of Colorado, Boulder, graduating in 1989. His dissertation addressed Arctic sea ice circulation and its links with atmospheric variability. Dr. Serreze never left the University of Colorado, and has spent his career at the National Snow and Ice Data Center (NSIDC), part of the Cooperative Institute for Research in Environmental Sciences (CIRES).

His early work focused on variability in Arctic weather patterns, and aspects of the Arctic's hydrologic cycle. As years passed, it became increasingly clear that the Arctic environment was rapidly changing. Serreze's research has evolved to trying to understand these coordinated changes.

In 2005, Serreze published an award winning text-book, "The Arctic Climate System". Community service has included contributions to the National Science Foundation, the National Oceanographic and Atmospheric Administration, the World Climate Research Programme, and the United States Navy. At present, he is a Senior Research Scientist at CIRES. He is also a fellow of CIRES. In his spare time, he enjoys golf, gardening, and playing the piano.

COOPERATION NOT CONFLICT: THE ARCTIC OCEAN AND THE LAW OF THE SEA

Michael Byers

Canada Research Chair in Global Politics and International Law, University of British Columbia



Recent media reporting of the Arctic has been framed in terms of looming conflicts over resources and territory. Far too little attention has been paid to well-established international rules and practices of diplomacy which together make the Arctic, from a political science

perspective, a zone of cooperation rather than conflict. This presentation will outline those rules and practices, including the Law of the Sea and recent negotiations between all five Arctic Ocean states, and then seek to predict the future of Arctic geopolitics.

PRESENTER'S BIO

Michael Byers holds the Canada Research Chair in Global Politics and International Law at the University of British Columbia. Prior to 2005, he was Professor of Law and Director of Canadian Studies at Duke University; from 1996-1999 he was a Fellow of Jesus College, Oxford University. Dr. Byers is the leader of two ArcticNet projects: the first (from 2005-2008) on "Canada's Arctic Waters in International Law and Diplomacy"; the second (from 2008-2011) on "The law and politics of Canadian jurisdiction over Arctic Ocean seabed". He is the author, most recently, of *Intent for a Nation: What is Canada For?*

THE OCEAN TRACKING NETWORK: ADDING MARINE ANIMAL MOVEMENTS TO GOOS

Ronald Keith O'Dor

*Consortium for Ocean Leadership, Washington, DC, USA
and Dalhousie University, Halifax, Nova Scotia, Canada*



Media coverage of the funding announcement for the Ocean Tracking Network (OTN) referred to it as "Blackberries for fish." The analogy is apt because a global group of users is pressing for standards and protocols to allow universal storage and sharing of a broad spectrum of information. Also like this merger of cell phone technology and the Internet, once society stabilizes the playing field, industry will be able to invest, secure in the understanding that the new products they develop will remain compatible with a wide-spread system. This talk will summarize the development of OTN from the Census of Marine Life projects, Pacific Ocean Shelf Tracking (POST) and Tagging of Pacific Predators (TOPP). It will highlight recurring themes from tracking

and telemetry workshops around the world – ways that industry believes it can deliver a picture of the complex interactions of physics and biology that are the world's oceans. Where animals go, what conditions they experience, how they interact and how individual's behaviours change over time-scales relevant to climate change. This is a picture that scientists and managers need in order to protect and restore ocean productivity – a particular challenge in the ice oceans.

PRESENTER'S BIO

Ron is currently Senior Scientist for the Census of Marine Life (COML), a global network of over 2000 researchers in more than 80 nations engaged in a ten-year initiative to assess and explain the diversity, distribution, and abundance of marine life in the oceans – top to bottom, past, present, and future. After degrees in biochemistry at the University of California, Berkeley and medical physiology at the University of British Columbia, a post-doc at Cambridge University and Stazione Zoologica, Naples, turned him to cephalopods and marine biology. Studies on cephalopod behaviour and physiology in nature using acoustic telemetry led to involvement in large scale tracking arrays. Within COML, as Associate Dean at Dalhousie University, he is developing the Ocean Tracking Network (OTN) to monitor marine animals from 20 gram salmon to 20 tonne whales with arrays to detect globally unique codes. Tags lasting up to 20 years give new time-series perspectives on changes in individual movements in response to climate change and acoustical downloading archival tags will provide records of the oceanography experienced by, and interactions among, tagged species.

TUTORIALS

T1 – FUNDAMENTAL UNDERWATER ACOUSTICS AND BOTTOM-INTERACTING SHALLOW WATER ACOUSTIC

This tutorial is intended for engineers and scientists concerned with the assessment of long range acoustic communication and sound transmission in deep and shallow water. The bottom is typically a sandy-sediment and has the dominant influence on the attenuation. The present tutorial surveys the basic science and experimental results that will enable one to make realistic interpretations and predictions. The session plan consists of a primer on the fundamentals of underwater acoustics, beginning with the wave equation, deep-water propagation, shallow water propagation, and the question of standards and a brief overview of ambient noise. The shallow water model of the Pekeris is discussed, progressing to a discussion of the modal solutions for realistic downward refracting sound velocity profiles, with a detailed examination of sample calculations for propagation in range-independent oceans. An assessment and review of representative effects of attenuation and a discussion of the importance of attenuation is presented. Current physical models of ocean sediments are reviewed, beginning with the original phenomenological model introduced by Biot in 1956. Later evidence justifying and extending this model, especially the rigorous theory of Burridge and Keller in 1981, is reviewed, and the applicable predictions of the theory, such as that the attenuation in the sediment varies as the square of the frequency at low frequencies. The fourth hour is concerned with the field measurements of sediment properties and of how these can be incorporated into propagation predictions.

Presenter's Bio – Allan D. Pearce

Allan D. Pearce is Professor of Aerospace and Mechanical Engineering at Boston University and Adjunct Scientist at Woods Hole Oceanographic Institution, and is also the Editor-in-Chief of the Acoustical Society of America (ASA). He received his doctorate from MIT in 1962, and

has subsequently held a variety of research and academic positions, including those at MIT, Georgia Tech, Penn State. Among his honors are the receipt of the Per Bruel Gold Medal from the ASME, the Rossing Prize in Acoustics Education from the ASA, the Silver Medal in Physical Acoustics from the ASA, and, most recently, the ASA's Gold Medal. He is perhaps best known in underwater acoustics for his invention of what is now termed adiabatic mode theory, and to the acoustics community at large for his graduate-level text on acoustics.

Presenter's bio – William M. Carey

William M. Carey is a Professor of Aerospace and Mechanical Engineering at Boston University, an Adjunct Professor of Applied Mathematics at the Rensselaer Polytechnic Institute and an Adjunct Scientist at the Woods Hole Oceanographic Institution. He was the Editor of the Journal of Oceanic Engineering is currently an Associate Editor for Underwater Acoustics, the Journal of the Acoustical Society of America. He has been a Physicist at several the Naval Laboratories and the ASW Program Manager at the Defense Advanced Project Agency. At the University of Chicago's Argonne National Laboratory, he was an Associate Scientist and Section Manager of acoustic surveillance. He has been a consultant to both industry and government in the areas of non-destructive testing, nuclear science/environmental measurements, and applied ocean acoustics. Dr. Carey is a Fellow of the Acoustical Society of America, a Fellow of the IEEE Oceanic Engineering Society, a full member of Sigma Xi, a member of the Connecticut Academy of Science and Engineering, and also a member of the Cosmos Club. He is the recipient of the IEEE-OES Distinguished Technical Achievement Award, the IEEE-OES Distinguished Service Award and an IEEE Millennium Medal. He recently received Pioneer of Underwater Acoustics Silver Medal He received the B.S. degree in Mechanical Engineering, the M.S. degree in Physics, and the Ph.D. degree in Nuclear Science from The Catholic University of America.

T2 – AIRBORNE HYPERSPECTRAL IMAGING

Hyperspectral data is being increasingly used for many different applications. Its use in coastal and marine monitoring and mapping has been expanding constantly in the past dozen years. More and more users are being drawn to the use of this complex technology to help address their needs to accurately map coastal resources. Since first being used to map coral reefs in the Turks and Caico's in 1995, hyperspectral data has been used to map corals in French Polynesia, Indonesia, Indian Ocean, Red Sea, Caribbean and Pacific Ocean. Hyper-spectral has also been proven as a reliable means to map underwater benthic vegetation, including identifying invasive marine vegetations.

This half day workshop will focus on providing new users an understanding of basic hyperspectral technology. It will be shown how this in turn helps facilitate project planning. Emphasis will be placed on the pitfalls to be aware of during the planning phase. Attention will also be placed on how an airborne hyperspectral project is actually carried out after the planning is finished. Despite careful planning there are many difficulties that can arise during data collection and these will be covered in detail. The introduction of IMU systems with hyperspectral sensors has meant the ability to have very accurate x,y positional information. This in turn has resulted in faster and more accurate mapping capabilities of the hyperspectral data. Advancements in software have meant a better ability to analyze this type of data. The workshop will cover:

- basic hyperspectral technology
- project planning
- the use of IMU's
- analysis of hyperspectral data
- mapping hyperspectral data

During the workshop examples from several recent projects undertaken by Mr. Ripley and Hyperspectral Imaging Limited will be highlighted. These projects will include:

- coral reef mapping in Indonesia, Caribbean and Red Sea
- mapping aquatic vegetation in Florida, the Caribbean and Canada
- detecting and mapping invasive marine species in the Mediterranean Sea (France) and Atlantic Ocean (Canada)

The workshop goal will be to provide participants with the information needed to successfully under-take a hyperspectral project.

Presenter's Bio – Herb Ripley

Herb Ripley is a Canadian citizen and is formally trained in geography and remote sensing. He has been active in the remote sensing/geomatics field for over twenty five years. During that period of time he has had the opportunity to work on numerous projects at a regional, national and international level. Herb is President of Hyperspectral Imaging Limited. (HIL), a firm where approximately 50% of its project work is done internationally. Many of the projects undertaken by HIL have a strong coastal and/or environmental focus, i.e. mapping the Peruvian rain-forest for an environmental impact assessment, mapping coastal areas of St Lucia to determine the impact level of human activities or studying the effects of El Nino on coral reefs in French Polynesia. HIL also provides high resolution digital photography and HIL works mainly within the forestry, agriculture and engineering communities. Herb has been an invited lecturer on remote sensing at local, national and international educational institutes, has published numerous technical papers at international scientific conferences and has been recognized by the Remote Sensing Society (U.K. based) by being named a Fellow. Herb is or has been a strong participant in such industry groups as the Geomatics Industry Association of Canada (GIAC) (served as Board member), the Geomatics Association of Nova Scotia (GANS) (Director, Vice President and President), the Alliance for Marine Remote Sensing (AMRS) (sat on the organizing committee) and was most recently AMRS's President. In 1995 he was the

founding President of the revitalized Champlain Institute and served a second term as President. Herb was recently elected the Chair of the Marine Technology Society's Remote Sensing Committee.

T3 – APPLIED MODEL-BASED SIGNAL PROCESSING: CLASSICAL, MODERN AND BAYESIAN TECHNIQUES

Topics presented in this tutorial include:

Modeling & simulation

- Introduction (background, estimation, model-based signal processing, deterministic state-space modeling)
- Stochastic modeling (random linear systems simulation, Gauss-Markov state-space modeling and simulation)
- Estimation (properties, performance, minimum variance estimation, ml, map estimation)

Model-based processing (Kalman filtering)

- Introduction (overview, innovations approach, innovations sequence analysis)
- Practical aspects (heuristics, tuned mbp, tuning parameters)

Model-based processing extensions

- Extensions (nonlinear (approximate) modeling, linearized mbp, classical nonlinear (extended) mbp)
- Extensions (nonlinear processing, modern unscented mbp)
- Extensions (nonlinear bayesian processing, particle-based mbp)
- Applications (ocean acoustics)

Master copies of the viewgraphs will be provided to the participants.

Presenter's Bio – Dr. James V. Candy

James V. Candy is the Chief Scientist for Engineering and former Director of the Center for Advanced Signal & Image Sciences at the University of California, Lawrence Livermore National Laboratory. He has published over 200 journal

articles, book chapters, and technical reports as well as written three texts in signal processing, "Signal Processing: the Model-Based Approach," (McGraw-Hill, 1986) and "Signal Processing: the Modern Approach," (McGraw Hill, 1988), "Model-Based Signal Processing," (Wiley/IEEE Press, 2006) with a fourth entitled "Bayesian Signal Processing: Classical, Modern and Particle Filtering" (Wiley/IEEE Press, 2008) in press.

His research interests include Bayesian estimation, identification, spatial estimation, signal and image processing, array signal processing, nonlinear signal processing, tomography, sonar/radar processing and biomedical applications.

T4 – AUV TECHNOLOGY AND APPLICATION BASICS

AUV Application Basics is a short course that provides an overview of current AUV technologies and operations. The objective is to establish a basic understanding of what currently available AUV systems can provide and what are best practices in 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 tradeoffs 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.

Presenter's Bio – William J. Kirkwood

Bill is currently the Associate Director of Engineering at the Monterey Bay Aquarium Research Institute (MBARI) located in Monterey Bay, California. Bill has a BS in Mechanical Engineering and a MS in Computer Science which he has applied to controls and automation of electromechanical systems and robotics since 1978. Bill has been with MBARI for 16 years as a lead mechanical engineer and program manager developing the Tiburon remotely operated vehicle and Dorado class autonomous underwater vehicles. Bill focus currently is developing underwater instrumentation for science to look at hydrates and anthropogenic CO₂ ocean acidification issues.

T5 – DESIGN OF SYNTHETIC APERTURE SONAR SYSTEMS FOR HIGH RESOLUTION SEABED IMAGING

This tutorial will review the key aspects of the design of synthetic aperture sonar (SAS) systems for high resolution seabed imaging. After a quick overview of the expected benefits and main features of SAS, the design of the transmitter and receiver arrays will be discussed, with emphasis on the mitigation of spatial aliasing with multi-element receiver arrays, wideband operation and extension to interferometric SAS for estimating the seabed bathymetry.

Next the most difficult issue in SAS, which is the micro-navigation problem i.e. that of estimating the unwanted platform motions with the required subwavelength accuracy, will be addressed in detail. The emphasis will be on methods which have proved their value at sea, which combine inertial navigation systems (INS) with data-driven methods based on the Displaced Phase Centre Antenna (DPCA) technique. The topics covered will include the

theory of spatial backscatter coherence, the derivation of ping to ping motion estimates using time delay estimation theory, including the use of bandwidth for phase unwrapping and the appropriate range-dependent near field corrections to arrive at unbiased estimates, the establishment of the Cramer Rao lower bounds for motion estimation which demonstrate the need for fusion with an INS to achieve full performance. The geometrical relationship between the DPCA and INS projection frames, which is necessary for accurate fusion, will be established and shown to depend also on the local seabed slope. The estimation of this slope with interferometric sonar will be discussed.

Furthermore the impact of the environment and in particular of the multipath structure in large range to water depth ratios will be discussed. Multipath will be shown to degrade the quality of the SAS imagery as well as adversely impact the accuracy of interferometric estimates including DPCA. Means to mitigate multipath operation by management of the vertical transmission and reception beams will be discussed, showing experimental results which point to some of the limitations of existing sonar performance prediction tools.

Finally different design tradeoffs between computational efficiency and robustness for micronavigated SAS imaging algorithms will be discussed and an example of a real-time implementation suited for operation on-board an autonomous underwater vehicle will be described.

Presenter's Bio – Marc Pinto

Marc Pinto was born in Wellington, India in 1960. He graduated from the Ecole Nationale des Ponts et Chaussées, Paris (France) in 1983. From 1985 to 1989 and 1989 to 1993 he worked as a research engineer for Thomson-CSF, specializing in the development of finite element techniques for solving non-linear magnetostatics to support the modeling of the magnetic recording process. In 1991, he received the Ph.D. degree in Solid State Physics from the University of Paris, Orsay. In 1993 he

joined Thomson-Sintra ASM (now Thales Underwater Systems) as Head of the Signal Processing Group, specializing in research into advanced MCM and airborne ASW sonar. In 1997 he joined the NATO Saclant Undersea Research Center, La Spezia, Italy as principal scientist. He was appointed Head of the Mine Counter-measures Group, in the Signal and Systems Division in 1998 and held this position until the Group was dissolved in 2000. From 2000 to 2004 he conducted, as project leader, research into synthetic aperture sonar systems for hunting proud and buried mines. In 2004 he was appointed Head of the Expeditionary MCM and Port Protection Department where he presently oversees the research into AUV-based mine-hunting, electronic mine counter-measures and harbour defence.

T6 – ARRAY PROCESSING AND BEAMFORMING

This tutorial is an introduction to different ways for processing data coming from arrays. These processed data can be used to create image of an illuminated scene, to detect some target (through angle and range) or to create a 3D model of the scene. The main idea of this course is not to make a catalogue of methods but really to emphasize on the difficulty for radar or sonar to determine the wave front arriving angle on an array. Thus, this tutorial is divided into three parts :

- The first part is an introduction to the problem and potential applications. The hypotheses used for modeling are detailed ranging from stationarity of the spatio-temporal field, noise decorrelation, type of arrays, ...
- The second part deals with traditional beam forming showing how it works but also its limitations. The beam forming can be expressed under constraint with ratio noise level (i.e. Capon algorithm) or under more precise constraints (i.e. GSC algorithm).
- The third part is about high resolution methods and mainly about why and when these methods can be used. A parallel is made with the interferometric approach, and to compare both. The most known method, Music (Pissarenko algorithm), is detailed

and several interesting points are investigated such as wide band signals, noise correlation etc.

This tutorial is a rapid description of several techniques for processing data along with their hypotheses. Finally, applications and examples conclude the tutorial.

This tutorial is intended for people or scientists connected with signal or array processing, and interested to have a fly-over about these commonly used methods.

Presenter's Bio – Christophe Sintès

Christophe Sintès graduated from « École Nationale des Études et Techniques d'Armement », Brest 1992. From 1995 to 1998, he worked for the French Hydrographic Services as electronics chief of the Atlantic Hydrographic Mission. He joined the GESMA (Groupe d'Études Sous-Marines de l'Atlantique) in 1998 and received a Ph.D degree in electronics from the Université de Rennes, France in 2002 about high resolution interferometric processing for mine hunting. In 2002, he also joined the "École nationale des Télécommunications" as Associate Professor in the remote sensing group. He works now on array processing for radar and sonar.

Presenter's Bio – Didier Guériot

Didier Guériot (M'95) graduated from "Institut National des Sciences Appliquées" (INSA), Rennes, France in 1991 where he studied computer science. In 1999, he received the Ph.D. degree in electronics at the University of Haute Alsace, France, focusing on extending genetic algorithms to variable length solutions for difficult problems such as neural networks learning and symbolic sonar image registration. From 1993 to 2005, he had been working as R&D Engineer for several research labs and companies within the sonar field, dealing with high resolution sonar imagery for GESMA ("Groupe d'Études Sous-Marines de l'Atlantique", a French navy research agency) and multi-beam echosounders for RESON in Santa Barbara, California. In 2005, he joined "ENST Bretagne" (École Nationale Supérieure des Télécommunications) in Brest, France as

an associate professor. His research interests range from sonar data processing to artificial intelligence applied to underwater environment reconstruction.

T7 – SYNTHETIC APERTURE SONAR IMAGE DESPECKLING

Over the past few years, more and more accurate positioning, imaging and cartography systems have been created. Synthetic Aperture SONAR (SAS) systems are good illustrations, since they offer images of great accuracy.

The active synthetic aperture SONAR is a high-resolution acoustic imaging technique that coherently combines the returns from multiple pings to synthesize a large acoustic aperture. Thus, the azimuth resolution of a SAS system does not depend anymore on the length of the real antenna but on the length of the synthetic antenna. Consequently, in artificially removing the link between azimuth resolution and physical length of the array, it is now possible to use lower frequencies to image the sea bed with a good resolution. Therefore, lower frequencies are less attenuated and long ranges can be reached. All these advantages make SAS images of great interest, especially for the detection, localization and eventually classification of objects lying on the seabed. But, as any image obtained with a coherent system, SAS images are highly corrupted by a granular multiplicative noise, called the speckle noise. This noise, by giving a variance to the intensity of each pixel, reduces spatial and radiometric resolutions. Such a noise hinders the interpretation and the automatic analysis of SAS images. For this reason a large amount of research works have been recently dedicated to reduce this noise and suppress the spacious reflections affecting the images, with two main goals: the strong reduction of the speckle level and the spatial resolution preservation. To respect these two constraints, a compromise has to be done, given that, for the most the classical approaches, a strong denoising affects the spatial resolution by a smoothing effect.

A review of the different techniques, found in the scientific literature, reveals that it is possible to classify these methods in various categories: the scalar filters (mean filters, median filters, ...), the adaptive filters (Lee filters, Frost filters, ...), the MAP filters (Gamma filter, Fisher-MAP filter, ...), the image-domain filters (wavelet approaches, stochastic matched filter, ...). All these methods give good results depending on the criteria used to quantify the quality of the despeckled data. Furthermore, to properly evaluate a despeckling process, it is also of great interest to take into consideration the number of input parameters, the necessary a priori knowledge of signal and noise, the algorithm complexity and implementability. Because of the high number of filtering methods coupled to the number of criteria, it appears of great interest to be able to classify these despeckling methods for each considered criterion, in order to allow the user to determine the most convenient method answering his specific problem (classification, localization, ...).

The purpose of this tutorial is to present a review of SAS images denoising methods (up to 40 techniques) using several criteria (up to 10 criteria) from spatial resolution preservation to speckle noise reduction to algorithm implementability.

Presenter's Bio – Philippe Courmontagne

Philippe Courmontagne was born in 1970. He received the Ph. D. degree in Physics at the University of Toulon (France) in 1997. In 1999, he became Professor in a French electronic engineering school: the Institut Supérieur de l'Électronique et du Numérique (ISEN Toulon, France), in the field of signal processing and image processing. He joined in 2001 the Provence Materials and Microelectronics Laboratory (L2MP UMR CNRS 6137), which is a unit of the French national research center (CNRS). In 2005, he obtained his Habilitation (HDR – Habilitation to Supervise Research) for his works in the field of noisy signal expansion. In 2007, he has been elected to the degree of IEEE Senior Member in recognition of professional standing for his works in the field of signal denoising

(SAR, SAS images), signal detection in noisy environment and signal transmission. In 2008, he will be the chairman of a workshop (PASSIVE'08), sponsored by the IEEE Oceanic Engineering Society, in the field of passive systems for oceanic observations.

T8 – ATMOSPHERIC EFFECTS ON VISIBLE AND INFRARED IMAGING IN MARINE ENVIRONMENTS

This tutorial provides a broad description of the atmospheric phenomena that affect imaging systems in the visible and infrared spectrum in marine environments. Effects of atmospheric transmission and radiance, refraction and turbulence are described in details and many examples are shown. Emphasis is given to medium-to-long range imaging at low levels above the ocean. We present physical models and current computational tools designed to describe and predict the effects on imaging systems as a function of the prevailing meteorological conditions. Reliability and accuracy of current models are discussed for the various effects. The physical quantities needed for system performance studies are introduced.

This tutorial is intended to anyone wishing to be acquainted with the atmospheric phenomena that affect imaging quality, and to know about available models to describe or predict the effects. Basic knowledge in physics, especially in light propagation, would help to understand the various principles involved.

Presenter's Bio – Denis Dion

Denis received the B.S. and M.S. degrees in Electrical Engineering from Laval University (Québec, Qc, Canada) in 1980 and 1983, respectively. He joined the Defence Research & Development Valcartier (DRDC Valcartier) in 1982 to conduct research in the field of modeling and simulation of radar and electro-optical sensors. His work has been mainly oriented towards the characterization and modeling of environmental effects on sensor performance in the maritime environment, with emphasis on propagation effects near the sea surface. He is author and co-author of many papers on the subject.

TECHNICAL PROGRAM

Monday, September 15 (8h00-12h00) Room 202

TUTORIAL: Fundamentals Underwater Acoustics and Bottom-Interacting Shallow Water Acoustics 1

Instructors: Allen Pierce
William Carey, Boston University

Monday, September 15 (8h00-12h00) Room 203

TUTORIAL: Design of Synthetic Aperture Sonar Systems for High Resolution Seabed Imaging

Instructors: Mark Pinto, Expeditionary MCM and Port Protection Department

Monday, September 15 (8h00-12h00) Room 204B

TUTORIAL: Array Processing and Beamforming

Instructors: Cristophe Sintès, École nationale des Télécommunications
Didier Guerot, ENST Bretagne

Monday, September 15 (8h00-12h00) Room 205A

TUTORIAL: Airborne Hyperspectral Imaging 1

Instructors: Herb Ripley, Hyperspectral Imaging Limited

Monday, September 15 (8h00-12h00) Room 206A

GEOSS Workshop 1

Co-Chairs: Jay Pearlman, IEEE ICEO

This workshop is entitled Science Modeling and Data Policy and will address three associated questions: **1)** how can GEOSS facilitate new environmental science and modeling capabilities? **2)** how can results from models of disparate phenomena such as oceans and atmosphere be integrated more effectively into products? and **3)** how can new science and modeling advances be used to facilitate user services as provided through GEOSS? These questions are raised as a means of identifying the key current and potential contributions of GEOSS to science and modeling

and the issues associated with GEOSS policy that will enable the envisioned societal benefits. The Data Policy segment of the workshop will focus on global access to earth observation data within the context of GEOSS. Key representatives from industry, academia, and government will provide invited talks on these and related issues that impact GEOSS implementation and utility. This session will acquaint the audience with the “implementation guidelines for the GEO Data Sharing principles”. Questions and comments will be solicited with time allocated for discussion and breakout sessions.

Monday, September 15 (8h00-12h00) Room 206B

TUTORIAL: Applied Model-based Signal Processing: Classical, Modern, and Bayes Techniques 1

Instructors: James Candy, Lawrence Livermore National Laboratory

Monday, September 15 (8h00-12h00) Room 302AB

TUTORIAL: AUV Technology and Application Basics

Instructors: William Kirkwood, Monterey Bay Aquarium Research Institute

Monday, September 15 (13h00-17h00) Room 202

TUTORIAL: Fundamentals Underwater Acoustics and Bottom-Interacting Shallow Water Acoustics 2

Instructors: Allen Pierce
William Carey, Boston University

Monday, September 15 (13h00-17h00) Room 203

TUTORIAL: Synthetic Aperture SONAR Image Despeckling

Instructors: Philippe Courmontagne, ISEN Toulon

Monday, September 15 (13h00-17h00) Room 205A

TUTORIAL: Airborne Hyperspectral Imaging 2

Instructors: Herb Ripley, Hyperspectral Imaging Limited

Monday, September 15 (13h00-17h00) Room 206A

GEOSS Workshop 2

Co-Chairs: Jay Pearlman, IEEE ICEO

Monday, September 15 (13h00-17h00) Room 206B

TUTORIAL: Applied Model-based Signal Processing:
Classical, Modern, and Bayes Techniques 2

Instructors: James Candy, Lawrence Livermore
National Laboratory

Monday, September 15 (13h00-17h00) Room 302AB

TUTORIAL: Atmospheric Effects on Visible and Infrared
imaging in marine Environments

Instructors: Denis Dion, DRDC-Valcartier

Monday, September 15 (17h00-18h30) Foyer Level 4

Opening Reception

Tuesday, September 16 (8h00-10h00) Room 400C

Plenary session

WELCOME ADDRESS

FINDING SUSTAINABLE SOLUTIONS:

SOCIETY'S RELIANCE ON MARINE TECHNOLOGY

Craig N. McLean, Deputy Assistant Administrator
for Programs and Administration, Oceanic
and Atmospheric Research, NOAA (NOAA)

OPTIMAL DESIGN & OPERATION OF THE PACIFIC OCEAN SHELF TRACKING ARRAY (POST)

David Welch, President Kintama Research

USING ADVANCED TECHNOLOGY TO UNDERSTAND THE ENVIRON- MENT: EXPLORING THE POLES

James A.R. McFarlane, Vice President,
Sound Ocean Systems Inc.

Tuesday, September 16 (10h00-11h30) Room 400AB

Exhibit Opening & Coffee Break

Tuesday, September 16 (10h30-11h30) Room 400AB

Town Hall, "Progress Towards Ocean Research Priorities"

The U.S. Joint Subcommittee on Ocean Science and Technology (JSOST) advises and assists the Committee on Environment and Natural Resources and the Interagency Committee on Ocean Science and Resource Management Integration on national issues of ocean science and technology. In 2007, the JSOST wrote *Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy (Charting the Course for Ocean Science)* as a guide to establish and realize priorities for ocean science and technology to improve society's stewardship and use of, and interaction with, the ocean. The JSOST developed the unique document in conjunction with its Committee on Ocean Policy partners and the broad ocean science community.

At present, the JSOST and its member agencies are working on implementation of the four Near-term Priorities (NTPs) presented in *Charting the Course for Ocean Science*.

This JSOST Town Hall, "Progress Towards Ocean Research Priorities", will provide the community updates on implementation activities of the NTPs and steps taken towards infrastructure studies to gather community input on these efforts.

Tuesday, September 16 (11h45-13h30) Room 400AB

MTS Lunch

Tuesday, September 16 (13h30-15h00) Room 202

An Ice-Free Arctic Ocean 1

Co-Chairs: Michael Byers, University of British Columbia
Louis Fortier, Laval University

COOPERATION NOT CONFLICT

Michael Byers, University of British Columbia

UNITED STATES ARCTIC OCEAN MANAGEMENT & THE LAW OF THE SEA CONVENTION

Megan Campbell, NOAA
Ole Varmer, NOAA

OIL AND GAS DEVELOPMENT IN THE ARCTIC OCEAN – UNDERSTANDING THE LEGAL AND REGULATORY FRAMEWORK

Fatima Ahmad, NOAA
Samuel Rauch, NOAA
Mark Hodor, NOAA

Tuesday, September 16 (13h30-15h00) Room 203

Vehicular Performance 2

Co-Chairs: Brian Bingham, Franklin W. Olin College
of Engineering

SEAKEEPING SYSTEM TRADES FOR COORDINATED AIR-SURFACE-UNDERWATER OPERATIONS

Brian Bingham, Franklin W. Olin College of Engineering
Eric Prechtel, Axis Engineering Technology, Inc.
Richard Wilson, Aurora Flight Sciences Corporation

PRELIMINARY RESULTS IN EXPERIMENTAL IDENTIFICATION OF 3-DOF COUPLED DYNAMICAL PLANT FOR UNDERWATER VEHICLES

Stephen Martin, Johns Hopkins University
Louis Whitcomb, Johns Hopkins University

BATTERY SYSTEM FOR THE SEAHORSE AUV

Gerald Landrum, Naval Oceanographic Office
Kenneth Sharp, Naval Oceanographic Office

MODELLING THE HYDRODYNAMIC SWAY FORCE EXERTED ON THE BARE-HULL OF AN AXISYMMETRIC UNDERWATER VEHICLE IN LATERAL ACCELERATION MANOEUVRES

Farhood Azarsina, Memorial University
of Newfoundland
Christopher Williams

Tuesday, September 16 (13h30-15h00) Room 204A

Vehicular Design 2

Co-Chairs: Clifford Goudey, Massachusetts Institute
of Technology
Hunter Brown, University of Michigan

DEVELOPMENT OF A MULTI-AUV SLAM TESTBED AT THE UNIVERSITY OF MICHIGAN

Hunter Brown, University of Michigan
Ayoung Kim, University of Michigan
Ryan Eustice, University of Michigan

CLUSTER SPACE CONTROL OF A 2-ROBOT SYSTEM AS APPLIED TO AUTONOMOUS SURFACE VESSELS

Paul Mahacek, Santa Clara University
Ignacio Mas, Santa Clara University
Ognjen Petrovic, Santa Clara University
Jose Acain, Santa Clara University
Christopher Kitts, Santa Clara University

UPDATE ON THE DEVELOPMENT AND TESTING OF A NEW LONG DURATION SOLAR POWERED AUTONOMOUS SURFACE VEHICLE

John Higinbotham, Emergent Space Technologies, Inc.
John Moisan, NASA/GSFC Wallops Flight Facility
Carl Schirtzinger, Zinger Enterprises, Inc.
Matt Linkswiler, EG&G
James Yungel, EG&G
Philip Orton, Lamont Doherty Earth Observatory
of Columbia University

Tuesday, September 16 (13h30-15h00) Room 204B

Acoustic Communication Systems 1

Co-Chairs: Pierre-Philippe Beaujean, Florida
Atlantic University
Stefan Murphy, Dalhousie University

MOTION-COMPENSATED ACOUSTIC POSITIONING IN VERY SHALLOW WATERS USING SPREAD-SPECTRUM ULTRA-SHORT BASELINE ARRAY PROCESSING

Pierre-Philippe Beaujean, Florida Atlantic University
Antoine Bon, Florida Atlantic University
Edgar An, Florida Atlantic University

HUMAN-GUIDED AUTONOMY FOR ACOUSTICALLY TETHERED UNDERWATER VEHICLES

Chris Murphy, Woods Hole Oceanographic Institution
Hanumant Singh, Woods Hole
Oceanographic Institution

HERMES – A HIGH-SPEED ACOUSTIC MODEM FOR REAL-TIME TRANSMISSION OF UNCOMPRESSED IMAGE AND STATUS TRANS- MISSION IN PORT ENVIRONMENT AND VERY SHALLOW WATER

Pierre-Philippe Beaujean, Florida Atlantic
University
Edward Carlson, Florida Atlantic University
John Spruance, EdgeTech
Dion Kriel, EdgeTech

Tuesday, September 16 (13h30-15h00) Room 205A

Geodesy and Meteorology

Co-Chairs: Clementine Costes, THALES Airborne Systems
Eberhard Sauter, Alfred Wegener Institute

DETERMINATION OF TIME DELAY FOR PRECISE BATHYMETRIC SURVEY

Hongmei Zhang, Wuhan University
Jianhu Zhao, Wuhan University
Fengnian Zhou, Changjiang Water Resource
Commission

CONVECTIVE CLOUDS MODELLING AND TRACKING BY AN AIRBORNE RADAR

Clementine Costes, THALES Airborne Systems
Rene Garello, TELECOM Bretagne
Gregoire Mercier, TELECOM Bretagne
Jean-Paul Artis, THALES Airborne Systems
Nicolas Bon, THALES Airborne Systems

MEASUREMENT-BASED ESTIMATES OF EXTREME WAVE CONDITIONS FOR THE GULF OF MEXICO

Chankwon Jeong, Texas A & M University
Vijay Panchang, Texas A & M University

METHANE DISCHARGE FROM A SUBMARINE MUD VOLCANO – A MULTIPLE-METHOD APPROACH

Eberhard Sauter, Alfred Wegener Institute

Tuesday, September 16 (13h30-15h00) Room 205C

Submarine Cables

Co-Chairs: Robert Bannon, IEEE

HISTORY OF UNDERSEA TELECOMMUNICATIONS TECHNOLOGY

Ronald Rapp, Tyco Telecommunications (US) Inc.
Marsha Spalding, Tyco Telecommunications (US) Inc.

DEVELOPMENT OF JAPANESE SCIENTIFIC CABLE TECHNOLOGY

Hitoshi Mikada, Kyoto University
Kenichi Asakawa, JAMSTEC

FAULT POINT LOCALIZATION OF POWER FEEDING LINES IN OPTICAL SUBMARINE CABLES

Junichi Kojima, KDDI R&D Laboratories Inc.
Shigetaka Matsumoto, KDDI R&D Laboratories Inc.
Kenichi Asakawa, JAMSTEC

UTILIZING PRESSURE BALANCED OIL FILLED (PBOF) HOSE CABLE ASSEMBLIES FOR USE WITH ELECTRIC AND FIBER OPTIC CONNEC- TORS. A REVIEW OF THE HISTORY AND CURRENT ADVANCES OF PBOF CABLING FOR USE IN SUBSEA DEPLOYMENTS.

David Jenkins, Seacon Brantner and Associates
Steven Thumbek, Seacon Advanced Products

Tuesday, September 16 (13h30-15h00) Room 206A

Acoustic Communication Networking 2

Co-Chairs: Mandar Chitre, Acoustic Research Lab/NUS

RECENT ADVANCES IN UNDERWATER ACOUSTIC COMMUNICATIONS & NETWORKING

Mandar Chitre, Acoustic Research Lab/NUS
Shiraz Shahabudeen, Acoustic Research Lab/NUS
Lee Freitag, Woods Hole Oceanographic Institution
Milica Sjotjanovic, MIT

IDENTIFICATION OF NEIGHBORS IN A LONG DELAY NETWORK USING UN-SLOTTED AND SLOTTED PROTOCOLS

Md. Shafiu Howlader, University of New South Wales
Michael Frater, University of New South Wales
Michael Ryan, University of New South Wales

A STUDY OF CHANNEL CAPACITY FOR A SEABED UNDERWATER ACOUSTIC SENSOR NETWORK

Peter King, Memorial University of Newfoundland
Ramachandran Venkatesan, Memorial University
of Newfoundland
Cheng Li, Memorial University of Newfoundland

A MODULAR DATA LINK LAYER FOR UNDERWATER NETWORKS

Jonathan Shusta, Woods Hole Oceanographic
Institution
Lee Freitag, Woods Hole Oceanographic Institution
Jim Partan, Woods Hole Oceanographic Institution

Tuesday, September 16 (13h30-15h00) Room 206B

NOPP Workshop: Visioning Round Table

Co-Chairs: Craig McLean, NOAA

The National Ocean Partnership Program (NOPP) is implemented through the Joint Subcommittee on Ocean Science and Technology (JSOST), Interagency Working Group on

Ocean Partnership (IWG-OP). Agency representatives from the IWG-OP, including the Office of Naval Research, Minerals Management Service, and NOAA, will lead an invited scoping discussion with industry representatives on furthering industry-government cooperation in ocean related research. This conversation is intended to be an opportunity to identify and understand areas of common interest, and where closer alignment in the planning, sponsorship, and execution phases of research could be leveraged. This scoping session is principally involving invited participants to the round table, but is not a closed session.

Tuesday, September 16 (13h30-15h00) Room 208A

Environmental Modeling and Simulation

Co-Chairs: Yasufumi Ishihara, JAPAN NUS CO.,LTD
Poojitha Yapa, Clarkson University

MODELING THE IMPACT OF ACCIDENTAL RELEASES OF METHANE GAS IN DEEPWATER

Poojitha Yapa, Clarkson University
Lalith Dasanayaka, Clarkson University

ECOSYSTEM MODEL APPLICATION TO LAKE HAMANA-SANARU, COASTAL LAGOON SYSTEM

Sohsuke Ohno, Tokai University
Kisaburo Nakata, Tokai University

PREDICTION OF IMPACTS OF DISCHARGED DISSOCIATED WATER IN METHANE HYDRATE ON ENVIRONMENT.

Itsuka Yabe, JAPAN NUS CO.,LTD
Yasufumi Ishihara, JAPAN NUS CO.,LTD
Kazuhito Asano, JAPAN NUS CO.,LTD

A MECHANISTIC DISSOLVED OXYGEN MODEL OF CORPUS CHRISTI BAY TO UNDERSTAND CRITICAL PROCESSES CAUSING HYPOXIA

Mohammad Islam, Texas A & M University
James Bonner, Clarkson University
Temitope Ojo, Clarkson University
Cheryl Page, Texas A & M University

Tuesday, September 16 (13h30-15h00) Room 208B

Computer Vision for Mapping and Mosaics 1

Co-Chairs: Shahriar Negahdaripour
Donna Kocak, Harris Corp

LOW OVERLAP IMAGE REGISTRATION BASED ON BOTH ENTROPY AND MUTUAL INFORMATION MEASURES

Cédric De Césaire, Laboratoire I3S, CNRS-UNSA
Maria-João Rendas, CNRS
Anne-Gaëlle Allais, Ifremer
Michel Perrier, Ifremer

UNDERWATER 3D MAPPING AND POSE ESTIMATION FOR ROV OPERATIONS

Piotr Jasiobedzki, MDA
Stephen Se, MDA
Michel Bondy, MDA
Roy Jakola, MDA

A MOTION COMPENSATED FILTERING APPROACH TO REMOVE SUNLIGHT FLICKER IN SHALLOW WATER IMAGES

Nuno Gracias, IliA Universitat de Girona
Shahriar Negahdaripour, University of Miami
Laszlo Neumann, IliA University of Girona
Ricard Prados, IliA University of Girona
Rafael Garcia, IliA University of Girona

SOFTWARE TOOLS FOR EXTRACTION OF VIDEO FRAMES USED IN MOSAICING

Yuri Rzhanov, University of New Hampshire

Tuesday, September 16 (13h30-15h00) Room 302AB

Unmanned Vehicles: New Concepts 1

Co-Chairs: Claude Brancart, NextFish

UNMANNED SURFACE VEHICLES, FIFTEEN YEARS OF DEVELOPMENT

Justin Manley, Battelle (NOAA Ocean Exploration)

UNMANNED UNDERWATER VEHICLES OCEANIC ENGINEERING SOCIETY TECHNOLOGY COMMITTEE:

Claude Brancart, NextFish
Hanumant Singh, Woods Hole Oceanographic Institution

TETHERED AND UNTETHERED VEHICLES: THE FUTURE IS IN THE PAST

James McFarlane, International Submarine
Engineering Ltd.

THE MARES AUV, A MODULAR AUTONOMOUS ROBOT FOR ENVIRONMENT SAMPLING

Nuno Cruz, University of Porto
Anibal Matos, University of Porto

Tuesday, September 16 (15h00-15h30) Room 400AB

Coffee Break

Tuesday, September 16 (15h30-17h00) Room 202

Undersea Vehicles: Enabling Technologies 2

Co-Chairs: Barbara Fletcher, SSC San Diego

ADAPTIVE MISSION PLAN DIAGNOSIS AND REPAIR FOR FAULT RECOVERY IN AUTONOMOUS UNDERWATER VEHICLES

Pedro Patrón, Heriot-Watt University
Emilio Miguelañez, Heriot-Watt University
Yvan Petillot, Heriot-Watt University
David Lane, Heriot-Watt University
Joaquim Salvi, Heriot-Watt University

A GRAPHICAL MISSION PLANNING TOOL FOR USE IN MINE COUN- TER MEASURE (MCM) OPERATIONS

Gary Giger, Pennsylvania State University
Mahmut Kandemir, Pennsylvania State University
John Dzielski, Pennsylvania State University

STUDY ON THE WIRELESS DATA TRANSMISSION OF AN AUTONOMOUS WATER VEHICLE FOR OCEAN OBSERVATION

Wei Gu, Shanghai Maritime University
Jianhua Wang, Shanghai Maritime University
Jianxin Chu, Shanghai Maritime University
Xixia Huang, Shanghai Maritime University

Tuesday, September 16 (15h30-17h00) Room 203

Long Term Observations 1

Co-Chairs: Leah Braithwaite, Canadian Ice Service,
Environment Canada
Zdenka Willis, NOAA

QUALITY OF ARCHIVED NDBC DATA AS CLIMATE RECORDS

Theodore Mettlach, SAIC
Robert Weir, SAIC
Kelly LaRue, SAIC
Chung-Chu Teng, National Data Buoy Center

WINTER PULSES OF PACIFIC-ORIGIN WATER AND RESUSPENSION EVENTS ALONG THE CANADIAN BEAUFORT SLOPE REVEALED BY A BOTTOM-MOORED OBSERVATORY

Alexandre Forest, Université Laval
Makoto Sampei, Université Laval
Marie-Emmanuelle Rail, Institut National de la
Recherche Scientifique
Yves Gratton, Institut National de la Recherche
Scientifique
Louis Fortier, Université Laval

ISOTOPIC AND MICROPALAEONTOLOGIC EVIDENCE FOR SEA ICE CONDITIONS AND PALEOCEANOGRAPHY IN LAST 15,000 YEARS ON THE MACKENZIE/ BEAUFORT SEA SLOPE AND AMUNDSEN GULF, CANADA

David Scott, Dalhousie University
Trecia Schelll, Dalhousie University
Guillaume St. Onge, Univ. Quebec a Rimouski
Andre Rochon, Univ. de Quebec a Rimouski
Dennis Darby, Old Dominion University
Steve Blasco, NRCan
Jennifer Mckay, Université du Quebec a Montreal

UPWARD LOOKING SONAR-BASED MEASUREMENTS OF SEA ICE KEELS AND OCEAN WAVES

David Fissel, ASL Environmental Sciences Inc.
Rene Chave, ASL Environmental Sciences Inc.
John Marko, ASL Environmental Sciences Inc.
Edward Ross, ASL Environmental Sciences Inc.
John Egan, Public Works and Government
Services Canada
Tony Kwan, ASL Environmental Sciences Inc

Tuesday, September 16 (15h30-17h00) Room 204A

Vehicular Navigation 1

Co-Chairs: Oscar Calvo, University of the Balearic Islands
Sean Augenstein, Stanford University

EXPERIMENTAL TESTS ON UNDERWATER PIPELINE INSPECTIONS

Oscar Calvo, University of the Balearic Islands
Andre Sousa, University of the Balearic Islands
Alejandro Rozenfeld, Imedeia/University of
the Balearic Islands

Jaime Bibiloni, University of the Balearic Islands
Gerardo Acosta, Universidad del Centro
Hugo Curti, Universidad Nacional del Centro
Jawhar Ghommam, Ecole Nationale
d'Ingenieurs de Sfax

ESTIMATING INERTIAL POSITION AND CURRENT IN THE MIDWATER

Sean Augenstein, Stanford University
Stephen Rock, Stanford University

FAST – AN AUTONOMOUS

SAILING PLATFORM FOR OCEANOGRAPHIC MISSIONS

Jose Alves, University of Porto
Nuno Cruz, University of Porto

Tuesday, September 16 (15h30-17h00) Room 204B

Unmanned Vehicles: Software and Control 3

Co-Chairs: Wayne Neu, Virginia Tech

COMBINED ENERGY STORAGE AND THREE-AXIS ATTITUDE CONTROL OF A GYROSCOPICALLY ACTUATED AUV

Blair Thornton, The University of Tokyo
Tamaki Ura, The University of Tokyo
Yoshiaki Nose, The University of Tokyo

ROBUST SEARCH FOR STRUCTURED OBJECT PLACEMENT USING UNMANNED VEHICLES

John Baylog, Naval Undersea Warfare Center
Thomas Wettergren, Naval Undersea Warfare Center
John Hyland, Naval Surface Warfare Center
Cheryl Smith, Naval Surface Warfare Center

MULTI-OBJECTIVE OPTIMIZATION OF AN AUTONOMOUS UNDERWATER VEHICLE

Matthew Martz, Virginia Tech
Wayne Neu, Virginia Tech

HARDWARE ARCHITECTURE FOR A MODULAR AUTONOMOUS UNDER-WATER VEHICLE STARFISH

Mehul Sangekar, Acoustic Research Lab/NUS
Mandar Chitre, Acoustic Research Lab/NUS
Teong Beng Koay, Acoustic Research Lab/NUS

Tuesday, September 16 (15h30-17h00) Room 205A

Surface Wave Radars

Co-Chairs: Dennis Trizna, Imaging Science Research, Inc.

SENSE, ENRICH AND CLASSIFY: THE SCANMARIS WORKSHOP FOR ASSESSMENT OF VESSEL'S ABNORMAL BEHAVIOR IN THE EEZ

Florent Jangal, ONERA
Marie-Anne Giraud, SOFRESUD
Michel Morel, DCNS
Jean-Pierre Mano, IRIT
Aldo Napoli, ARMINES

HIGH FREQUENCY (HF) RADAR CROSS SECTIONS OF THE OCEAN SURFACE INCORPORATING A CONTINUOUS WAVE FREQUENCY MODULATED SOURCE

Jianjun Zhang, Memorial University of Newfoundland
Eric Gill, Memorial University of Newfoundland
John Walsh, Northern Radar Inc.

MORPHOLOGICAL OPERATOR AND EMPIRICAL MODE DECOMPOSITION FOR CLUTTER MITIGATION

Florent Jangal, ONERA
Florent Mandereau, CNAM

A COHERENT MARINE RADAR FOR DECAMETRIC-SCALE CURRENT MAPPING AND DIRECT MEASUREMENT OF DIRECTIONAL OCEAN WAVE SPECTRA

Dennis Trizna, Imaging Science Research, Inc.

A BISTATIC HF RADAR FOR CURRENT MAPPING AND ROBUST SHIP TRACKING

Dennis Trizna, Imaging Science Research, Inc.

Tuesday, September 16 (15h30-17h00) Room 205C

Acoustic Propagation and Sonar

Co-Chairs: Timothy Duda, Woods Hole Oceanographic Institution
Kenneth Foote, Woods Hole Oceanographic Institution

HISTORY OF ENVIRONMENTAL ACOUSTICS, 1960'S TO 2000'S

Timothy Duda, Woods Hole Oceanographic
Institution
Allan Pierce, Boston University

ACOUSTIC CHANNEL CHARACTERIZATION IN THE BALTIC SEA AND IN THE NORTH SEA

Henry Dol, TNO
Frank Gerdes, FWG
Paul Van Walree, TNO
Wolfgang Jans, FWG
Steffen Kuenzel, FWG

ANALYSIS OF CHARACTERISTICS OF SOUND PROPAGATION IN THE ANTARCTIC OCEAN BY PARABOLIC EQUATION METHOD

Takenobu Tsuchiya, Kanagawa University
Tetsuo Anada, Kanagawa University
Shuki Ushio, National Institute for Polar Research
Nobuyuki Endoh, Kanagawa University

A NETWORKED/AUTONOMOUS RECEIVING ARRAY SYSTEM

Jeffrey Skinner, University of California, San Diego
William Hodgkiss, University of California, San Diego

NOISE REDUCTION IN HYDROPHONE SIGNAL CONDITIONING

Mehdi Banihashemi, Research Institute
of Agriculture Ministry
Shahram Bayat, Research Institute
of Agriculture Ministry

Tuesday, September 16 (15h30-17h00) Room 206A

Acoustic Communication Networking 3

Co-Chairs: Paolo Casari, University of Padova
Sung-Joon Park, Kangnung National
University

EFFECTIVE HEURISTICS FOR FLEXIBLE SPECTRUM ACCESS IN UNDER-WATER ACOUSTIC NETWORKS

Nicola Baldo, University of Padova
Paolo Casari, University of Padova
Paolo Casciaro, University of Padova
Michele Zorzi, University of Padova

A COMPARISON BETWEEN THE TONE-LOHI AND SLOTTED FAMA MAC PROTOCOLS FOR UNDERWATER NETWORKS

Paolo Casari, University of Padova
Beatrice Tomasi, University of Padova
Michele Zorzi, University of Padova

DESIGN AND IMPLEMENTATION OF HIGH-SPEED COMMUNICATION MODEM USING ULTRASONIC SENSORS FOR UNDERWATER SENSOR NETWORKS

Moo-Kwang Byeon, Kangnung National University
Bo-Won Kim, Kangnung National University
Jun-Ho Jeon, Kangnung National University
Sung-Joon Park, Kangnung National University

DFR: DIRECTIONAL FLOODING-BASED ROUTING PROTOCOL FOR UNDERWATER SENSOR NETWORKS

Daeyoup Hwang, Kyungpook National University
Dongkyun Kim, Kyungpook National University

Tuesday, September 16 (15h30-17h00) Room 206B

NOPP Workshop: Government – Industry Discussion

Co-Chairs: Craig McLean, NOAA

This open session invites conference attendees who are interested in discussing ideas on sharing technology, identifying dual use opportunities, and how to better circulate information in the marine technology and ocean engineering communities about emerging technologies to enable wider applications. Being aware of technologies and applications under development, other ideas and influences on technology could emerge that would enable a wider and lower cost application or product. This session will explore ideas about how to facilitate this information exchange. The session will follow the NOPP Visioning Round Table, after a short break.

Tuesday, September 16 (15h30-17h00) Room 208A

Marine Life and Ecosystems

Co-Chairs: John Wiltshire, University of Hawaii
Amber York, Woods Hole Oceanographic
Institution

MARINE MINERAL TAILINGS USE IN ANTICORROSIVE COATINGS

Zhimin Bai, China University of Geosciences
Zhihui Wen, China University of Geosciences
John Wiltshire, University of Hawaii

MARINE BROADBAND FRAMEWORK FOR COASTAL FISHING

Masaaki Wada, Future University-Hakodate
Katsumori Hatanaka, Tokyo University
of Agriculture
Masashi Toda, Future University-Hakodate
Minoru Sano, Hokkaido Abashiri Fisheries
Experiment Station

OPTICAL PROPERTIES OF CHROMOPHORIC DISSOLVED ORGANIC MATTER ALONG A TRANSECT IN THE BARATARIA BAY, LOUISIANA

Eurico D'Sa, Louisiana State University
Puneeta Naik, Louisiana State University
Erick Swenson, Louisiana State University

USING A TOWED OPTICAL HABITAT MAPPING SYSTEM TO MONITOR THE INVASIVE TUNICATE SPECIES DIDEMNUM SP. ALONG THE NORTHEAST CONTINENTAL SHELF

Amber York, Woods Hole Oceanographic Institution
Scott Gallager, Woods Hole Oceanographic Institution
Richard Taylor, Advanced Habitat Imaging Consortium
Norman Vine, Advanced Habitat Imaging Consortium
Steve Lerner, Woods Hole Oceanographic Institution

Tuesday, September 16 (15h30-17h00) Room 208B

Computer Vision for Mapping and Mosaics 2

Co-Chairs: Shahriar Negahdaripour

A PRACTICAL UNDERWATER 3D-LASERSCANNER

Marc Hildebrandt, DFKI-Bremen
Jochen Kerdels, DFKI-Bremen
Jan Albiez, DFKI-Bremen
Frank Kirchner, DFKI-Bremen

3-D MOTION AND STRUCTURE ESTIMATION FOR ARBITRARY SCENES FROM 2-D OPTICAL AND SONAR VIDEO

Shahriar Negahdaripour, University of Miami
Ali Taatian, University of Miami

BUNDLE ADJUSTMENT FOR 3-D MOTION AND STRUCTURE ESTIMA- TION FROM 2-D OPTICAL AND SONAR VIEWS

Shahriar Negahdaripour, University of Miami
Ali Taatian, University of Miami

AN APPROACH OF 3D INFORMATION REAL-TIME DISPLAY FOR DETECTION OF UNDERWATER TARGET BASED ON LASER DIGITAL SCANNING GRID

Bing Zheng, Ocean University of China
Guoyo Wang, Ocean University of China
Jialin Hou, Ocean University of China

Tuesday, September 16 (15h30-17h00) Room 302AB

Signal Processing Applications 1

Co-Chairs: Brian Harrison, Naval Undersea Warfare Center

A MULTI-RESOLUTION HIDDEN MARKOV MODEL FOR OPTIMAL DETECTION, TRACKING, SEPARATION AND CLASSIFICATION OF MARINE MAMMAL VOCALIZATIONS

Brian Harrison, Naval Undersea Warfare Center
Paul Baggenstoss, Naval Undersea Warfare Center

ON OPTIMAL RESAMPLING FOR OFDM SIGNALLING IN DOUBLY SELECTIVE UNDERWATER ACOUSTIC CHANNELS

Srinivas Yerramalli, University of Southern California
Urbashi Mitra, University of Southern California

PERFORMANCE ANALYSIS OF DOA ESTIMATION FOR MIMO SO- NAR BASED ON EXPERIMENTS

Jianguo Huang, Northwestern Polytechnical University
Lijie Zhang, Northwestern Polytechnical University
Yong Jin, Northwestern Polytechnical University
Yunshan Hou, Northwestern Polytechnical University
Qunfei Zhang, Northwestern Polytechnical University
Min Jiang, Northwestern Polytechnical University

FIELD DIRECTIONALITY SYNTHESIS FROM MULTIPLE ARRAY ORIENTATIONS: A LEAST SQUARES APPROACH

Granger Hickman, Duke University
Hailiang Tao, Duke University
Jeffrey Krolik, Duke University

INTERPOLATION METHODS FOR VERTICAL LINEAR ARRAY ELEMENT LOCALIZATION

Tarun Chandrayadula, George Mason University
Kathleen Wage, George Mason University

Tuesday, September 17 (17h00-18h30) Room 400AB

Exhibit Reception

Wednesday, September 17 (7h30-9h00) Room 2000D

Oceans '08 Networking Breakfast

Offered by Ministère du Développement économique, de l'Innovation et de l'Exportation du Gouvernement du Québec. Come at the Canadian Pavilion to reserve your place.

Wednesday, September 17 (8h15-9h45) Room 202

An Ice-Free Arctic Ocean 2

Co-Chairs: Louis Fortier, Laval University
Michael Byers, University of British Columbia

SURVEILLANCE OF CANADA'S HIGH ARCTIC

J. Forand, DRDC Valcartier
Vincent Larochelle, DRDC Valcartier
Dan Brookes, DRDC Ottawa
Jim Lee, DRDC Ottawa
Garry Heard, DRDC Atlantic
Matthew MacLeod, DRDC CORA
Nelson McCoy, DRDC Atlantic
Roger Dao, DRDC Corporate
Klaus Kollenberg, DRDC Corporate

GETTING READY FOR ARCTIC OPERATIONS

Kurt Hansen, US Coast Guard R&D
Mike Inman, US Coast Guard
Michael Cerne, US Coast Guard
John Natale, US Coast Guard R&D

Wednesday, September 17 (8h15-9h45) Room 203

ROV 1

Co-Chairs: Barbara Fletcher, SSC San Diego
Justin Manley, Battelle (NOAA Ocean
Exploration)

DEMONSTRATION OF THE HYBRID REMOTELY OPERATED VEHICLE (HROV) LIGHT FIBER TETHER SYSTEM

Barbara Fletcher, SSC San Diego
Chris Young, SSC San Diego

James Buescher, SSC San Diego
Andrew Bowen, Woods Hole Oceanographic
Institution

Robert McCabe, Woods Hole Oceanographic
Institution

Dana Yoerger, Woods Hole Oceanographic
Institution

Louis Whitcomb, Johns Hopkins University

AUTONOMOUS SAILBOATS : AN EMERGING TECHNOLOGY FOR OCEAN SAMPLING AND SURVEILLANCE

Nuno Cruz, University of Porto
Jose Alves, University of Porto

EXPERIMENTAL RESEARCH ON HORIZONTAL ROTATION OF ROV INDUCED BY EXTERNAL FORCES NEAR SEA SURFACE

Hiroyoshi Suzuki, Osaka University
Tomoya Inoue, JAMSTEC
Tsuyoshi Shimamura, Osaka University
Kengo Nakajima, Osaka University
Genki Shioji, Osaka University

EXPERIMENTAL RESEARCH ON MOVABILITY CHARACTERISTIC OF CRAWLER DRIVEN ROV

Tomoya Inoue, JAMSTEC
Tokihiko Katsui, Osaka Prefecture University
Junichiro Tahara, JAMSTEC
Kazuaki Itoh, JAMSTEC
Hiroshi Yoshida, JAMSTEC
Shojiro Ishibashi, JAMSTEC
Ken Takagi, JAMSTEC

DEVELOPMENT OF A COORDINATED CONTROLLER FOR UNDERWATER VEHICLE-MANIPULATOR SYSTEMS

Serdar Soylu, University of Victoria
Bradley Buckham, University of Victoria
Ronald Podhorodeski, University of Victoria

Wednesday, September 17 (8h15-9h45) Room 204A

Vehicular Design 1

Co-Chairs: Louis Whitcomb, Johns Hopkins University

DECOUPLING DESIGN TECHNIQUES FOR DYNAMICALLY COUPLED SYSTEMS: APPLICATION TO THE CANADIAN REMOTE MINEHUNTING AND DISPOSAL SYSTEM

Paul Van Luxemborg, Canadian Forces Naval Engineering School
Mae Seto, DRDC Atlantic
Dale Retallack, Dalhousie University

MORPHING HULL CONCEPTS FOR UNMANNED UNDERWATER VEHICLES

Russell Rufino, Pennsylvania State University
Timothy Miller, Applied Research Lab
– University of Texas
Farhan Gandhi, Pennsylvania State University

THE NEREUS HYBRID UNDERWATER ROBOTIC VEHICLE FOR GLOBAL OCEAN SCIENCE OPERATIONS TO 11,000M DEPTH

Louis Whitcomb, Johns Hopkins University
Andrew Bowen, Woods Hole Oceanographic Institution
Dana Yoerger, Woods Hole Oceanographic Institution
Chris Taylor, Woods Hole Oceanographic Institution
Robert McCabe, Woods Hole Oceanographic Institution
Jonathan Howland, Woods Hole Oceanographic Institution
Daniel Gomez-Ibanez, Woods Hole Oceanographic Institution
Jamed Kinsey, Woods Hole Oceanographic Institution
Matthew Heintz, Woods Hole Oceanographic Institution
Glenn McDonald, Woods Hole Oceanographic Institution
Donald Peters, Woods Hole Oceanographic Institution
Barbara Fletcher, US Navy SSC San Diego
Chris Young, SSC San Diego
James Buescher, SSC San Diego
Stephen Martin, Johns Hopkins University
Sarah Webster, Johns Hopkins University
Michael Jakuba, Johns Hopkins University

DESIGN OF SELF-LOCALIZATION STRATEGIES FOR NETWORKS OF UNDERWATER DRIFTERS

Diba Mirza, University of California, San Diego
Curt Schurgers, University of California, San Diego

Wednesday, September 17 (8h15-9h45) Room 204B

Physical Oceanographic Modeling and Simulation 1

Co-Chairs: David Fissel, ASL Environmental Sciences Inc.
Patrícia Ramos, Faculdade de Engenharia da Universidade do Porto

3D IMMERSIVE VISUALIZATION AND EVALUATION OF MESOSCALE MODEL OUTPUTS SIMULATING HURRICANE LILI'S(2002) RAPID WEAKENING

Jibonananda Sanyal, Mississippi State University
Phil Amburn, Mississippi State University
Song Zhang, Mississippi State University
Patrick Fitzpatrick, Mississippi State University
Robert Moorhead, Mississippi State University

FOZ DO ARELHO OUTFALL PLUME PREDICTIVE STUDY

Patrícia Ramos, Faculdade de Engenharia da Universidade do Porto
Sandra Carvalho, Águas do Oeste, S.A.

HIERARCHICAL CLUSTERING OF HISTORICAL SOUND SPEED PROFILES

Roger Meredith, Naval Oceanographic Office
Bryan Mensi, Naval Oceanographic Office
Marlin Gendron, Naval Research Lab

REMOVING PING TIMING AMBIGUITY VIA DATA ASSOCIATION

Vishal Ravindra, University of Connecticut
Marco Guerriero, University of Connecticut
Peter Willett, University of Connecticut
Stefano Coraluppi, NATO Undersea Research Center
Shengli Zhou, University of Connecticut

Wednesday, September 17 (8h15-9h45) Room 205A

Modeling and Simulation of the Ocean Surface

Co-Chairs: René Garello, TELECOM Bretagne

THE MODENA PROJECT: MODELING AND SIMULATION OF THE MARITIME ENVIRONMENT REMOTELY SENSED BY RADAR

René Garello, TELECOM Bretagne

AUTONOMY BASED MODELLING FOR THE SIMULATION OF OCEAN REMOTE SENSING

Marc Parenthoën, LISyC-ENIB
Zakaria Belemaalem, LISyC-ENIB

A MULTISCALE STUDY OF WIND FIELDS RETRIVED USING SYNTHETIC APERTURE RADARS AND SCATTEROMETERS

Mohamed Bassam Ben Ticha, TELECOM Bretagne
Bertrand Chapron, Ifremer
René Garello, TELECOM Bretagne

Wednesday, September 17 (8h15-9h45) Room 205C

Current Measurement Technology 1

Co-Chairs: Steven Anderson, Horizon Marine, Inc.
Richard Crout, National Data Buoy Center

TECHNOLOGY OF WATER FLOW MEASUREMENT REPRESENTED BY THIRTY YEARS OF CMTC WORKSHOPS

Albert Williams, Woods Hole Oceanographic Institution
Mal Heron, James Cook University
Steven Anderson, Horizon Marine, Inc.

OIL AND GAS PLATFORM OCEAN PROFILE DATA

Richard Crout, National Data Buoy Center

EVALUATION OF CURRENT AND WAVE MEASUREMENTS FROM A COASTAL BUOY

Doug Wilson, NOAA
Eric Siegel, NortekUSA

Wednesday, September 17 (8h15-9h45) Room 206A

Ocean Observing Concepts 2

Co-Chairs: Kent Headley, MBARI
S. Taylor, Ocean Networks Canada

STRATEGIC AND BUSINESS PLANNING FOR THE VENUS AND NEPTUNE CANADA OCEAN OBSERVING SYSTEMS

S. Taylor, Ocean Networks Canada

BUILDING MARINE INFRASTRUCTURE FOR SCIENCE

Peter Phibbs, University of Victoria

DEVELOPMENT AND TEST OF IEEE-1588 PRECISION TIMING PROTOCOL FOR OCEAN OBSERVATORY NETWORKS

Alex Milevsky, SAIC
John Walrod, SAIC

MANNED UNDERWATER VEHICLES: A RELEVANT AND CORNERSTONE TECHNOLOGY FOR THE FUTURE ASSESSMENT OF OCEAN ECO-SYSTEMS

William Kohnen, SEAmagine Hydrospace Corp.

Wednesday, September 17 (8h15-9h45) Room 206B

Signal Processing Applications 2

Co-Chairs: James Tucker, Colorado State University
Julien Bonnel, GIPSA-Lab

TARGET DETECTION IN M-DISPARATE SONAR PLATFORMS USING MULTICHANNEL HYPOTHESIS TESTING

James Tucker, Colorado State University
Nick Klausner, Colorado State University
Mahmood Azimi-Sadjadi, Colorado State University

A TIME-REVERSAL SUBOPTIMAL DETECTOR FOR UNDERWATER ACOUSTIC BARRIERS.

Sergio Jesus, ISR, University of Algarve
Orlando Rodriguez, ISR, University of Algarve

SYNTHETIC VIRTUAL ARRAY PROCESSING OF GPS SONOBUOYS FOR UNDERWATER TARGET TRACKING

Abdalla Osman, University of Calgary
Aboelmagd Noureldin, Royal Military College
of Canada

Jim Theriault, DRDC Atlantic
Garfield Mellema, DRDC Atlantic
D.J.S Campbell, Department of National Defense, Canada

AUTOMATIC AND PASSIVE WHALE LOCALIZATION IN SHALLOW WATER USING GUNSHOTS

Julien Bonnel, GIPSA-Lab
Grégoire Le Touzé, GIPSA-Lab
Barbara Nicolas, GIPSA-Lab
Jérôme Mars, GIPSA-Lab
Cédric Gervaise, ENSIETA

Wednesday, September 17 (8h15-9h45) Room 208A

Buoy Technology

Co-Chairs: John Flory, Tension Technology International

COBIA: THE NEXT GENERATION BUOY – A MODULAR APPROACH

Jack Rowley, SAIC

WAVE HEIGHTS FROM A 3-M DISCUS BUOY DURING HURRICANE KATRINA

Leslie/Les Bender, Texas A & M University
Norman Guinasso, Texas A & M University
John Walpert, Texas A & M University
Stephan Howden, University of Southern Mississippi

Wednesday, September 17 (8h15-9h45) Room 208B

EM Sensing and Navigation

Co-Chairs: Roy Wiegert, Naval Surface Warfare Center

IMPROVED MAGNETIC STAR METHODS FOR REAL TIME, POINT-BY-POINT LOCALIZATION OF UNEXPLODED ORDNANCE AND BURIED MINES

Roy Wiegert, Naval Surface Warfare Center
Kwang Lee, Naval Surface Warfare Center
John Oeschger, Naval Surface Warfare Center

ANALYSIS OF UNDERWATER ACOUSTIC AND ELECTRIC NOISE IN THE PORT OF GOTHENBURG

Stefan Petrovic, Swedish Defence Research Agency
Eva Dalberg, Swedish Defence Research Agency
Ron Lennartsson, Swedish Defence Research Agency
Leif Persson, Swedish Defence Research Agency

MARINE UNEXPLODED ORDNANCE (UXO) SURVEY SYSTEM

Chet Bassani, SAIC

STUDY ON BUILDING LOCAL MARINE GEOMAGNETIC FIELD MODEL BASED ON INTERPOLATION METHOD

Jianhu Zhao, Wuhan University
Hui Liu, Wuhan University
Juanjuan Li, Wuhan University

TOWED OCEAN BOTTOM MAGNETOMETER TO MEASURE GEOMAGNETIC VECTOR BASED ON AMR SENSOR AND SINS

Xue-ting Zhang, Hangzhou Dianzi University
Jing-biao Liu, Hangzhou Dianzi University
Ying Chen, Zhejiang University
De-nv Huang, Hangzhou Dianzi University

Wednesday, September 17 (8h15-9h45) Room 302AB

Signal Processing 1

Co-Chairs: Neil Wachowski, Colorado State University
Gerard Llorc-Pujol, TELECOM Bretagne

ANALYSIS OF VERNIER INTERFEROMETERS FOR SONAR BATHYMETRY

Gerard Llorc-Pujol, TELECOM Bretagne
Christophe Sintès, TELECOM Bretagne
Didier Guériot, TELECOM Bretagne

SOURCE LOCALIZATION ON A SINGLE HYDROPHONE

Grégoire Le Touzé, GIPSA-Lab
Josep Torras, GIPSA-Lab
Barbara Nicolas, GIPSA-Lab
Jérôme Mars, GIPSA-Lab

BURIED UNDERWATER TARGET CLASSIFICATION USING FREQUENCY SUBBAND COHERENCE ANALYSIS

Neil Wachowski, Colorado State University
Mahmood Azimi-Sadjadi, Colorado State University

CALIBRATION TECHNIQUES OF UNDERWATER ACOUSTIC SIGNALS AND ITS APPLICATION TO TARGET IMAGING

Kun-Chou Lee, National Cheng-Kung University
Min-Chih Huang, National Cheng-Kung University
Ming-Chung Fang, National Cheng-Kung University
Lan-Ting Wang, Tainan University of Technology
Jyun-Gu Ou, National Cheng-Kung University

Wednesday, September 17 (9h45-10h15) Room 400AB

Coffee Break

Wednesday, September 17 (10h15-11h45) Room 202

Challenges in Managing the St-Lawrence Workshop 2

Co-Chairs: Serge Demers, ISMER
Paul Bellemare, IML

THE ST. LAWRENCE GLOBAL OBSERVATORY: INTER-INSTITUTIONAL COOPERATION FOR THE SUSTAINABLE MANAGEMENT OF THE ST. LAWRENCE ECOSYSTEM

Joanne Hamel, Fisheries & Oceans Canada

Wednesday, September 17 (10h15-11h45) Room 203

Tidal Power Modeling and Testing

Co-Chairs: William Hamner, Hydrovolts, Inc.
Md.Nahidul Khan, Memorial University
of Newfoundland

ASSESSING THE SITE POTENTIAL FOR UNDERWATER TURBINES IN TIDAL CHANNELS USING NUMERICAL MODELING AND ADVANCED OCEAN CURRENT MEASUREMENTS

David Fissel, ASL Environmental Sciences Inc.
Jianhua Jiang, ASL Environmental Sciences Inc.
Rick Birch, ASL Environmental Sciences Inc.
Jan Buermans, ASL Environmental Sciences Inc.
David Lemon, ASL Environmental Sciences Inc.

SUBMERGED WATER CURRENT TURBINES

Md.Nahidul Khan, Memorial University of Newfoundland
M.Tariq Iqbal, Memorial University of Newfoundland
Michael Hinchey, Memorial University of Newfoundland

Wednesday, September 17 (10h15-11h45) Room 204A

International Submarine Races

Co-Chairs: Claude Brancart, NextFish

THE INTERNATIONAL SUBMARINE RACES: THE FIRST 19 YEARS, PLUS THE NEXT 19 YEARS AND BEYOND

Claude Brancart, NextFish
Hussey Nancy, Foundation for Underwater Research
and Education

THE OMER HUMAN-POWERED SUBMARINE TEAM: FROM CLASS-ROOM TO COMPETITION

Simon Joncas, École de technologie supérieure
Christian Belleau, École de technologie supérieure

THE FUTURE ENGINEERS AND SCIENTISTS: YOU NEED THEM? I HAVE THEM? LOTS OF THEM

Christopher Land, Sussex County Technical School

Wednesday, September 17 (10h15-11h45) Room 204B

Acoustic Communication Systems 2

Co-Chairs: Paulo Oliveira, IST/ISR
Yoshitaka Watanabe, JAMSTEC

A POSITIONING OF AUV WITH DATA TRANSMISSION USING SS ACOUSTIC SIGNAL.

Yoshitaka Watanabe, JAMSTEC
Hiroshi Ochi, JAMSTEC
Takuya Shimura, JAMSTEC

JOINT POSITIONING AND NAVIGATION AIDING SYSTEM FOR UNDER-WATER ROBOTS

Renato Sousa, IST/ISR
Alex Penas, IST/ISR
Paulo Oliveira, IST/ISR
Reza Ghabcheloo, IST/ISR
Antonio Pascoal, IST/ISR

ANALYSIS OF SECONDARY SOURCE LEVELS OF A PARAMETRIC ARRAY TRANSDUCER

Mano Andrews, Cheju National University
Jeong Han, Cheju National University
Bae Ho, Cheju National University
Chong Lee, Cheju National University

Wednesday, September 17 (10h15-11h45) Room 205A

Geophysical Parameter Estimation

Co-Chairs: David Weissman, Hofstra University

MEASUREMENTS OF THE EFFECT OF RAIN-INDUCED SEA SURFACE ROUGHNESS ON THE QUIKSCAT SCATTEROMETER RADAR CROSS SECTION AND WIND STRESS

David Weissman, Hofstra University
Mark Bourassa, Florida State University

DETECTION OF KARENIA BREVIS HARMFUL ALGAL BLOOMS IN THE WEST FLORIDA SHELF USING RED BANDS OF MERIS IMAGERY

Ruhul Amin, City University of New York
Jing Zhou, City University of New York
Alex Gilerson, City University of New York
Barry Gross, City University of New York
Fred Moshary, City University of New York
Sam Ahmed, City University of New York

OIL SPILL EMERGENCY RESPONSE MAPPING FOR COASTAL AREA USING SAR IMAGERY AND GIS

Hamid Assilzadeh, University of Calgary
Yang Gao, University of Calgary

Wednesday, September 17 (10h15-11h45) Room 205C

Acoustic Propagation 2

Co-Chairs: Timothy Duda, Woods Hole Oceanographic Institution

Jean-Pierre Hermand, Environmental Hydroacoustics Lab., OPERA-Acoustics Dept.

A FULL SPECTRUM SOLUTION TO WAVE PROPAGATION PREDICTION

Cathy Ann Clark, Naval Undersea Warfare Center
Kevin Smith, Naval PostGraduate School

VARIABILITY OF OBSERVED REVERBERATION AND ESTIMATED SEA-FLOOR SCATTERING STRENGTH

Martin Barlett, Applied Research Lab - University of Texas
Walter Brown, Applied Research Lab - University of Texas
Andrew Porter, Applied Research Lab - University of Texas

A WEDGE DIFFRACTION BASED SCATTERING MODEL FOR ACOUSTIC SCATTERING FROM ROUGH LITTORAL SEAFLOORS

Richard Keiffer, Naval Research Lab
Robert Zingarelli, Naval Research Lab

EFFECT OF WIND-DURATION, SWELL-CONTAMINATION AND BIMODAL OCEAN WAVE SPECTRA ON ACOUSTIC DOPPLER

Richard Keiffer, Naval Research Lab

Wednesday, September 17 (10h15-11h45) Room 206A

Acoustic Communication Networking 4

Co-Chairs: Josep Miquel Jornet, MIT
Chan Wang Park, Université du Québec à Rimouski

DISTRIBUTED POWER CONTROL FOR UNDERWATER ACOUSTIC NET-WORKS

Josep Miquel Jornet, MIT
Milica Stojanovic, MIT

DESIGNING AND IMPLEMENTING A SYSTEM OF MULTIPLEXING AND DEMULTIPLEXING ON FPGA USING MATLAB/SIMULINK FOR THE DETECTION OF ACOUSTIC SIGNALS

Mohamed Abdillahi-Said, Université du Québec à Rimouski
Chan Wang Park, Université du Québec à Rimouski

A COMPARATIVE PERFORMANCE EVALUATION OF MAC PROTOCOLS FOR UNDERWATER SENSOR NETWORKS

Roberto Petrocchia, University of Rome "La Sapienza"
Chiara Petrioli, University of Rome "La Sapienza"
Milica Stojanovic, MIT

A PHYSICAL LAYER IMPLEMENTATION ON RECONFIGURABLE UNDERWATER ACOUSTIC MODEM

Mehmet Aydinlik, MIT
Ahmet Ozdemir, MIT
Milica Stojanovic, MIT

Wednesday, September 17 (10h15-11h45) Room 206B

Physical Oceanography

Co-Chairs: Malcolm Heron, James Cook University
Richard Crout, National Data Buoy Center

REPORT ON THE GREAT COASTAL GALE OF 2007 FROM COASTAL STORMS PROGRAM BUOY 46089

Richard Crout, National Data Buoy Center
Ian Sears, National Data Buoy Center
Lea Locke, National Data Buoy Center

ON THE INCLUSION OF STOKES AND EKMAN SURFACE CURRENTS INTO HYDRODYNAMIC MODELS

Malcolm Heron, James Cook University

PRELIMINARY RESULTS OF COMPARISONS BETWEEN TROPICAL ATMOSPHERE OCEAN (TAO) OCEANOGRAPHIC REFRESH AND LEGACY SENSORS

Richard Crout, National Data Buoy Center
Janice Boyd, SAIC

CHARACTERIZATION OF TURBULENT REGIMES DERIVED FROM HIGH RESOLUTION CTD PROFILES. POTENTIAL APPLICATION TO CONTINUOUS PROFILING SYSTEMS

Jaume Piera, Unidad de Tecnología Marina (UTM-CSIC)
Ruben Quesada, Technical University of Catalonia
Juanjo Dañobeitia, Unidad de Tecnología Marina (UTM-CSIC)

Wednesday, September 17 (10h15-11h45) Room 208A

Coastal and Economic Zones

Co-Chairs: Thomas Street, NOAA
Fatima Ahmad, NOAA

CLIMATE CHANGE, OFFSHORE WIND POWER, AND THE COASTAL ZONE MANAGEMENT ACT

Thomas Street, NOAA

DEVELOPMENT OF THE MARINE SCIENCE AND TECHNOLOGY INDUSTRY CLUSTER IN NEW ENGLAND

Thomas Curry, UMass Dartmouth

MARGARET MERRILL, MARINE MARKETING SERVICES

Stephen Andrade, Battelle Technology Practice
Partnership
Susan Peterson, Teal Partners

SEMANTIC WEB HOLDS PROMISES FOR OCEAN OBSERVING NEEDS

Steven Le, SAIC

Wednesday, September 17 (10h15-11h45) Room 208B

Underwater Camera and Lighting Systems

Co-Chairs: Kevin Hardy, DeepSea Power & Light
Fraser Dalglish

ADVANCES IN HIGH BRIGHTNESS LIGHT EMITTING DIODES IN UNDERWATER APPLICATIONS

Kevin Hardy, DeepSea Power & Light
Mark Olsson, DeepSea Power & Light
John Sanderson, DeepSea Power & Light
Peter Weber, DeepSea Power & Light
Jon Simmons, DeepSea Power & Light

HEMISPHERICAL REFRACTION AND CAMERA CALIBRATION IN UNDERWATER VISION

Clayton Kunz, Woods Hole Oceanographic Institution
Hanumant Singh, Woods Hole Oceanographic Institution

COMPUTER VISION BASED DEEP-SEA VISUAL EXPLORATION SYSTEM

Jing-Biao LIU, Hangzhou Dianzi University
Wenyu CAI, Hangzhou Dianzi University

Wednesday, September 17 (10h15-11h45) Room 302AB

Unmanned Vehicles: Applications 1

Co-Chairs: Kenneth Sharp, U.S. Navy

APPLICATION OF AUTONOMOUS UNDERWATER VEHICLE SYSTEMS IN DISTRIBUTED OCEAN OBSERVING NETWORKS

Doug Cronin, Naval Oceanographic Office
Gerald Landrum, Naval Oceanographic Office
Kenneth Sharp, Naval Oceanographic Office

BENTHIC HABITAT MAPPING

WITH AUTONOMOUS UNDERWATER VEHICLES

Andrew Davie, Tasmanian ICT Centre
Klaas Hartmann, Tasmanian ICT Centre
Gregory Timms, Tasmanian ICT Centre
Martin de Groot, Tasmanian ICT Centre
John McCulloch, Tasmanian ICT Centre

AUV-ASSISTED SURVEYING OF RELIC REEF SITES

Stefan Williams, Australian Centre for Field Robotics
Oscar Pizarro, Australian Centre for Field Robotics
Jody Webster, James Cook University
Robin Beaman, James Cook University
Matthew Johnson-Roberson, Australian Centre
for Field Robotics
Ian Mahon, Australian Centre for Field Robotics
Tom Bridge, James Cook University

USS: AN UNDERWATER SELF-RECONFIGURABLE SYSTEM

Chao Wu, Shanghai Jiao Tong University
Tong Ge, Shanghai Jiao Tong University
Lian Lian, Shanghai Jiao Tong University

Wednesday, September 17 (11h45-13h30) Room 200AB

OES/IEEE Lunch

Wednesday, September 17 (13h30-15h00) Room 202

Challenges in Managing the St-Lawrence Workshop 1

Co-Chairs: Paul Bellemare, IML
Serge Demers, ISMER

RELATIONSHIPS BETWEEN METALLOTHIONEIN INDUCTION, CADMIUM, COPPER AND ZINC LEVELS AND ENVIRONMENTAL PARAMETERS IN THE SOFT SHELL CLAM MYA ARENARIA IN THE SAGUENAY FJORD AND THE ST. LAWRENCE RIVER MARITIME ESTUARY

Jocelyne Pellerin, UQAR-ISMER
Jean-Claude Amiard, Université de Nantes

WAVE AND CURRENT MEASUREMENTS IN THE ST-LAWRENCE ESTUARY NEAR GROS-CACOUNA, QUEBEC: IMPLICATION ON SEDIMENT TRANSPORT

Danielle Cloutier, CIMA
Yann Ropars, Consultants Ropars Inc.
Marc Villeneuve, Groupe Conseil LaSalle

Wednesday, September 17 (13h30-15h00) Room 203

Adapting to Ice Covered Seas 1

Co-Chairs: Yvan Simard, IML
Martin Fortier, ArcticNet, Laval University

ADAPTING AUVS FOR USE IN UNDER-ICE SCIENTIFIC MISSIONS

James Ferguson, International Submarine Engineering Ltd.

DEPLOYMENT UNDER ICE: CHALLENGES FOR THE NORTH

Alexander Forrest, University of British Columbia
Bernard Laval, University of British Columbia
Martin Doble, University of Cambridge
Richard Yeo, Hafmynd ehf
Egbert Magnusson, Hafmynd ehf

ADVANCED METHODS FOR OPTIMIZING SHIP OPERATIONS TO REDUCE EMISSIONS THAT CONTRIBUTE TO GLOBAL WARMING

Phil Ballou, Jeppesen Commercial Marine Operations
Henry Chen, Jeppesen Commercial Marine Operations
John Horner, Jeppesen Commercial Marine Operations

Wednesday, September 17 (13h30-15h00) Room 204A

Long Term Observations 2

Co-Chairs: Martin Fortier, ArcticNet, Laval University
Leah Braithwaite, Canadian Ice Service,
Environment Canada

FISHERIES AND OCEANS CANADA OCEAN SCIENCE PROGRAM: THE ARCTIC AND THE FUTURE

Helen Joseph, Fisheries and Oceans Canada

EARTH-OBSERVING AND SATELLITE NETWORKS FOR THE ARCTIC OCEAN

Jean-Marc Chouinard, Natural Resources Canada

THE INTERNATIONAL ARCTIC BUOY PROGRAMME (IABP): A CORNER-STONE OF THE ARCTIC OBSERVING NETWORK

Ignatius Rigor, University of Washington
Pablo Clemente-Colón, US National/Naval Ice Center
Edward Hudson, Meteorological Service of Canada

THE U.S. ARCTIC OBSERVING NETWORK (AON): A COMPONENT OF THE STUDY OF ENVIRONMENTAL ARCTIC CHANGE

Peter Schlosser, Columbia University
Hajo Eicken, University of Alaska

Wednesday, September 17 (13h30-15h00) Room 204B

Bathymetric Information Systems

Co-Chairs: Daniel Neumann, NOAA
Stephen Barkby, Australian Centre
for Field Robotics

THE HYDROGRAPHIC SURVEY META DATABASE

Daniel Neumann, NOAA

IMPROVING INSTANTANEOUS HEIGHT QUALITY OF TRANSDUCER IN PRECISE BATHYMETRIC MEASUREMENT BASED ON MULTI-INFORMATION FUSION

Jianhu Zhao, Wuhan University
Hongmei Zhang, Wuhan University

MARITIME RADAR SIMULATOR BASED ON DSP BOARD USING SWITCHED SLIDE WINDOW TRACKING ALGORITHM

Jinho Bae, Cheju National University
Jeong Hee Han, Cheju National University
Mano Andrews, Cheju National University
Chong Hyun Lee, Cheju National University
Hyoung-Goo Jeon, Donggeui University

Wednesday, September 17 (13h30-15h00) Room 205A

Ocean Observing Concepts 1

Co-Chairs: Zdenka Willis, NOAA
Andrew Clark, Harris Corp

THE OCEAN TRACKING NETWORK

Ron O'Dor, Dalhousie University
Mark O'Dor, Dalhousie University

CREATION AND OPERATION OF A GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS

Jay Pearlman, IEEE ICEO
Stephen Holt, Noblis
Christoff Waldmann, University of Bremen/MARUM

US IOOS - PROGRAM UPDATE

Zdenka Willis, NOAA

ON THE NEED, DEVELOPMENT AND OPERATION OF JOINT USE COMMERCIAL-SCIENTIFIC OCEAN OBSERVING SYSTEMS

Andrew Clark, Harris Corp
Donna Kocak, Harris Corp

Wednesday, September 17 (13h30-15h00) Room 205C

Acoustic Oceanography

Co-Chairs: Jean-Pierre Hermand, Environmental Hydroacoustics Lab., OPERA-Acoustics Dept.
Kenneth Foote, Woods Hole Oceanographic Institution

UNDERWATER ACOUSTIC TECHNOLOGY: REVIEW OF SOME RECENT DEVELOPMENTS

Kenneth Foote, Woods Hole Oceanographic Institution

RANGE-RESOLVING SHALLOW WATER ACOUSTIC TOMOGRAPHY BY ENSEMBLE KALMAN FILTERING

Olivier Carrière, Environmental Hydroacoustics Lab., OPERA-Acoustics Dept.
Jean-Pierre Hermand, Environmental Hydroacoustics Lab., OPERA-Acoustics Dept.
James Candy, Lawrence Livermore National Lab

COMPARISON OF ACOUSTIC MEASUREMENTS OF ZOOPLANKTON POPULATIONS USING AN ACOUSTIC WATER COLUMN PROFILER AND AN ADCP

David Lemon, ASL Environmental Sciences Inc.
David Billenness, ASL Environmental Sciences Inc.
Jan Buermans, ASL Environmental Sciences Inc.

SUBSEAFLOOR GEOACOUSTIC CHARACTERIZATION IN THE KILOHERTZ REGIME WITH A BROADBAND SOURCE AND A 4-ELEMENT RECEIVER ARRAY

Jean-Pierre Hermand, Environmental Hydroacoustics Lab., OPERA-Acoustics Dept.
Jean-Claude Le Gac, NATO Undersea Research Centre

Wednesday, September 17 (13h30-15h00) Room 206A

Acoustic Communication Processing 1

Co-Chairs: Fengzhong Qu, University of Florida
Goulven Eynard, TELECOM Bretagne

BASIS EXPANSION MODEL FOR UNDERWATER ACOUSTIC CHANNELS?

Fengzhong Qu, University of Florida
Liuqing Yang, University of Florida

INITIAL DOPPLER COMPENSATION TECHNIQUES FOR DIGITAL UNDER-WATER COMMUNICATIONS

Goulven Eynard, TELECOM Bretagne
Christophe Laot, TELECOM Bretagne

UNDERWATER COMMUNICATION GOES COGNITIVE

Yonggang Wang, System Engineering Research Institute
Jiansheng Tang, System Engineering Research Institute
Yue Pan, System Engineering Research Institute
Li Huangfu, System Engineering Research Institute

THE TRONDHEIM HARBOUR: ACOUSTIC PROPAGATION MEASUREMENTS AND COMMUNICATION CAPACITY

Knut Grythe, SINTEF ICT
Jan Hakegaard, SINTEF ICT
Tor Reinen, SINTEF ICT
Tor Myrvoll, SINTEF ICT

Wednesday, September 17 (13h30-15h00) Room 206B

Signal Processing: Synthetic Aperture Sonar

Co-Chairs: Sergio Silva, University of Porto
Roy Hansen, Norwegian Defence Research Establishment

AN ALGEBRAIC APPROACH TO SYNTHETIC APERTURE SONAR IMAGE RECONSTRUCTION

Sergio Silva, University of Porto
Sergio Cunha, University of Porto
Aníbal Matos, University of Porto
Nuno Cruz, University of Porto

HIGH FIDELITY SYNTHETIC APERTURE SONAR PRODUCTS FOR TARGET ANALYSIS

Roy Hansen, Norwegian Defence Research Establishment
Hayden Callow, Norwegian Defence Research Establishment
Torstein Sæbø, Norwegian Defence Research Establishment
Per Hagen, Kongsberg Maritime
Bjørnar Langli, Kongsberg Maritime

SUB-BAND PROCESSING OF SYNTHETIC APERTURE SONAR DATA

Sergio Silva, University of Porto
Sergio Cunha, University of Porto
Aníbal Matos, University of Porto
Nuno Cruz, University of Porto

Wednesday, September 17 (13h30-15h00) Room 208A

Remote Sensing of the Oceans

Co-Chairs: David Weissman, Hofstra University
Michael Goldberg, Noblis, Inc.

OCEAN REMOTE SENSING: A CHALLENGE FOR THE FUTURE

Bertrand Chapron, Ifremer
René Garello, TELECOM Bretagne
David Weissman, Hofstra University

UNDERSTANDING THE IMPACT OF SURFACE WAVES ON MICROWAVE WATER LEVEL MEASUREMENTS

Robert Heitsenrether, NOAA
Mark Bushnell, NOAA
Kate Derner, NOAA
John Boon, Virginia Institute of marine Science
Warren Krug, NOAA

THE NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM – RESTRUCTURED CAPABILITIES FOR OPERATIONAL OCEAN REMOTE SENSING

Gary Mineart, Noblis
Vincent Grano, NOAA

Wednesday, September 17 (13h30-15h00) Room 208B

Optical Sensing and Applied Metrology

Co-Chairs: Donna Kocak, Harris Corp
Frank Caimi, IEEE OES

UNDERWATER OPTICS AND IMAGING: RECENT ADVANCES

Frank Caimi, IEEE OES
Donna Kocak, Harris Corp
Fraser Dalgleish, Harbor Branch Oceanographic Institution
John Watson, University of Aberdeen

EXTRACTION METHOD OF SCALLOP AREA IN SEABED IMAGES FOR FISHERY RESOURCES INVESTIGATION

Masashi Toda, Future University-Hakodate
Koichiro Enomoto, Future University-Hakodate
Yasuhiro Kuwahara, Hokkaido Abashiri Fisheries Experiment Station
Masaaki Wada, Future University-Hakodate
Katsumori Hatanaka, Tokyo University of Agriculture

ABSORPTION PROPERTIES IN SHOAL DOMINATED REGIONS OF THE ATCHAFALAYA SHELF, LOUISIANA, USA

PUNEETA NAIK, Louisiana State University
Eurico D'SA, Louisiana State University

Wednesday, September 17 (13h30-15h00) Room 302AB

Unmanned Vehicles: Applications 2

Co-Chairs: Per Espen Hagen, Kongsberg Maritime

HIGH SPATIAL RESOLUTION MAPPING OF WATER QUALITY AND BATHYMETRY WITH A PERSON-DEPLOYABLE, LOW COST AUTONOMOUS UNDERWATER VEHICLE

Robert Ellison, YSI Inc.
Daryl Slocum, YSI Inc.

TOWARD HIGH-SPATIAL RESOLUTION GRAVITY SURVEYING OF THE MID-OCEAN RIDGES WITH AUTONOMOUS UNDERWATER VEHICLES

James Kinsey, Woods Hole Oceanographic Institution
Maurice Tivey, Woods Hole Oceanographic Institution
Dana Yoerger, Woods Hole Oceanographic Institution

APPLICATIONS OF AUVS WITH SAS

Per Espen Hagen, Kongsberg Maritime
Terje Fossum, Kongsberg Maritime
Roy Hansen, Norwegian Defence Research Establishment

LARGE-AREA VISUAL MAPPING OF AN UNDERWATER VENT FIELD USING THE AUV

Toshihiro Maki, Univ. of Tokyo
Hayato Kondo, Tokyo University of Marine Science
and Technology
Tamaki Ura, Univ. of Tokyo
Takashi Sakamaki, Univ. of Tokyo

Wednesday, September 17 (15h00-15h30) Room 400AB

Coffee Break

Wednesday, September 17 (15h30-17h00) Room 2000D

Canadian Arctic Technologies: Opportunities and Challenges

Speaker: Dr. Pierre Coulombe, President,
National Research Council

Advanced technologies, applied to Arctic challenges, are essential tools for the Canadian Government in advancing its Arctic strategy. The National Research Council of Canada works with companies and with other government departments to create, develop and improve new technologies in areas critical to Canada's future. Hence NRC's Arctic programs carry out research not just about the Arctic, but for the Arctic. Dr. Coulombe's presentation will feature examples that show the breadth and depth of NRC's Arctic experience, and provide information on the opportunities and challenges facing Canada's Arctic technology. NRC's role as a technology solution provider with decades of experience in Arctic operations and technologies uniquely positions NRC to engage northern stakeholders as a developer of northern and circumpolar networks and improve the lives of northerners through its extensive international connections.

Wednesday, September 17 (15h30-17h00) Room 202

Ocean Data Information Systems 1

Co-Chairs: John Sample, Naval Research Lab
Frederick Petry, Naval Research Lab

WEB ACCESS OF METEOROLOGICAL AND OCEANOGRAPHIC DATA

Frederick Petry, Naval Research Lab
Bruce Lin, Naval Research Lab
Richard Sween, Naval Research Lab
Roy Ladner, Naval Meteorology
and Oceanography Command

TOWARDS MARINE GEOGRAPHIC INFORMATION SYSTEMS: MULTIDIMENSIONAL REPRESENTATION OF FISH AGGREGATIONS AND THEIR SPATIOTEMPORAL EVOLUTIONS

Valerie Carette, Laval University
Mir Abolfazl Mostafavi, Laval University
Rodolphe Devillers, Memorial University
of Newfoundland

US NAVAL FACILITIES ENGINEERING SERVICE CENTER ENVIRONMENTAL PROGRAM ON CLIMATE CHANGE

Kathleen Paulson, US Navy (NAVFAC ESC)
Dallas Meggitt, Sound & Sea Technology

Wednesday, September 17 (15h30-17h00) Room 203

Adapting to Ice Covered Seas 2

Co-Chairs: Martin Fortier, ArcticNet, Laval University
Yvan Simard, IML

PAYLOAD SENSORS, NAVIGATION AND RISK REDUCTION FOR AUV UNDER ICE SURVEYS

Bjorn Jalving, Kongsberg Maritime
Karstein Vestgård, Kongsberg Maritime
Jan Erik Faugstadmo, Kongsberg Maritime
Øyvind Hegrenæs, Kongsberg Maritime
Øystein Engelhardttsen, Kongsberg Maritime
Brendan Hyland, Wireless Fibre System Ltd

ACTIVE LOCALIZATION ON THE OCEAN FLOOR WITH MULTIBEAM SONAR

Nathaniel Fairfield, Carnegie Mellon University
David Wettergreen, Carnegie Mellon University

LISTENING AT CLIMATE CHANGE IN ICE-COVERED SEAS: EXAMPLE WITH AURAL AUTONOMOUS HYDROPHONES IN THE ARCTIC

Yvan Simard, Fisheries and Oceans Canada
Louis Fortier, Université Laval

THE TECHNICAL CHALLENGES OF DESIGNING OIL AND GAS PIPE-LINES IN THE ARCTIC

Basel Abdalla, J P Kenny, Inc.
Paul Jukes, J P Kenny, Inc.
Ayman Eltaher, J P Kenny, Inc.
Billy Duron, J P Kenny, Inc

Wednesday, September 17 (15h30-17h00) Room 204A

Ocean Engineering

Co-Chairs: Michael Harrison, Sound & Sea Technology

INSTALLATION OF A DEEP WATER SUB SURFACE MOORING FOR A HIGH GAIN RADIATED NOISE MEASUREMENT SYSTEM

Michael Harrison, Sound & Sea Technology
Mark Greise, Sound & Sea Technology
Phil DeNolfo, Naval Undersea Warfare Center
Hugh Thomson, Naval Facilities Engineering Service Center

A QUANTITATIVE ASSESSMENT OF THE THERMAL PROPERTIES OF DIVING GARMENTS WHEN USING ARGON AS A SUIT INFLATION GAS

Marshall Nuckols, Duke University
Joseph Giblo, Navy Clothing and Textile Research Facility
Jody Wood-Putnam, Naval Surface Warfare Center

BEHAVIOR OF THE DEEP SUBMERSIBLE HATCH IN DEEP SEA

Itaru Kawama, JAMTEC

Wednesday, September 17 (15h30-17h00) Room 204B

Bioacoustics

Co-Chairs: Kenneth Foote, Woods Hole Oceanographic Institution

Jean-Pierre Hermand, Environmental Hydroacoustics Lab., OPERA-Acoustics Dept.

IMPROVED TORPEDO RANGE ESTIMATION USING MODIFIED FAST ORTHOGONAL SEARCH TECHNIQUES

Vincent Dagenais, Detachment Mirabel
Donald McGaughey, Royal Military College of Canada
Sean Pecknold, DRDC Atlantic

CLASSIFICATION OF SPERM WHALE CLICKS AND TRIANGULATION FOR REAL-TIME LOCALIZATION WITH SBL ARRAYS

Ryo Hirotsu, Waseda University
Tamaki Ura, The University of Tokyo
Junichi Kojima, KDDI R&D Laboratories Inc.
Harumi Sugimatsu, The University of Tokyo
Masao Sakata, The University of Tokyo
Rajendar Bahl, Indian Institute of Technology, Delhi
Masao Yanagisawa, Waseda University

UNDERWATER BEHAVIORAL STUDY OF GANGES RIVER DOLPHINS BY USING ECHOLOCATION CLICKS RECORDED BY 6-HYDROPHONE ARRAY SYSTEM

Harumi Sugimatsu, University of Tokyo
Tamaki Ura, University of Tokyo
Junichi Kojima, KDDI R&D Laboratories Inc.
Rajendar Bahl, Indian Institute of Technology, Delhi
Sandeep Behera, WWF-India

FAST MARCHING AND ACOUSTIC DESCRIPTORS BASED METHOD FOR FISH PROPORTION INTERPOLATION

Imen Karoui, TELECOM Bretagne
Ronan Fablet, TELECOM Bretagne
Jean-Marc Boucher, TELECOM Bretagne

ENABLING HUMANS TO HEAR THE DIRECTION OF SOUNDS UNDERWATER – EXPERIMENTS AND PRELIMINARY RESULTS

TeongBeng Koay, Acoustic Research Lab/NUS
Jolyn Tan, National University of Singapore
Soo Pieng Tan, Acoustic Research Lab/NUS
Soon Keat Yeo, Acoustic Research Lab/NUS
Harold Tay, Acoustic Research Lab/NUS
Mandar Chitre, Acoustic Research Lab/NUS
John Potter, Acoustic Research Lab/NUS

Wednesday, September 17 (15h30-17h00) Room 205A

Ocean Observing Systems 1

Co-Chairs: Scott Gallager, Woods Hole Oceanographic Institution

Jay Pearlman, IEEE ICEO

RETROSPECTIVE AND PROSPECTIVE VIEWS OF THE OCEAN OBSERVING SYSTEM

Neal Pettigrew, University of Maine
John Wallinga, University of Maine
Linda Mangum, University of Maine
Francois Neville, University of Maine

DESIGN, INSTALLATION, AND OPERATION OF THE PLUTO OBSERVATORY, ISLA DE CANALES DE TIERRA, PANAMA

Scott Gallager, Woods Hole Oceanographic Institution
Steve Lerner, Woods Hole Oceanographic Institution
Amber York, Woods Hole Oceanographic Institution
Emily Miller, Woods Hole Oceanographic Institution
Andy Girard, Woods Hole Oceanographic Institution

DESIGN AND OPERATION OF A MULTI NODE CABLED OBSERVATORY

Adrian Woodroffe, OceanWorks International
Adrian Round, University of Victoria

OCEAN OBSERVING SYSTEM COMMITTEE KICK-OFF MEETING

Donna Kocak, Harris Corp

Wednesday, September 17 (15h30-17h00) Room 205C

Ocean Current and Offshore Energy Production

Co-Chairs: Frederick Driscoll, Florida Atlantic University

OCEANIC ENGINEERING AND OFFSHORE ENERGY PRODUCTION

William Carey, Boston University
Claude Brancart, Nextfish

FAU'S CENTER FOR OCEAN ENERGY TECHNOLOGY

Frederick Driscoll, Florida Atlantic University
Susan Skemp, Florida Atlantic University
Gabriel Alsenas, Florida Atlantic University

20 KW OCEAN CURRENT TURBINE

Frederick Driscoll, Florida Atlantic University
Gabriel Alsenas, Florida Atlantic University
Shirley Ravenna, Florida Atlantic University
Jason Raveling, Florida Atlantic University
Erick Busold, Florida Atlantic University

Wednesday, September 17 (15h30-17h00) Room 206A

Acoustic Communication Processing 2

Co-Chairs: Joël Trubuil, TELECOM Bretagne

SYNCHRONIZATION AND CHANNEL CODING IN SHALLOW WATER ACOUSTIC COMMUNICATION

Joël Trubuil, TELECOM Bretagne
André Goalic, TELECOM Bretagne
Nicolas Beuzelin, GESMA

AN ADAPTIVE DIFFERENTIALLY COHERENT DETECTION AND PHASE COMPENSATION ALGORITHM IN UNDERWATER ACOUSTIC COMMUNICATION

Maohua Ran, Northwestern Polytechnical University
Jianguo Huang, Northwestern Polytechnical University
Zhenhua Yan, Northwestern Polytechnical University

OFDM DEMODULATION IN UNDERWATER TIME-REVERSED SHORTENED CHANNELS

Joao Gomes, ISR – Instituto Superior Tecnico
Antonio Silva, SiPLAB – Universidade do Algarve
Sergio Jesus, SiPLAB – Universidade do Algarve

Wednesday, September 17 (15h30-17h00) Room 206B

Undersea Vehicles: Enabling Technologies 3

Co-Chairs: Barbara Fletcher, SSC San Diego
Nuno Cruz, University of Porto

NEW TOOLS FOR OCEAN EXPLORATION, EQUIPPING THE NOAA SHIP OKEANOS EXPLORER

Justin Manley, Battelle (NOAA Ocean Exploration)

SHIP OF OPPORTUNITY LAUNCH AND RECOVERY OF REMUS 600 AUV'S

Chris Rauch, Woods Hole Oceanographic Institution
Michael Purcell, Woods Hole Oceanographic Institution
Thomas Austin, Woods Hole Oceanographic Institution
Gregory Packard, Woods Hole Oceanographic Institution

DSAAV – A DISTRIBUTED SOFTWARE ARCHITECTURE FOR AUTONOMOUS VEHICLES

Mandar Chitre, Acoustic Research Lab/NUS

MODELLING VARIABLE LENGTH TOWS AND ALTITUDE-KEEPING WITH THE CANADIAN REMOTE MINEHUNTING AND DISPOSAL SYSTEM

Mae Seto, DRDC Atlantic
David Hopkin, DRDC Atlantic

Wednesday, September 17 (15h30-17h00) Room 208A

Marine Education and Outreach1

Co-Chairs: Paula Keener-Chavis, NOAA
Liesl Hotaling, The Beacon Institute

CURRENT AND FUTURE DIRECTIONS IN OCEAN EDUCATION AT THE CONSORTIUM FOR OCEAN LEADERSHIP

Susan Cook, Consortium for Ocean Leadership
Leslie Peart, Consortium for Ocean Leadership

SENSE THE HUDSON – STUDENT DEVELOPED ENVIRONMENTAL SENSORS CLASSROOM PROJECT

Liesl Hotaling, The Beacon Institute
Rustam Stolkin, University of Birmingham
James Bonner, Clarkson University
William Kirkey, Clarkson University

THE NOAA SHIP OKEANOS EXPLORER: CONTINUING TO UNFOLD THE PRESIDENT'S PANEL ON OCEAN EXPLORATION RECOMMENDATIONS FOR OCEAN LITERACY

Paula Keener-Chavis, NOAA

Wednesday, September 17 (15h30-17h00) Room 208B

Pollution Monitoring

Co-Chairs: Michael Goldberg, Noblis, Inc.

SPATIAL DISTRIBUTION OF A SEWAGE OUTFALL PLUME OBSERVED WITH AN AVU

Patrícia Ramos, Faculdade de Engenharia da Universidade do Porto
Maurici Monego, Faculdade de Engenharia da Universidade do Porto
Sandra Carvalho, Águas do Oeste, S.A.

OVERVIEW OF THE R&D PROGRAM FOR AN ENVIRONMENTAL IMPACT ASSESSMENT OF METHANE HYDRATE EXPLOITATION IN JAPAN

Nao Arata, Engineering Advancement Association of Japan,MBRIJ
Shyunji Sukizaki, Marine Biological Research Institute of Japan Co., Ltd.

Yuji Awashima, IHI Marine United Inc
Yo Okada, Japan Oil Engineering Co. Ltd.
Eiji Ogisako, Shimizu Corporation

RESEARCH ACTIVITIES BY THE MARINE ENVIRONMENT SURVEY AND ASSESSMENT SUBGROUP IN THE RESEARCH CONSORTIUM FOR METHANE HYDRATE RESOURCES (MH21 PROJECT) IN JAPAN

Shinya Suzuki, Engineering Advancement Association of Japan,MBRIJ
Shunji Sukizaki, Engineering Advancement Association of Japan,MBRIJ
Yasufumi Ishihara, Engineering Advancement Association of Japan,MBRIJ
Itsuka Yabe, Engineering Advancement Association of Japan,MBRIJ
Kisaburo Nakata, Tokai University
Poojitha Yapa, Clarkson University
Lalith Dasanayaka, Clarkson University
Uditha Bandara, Clarkson University

FIELD MEASUREMENTS OF SHIP WAVES ALONG THE ST. LAWRENCE RIVER WATERWAY, CANADA

Samir Gharbi, Canadian Coast Guard
Samir Hamdi, GENIVAR
Ioan Nistor, University of Ottawa
G. Valkov, Canadian Coast Guard

Wednesday, September 17 (15h30-17h00) Room 302AB

Unmanned Vehicles: Applications 3

Co-Chairs: Philip McGillivray, US Coast Guard Ice-breakers

MORE TOOLS IN THE TOOLBOX: THE NAVAL OCEANOGRAPHIC OFFICE'S

Kenneth Sharp, Naval Oceanographic Office
Randy White, Naval Oceanographic Office

INVESTIGATION OF AUTONOMOUS DOCKING STRATEGIES FOR ROBOTIC OPERATION ON INTERVENTION PANELS

Szymon Krupinski, Cybernetix SA
Francesco Maurelli, Heriot Watt University
Gabriel Grenon, Cybernetix SA
Yvan Petillot, Heriot Watt University

IMPROVEMENT AND SEA TEST OF AUTONOMOUS UNDERWATER VEHICLE URASHIMA FOR PRACTICAL USE

Junya Ishiwata, JAMSTEC
Satoshi Tsukioka, JAMSTEC
Tadahiro Hyakudome, JAMSTEC
Takao Sawa, JAMSTEC
Hidehiko Nakajo, JAMSTEC
Yoshinobu Nanbu, JAMSTEC
Kojiro Watanabe, JAMSTEC
Akihisa Ishikawa, Nippon Marine Enterprise Ltd.

Thursday, September 18 (17h30-21h30) Room 200AB

Banquet

Thursday, September 18 (8h15-9h45) Room 202

Signal Processing: Vector Sensor

Co-Chairs: Huaihai Guo, New Jersey Institute of Technology
Aijun Song, University of Delaware

MULTIUSER UNDERWATER COMMUNICATION WITH SPACE-TIME BLOCK CODES AND ACOUSTIC VECTOR SENSOR

Huaihai Guo, New Jersey Institute of Technology
Ali Abdi, New Jersey Institute of Technology

A CORRELATION MODEL FOR VECTOR SENSOR ARRAYS IN UNDERWATER COMMUNICATION SYSTEMS

Ali Abdi, New Jersey Institute of Technology
Huaihai Guo, New Jersey Institute of Technology

TIME REVERSAL RECEIVERS FOR UNDERWATER ACOUSTIC COMMUNICATION USING VECTOR SENSORS

Aijun Song, University of Delaware
Mohsen Badiy, University of Delaware
Paul Hursky, Heat, Light, & Sound Research, Inc.
Ali Abdi, New Jersey Institute of Technology

AUTOMATIC CLASSIFICATION OF DEEP BENTHIC HABITATS: DETECTION OF MICROBIAL MATS AND SIBOGLINID POLYCHAETE FIELDS FROM OPTICAL IMAGES ON THE HÅKON MOSBY MUD VOLCANO.

Cyril Chailloux, Ifremer
Karine Olu, Ifremer
Anne-Gaelle Allais, Ifremer
Patrick Simeoni, Ifremer

Thursday, September 18 (8h15-9h45) Room 203

Challenges in Biological Oceanography 1

Co-Chairs: Paul Snelgrove, Memorial University of Newfoundland
Ron O'Dor, Dalhousie University

SCIENTIFIC CRITERIA FOR CONSERVATION AND SUSTAINABLE USAGE OF MARINE BIODIVERSITY IN CANADA'S OCEANS

Paul Snelgrove, Memorial University of Newfoundland
Philippe Archambault, Université du Québec à Rimouski
Kim Juniper, University of Victoria
Peter Lawton, Fisheries and Oceans Canada
Anna Metaxas, Dalhousie University
Chris McKindsey, Fisheries and Oceans Canada
Pierre Pepin, Fisheries and Oceans Canada
David Schneider, Ocean Sciences Centre
Verena Tunnicliffe, University of Victoria

AUTONOMOUS SURFACE CRAFT PROVIDE FLEXIBILITY TO REMOTE ADAPTIVE OCEANOGRAPHIC SAMPLING AND MODELING

Joseph Curcio, MIT
Toby Schneider, MIT
Michael Benjamin, MIT
Andrew Patrikalakis, MIT

EVOLUTION OF A BENTHIC IMAGING SYSTEM FROM A SIMPLE TOWED CAMERA

Richard Taylor, Advanced Habitat Imaging Consortium
Norman Vine, Advanced Habitat Imaging Consortium
Amber York, Woods Hole Oceanographic Institution
Steve Lerner, Woods Hole Oceanographic Institution
Dvora Hart, NMFS
Jonathan Howland, Woods Hole Oceanographic Institution
Scott Gallager, Woods Hole Oceanographic Institution

Thursday, September 18 (8h15-9h45) Room 204A

Signal Processing: Sonar Imaging

Co-Chairs: Brian Ferguson, DSTO
John Bird, Simon Fraser University

MAPPING THE ACOUSTIC REFLECTIVITY OF UNDERWATER OBJECTS USING RECONSTRUCTIVE TOMOGRAPHY

Brian Ferguson, DSTO
Ron Wyber, Midspar Systems

WAKE REMOVAL FOR CLEAR SIDE-SCAN IMAGES

John Bird, Simon Fraser University
Geoff Mullins, Simon Fraser University

POTENTIAL OF UNDERWATER SONAR SYSTEMS FOR PORT INFRASTRUCTURE INSPECTION

Naouraz Brahim, University of Laval
Sylvie Daniel, University of Laval
Didier Guériot, TELECOM Bretagne

Thursday, September 18 (8h15-9h45) Room 204B

Unmanned Vehicles: Navigation 1

Co-Chairs: Brian Bingham, Franklin W. Olin College of Engineering

LOW-COST TERRAIN RELATIVE NAVIGATION FOR LONG-RANGE AUVS

Deborah Meduna, Stanford University
Stephen Rock, Stanford University
Rob McEwen, Monterey Bay Aquarium Research Institute

IMPROVING NAVIGATIONAL ACCURACY FOR AUVS USING THE MAPR PARTICLE FILTER

Andrew Lammas, Flinders University
Karl Sammut, Flinders University
Fangpo He, Flinders University

NLMAP – VISUAL-BASED SELF LOCALIZATION AND MAPPING FOR AUTONOMOUS UNDERWATER VEHICLES

Silvia Botelho, FURG
Gabriel Leivas, FURG
Paulo Drews, FURG

UUV MOBILITY MANAGEMENT FOR UNDERWATER ACOUSTIC SENSOR NETWORKS

Wenyu CAI, Hangzhou Dianzi University
Jingbiao LIU, Hangzhou Dianzi University

Thursday, September 18 (8h15-9h45) Room 205A

Ocean Observing Systems 2

Co-Chairs: Christoph Waldmann
Bill Carter, Memorial University of Newfoundland

SMARTBAY: BETTER INFORMATION – BETTER DECISIONS

Bill Carter, Memorial University of Newfoundland
Stephen Green, AMEC Earth and Environmental
Robert Leeman, Earth Information Technologies (NL) Ltd.
Neil Chaulk, International Communications and Navigation (ICAN) Ltd.

REAL TIME OBSERVATION OF THE THERMAL BAR AND SPRING STRATIFICATION OF LAKE MICHIGAN WITH THE GLUCOS COASTAL OBSERVATORY

Thomas Consi, University of Wisconsin - Milwaukee
Geoff Anderson, University of Wisconsin - Milwaukee
Greg Barske, University of Wisconsin - Milwaukee
Harvey Bootsma, University of Wisconsin - Milwaukee
Thomas Hansen, University of Wisconsin - Milwaukee
John Janssen, University of Wisconsin - Milwaukee
Val Klump, University of Wisconsin - Milwaukee
Robert Paddock, University of Wisconsin - Milwaukee
Donald Szmania, University of Wisconsin
Korey Verhein, University of Wisconsin - Milwaukee
James Waples, University of Wisconsin - Milwaukee

THE CHESAPEAKE BAY INTERPRETIVE BUOY SYSTEM

William Wilson, NOAA

TOWARDS A 3-DIMENSIONAL MODEL OF HOI HA WAN MARINE PARK, HONG KONG

Robin Bradbeer, City University of Hong Kong
Paul Hodgson, City University of Hong Kong
Kenneth Ku, City University of Hong Kong
L Yeung, City University of Hong Kong
C Zhan, City University of Hong Kong

Thursday, September 18 (8h15-9h45) Room 205C

Oceanographic Instrumentation and Sensors

Co-Chairs: Michael Harris, Naval Research Lab
James Irish, University of New Hampshire

SENSING SHALLOW SEAFLOOR AND SEDIMENT PROPERTIES, RECENT HISTORY

Michael Harris, Naval Research Lab
William Avera, Naval Research Lab
Andrei Abelev, Naval Research Lab
L. Bibee, Naval Research Lab

SALINITY SENSOR SYSTEM FOR ESTUARY STUDIES

Thanh-Tung Pham, University of Washington
Linda Bushnell, University of Washington
Thomas Green, University of Washington
Jonathan Chen, University of Washington
Phuong Truong, University of Washington
Aditya Vaidya, University of Washington

ACOUSTIC – MICROWAVE WATER LEVEL SENSOR COMPARISONS IN AN ESTUARINE ENVIRONMENT

John Boon, Virginia Institute of Marine Science
John Brubaker, Virginia Institute of Marine Science

CORRECTING AND VALIDATING MOORED OXYGEN TIME-SERIES OBSERVATIONS

James Irish, University of New Hampshire
Larry Ward, University of New Hampshire
Stanley Boduch, University of New Hampshire

Thursday, September 18 (8h15-9h45) Room 206A

Acoustic Communication Processing 3

Co-Chairs: Tsih Yang, Naval Research Lab.

LOW PROBABILITY OF DETECTION UNDERWATER ACOUSTIC COMMUNICATIONS BETWEEN MOBILE PLATFORMS

Tsih Yang, Naval Research Lab.
Wen-Bin Yang, National Institute of Standards and Technology

TIME-DOMAIN RECEIVER DESIGN FOR MIMO UNDERWATER ACOUSTIC COMMUNICATIONS

Jun Tao, Univ. of Missouri-Columbia
Y Zheng, Missouri University of Science and Technology
Chengshan Xiao, Missouri University of Science and Technology
T.C. Yang, Naval Research Lab
Wen-Bin Yang, National Institute of Standards and Technology

UNDERWATER ACOUSTIC LOCALIZATION BY EIGENSPACE BASED PROBABILISTIC APPROACH

Kun-Chou Lee, National Cheng-Kung University
Min-Chih Huang, National Cheng-Kung University
Ming-Chung Fang, National Cheng-Kung University
Lan-Ting Wang, Tainan University of Technology
Jih-Sian Ou, National Cheng-Kung University

DESIGN AND ANALYSIS OF LOW FREQUENCY COMMUNICATION SYSTEM IN PERSIAN GULF

Hossein Shahbazi, Institute of Engineering Research, Iran
Ali Karimifard, Institute of Engineering Research, Iran

Thursday, September 18 (8h15-9h45) Room 206B

Acoustic Communication Networking 1

Co-Chairs: Milica Stojanovic, Massachusetts Institute of Technology
Craig Benson, University of New South Wales

A DEMONSTRATION OF ABSORPTION CONTROLLED ISOLATION FOR UNDERWATER NETWORKS

Craig Benson, University of New South Wales
Michael Ryan, University of New South Wales
Michael Frater, University of New South Wales
Robin Dunbar, University of New South Wales

A METHOD FOR EFFICIENT UNDERWATER ACOUSTIC NETWORKING IN STRONG NOISY ENVIRONMENT

Yangze Dong, Xiamen University
Xiaomei Xu, Xiamen University
Pingxiang Liu, Xiamen University

A POWER ASSIGNMENT MECHANISM FOR UNDERWATER WIRELESS MULTIMEDIA

Lin Chin-Feng, National Taiwan Ocean University
Shun-Hsyung Chang, National Kaohsiung Marine University

FREQUENCY-DOMAIN EQUALIZATION FOR SINGLE CARRIER MIMO UNDERWATER ACOUSTIC COMMUNICATIONS

Jian Zhang, Missouri University of Science and Technology
Yahong Zheng, Missouri University of Science and Technology
chengshan Xiao, Missouri University of Science and Technology

Thursday, September 18 (8h15-9h45) Room 208A

Marine Education and Outreach 2

Co-Chairs: Jerry Schubel, Aquarium of the Pacific
Anna Fiolek, NOAA

**FROM OCEAN ISSUES TO SOLUTIONS:
THE ROLE OF PUBLIC OCEAN LITERACY**

Jerry Schubel, Aquarium of the Pacific
Kathryn Schubel, Golden Shore Institute

**OCEAN LITERACY OF BLACK GUILLEMOTS AND POLAR BEARS,
LITERATE CITIZENS VERSUS THE NATURE FAKERS**

Rob Moir, Ocean River Institute

**VIDEO DATA MANAGEMENT SYSTEM ARCHIVES AND PROVIDES
ONLINE ACCESS TO THE NOAA OCEAN EXPLORATION DIGITAL
VIDEO AND IMAGE DATA ON DEEP CORALS**

Anna Fiolek, NOAA
Donald Collins, NOAA

**AMS OCEAN STUDIES: A DYNAMIC, INTRODUCTORY COLLEGE-
LEVEL OCEANOGRAPHY COURSE EMPHASIZING REAL-WORLD
DATA AND INVESTIGATIONS**

James Brey, American Meteorological Society
Ira Geer, American Meteorological Society
Joseph Moran, American Meteorological Society
Robert Weinbeck, American Meteorological Society
Elizabeth Mills, American Meteorological Society
Bernard Blair, American Meteorological Society
Thomas Kiley, American Meteorological Society
Edward Hopkins, University of Wisconsin – Madison

Thursday, September 18 (8h15-9h45) Room 208B

Optical Communications and Navigation

Co-Chairs: Frank Caimi, IEEE OES

**AN UNDERWATER OPTICAL COMMUNICATION SYSTEM
IMPLEMENTING REED-SOLOMON CHANNEL CODING**

William Cox, North Carolina State University
Jim Simpson, North Carolina State University
Carlo Domizioli, North Carolina State University
John Muth, North Carolina State University
Brian Hughes, North Carolina State University

DIFFUSE HIGH BANDWIDTH OPTICAL COMMUNICATIONS

Clifford Pontbriand, Woods Hole Oceanographic
Institution

Norman Farr, Woods Hole Oceanographic Institution
Jonathan Ware, Woods Hole Oceanographic Institution
Jim Preisig, Woods Hole Oceanographic Institution
Hugh Popenoe, Woods Hole Oceanographic Institution

**VISUAL SLAM FOR UNDERWATER VEHICLES USING VIDEO
VELOCITY LOG AND NATURAL LANDMARKS**

Joaquim Salvi, University of Girona
Yvan Petillot, Heriot-Watt University
Stephen Thomas, Heriot-Watt University
Josep Aulinas, University of Girona

Thursday, September 18 (8h30-12h30) Room 302AB

Maritime Renewable Energy Workshop 1

Co-Chairs: Donna Kocak, Harris Corp

This half day OCEANS'08 MTS/IEEE Workshop is focused on marine renewable energy technologies, collaborations and policies. The workshop will also provide a forum for discussing opportunities and planning within the Marine Technology Society's Renewable Energy Committee.

Thursday, September 18 (9h45-10h15) Room 400AB

Coffee Break

Thursday, September 18 (10h15-11h45) Room 202

Signal Processing 8

Co-Chairs: Riwal Lefort, Ifremer and TELCOM Bretagne

**PRE-PROCESSING METHODS FOR PARAMETRIC ARRAY TO GENERATE
WIDEBAND DIFFERENCE-FREQUENCY-SIGNALS**

Songwen Li, Xiamen University

TOWARDS IMAGE-BASED MARINE HABITAT CLASSIFICATION

Oscar Pizarro, Australian Centre for Field Robotics
Paul Rigby, Australian Centre for Field Robotics
Jamie Colquhoun, AIMS
Matthew Johnson-Roberson, Australian Centre
for Field Robotics
Stefan Williams, Australian Centre for Field Robotics

AUTOMATIC FISH SCHOOL CLASSIFICATION FOR ACOUSTIC SENSING OF MARINE ECOSYSTEM

Riwal Lefort, Ifremer and TELCOM Bretagne
Ronan Fablet, TELECOM Bretagne
Jean Marc Boucher, TELECOM Bretagne
Laurent Berger, ifremer
Sebastien Bourguignon, Ifremer

SEARCH PERFORMANCE PREDICTION FOR MULTISTATIC SENSOR FIELDS

Michael Walsh, Naval Undersea Warfare Center
Thomas Wettergren, Naval Undersea Warfare Center

Thursday, September 18 (10h15-11h45) Room 204A

AUV Mission Planning, Situation Awareness, and Application

Co-Chairs: Charles Benton, Technology Systems, Inc.
Pedro Patrón, Heriot-Watt University

GEOSTATISTICAL ASSESSMENT OF SEWAGE OUTFALL DISCHARGES

Maurici Monego, Faculdade de Engenharia da Universidade do Porto
Patrícia Ramos, Faculdade de Engenharia da Universidade do Porto
Mário Neves, Faculdade de Engenharia da Universidade do Porto

SEMANTIC KNOWLEDGE-BASED REPRESENTATION FOR IMPROVING SITUATION AWARENESS IN SERVICE ORIENTED AGENTS OF AUTONOMOUS UNDERWATER VEHICLES

Pedro Patrón, Heriot-Watt University
Emilio Miguelañez, Heriot-Watt University
Joel Cartwright, Heriot-Watt University
Yvan Petillot, Heriot-Watt University

HIGH-PERFORMANCE VISUALIZATIONS AND SIMULATIONS FOR OCEAN ENVIRONMENTS AND THE MINE COUNTERMEASURE MISSION USING C3L

John Sustersic, Pennsylvania State University
Mahmut Kandemir, Pennsylvania State University
Shashi Phoha, Pennsylvania State University
Mendel Schmiedekamp, Pennsylvania State University

MERGING OCEAN/MARITIME MODELS AND ARCTIC OPERATIONS USING MISSION PLANNING TOOLKITS AND AUGMENTED REALITY

Charles Benton, Technology Systems, Inc.

Robert Nitzel, Technology Systems, Inc.
Tom Zysk, Technology Systems, Inc.

Thursday, September 18 (10h15-11h45) Room 204B

Unmanned Vehicles: Navigation 2

Co-Chairs: Brian Bingham, Franklin W. Olin College of Engineering

NAVIGATION OF AN AUTONOMOUS UNDERWATER VEHICLE IN A MOBILE NETWORK

Nuno Santos, University of Porto
Aníbal Matos, University of Porto
Nuno Cruz, University of Porto

TRAJECTORY TRACKING CONTROLLER FOR AN UNDERWATER HEXAPOD VEHICLE

Nicolas Plamondon, McGill University
Meyer Nahon, McGill University

GUIDANCE AND CONTROL OF AN ASV IN AUV TRACKING OPERATIONS

José Melo, Faculdade de Engenharia da Universidade do Porto
Aníbal Matos, Faculdade de Engenharia da Universidade do Porto

A PARTICLE FILTER APPROACH FOR AUV LOCALIZATION

Francesco Maurelli, Heriot Watt University
Szymon Krupinski, Cybernetix SA
Yvan Petillot, Heriot Watt University
Joaquim Salvi, University of Girona

Thursday, September 18 (10h15-11h45) Room 205A

Ocean Observing Technology 1

Co-Chairs: Jonathan Berger, Scripps Institution of Oceanography
Timothy Lynch, CSIRO

US DEEP-SEA TSUNAMETER NETWORK FULLY OPERATIONAL

Douglas Maxwell, National Data Buoy Center
Shannon McArthur, National Data Buoy Center
Richard Bouchard, National Data Buoy Center

THE EXTENDED DRAFT PLATFORM: A DEEP-OCEAN SCIENCE OBSERVATORY.

Jonathan Berger, Scripps Institution of Oceanography
John Orcutt, University of California, San Diego
Jim O'Sullivan, Technip
John Halkyard, John Halkyard & Associates

A NATIONAL REFERENCE STATION INFRASTRUCTURE FOR AUSTRALIA – USING TELEMETRY AND CENTRAL PROCESSING TO REPORT MULTI- DISCIPLINARY DATA STREAMS FOR MONITORING MARINE ECOSYSTEM RESPONSE TO CLIMATE CHANGE

Timothy Lynch, CSIRO
Dan Mclaughlan, CSIRO
David Hughes, CSIRO
David Cherry, CSIRO
Gary Critchley, CSIRO
Simon Allen, CSIRO
Lindsay Pender, CSIRO
Peter Thompson, CSIRO
Anthony Richardson, CSIRO
Frank Coman, CSIRO
Craig Steinberg, AIMS
Dave Terhell, CSIRO
Moninya Roughan, UNSW
Laurent Seuront, Flinders University
Gary Meyers, UTAS

A NEW COMPACT OCEAN BOTTOM CABLED SEISMOMETERS SYSTEM FOR SPATIALLY DENSE OBSERVATION ON SEA FLOOR

Toshihiko Kanazawa, University of Tokyo
Masaano Shinohara, University of Tokyo
Shinichi Sakai, University of Tokyo
Osamu Sano, University of Tokyo
Hisashi Utada, University of Tokyo
Hijime Shiobara, University of Tokyo
Yuichi Morita, University of Tokyo
Tomoaki Yamada, University of Tokyo
Katsuyuki Yamazaki, Nagaoka University of Technology

Thursday, September 18 (10h15-11h45) Room 205C

Ocean Data Information Systems 2

Co-Chairs: Martin Yapur, NOAA
Jeff de La Beaujardière, NOAA

NOAA'S INTEGRATED OBSERVATIONS AND DATA MANAGEMENT TOOLS

Martin Yapur, NOAA
Eric Miller, NOAA

AUTOMATED DATA QUALITY ASSURANCE FOR MARINE OBSERVATIONS

James Koziata, SAIC
John Olson, SAIC
Troy Anselmo, SAIC
Weiwei Lu, SAIC

THE NOAA IOOS DATA INTEGRATION FRAMEWORK: INITIAL IMPLEMENTATION REPORT

Jeff de La Beaujardière, NOAA

Thursday, September 18 (10h15-11h45) Room 206A

Offshore Structures 1

Co-Chairs: Michael Harrison, Sound & Sea Technology
David Murrin, Memorial University
of Newfoundland

LARGE-SCALE EXPERIMENTS OF A MARINE RISER

David Murrin, Memorial University of Newfoundland
Sue Molloy, Glas Ocean Engineering Consulting
Wei Qiu, Memorial University of Newfoundland
Neil Bose, Australian Maritime Hydrodynamics
Research Centre (AMHRC)
Martin Ordenez, Memorial University of Newfoundland

DESIGN OF A DEEP WATER SUB SURFACE MOORING FOR A HIGH GAIN RADIATED NOISE MEASUREMENT SYSTEM

Michael Harrison, Sound & Sea Technology
Phil DeNolfo, Naval Undersea Warfare Center
Hugh Thomson, Naval Facilities Engineering
Service Center
Mark Greise, Sound & Sea Technology

EXPERIMENTAL PHYSICAL MODEL STUDY AND ANALYSIS OF WAVE PROPAGATION ON MODEL AND PROTOTYPE

Sadegh Barzegar, Iran Marine Industries SADRA
Mohammad Banae Babazadeh, Iran Marine
Industries SADRA
Mehdi Asadi Niazi, Iran Marine Industries SADRA
Pooyan Rahbar, Iran Marine Industries SADRA

RAPID RISK ASSESSMENT FOR TEMPORARILY MOORED MODUS

Evan Zimmerman, Delmar Systems, Inc.
Daniel Alonso, Delmar Systems, Inc.

Thursday, September 18 (10h15-11h45) Room 206B

Unmanned Vehicles: Applications 4

Co-Chairs: James Morash, MIT Sea Grant AUV Laboratory
Ralf Bachmayer, Memorial University
of Newfoundland

AUV DEPLOYED MARKING AND HOMING TO TARGETS

Chris Rauch, Woods Hole Oceanographic Institution
Thomas Austin, Woods Hole Oceanographic Institution
Mark Grosenbaugh, Woods Hole Oceanographic
Institution
Frederic Jaffre, Woods Hole Oceanographic Institution
Roger Stokey, Woods Hole Oceanographic Institution
Jonathan MacDonald, Woods Hole Oceanographic
Institution

TIME-CONSTRAINED OPTIMIZATION OF MULTI-AUV COOPERATIVE MINE DETECTION

Ryan Prins, Pennsylvania State University
Mahmut Kandemir, Pennsylvania State University

PROGRESS IN PREDICTING THE PERFORMANCE OF OCEAN GLIDERS FROM AT-SEA MEASUREMENTS

Christopher Williams, National Research Council
of Canada
Ralf Bachmayer, Memorial University of Newfoundland
Brad deYoung, Memorial University of Newfoundland

MODULAR MODELING OF MANEUVERING MOTIONS OF AN UNDERWATER GLIDER

Fornq-Chen Chiu, National Taiwan University
Ming-Feng Guo, China Corporation Register of Shipping
Jenhwa Guo, National Taiwan University
Seung-Keon Lee, National University

Thursday, September 18 (10h15-11h45) Room 208A

Signal Processing 2

Co-Chairs: Tom Aridgides, Lockheed Martin
Vincent Myers, DRDC Atlantic

AUTOMATIC TARGET RECOGNITION ALGORITHM FOR HIGH RESOLUTION MULTI-BAND SONAR IMAGERY

Tom Aridgides, Lockheed Martin
Manuel Fernandez, Lockheed Martin

PASSIVE TRACKING AND DETECTION OF UNDERWATER NARROW-BAND ACOUSTICAL SPECTRAL SIGNATURES

Jüri Sildam, DRDC Atlantic

RECONSTRUCTION AND FUSION OF PERCEPTUAL FEATURES FOR AUTOMATIC CLASSIFICATION OF SONAR ECHOES

Vincent Myers, DRDC Atlantic
John Fawcett, DRDC Atlantic
Paul Hines, DRDC Atlantic
Victor Young, DRDC Atlantic

ATTITUDE ESTIMATION FROM NOISY SONAR IMAGES

Hisashi Shiba, NEC Corporation

Thursday, September 18 (10h15-11h45) Room 208B

Acoustic Communication Processing 7

Co-Chairs: Philippe Courmontagne, ISEN Toulon
Sean Mason, University of Connecticut

A CHIRP FSK IMPROVEMENT FOR COMMUNICATIONS IN SHALLOW WATER USING BANDWIDTH OVERLAPPING

Philippe Courmontagne, ISEN Toulon
Guillaume Fages, ISEN Toulon
Pierre-Philippe Beaujean, Florida Atlantic University

A COMPARATIVE STUDY OF DIFFERENTIAL AND NONCOHERENT DIRECT SEQUENCE SPREAD SPECTRUM OVER UNDERWATER ACOUSTIC CHANNELS WITH MULTIUSER INTERFERENCE

Sean Mason, University of Connecticut
Shengli Zhou, University of Connecticut
Paul Gendron, Naval Research Lab
Wen-Bin Yang, National Institute of Standards
and Technology

TOWARD CONTINUOUS UNDERWATER ACOUSTIC COMMUNICATIONS

Tsih Yang, Naval Research Lab.

Thursday, September 18 (13h30-15h00) Room 202

Unmanned Vehicles: Software and Control 1

Co-Chairs: Wayne Neu, Virginia Tech

A PHYSICOMIMETICS CONTROL FRAMEWORK FOR SWARMS OF AUTONOMOUS SURFACE VEHICLES

Diana Spears, University of Wyoming
Charles Frey, Harbor Branch Oceanographic Institution
Dimitri Zarzhitsky, University of Wyoming
William Spears, University of Wyoming
Christer Karlsson, University of Wyoming
Brian Ramos, Harbor Branch Oceanographic Institution
Jerry Hamann, University of Wyoming
Edith Widder, Ocean Research
and Conservation Association

ANALYSIS OF HORIZONTAL ZIGZAG MANOEUVRING TRIALS FROM MUN EXPLORER AUV

Manoj Issac, Memorial University of Newfoundland
Sara Adams, Memorial University of Newfoundland
Neil Bose, University of Tasmania
Christopher Williams, National Research Council
of Canada
Ralf Bachmayer, Memorial University of Newfoundland
Tristan Crees, International Submarine Engineering Ltd

FULLY COUPLED 6 DEGREES-OF-FREEDOM CONTROL OF AUTONOMOUS UNDERWATER VEHICLES

Matthew Kokegei, Flinders University
Fangpo He, Flinders University
Karl Sammut, Flinders University

ASYMPTOTIC DIVING CONTROL METHOD FOR TORPEDO-TYPE UNDERACTUATED AUVS

Ji-Hong Li, MOERI/KORDI
Pan-Mook Lee, MOERI/KORDI

Thursday, September 18 (13h30-15h00) Room 203

Ocean Observing Technology 2

Co-Chairs: Adrian Woodroffe, OceanWorks
International
Steve Holt, Noblis, Inc.

POWER DELIVERY TO SUBSEA CABLED OBSERVATORIES

Adrian Woodroffe, OceanWorks International
Michael Wrinch, Hedgehog Technologies Inc
Steve Pridie, OceanWorks International

DEEP SEA UNREPEATED VIDEO TRANSMISSION SYSTEM OVER 10 KM COAXIAL TOW CABLE BASED ON SHDSL

Hai Yu, Hangzhou Dianzi University
Jingbiao Liu, Hangzhou Dianzi University
Wenyu Cai, Hangzhou Dianzi University

CONNECT OR TERMINATE: HOW CONOPS DRIVES DESIGN OF SUBSEA NETWORK SYSTEMS

Michael Slater, SAIC
Jennifer Snyder, SAIC

Thursday, September 18 (13h30-15h00) Room 204B

Unmanned Vehicles: Cooperative Vehicles

Co-Chairs: Joseph Curcio, MIT

AUTONOMOUS COOPERATION OF HETEROGENEOUS PLATFORMS FOR SEA-BASED SEARCH TASKS

Andrew Shafer, MIT
Michael Benjamin, MIT and NAVSEA
John Leonard, MIT
Joseph Curcio, MIT

IMPLEMENTATION AND TEST OF ISIMI100 AUV FOR A MEMBER OF AUVS FLEET

Filll-Youb Lee, MOERI, KORDI
Bong-Huan Jun, MOERI, KORDI
Pan-Mook Lee, MOERI, KORDI
Kihun Kim, MOERI, KORDI

A PATH PLANNING CONTROL STRATEGY FOR SEARCH-CLASSIFY TASK USING MULTIPLE COOPERATIVE UNDERWATER VEHICLES

Yueyue Deng, Florida Atlantic University
Pierre-Philippe Beaujean, Florida Atlantic University
Edgar An, Florida Atlantic University
Edward Carlson, Florida Atlantic University

STUDY ON ADAPTIVE CONTROL OF THE PROPELLING AND TURNING MANOEUVRE OF AN AUTONOMOUS WATER VEHICLE FOR OCEAN OBSERVATION

Jianxin Chu, Shanghai Maritime University
Wei Gu, Shanghai Maritime University
Xiaoya Chen, Shanghai Maritime University

Thursday, September 18 (13h30-15h00) Room 205A

Oceanographic Instrumentation and Sensors 2

Co-Chairs: Neil Cater, Memorial University
of Newfoundland
Robert Tyce, Univ. of Rhode island \ NBC

SMART OCEAN SENSORS – WEB ENABLED OCEAN SENSORS FOR AQUACULTURE

Neil Cater, Memorial University of Newfoundland

LOW POWER CONTROL SYSTEMS FOR MICROBIAL FUEL CELL BATTERIES

Robert Tyce, Univ. of Rhode island \ NBC
Kenneth Critz, Univ. of Rhode island \ NBC
Jeffrey Book, Naval Research Lab
Leonard Tender, Naval Research Lab

PROGRESS IN DEVELOPING A DEVICE FOR MEASURING HEAT FLUX FROM THE HYDROTHERMAL VENT IN DEEP OCEAN USING ACOUSTIC METHOD

Huachen Pan, Hangzhou Dianzi University
Ying Chen, Hangzhou Dianzi University
Jie Mao, Hangzhou Dianzi University
Wei Fan, Hangzhou Dianzi University
Yiwen Pan, Zhejiang University
Youfeng Wu, Hangzhou Dianzi University
Minzhong Wu, Hangzhou Dianzi University

SURFACE CURRENT MAPPING IN THE LOWER CHESAPEAKE

Larry Atkinson, Center for Coastal Physical
Oceanography
Teresa Garner, CCPO
Jose Blanco, CCPO

TIME SERIES MEASUREMENTS OF ATMOSPHERIC AND OCEANIC CO₂ AND OXYGEN IN THE WESTERN GULF OF MAINE

Shawn Shellito, University of New Hampshire
James Irish, University of New Hampshire
Douglas Vandemark, University of New Hampshire
Stacy Maenner, NOAA
Noah Lawrence-Salvas, NOAA
Chris Sabine, NOAA

Thursday, September 18 (13h30-15h00) Room 205C

Physical Oceanographic Data Analysis and Forecasting

Co-Chairs: Paulo Oliveira, IST/ISR

WAVE FORECASTING IN PRINCE WILLIAM SOUND (ALASKA)

Gaurav Singhal, Texas A & M University
Vijay Panchang, Texas A & M University

ANALYTICAL TECHNIQUES FOR THE CALCULATION OF LEEWAY AS A BASIS FOR SEARCH AND RESCUE PLANNING

John Morris, SAIC
Vladimir Osychny, SAIC
A. Turner, US Coast Guard R&D

BATHYMETRIC DATA FUSION: PCA BASED INTERPOLATION AND REGULARIZATION, SEA TESTS, AND IMPLEMENTATION

Luís Gomes, IST/ISR
Paulo Oliveira, IST/ISR

Thursday, September 18 (13h30-15h00) Room 206A

Acoustic Communication Processing 5

Co-Chairs: Baosheng Li, University of Connecticut
Patricia Carrascosa, MIT

FURTHER RESULTS ON MIMO-OFDM UNDERWATER ACOUSTIC COMMUNICATIONS

Baosheng Li, University of Connecticut
Jie Huang, University of Connecticut
Shengli Zhou, University of Connecticut
Keenan Ball, Woods Hole Oceanographic Institution
Milica Stojanovic, MIT
Lee Freitag, Woods Hole Oceanographic Institution
Peter Willett, University of Connecticut

ADAPTIVE MIMO DETECTION OF OFDM SIGNALS IN AN UNDERWATER ACOUSTIC CHANNEL

Patricia Carrascosa, MIT
Milica Stojanovic, MIT

MULTICARRIER SPREAD SPECTRUM FOR COVERT ACOUSTIC COMMUNICATIONS

Paul van Walree, TNO
Geert Leus, TU Delft
Erland Sangfelt, FOI

COVERT UNDERWATER COMMUNICATIONS WITH MULTIBAND OFDM

Geert Leus, Delft University of Technology
Paul van Walree, TNO
Jeroen Boschma, TNO
Claudio Fanciullacci, Teleport Eutelsat
Hans Gerritsen, Moog FCS
Paolo Tusoni, Value Team

Thursday, September 18 (13h30-15h00) Room 206B

Automatic Control

Co-Chairs: Dimitra Panagou, National Technical
University of Athens

POSITIONING CONTROL OF AN UNDERACTUATED SURFACE VESSEL

Aníbal Matos, Faculdade de Engenharia
da Universidade do Porto
Nuno Cruz, University of Porto

STABILIZATION OF AN UNDERACTUATED UNDERWATER VEHICLE IN THE PRESENCE OF UNKNOWN DISTURBANCES

Dimitra Panagou, National Technical University of Athens
George Karras, National Technical University of Athens
Kostas Kyriakopoulos, National Technical
University of Athens

SYNCHRONIZATION PATH FOLLOWING CONTROL OF MULTIPLE UNDER-ACTUATED MARINE CRAFTS

Jawhar Ghommam, MECA
Oscar Calvo, University of the Balearic Islands
Alejandro Rozenfeld, Imedeia/University
of the Balearic Islands

Thursday, September 18 (13h30-15h00) Room 208A

Ropes and Tension Members

Co-Chairs: John Flory, Tension Technology International
Evan Zimmerman, Delmar Systems, Inc.

FIBER ROPE INSPECTION AND RETIREMENT GUIDES

John Flory, Tension Technology International
Hank McKenna, Tension Technology International

SOME RECENT DEVELOPMENT OF ROPE TECHNOLOGIES? FURTHER ENHANCEMENT OF HIGH PERFORMANCE SYNTHETIC ROPES

Justin Gilmore, Samson Rope Technologies
Danielle Stenvers, Samson Rope Technologies
Rafael Chou, Samson Rope Technologies

THE USE OF HMPE MOORING LINES IN DEEPWATER MODU MOORING SYSTEMS

Robert Garrity, Delmar Systems, Inc.
Bill Fronzaglia, DSM

AN INVESTIGATION OF VIV RESPONSE OF A STEEL CATENARY MODEL

John Niedzwecki, Texas A & M University
Geir Moe, Norwegian Institute of Science
and Technology

Thursday, September 18 (13h30-15h00) Room 302AB

Acoustic Communication Processing 6

Co-Chairs: Geoffrey Edelson, BAE Systems E&IS
Urbashi Mitra, University of Southern
California

UNDERWATER ACOUSTIC SINGLE AND MULTI-USER DIFFERENTIAL FREQUENCY HOPPING COMMUNICATIONS

Dianne Egnor, BAE Systems E&IS
Luca Cazzanti, Applied Physics Lab
– University of Washington
Julia Hsieh, Applied Physics Lab
– University of Washington
Geoffrey Edelson, BAE Systems E&IS

TRANSMIT/RECEIVE FILTER OPTIMIZATION FOR DOUBLY-SELECTIVE UNDERWATER ACOUSTIC CHANNELS

Alan Barbieri, Università di Parma
Giuseppe Caire, University of Southern California
Urbashi Mitra, University of Southern California

MULTI-CHANNEL COMBINING AND EQUALIZATION FOR UNDERWATER ACOUSTIC MIMO CHANNELS

Aijun Song, University of Delaware
Mohsen Badiy, University of Delaware
Vincent McDonald, Space and Naval Warfare
Systems Center

STUDENT POSTER PROGRAM

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 under graduate students of any tertiary level university or college worldwide. The program is supported by a grant from the US Navy Office of Naval Re-search.

The posters will be judged by a panel of judges and prizes will be awarded at the Conference Banquet. The posters will be on display in the Exhibition area throughout the OCEANS Conference. They will be on display from 2h00 to 5h00 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:

TERRAIN BASED NAVIGATION FOR UNDERWATER VEHICLES USING SIDE SCAN SONAR IMAGES

Severin Stalder, University of Tokyo/ Swiss Federal Institute of Technology

Tamaki Ura, University of Tokyo

Hannes Bleuler, Swiss Federal Institute of Technology Lausanne

INCREASING SHIP ROLL STABILITY BY USING ANTI-ROLLING TANKS

Tuan Phan Anh, Tokyo University of Marine Science and Technology

Kuniaki Shoji, Tokyo University of Marine Science and Technology

Kiyokazu Minami, Tokyo University of Marine Science and Technology

Shigeo Mita, Tokyo University of Marine Science and Technology

MODELLING TIDAL TURBINES

Naomi Turner, The Robert Gordon University

Alan Owen, The Robert Gordon University

Mamdud Hossain, The Robert Gordon University

AUTOMATED QUANTIFICATION OF GRADIENT DEFINED FEATURES

Tom Fedenczuk, University of Hawaii

OIL SPILL CONTINGENCY PLANNING USING LASER FLUOROSENSORS AND WEB-BASED GIS

Maya Jha, University of Calgary

TURBULENCE : CHARACTERISTICS AND ITS IMPLICATIONS IN TIDAL CURRENT ENERGY DEVICE TESTING.

Oghenevworí Okorie, The Robert Gordon University

STUDY ON KEY TECHNOLOGIES OF CONSTRUCTION OF MARINE GEOMAGNETIC FILED MODEL BASED ON POLYNOMIAL METHOD

Shengping Wang, Wuhan University

Jianhu Zhao, Wuhan University

Yongting Wu, Wuhan University

FAST PHYTOPLANKTON CLASSIFICATION FROM EMISSION FLUORESCENCE SPECTRA BASED ON SELF-ORGANIZING MAPS

Ismael Aymerich, Unidad de Tecnología Marina (UTM-CSIC)

Jaume Piera, Unidad de Tecnología Marina (UTM-CSIC)
Aureli Soria-Frisch, Universitat Pompeu Fabra

SINS INITIAL ALIGNMENT METHOD USING ROBUST FILTERING FOR TOWED OCEAN BOTTOM MAGNETOMETER

Xue Zhang, Hangzhou Dianzi University

De Huang, Hangzhou Dianzi University

Jing Liu, Hangzhou Dianzi University

METHODOLOGY FOR MODELLING TIDAL TURBINE CHARACTERISTICS

Emma Robinson, University College Dublin

Gerald Byrne, University College Dublin

VISITOR INTERACTIONS WITH 3-D VISUALIZATIONS ON A SPHERICAL DISPLAY AT A SCIENCE MUSEUM

Céleste Barthel, Oregon State University

Shawn Rowe, Oregon State University

A STUDY OF ANNULUS LUBRICATION FOR OIL WELL COMPLETION USING SCALE MODEL TESTS

Morgan Adams, Centre for Research in Energy and the Environment

Naomi Turner, Centre for Research in Energy and the Environment

Pat Pollard, Centre for Research in Energy and the Environment

SHALLOW WATER HEIGHT MAPPING WITH INTERFEROMETRIC SYNTHETIC APERTURE SONAR

Sergio Silva, University of Porto

Sergio Cunha, University of Porto

Aníbal Matos, University of Porto

Nuno Cruz, University of Porto

UNMANNED SURFACE VEHICLES FOR UNDERGRADUATE ENGINEERING EDUCATION

Joseph Holler, Franklin W. Olin College of Engineering

Andrea Striz, Franklin W. Olin College of Engineering

Stephen Longfield, Franklin W. Olin College of Engineering

Katherine Murphy, Franklin W. Olin College of Engineering

Brian Bingham, Franklin W. Olin College of Engineering

DEVELOPMENT AND INITIAL TESTING OF A SWATH BOAT FOR SHALLOW-WATER BATHYMETRY

Paul Mahacek, Santa Clara University

Todd Berk, Santa Clara University

Andrew Casanova, Santa Clara University

Christopher Kitts, Santa Clara University

William Kirkwood, Monterey Bay Aquarium Research Institute

Geoff Wheat, University of Alaska

PASSIVE BROADBAND SOURCE LOCALIZATION IN SHALLOW-WATER MULTIPATH ACOUSTIC CHANNELS

Jeffrey Rogers, Duke University

Jeffrey Krolik, Duke University

STRAY-LIGHT CORRECTION OF IN-WATER ARRAY SPECTRORADIOMETERS. EFFECTS ON UNDERWATER OPTICAL MEASUREMENTS

Elena Torrecilla, Marine Technology Unit (UTM-CMIMA)

Sergi Pons, Marine Technology Unit (UTM-CMIMA)

Meritxell Vilaseca, Centre de Desenvolupament de Sensors, Instrumentació i Sistemes (CD6-UPC)

Jaume Piera, Marine Technology Unit (UTM-CMIMA)

Jaume Pujol, Centre de Desenvolupament de Sensors, Instrumentació i Sistemes (CD6-UPC)

DIVING BEHAVIOR OF FEMALE LOGGERHEAD TURTLES (CARETTA CARETTA) DURING THEIR INTERNESTING INTERVAL AND AN EVALUATION OF THE RISK OF BOAT STRIKES

Jacob Sobin, Duke University

Tony Tucker, Mote Marine Laboratory

INTERPOLATION BASED CHANNEL ESTIMATION METHODS FOR DS-CDMA SYSTEMS IN RAYLEIGH MULTIPATH CHANNELS

Karim Ouertani, TELECOM Bretagne

Samir Saoudi, TELECOM Bretagne

Mahmoud Ammar, ENIT

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EXHIBITOR PROFILES

AANDERAA INSTRUMENTS, INC.

BOOTH 412

SEAGUARD® host for Underwater Observation Systems. New in 2008 AADI Wave & Tide Sensor and Real-Time data Collector for networked observatories. AADI continues to produce advanced commercially available Remote Underwater Observation products. SEAGUARD® supports an expanding line of underwater and atmospheric measurements. Trust AADI to supply robust instruments for long term observations of the marine environment.

Email: ivan.victoria@aadi.no

Web: www.aadi.no

ALEC ELECTRONICS CO., LTD.

BOOTH 315, 414

Alec Electronics is the leading Japanese maker of oceanographic and hydrographic instruments. At MTS/IEEE Oceans 2008 we highlight RINKO, the world's fastest DO sensor (1-sec response); Multi-Exciter, a fluorometer with eight wavelengths for harmful algae classification; and Infinity EM-Deep, a current meter that delivers accurate measurements in clear water conditions.

Email: alec@rocklandocean.com

Web: www.alecvictoria.com

AMERICAN METEOROLOGICAL SOCIETY

BOOTH 706

The American Meteorological Society Education Program promotes the teaching of atmospheric, oceanographic and hydrologic sciences through pre-college teacher training and instructional resource material development. It also promotes instructional innovation at the introductory college course level, hence the K-13 designation for the program. All AMS programs promote diversity in the geosciences.

Email: onlinewx@ametsoc.org

Web: www.ametsoc.org

APPLIED ACOUSTICS

BOOTH 308

AAE's extensive product range includes the innovative subsea USBL tracking system, Easytrak, a variety of positioning and release beacons, and seismic systems for sub-bottom profiling. All the products are designed and built in Great Yarmouth, UK and are in worldwide use with many commercial, military and research organizations.

Email: general@appliedacoustics.com

Web: www.appliedacoustics.com

AQUATIC INFORMATICS

BOOTH 214

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.

Email: nat@aquaticinformatics.com

Web: www.aquaticinformatics.com

ASL ENVIRONMENTAL SCIENCES

Booth 303

ASL specializes in physical oceanography. Products include the Ice Profiler – measures ice-keel depths; Acoustic Water Column Profiler – monitors the presence and location of zooplankton, fish, or sediments; and the IRIS – data logger for Imagenex 881A Sonar. Consulting services include ice studies, flow and wave measurement and analysis.

Email: asl@aslenv.com

Web: www.aslenv.com

AXYS TECHNOLOGIES, INC

BOOTH 203

AXYS Technologies Inc. (AXYS) is a Canadian company with over 30 years experience in the design, manufacture and installation of remote environmental monitoring systems worldwide. Headquartered in British Columbia, AXYS is an international leader in environmental technologies for both marine and terrestrial applications. AXYS applies its extensive knowledge and experience to freshwater, marine, and land-based monitoring stations that measure oceanic and atmospheric parameters. AXYS systems and solutions utilize proven technology related to a wide range of remote environmental applications.

Email: info@axys.com

Web: www.axystechnologies.com

CANAL GEOMATICS

BOOTH 705

Canal Geomatics Inc. offers the most technologically advanced GPS, Heading, Inertial and Attitude solutions to the ocean science industry. Our always in stock solutions from NovAtel, Hemisphere GPS and Magellan Professional are rapidly deployed to the most demanding environments around the world where high accuracy and reliability is a must.

Email: sales@canalgeomatics.com

Web: www.canalgeomatics.com

CHELSEA TECHNOLOGIES GROUP

BOOTH 309

Developing and manufacturing a range of sensors, tow vehicle & acoustic systems for monitoring and recording environmental parameters in reservoirs, rivers, estuaries, the open sea and the deep ocean. Come by and see the new FASTtracka MkII and TriLux mini multi-wavelength Fluorimeters.

Web: www.chelsea.co.uk

CIDCO – INTERDISCIPLINARY CENTRE

FOR THE DEVELOPMENT OF OCEAN MAPPING

BOOTHS 813, 815, 912, 914

CIDCO's aim is to promote marine geomatics sciences and technologies to industrial, governmental and academic partners in North America. With surveying facilities CIDCO can experiment new technologies and provide support on marine data acquisition methods and technologies as well as data basing, visualisation, interpretation and dissemination.

Web: www.cidco.ca

CLS AMERICA INC.

BOOTH 814

CLS America Inc. provides Argos and Iridium satellite services for global data and location reporting. Drifting buoys, profiling floats and other oceanographic platforms are monitored worldwide. Low power transmissions enable long-term autonomous operation. New features include two-way communication, increased data transmission rate and fully customized access to data and results.

Email: userservices@clsamerica.com

Web: www.clsamerica.com

COBHAM TRACKING & LOCATING (NOVA SCOTIA)

BOOTH 605

Asset Recovery, SAR, Argos, Novatech Beacons, Argos Transmitters, SAR products.

Email: sdonelle@cobhamtl.com

Web: www.cobhamtl.com

CODAOCTOPUS

BOOTH 308

Specialist in underwater technologies for imaging, mapping, survey and defence, CodaOctopus supplies a range of geophysical survey solutions and 3D real-time imaging. The Octopus F180series of precision motion sensors now includes a new precalibrated mounting unit, whilst the feature-rich Coda DAseries of geophysical acquisition systems boasts a new compact form.

Email: salesamericas@codaoctopus.com

Web: www.codaoctopus.com

CORPEX – LOWER ST-LAWRENCE REGION

EXPORT PROMOTION CORPORATION

BOOTH 813, 815, 912, 914

The mission of the Export Promotion Corporation of the Lower St-Lawrence (CORPEX BSL) focuses on the development of businesses using specialized services related to training activities, advices and coaching, market development procedures structuring, and export markets strengthening. The COR-PEX BSL can also give you some helpful advices on the identification of potential promising international gaps thus enhancing the economic growth of the entire Lower St-Lawrence region.

Web: www.corpexbsl.ca

DASCO EQUIPMENT

BOOTH 205

DASCO Equipment Inc., (1987) is a Manufacturer's Representative for Marine & Oceanographic equipment throughout Canada. Products include: Teledyne RD Instruments ADCPs, VideoRay & Sub-Atlantic ROVs, BlueView Sonars, Subconn UnderWater connectors, SeaViewer Cameras, Water Level & Wave instrumentation, Acoustic Tracking & Modems.

Email: dasco@eastlink.ca

Web: www.dasco.eastlink.ca

DEEPSEA POWER & LIGHT

BOOTH 207

DeepSea Power & Light has been designing and building state of the art underwater video, lighting, and power systems for 25 years. From wet/dry surface application to the deepest ocean trenches, DeepSea has a product that can take you there. Stop by our booth to see our new line of deepwater LED lights.

Email: sales@deepsea.com

Web: www.deepsea.com

EDO CORP (ITT CORPORATION)

BOOTH 613

We are a producer of piezoelectric transducers. We supply both commercial and military applications from ultrasound to sonar. On December 20, 2007, EDO Corporation merged with ITT Corporation to form a top-ten U.S. defense supplier. Visit us at www.defense.itt.com

Email: John.M.Taylor@itt.com

Web: www.itt.com

ENERGY SALES INC.

BOOTH 804

Energy Sales is a custom battery pack assembly company with facilities in Mountain View, CA, Redmond, WA and Hillsboro, OR. Our specialty is High Energy Custom Battery Packs in all primary and secondary chemistries for use in Oceanographic, Aviation, Instrumentation and Medical applications to name but a few.

Email: tim@energy-sales.com

Web: www.energy-sales.com

FALMAT

BOOTH 500

An internationally recognized manufacturer of custom cables for all marine and oceanographic applications. Cable solutions for ROV, magnetometer, diver, video, lighting, side scan sonar, transducer and fiber optic requirements. A leading manufacturer of braided haired fairings. Falmat XtremeGreen inspection cables are tested and proven worldwide as the premier choice in harsh environments. Specialty manufacturing capabilities include single and multilayered steel armored cables.

Email : sales@falmat.com

Web : www.falmat.com

GEOMETRICS

BOOTH 715

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.

Email : sales@geometrics.com

Web : www.geometrics.com

GOVERNMENT OF CANADA

BOOTH 901 AREA

The Government of Canada is proud to support and participate in Oceans 2008. 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.

Web : www.canada.gc.ca

St. Lawrence Global Observatory

The St. Lawrence Global Observatory is an initiative to provide quick and transparent integrated access to the data and information from a network of federal, provincial, academic and other organizations for the sustainable management of the St. Lawrence global ecosystem by implementing and managing an Internet portal for dissemination accurate information.

Email : Joanne.Hamel@dfo-mpo.gc.ca

Web : <http://slgo.ca>

Canada Economic Development – Quebec Regions

Canada Economic Development for Quebec Regions (CED-Q) has supported the development of a pole of excellence in maritime science and technology in Quebec maritime regions and has contributed to the establishment of new companies in this sector. This has led to research and technology transfer in marine biotechnologies (nutraceuticals, cosmeceuticals and environment), maritime technologies (shipbuilding, electronic navigation equipment and maritime information), aquaculture and harvesting and marine products processing. CED-Q also supports development of the international cruise ship industry in an effort to revitalize Quebec communities.

Web : www.dec-ced.gc.ca

Atlantic Canada Opportunities Agency

The Atlantic Canada Opportunities Agency is the federal government department responsible for helping to build economic capacity in the Atlantic Provinces by working with the people of the region – in their communities, through their institutions and with their local and provincial governments and businesses – to create jobs and enhance earned incomes.

Web : www.acoa-apeca.gc.ca

Canadian Space Agency

Established in 1989, the Canadian Space Agency coordinates all civil space-related policies and programs on behalf of the Government of Canada. The Agency directs its resources and activities through four key thrusts: Earth Observation, Space Science and Exploration, Satellite Communications, and Space Awareness and Learning. The CSA leverages international collaboration to promote industrial development and world-class scientific research for the benefit of humanity.

Web : www.space.gc.ca

NRC Institute for Ocean Technology

NRC-IOT is Canada's national centre for ocean technology research and development. Its mandate is to develop and transfer the technology solutions required by private and public sector partners and clients. Its research program concentrates on requirements in marine safety, Arctic operations, ocean observation and performance evaluation.

Email : noel.murphy@nrc.ca

Web : www.iot-ito.nrc-cnrc.gc.ca

NRC Industrial Research Assistance Program (NRC-IRAP)

The NRC Industrial Research Assistance Program provides a range of technical and business advisory services along with financial support to small and medium-sized enterprises (SMEs). The program is delivered by a network of 235 Industrial technology advisors in 100 communities across the country. NRC-IRAP supports innovative research and development and helps SMEs become commercialization-ready with new products and services.

Web : www.irap-pari.nrc-cnrc.gc.ca

British Columbia Innovation Council

The British Columbia Innovation Council (BCIC) creates conditions for top-tier innovation and commercialization within B.C. In partnership with government, industry and academia, BCIC advances B.C. as a global competitor in key innovation areas such as the ocean sector. BCIC is a Crown agency of the Province of British Columbia.

Web : www.bcic.ca

Western Economic Diversification Canada

On Canada's pacific coast, Western Economic Diversification Canada (WD) is a long time supporter of British Columbia entrepreneurs within the oceans technology sector. Our investments create skilled employment opportunities for western Canadians, help communities compete in the knowledge-based economy, and diversify the region's overall economic base.

Maurice Lamontagne Institute, Fisheries and Oceans Canada, Mont Joli

The Maurice Lamontagne Institute plays a vital supporting role for coastal communities through its various activities, providing essential information that is used to increase understanding of aquatic ecosystems and manage them more effectively, assess the impact of human activities on these ecosystems, and ensure the safe use of waterways.

Email : ariane.plourde@dfo-mpo.gc.ca

Web : www.qc.dfo-mpo.gc.ca/iml/

Canadian Centre for Ocean Gliders Inc.

The centre's mandate is to promote the use of Ocean Gliders in Canada and abroad in collaboration with Canadian Industry. CCOG provides gliders to partners and support at minimal costs and assists partners as needed to carry out glider projects.

Email : ccog@shaw.ca

DRDC Valcartier

Established in the Québec region since 1945, Defence R&D Canada – Valcartier is one of seven research centres operated by Defence R&D Canada, an agency of the Department of National Defence. DRDC Valcartier's mandate is to enhance defence and security capabilities in Canada through research and development in three sectors of excellence (optronic systems, information systems and combat systems) and provide Canadian Forces with expertise that will guarantee their operational success.

Email : info-valcartier@drdc-rddc.gc.ca

Web : www.valcartier.drdc-rddc.gc.ca

Ocean Renewable Energy Group

The Ocean Renewable Energy Group (OREG) aligns industry, academia and government to ensure that Canada is a leader in providing ocean energy solutions to a world market. OREG is a national organization, with over 95 Canadian and international members.

Web : www.oreg.ca

Ocean Science and Technology Partnership

The Oceans Science and Technology Partnership (OSTP) is a network of networks. It is an independent, federally incorporated, non-profit corporation developed with the support of Canada's Oceans Action Plan (OAP). The OSTP has been formed to provide a voice for the oceans science and technology community. It is an effective resource to promote and oversee the implementation of a sectoral strategy in the area of oceans science and technology.

Email : bfay@hfx.eastlink.ca

Web : www.ostp-psto.ca

COIN Pacific Ocean Technology Inc.

COIN Pacific is an independent non-profit corporation. It is the BC Ocean Technology Cluster organization whose mandate is to encourage partnership and teaming of Ocean Technology developers and Ocean users thereby encouraging innovation in Ocean activities and improving productivity and economic development.

Email : paul.lacroix@shaw.ca

GOVERNMENT OF NEWFOUNDLAND & LABRADOR BOOTHS 600, 611

Thirteen Atlantic Canadian ocean technology companies are showcasing their technologies and seeking global partnerships/opportunities. Technologies range from environmental technology, acoustics, marine consulting, maritime defense, ocean exploration and ocean monitoring systems.

Email : doneill@gov.nf.ca

Web : www.nlbusiness.com

GRI SIMULATIONS INC. (NFLD GROUP) BOOTH 602

ROV Simulators & Training.

Email : russ.pelley@grisim.com

Web : www.grisim.com

H2OPS BOOTH 202

H2Ops is the leading bi-monthly publication for underwater professionals worldwide. Each issue covers latest industry news and new products as well as news from the Society for Underwater Technology and the Australian Diver Accreditation Scheme and topical features. For more information and back issues please visit our web site.

Email : ben@dsmedialtd.com

Web : www.dsmedialtd.com

HAWBOLDT INDUSTRIES LIMITED (NOVA SCOTIA)

BOOTH 609

Designers and manufacturers of custom winches and deck gear for Defense, Oceanographic and Fisheries applications.

Email: dan.gibson@hawboldt.ca

Web: www.hawboldt.ca

HELZEL MESSTECHNIK GMBH

BOOTH 305

HELZEL is the TÜV certified manufacturer of the well known remote ocean sensing system WERA. The shore-based WERA provides reliable data of ocean surface currents and significant wave height and direction over long distances (> 200 km) with outstanding spatial and temporal resolution for VTS, SAR and environmental protection applications.

Email: wera@helzel.com

Web: www.helzel.com

HYDRO INTERNATIONAL (REED PUBLISHING)

BOOTH 212

Web: www.hydro-international.com

IMAGENEX TECHNOLOGY CORP.

BOOTHS 709, 808

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. The company's products include multibeam, mechanical scanning, and sidescan sonars.

Email: Imagenex@shaw.ca

Web: www.imagenex.com

INSTITUT MARITIME DU QUÉBEC (IMQ)

BOOTHS 813, 815, 912, 914

Founded in 1944, the Institut maritime du Québec (IMQ) is the most important maritime teaching establishment in Canada. The IMQ trains a skilled workforce in five specialties: naval architecture, navigation, marine engineering, professional diving and transport logistics. The institute supports research and development. Training is in accordance with the STCW Convention and Transport Canada.

Web: www.imq.qc.ca

INTERNATIONAL OCEAN SYSTEMS

BOOTH 623

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.

Email: astrid@divermag.co.uk

Web: www.intoceansys.co.uk

INTERNATIONAL TRANSDUCER CORPORATION

BOOTH 512

International Transducer Corporation (ITC) is a leading manufacturer of acoustic transducers for: ship, submarine sonar, oceanographic survey, seismic exploration, marine life research, medical devices and industrial proximity sensing. ITC transducers are used in defense, communication, navigation control and information gathering applications. ITC's facilities incorporate pressure tanks and sophisticated test equipment.

Email: lizzo@channeltech.com

Web: www.itc-transducers.com

IROBOT

BOOTH 400

iRobot is a global leader in practical robots. Founded in 1990, iRobot designs and builds tactical mobile robots that provide enhanced situational awareness, increase mission success, and keep troops out of harm's way. In addition to our ground tactical mobile robots, iRobot commercializes Autonomous Underwater Vehicle (AUV) Seaglider technology, expanding our robot line into underwater territory.

Email: jllessar@irobot.com

Web: www.irobot.com

ISMER— INSTITUT DES SCIENCES DE LA MER DE RIMOUSKI

BOOTHS 813, 815, 912, 914

Located on the campus of the Université du Québec à Rimouski and composed of researchers and specialists whose expertise covers the main areas of coastal oceanography; ISMER offers a diverse and integrated research programme. Therefore students have access to a variety of expertise.

Web: www.ismer.ca

JASCO RESEARCH LTD (NOVA SCOTIA)

BOOTH 611A

Oceanographic instrumentation, acoustics consulting.

Email: scott@jasco.com

Web: www.jasco.com

JOUBEH TECHNOLOGIES (NOVA SCOTIA)

BOOTH 611B

Global satellite data solutions, data delivery services, hardware data processing, data storage and engineering services.

Email: paul@joubeh.com

Web: www.joubeh.com

KISTERS NORTH AMERICA INC

BOOTH 615

KISTERS' has been providing data management solutions to agencies around the world since 1987. KISTERS' core business is the implementation of Time Series Data Management Systems for Environmental, Hydrological, and Energy disciplines. Kisters' software is currently installed at many of the largest hydroelectric power based utilities in North America and the world.

Email: Brad.Stcyr@kisters.net

Web: www.kisters.net

KONGSBERG MARITIME

BOOTHS 513, 515, 612, 614

Kongsberg Maritime is a global supplier of systems for underwater positioning and communication, hydrography and shallow seismic, sonars for offshore and defense markets, underwater cameras, fisheries and fisheries research, as well as AUVs. Kongsberg Maritime delivers ship systems for DP and navigation, automation, level sensors, training simulators and position reference.

Email: john.gillis@kongsberg.com

Web: www.km.kongsberg.com

LAVAL UNIVERSITY

BOOTH 702

Among Canada's top research universities, Université Laval is a national leader in oceanography thanks to its strategic centre Québec-Océan funded by the Quebec Government. It hosts the Network of Centres of Excellence ArcticNet and the Research Icebreaker Amundsen, which spearhead Canada's contribution to the International Polar Year (2007-2009).

Web: www.ulaval.ca

LINKQUEST

BOOTH 712

LinkQuest Inc. is a leading manufacturer of precision acoustic instruments. Our innovative Broadband Acoustic Spread Spectrum (BASS) Technology sets new standard for acoustic communication and positioning. LinkQuest is the dominant supplier of Underwater Acoustic Modems in the world. LinkQuest's TrackLink systems are the world's best selling USBL tracking systems. LinkQuest's FlowQuest Acoustic Current Profilers and NavQuest Doppler Velocity Logs (DVL) provide highly competitive solutions for current profiling or precision underwater navigation applications.

Email : sales@link-quest.com

Web : www.link-quest.com

LOCKHEED MARTIN

BOOTHS 402, 404

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.

Email : tracy.l.mcneil@lmco.com

Web : www.lockheedmartin.com

M3 SONAR INC. (NFLD GROUP)

BOOTH 604

Underwater acoustics design & development services.

Email : Gary.dinn@m3c.ca

Web : www.m3c.ca

MACARTNEY OFFSHORE

BOOTH 505

MacArtney Offshore, Inc. is a systems integrator specializing in design, manufacture, sales and service of a wide variety of underwater technology systems. We have been serving the underwater technology market for 30 years. Our Houston office supplies a wide variety of products and services from fairly simple cable and connector assemblies to advanced

fiber optic systems, including subsea video/data multiplexers, Focal slip ring repairs, winches, umbilical terminations (including lift terminations) and engineering services.

Email : mkm@macartney.com

Web : www.macartney.com

MARINE TECHNOLOGY REPORTER

BOOTH 204

Description : MTR combines the world's largest audited circulation with the world's largest e-news service & website and North Americas only international trade show OceanTech Expo, making Marine Technology Reporter the global leader for information on underwater and ocean science technology. No other media source is close in comparison.

Email : Howard@marinelink.com

Web : www.seadiscovery.com

MARINE TECHNOLOGY SOCIETY (MTS)

BOOTH 210

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.

Email : jeanne.glover@mtsociety.org

Web : www.mtsociety.org

MARITIME INNOVATION (IMAR)

BOOTHS 813, 815, 912, 914

Maritime Innovation, an applied research center, identifies and develops solutions for the marine industry to enhance the competitiveness and efficiency of shipping companies, ports and marine suppliers and stakeholders through innovation. Our research areas are marine security, electronic navigation, underwater interventions, pollution prevention and ships and ports management.

Web : www.imar.ca

MARPORT CANADA INC. (NFLD GROUP)

BOOTH 600

Developer of software defined sonar technology for commercial fisheries, offshore energy, science and defense.

Email : gleyte@marport.com

Web : www.marport.com

MATE CENTER

BOOTH 405

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.

Email : zande@mpc.edu

Web : www.marinetech.org

MATERIALS SYSTEMS INC. (MSI)

BOOTH 301

MSI designs and manufactures custom sonar transducers and arrays for a wide range of applications. MSI's piezo-composite 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.

Email : info@msitransducers.com

Web : www.msitransducers.com

MCGREGOR GEOSCIENCE LTD (NOVA SCOTIA)

BOOTH 603

Marine Geophysical Services, Hydrographic Surveys, Data Interpretation and Processing.

Email : mike.macintyre@mcgregor-geoscience.com

Web : www.mcgregor-geoscience.com

MCLANE RESEARCH LABORATORIES, INC

BOOTH 209

McLane Research Laboratories, Inc. designs, manufactures and sells reliable, autonomous, time-series sampling instruments for physical and biogeochemical ocean research and environmental monitoring. Our samplers collect water in EPA approved bags, filtered samples for harmful algal bloom studies, and large volume water samples for chemical analyses. McLane also manufactures moored profilers for the collection of high-resolution CTD, acoustic currents, dissolved oxygen, turbidity, and fluorometer measurements. We also maintain a product line of glass and steel flotation.

Email : mclane@mclanelabs.com

Web : www.mclanelabs.com

MEASUREMENT TECHNOLOGY NW

BOOTH 703

Measurement Technology NW's rugged, reliable LCI-90 displays and running line tensiometers are used to control and monitor line tension, speed, and payout (cable and chain) in winch systems used for equipment deployment, barge positioning, mooring, towing and ship assist activities, dredging, and wherever accurate and reliable line control is required.

Email : lcj@mtnw-usa.com

Web : www.mtnw-usa.com

METOCEAN

BOOTH 401

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.

Email : emily@metocean.com

Web : www.metocean.com

M.J. STEWART ASSOCIATES INC.

BOOTH 507

M.J. Stewart Associates is the North American distributor of Subconn wet mateable underwater connectors. We also provide a wide range of fiber optic connectors and cable assemblies for underwater use. In addition we design and supply customized solutions for underwater applications.

Email : sales@mjstew.com

Web : www.subconn.com

MULTI-ÉLECTRONIQUE (MTE) INC.

BOOTH 913

Specialized in design and manufacture of on demand electronic product, Multi-Électronique (MTE) Inc. is a leader in the oceanographic equipment field. We developed many

instruments as underwater sound recorder (AURAL), buoy and more. If you cannot find a product to satisfy your needs, we can create it for you.

Email : info@multi-electronique.com

Web : www.multi-electronique.com

MYRIAX

BOOTH 700

Deepen Your Environmental Insight. Eonfusion is powerful software for visualizing, exploring and analyzing environmental data. Offering :

- Analysis and manipulation of time-varying spatial data
- Rich 4D Visualization
- Integration of multiple data sources, types and formats
- Effortless communication and sharing of complex information
- Eonfusion from Myriax, Australia.

Email : chris.malzone@myriax.com

Web : www.myriax.com

NAVAL METEOROLOGY

AND OCEANOGRAPHY COMMAND

BOOTH 200

The Naval Meteorology and Oceanography Command enables the safety, speed and operational effectiveness of the Fleet by illuminating the risks and opportunities for Naval and Joint forces posed by the present and future natural environment. The command's organization includes an operational center, the Naval Operational Oceanography Center, which is aligned to the Navy's major warfare and warfare support areas; three production centers, the Naval Oceanographic Office, Fleet Numerical Meteorology and Oceanography Center and the Naval Observatory; and the Commander, Undersea Surveillance.

Email : cnmocpao@navy.mil

Web : www.navmetoccom.navy.mil

NAVSIM TECHNOLOGY INC. (NFLD GROUP)

BOOTH 608

GPS/Marine Navigation Systems.

Email : lisa@navsim.com

Web : www.navsim.com

NORTEK CANADA (NOVA SCOTIA)

BOOTH 607

Acoustic Doppler current and wave gauges.

Email : eric@nortekusa.com

Web : www.nortekusa.com

NOVA SCOTIA BUSINESS INC.

BOOTHS 600 THROUGH 611

Thirteen Atlantic Canadian ocean technology companies are showcasing their technologies and seeking global partnerships/opportunities. Technologies range from environmental technology, acoustics, marine consulting, maritime defense, ocean exploration and ocean monitoring systems.

Email : giffinpl@gov.ns.ca

Web : www.novascotiabusiness.com

OCEAN INCUBATION

– MARINE TECHNOLOGIES BUSINESS INCUBATOR

BOOTHS 813, 815, 912, 914

Ocean incubation is a non-for-profit business incubator focused on marine/maritime technologies. The mission of Ocean incubation is assisting new early-stage and start-ups companies in marine security and safety, shipping, coastal and harbour management, subsea and hyperbaric operations, oceanic technologies, electronic navigation, ocean mapping and marine geomatic, environment, marine biotechnologies, information and communication technologies.

Web : www.oceanincubation.com

OCEAN NEWS & TECHNOLOGY

BOOTH 502

Ocean News & Technology has been the primary news publication in the ocean industry for more than 25 years, reporting the latest news, trends and technology developments in the global market-place. From Defense, Offshore Oil & Gas, Marine, Ocean Science, Communications and Diving, Ocean News reaches industry leaders around the world, and is now available in digital or print formats.

Email : mjmcduffee@ocean-news.com

Web : www.ocean-news.com

OCEANS '09 BILOXI

BOOTH 915

OCEANS 2009 will feature a top-quality technical program, high-traffic exhibit floor, and many special events. New for this conference is a Career Fair, matching organizations with qualified candidates. Exhibit and patron opportunities are available to promote your agency to local buyers at www.oceans09mtsieebiloxi.org. Welcome Back – it's better than ever!

Email : skingston@roadrunner.com

Web : www.oceans09mtsieebiloxi.org

OCEANS '09 IEEE BREMEN

BOOTH 917

Bremen/Germany were chosen as the venue for the 2009 OCEANS conference primarily because it holds a distinguished position in the area of marine research and technology not only in Germany but also throughout Europe. Along with five marine scientific oriented institutions, many companies are located in Bremen, which hold prominent positions in the marine-technology market. With its conference and trade fair centre in the heart of the town, Bremen offers very good conditions for the successful realization of the event.

Email : oceans09@marum.de

Web : www.oceans09ieeebremen.org

OCEANIC ENGINEERING SOCIETY (OES/IEEE)

BOOTH 208

The Oceanic Engineering Society (OES) of the IEEE seeks to advance the science and technology of Ocean Engineering. Its objectives are scientific, literary, and educational. Stop by the OES booth to learn about the benefits of being a member.

Web : www.oceanicengineering.org

OCEANSERVER

BOOTH 213

OceanServer Technology, Inc. manufactures Li-Ion power solutions, digital compasses and Autonomous Underwater Vehicles (AUVs) for a variety of applications. The Iver2 AUV is a low-cost, simple to operate marine robot for near coastal studies, general research and environmental monitoring.

Email : sales@ocean-server.com

Web : www.ocean-server.com

OCEANWORKS INTERNATIONAL

BOOTH 306

OceanWorks is an international Subsea Solutions Provider. We offer a full range of subsea engineering, fabrication and testing capabilities that meet the highest industry standards. From standard product lines to custom design/build solutions, Ocean-Works provides our clients with the most robust and effective solutions at competitive prices.

Web : www.oceanworks.com

ODOM

BOOTH 207

ODOM has constantly pushed the technological envelope by engineering a sophisticated line of echo sounders and multibeam systems designed to withstand the rigors of hydrographic surveying while incorporating the highest level of technological advances that are second to none.

Email : email@odomhydrographic.com

Web : www.odomhydrographic.com

OEA TECHNOLOGIES INC.

BOOTH 812

OEA Technologies is the Canadian supplier of CO-DAR HF radar systems and is a recognized leader in the provision of Earth-observing satellite consulting services. During Oceans '08, OEA will feature CO-DAR's automated Sea-Sondes, which produce synoptic maps of sea surface currents for operational and scientific purposes.

Email : info@oeatech.com

Web : www.oeatech.com

OMER MANNED SUBMERSIBLES

BOOTH 216

The International Submarine Race (ISR) will have two human powered submarines on display in the exhibit hall. You will be able to see the fastest human powered submarine in the world, OMER 5: top speed of 8.035 knots. Visit the subs and talk to the designers and operators.

OPEN SEAS INSTRUMENTATION INC. (NOVA SCOTIA)

BOOTH 601

Streamlined subsurface buoys, trawl resistant shields, towed multi-net zooplankton systems, data loggers.

Email : dan@openseas.com

Web : www.openseas.com

PAROSCIENTIFIC, INC.

BOOTH 300

Paroscientific manufactures and sells a complete line of high precision pressure instrumentation. Our products are able to provide resolution better than 0.0001% of full scale and typical accuracy of 0.01% of full scale even under difficult environmental conditions. Over 30 full scale pressures are available – from 2 psig to 40000 psia. Absolute, gauge and differential sensors have been packaged in variety of configurations including intelligent transmitters, depth sensors, portable standards, meteorological measurement systems and water level systems.

Email : mooseles@paroscientific.com

Web : www.paroscientific.com

PESCA ENVIRONNEMENT

BOOTHS 813, 815, 912, 914

PESCA Environnement's multidisciplinary team is renowned in such areas as maritime and terrestrial environment since 1991. PESCA Environnement's offers consulting services in fish habitat characterization, marine resource impact assessment, environmental site assessments, contaminated sediment management, environmental monitoring, mapping, protection against erosion, hydrodynamic modeling, scientific diving, and underwater imagery.

Web : www.pescaenvironnement.com

PMI INDUSTRIES, INC.

BOOTH 619

Cable products and engineered solutions to cable problems; reliable terminations and protection accessories (EVERGRIP™ Termination, CABLE-GRIP™ Termination, DAM/BLOK™ Electrical Splice Kit, EVER-FLEX™ 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.

Email : sales@pmiind.com

Web : www.pmiind.com

POLYMER CORPORATION

BOOTH 707

For 25 years Polymer Corporation has manufactured precision plastic parts in low volumes. Our unique Liquid Resin Casting (LRC™) process allows Polymer to manufacture complex plastic parts with low tooling costs, tight tolerances, and excellent cosmetics. Typical marine applications are Electronic Encapsulations, Antennas, Underwater Vehicle Components, Canisters, Rebreather Components, Clear Lenses, and Hand Held Cases.

Email : sales@polymercorporation.com

Web : www.polymercorporation.com

PRAIRIE OCEAN TECHNOLOGIES, INC.

BOOTH 309

Prairie Ocean is the North & South American Representative for the Chelsea Technologies Group. Developing and manufacturing a range of sensors, tow vehicle & acoustic systems for monitoring and recording environmental parameters in reservoirs, rivers, estuaries, the open sea and the deep ocean. Come by and see the new FASTtracka MkII and TriLux mini multi-wavelength Fluorimeters.

Email : andrea@prairieoceantech.com

Web : www.prairieoceantech.com

PROVINCIAL AEROSPACE LTD. (NFLD GROUP)

BOOTH 610

Products/Services – Marine aerial surveillance technology systems integration and support services.

Email : kstoodley@provair.com

Web : www.provair.com

RBR LTD.

BOOTH 314

RBR is a global leader in the oceanographic instrumentation industry, providing competitive and innovative products to the marine and freshwater instrumentation community. RBR designs and manufactures Data Loggers that are highly accurate, submersible down to 10,500m and include a wide range of sensors for CTD and water quality. RBR also offers instrumentation for laboratory or field sites. Applications include oceanography, limnology and polar research in deep oceans, coastal waters, lakes, rivers, permafrost and ice.

Email : info@rbr-global.com

Web : www.rbr-global.com

RESON

BOOTH 714

RESON is the world leader in underwater acoustic systems. RESON's unique series of SeaBat multibeam sonar systems, NaviSound Singlebeam echosounders, PDS2000 survey software and related hydrographic equipment have made RESON a respected partner for customers in the dredging, hydrographic, marine research, naval, and offshore oil & gas sectors.

Email: sales@reson.com

Web: www.reson.com

RIMOUSKI ECONOMIC DEVELOPMENT CORPORATION

BOOTHS 813, 815, 912, 914

SOPER is the economic development corporation of the city of Rimouski, a very dynamic urban area of 50 000 people on the south shore of the St. Lawrence River. The mission of SOPER is to support the implementation in Rimouski of all new applied technology projects, initiatives and businesses such as marine technology, biotechnology, communications, biological resources and environmental survey.

Web: www.promotion-rimouski.org

ROMOR ATLANTIC LIMITED

BOOTHS 207, 209, 308

ROMOR Atlantic Limited is an Oceans Solutions provider exclusively representing and distributing oceanographic and geophysical instrumentation. ROMOR provides our clients with ROMOR Ocean Application Research (ROAR); a team of experts to assist with their integration requirements. Our team has the ability to offer full systems integration, new product development needs, mooring design and deployment, field service and custom training on instrumentation and technology.

Email: sales@romor.ca

Web: www.romor.ca

ROPER RESOURCES

BOOTH 806

Roper Resources Ltd carries a wide range of ocean robotic equipment and sensors. Roper Resources Ltd will be exhibiting the following hardware:

Sensors:

Contros CO2 & CH4 sensors 2K,4K & 6K depth Rated, Lynn T38 Visual Enhancement Technology.

ROVs:

SAAB Seaeye Falcon ROV.

AUVs:

Gavia AUV

Email: Chris@RoperResources.com

Web: www.roperresources.com

SAIC

BOOTH 406, 408

SAIC is a FORTUNE 500® scientific, engineering and technology applications company that uses its deep domain knowledge to solve problems of vital importance to the nation and the world, in national security, energy and the environment, critical infrastructure, and health. SAIC: From Science to Solutions®

Email: tannerdo@saic.com

Web: www.saic.com

SCHOOL OF OCEAN TECHNOLOGY (NFLD GROUP)

BOOTH 606

Contract training for the ocean industries sector including ROV applications

Email: dwight.howse@mi.mun.ca

Web: www.mi.mun.ca

SEA-BIRD ELECTRONICS

BOOTH 800, 802

Sea-Bird Electronics is the leading manufacturer of oceanographic CTDs and water sampling systems. CTDs measure conductivity, temperature and pressure (depth), as well as dissolved oxygen and other variables, enabling oceanographers to determine salinity, density, and other properties contributing to ocean circulation, the function of marine ecosystems, and global climate dynamics.

Email : seabird@seabird.com

Web : www.seabird.com

SEABOTIX, INC.

BOOTH 511

SeaBotix manufactures underwater remotely-operated vehicles 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.

Email : info@SeaBotix.com

Web : www.seabotix.com

SEA CON BRANTNER AND ASSOCIATES, INC.

BOOTH 313

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 underwater connector technology.

Email : gpollock@seaconbrantner.com

Web : www.seacon-us.com

SERDP/ESTCP

BOOTH 304

SERDP and ESTCP are the Department of Defense's environmental technology programs. SERDP and ESTCP fund basic and applied research and development and demonstration/validation of technologies. Of particular interest are demonstrations of mature technologies for detection and removal of munitions underwater and studies of target characterization and environmental phenomenology.

Email : Herbert.Nelson@osd.mil

Web : www.serdp.org & www.estcp.org

SEA TECHNOLOGY MAGAZINE

BOOTH 403

Published monthly for more than 44 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.

Email : seatechads@sea-technology.com

Web : www.sea-technology.com

SHARK MARINE TECHNOLOGIES INC.

BOOTH 307

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 video and imaging equipment, remotely operated vehicles and multiple survey systems. In our services we provide consultation, software development, custom manufacture, equipment rentals and on-site operations.

Email : jhoney@sharkmarine.com

Web : www.sharkmarine.com

SONAR DYNE INTERNATIONAL LTD.

BOOTH 504

Sentinel is the Intruder/Diver Detection Sonar from Sonardyne International Ltd. designed for the protection of marine assets from underwater attack. Small and lightweight, Sentinel can be easily and quickly deployed in a variety of scenarios including: seafloor, jetty or from over the side of a vessel ensuring complete protection. US Navy Tested and proven.

Email: eric.levitt@sonardyne.com

Web: www.sonardyne.com

S.O.N.I.A.

BOOTH 625

The SONIA project from the École de technologie supérieure, entirely composed of volunteer, under-graduate engineering students, is devoted to the development of an Autonomous Underwater Vehicle (AUV). Recent years have seen us consistently ranking in the top three positions with our award winning designs. We are collaborating extensively with local and national industrial groups to develop new prototypes, promoting the use of our partners' technologies.

Email: sonia-gen@googlegroups.com

Web: www.sonia.etsmtl.ca

SONTEK/YSI

BOOTH 201

Recognized as the global leader in water velocity measurement, SonTek/YSI manufactures affordable, reliable acoustic Doppler systems for water velocity measurement in oceans, harbors, rivers, estuaries, and laboratories. Since our invention of the Acoustic Doppler Velocimeter, the SonTek/YSI product line has grown into a diverse, multi-faceted mix of high-technology instrumentation.

Email: inquiry@sontek.com

Web: www.sontek.com

SOPER – UNIVERSITÉ DU QUÉBEC À RIMOUSKI (UQAR)

BOOTHS 813, 815, 912, 914

UQAR is a comprehensive French-language institution of higher education firmly rooted in the local community. Over the years, UQAR is present in various fields of knowledge and is actively involved in many teaching and research partnerships and has developed special expertise in several areas of research that have significantly contributed to the institution's international reputation, notably marine sciences, regional development, and nordicity.

Web: www.uqar.qc.ca

SOUND METRICS CORP.

BOOTH 710

Sound Metrics Corp. is a leading designer and manufacturer of acoustic lens sonar systems for multiple applications and markets. The DIDSON Dual-Frequency Identification Sonar system is available in five different models. All DIDSON Sonar's are made to allow for interchangeable lenses which provide the user with new and unique product capabilities.

Email: jdorsey@oceanmarineinc.com

Web: www.soundmetrics.com

SOUND OCEAN SYSTEMS, INC.

BOOTH 701

Since 1978 Sound Ocean Systems, Inc. has been providing custom engineering and manufacturing solutions for the military, commercial, and research oceanographic industries. Our strengths include data and power buoys, ocean bottom platforms, launch & recovery systems, custom winches and representation of various foreign and domestic oceanographic firms. Engineering services are also available to our customers. Visit our web site for a small selection of our products and services.

Email: inquiries@soundocean.com

Web: www.soundocea.com

SOUTH BAY CABLE

BOOTH 713

Manufacture of Custom Electrical, Optical and Mechanical Cables, celebrating over 50 years 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.

Email: bill@southbaycable.com

Web: www.southbaycable.com

SOUTHCOAST DEVELOPMENT PARTNERSHIP

BOOTHS 213, 312

From Buzzards Bay to Narragansett Bay, SouthCoast is at the center of a unique, world-class marine science technology corridor. For companies considering New England/Massachusetts for business investment, SouthCoast Massachusetts has marine-focused incubators, affordable business parks, generous financial incentives, plentiful/skilled labor and access to university research facilities.

Email: jmenard@umassd.edu

Web: www.southcoastdev.org

SPAWAR SYSTEMS CENTER PACIFIC

BOOTHS 501,503

The Marine Navigation Division of SPAWAR Systems Center Pacific provides advanced navigation solutions for the war fighter. 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.

Email: john.handal@navy.mil

Web: www.spawar.navy.mil/depts/d30/

SUBCONN INC.

BOOTH 509

Subconn is the leading manufacturer of wet mateable electrical connectors for over 25 years. We offer a wide range of rubber molded connectors for a wide range of uses. Our new Data Communication connector system offers 1 GBps data transmission up to 25 meters in length. The Subconn connectors are offered in Standard, Micro, low profile, and power connector series. Special PUR cable assemblies, penetrators and Y molds are available.

Email: sales@mjstew.com

Web: www.subconn.com

TECHNOPOLE MARITIME DU QUÉBEC (TMQ)

BOOTHS 813, 815, 912, 914

The TMQ's mission is to create a stimulating environment for the sustainable development of marine sciences and technologies, the cornerstone for a knowledge-based sea and ocean economy for Quebec's coastal regions, and to ensure these regions become key players at the national and international level.

Web: www.tmq.ca

TELEDYNE MARINE

BOOTHS 407, 409, 506, 508

Teledyne Marine is comprised of eight leading-edge undersea technology companies assembled by Teledyne Technologies, Incorporated. Collectively these companies have over 300 years of experience providing undersea solutions to the defense, off-shore and academic communities. Explore, navigate, connect, measure, communicate and observe the underwater environment with Teledyne Marine's wide array of innovative technologies.

Teledyne RD Instruments

With over 15,000 Doppler products delivered to date, Teledyne RD Instruments is the industry's leading manufacturer of Acoustic Doppler Current Profilers (ADCPs) for high resolution current profiling and wave measurement applications, and Doppler Velocity Logs (DVLs) for precision underwater navigation and diver applications.

Email: rdisales@teledyne.com
Web: www.rdinstruments.com

Teledyne ODI

Teledyne ODI (Ocean Design Inc) is the world leader in subsea electrical, fiber optic, hybrid and high power interconnect systems. ODI's wet and dry mate, harsh environment, high reliability connectors, cable & umbilical terminations and junction boxes are used worldwide for offshore oil and gas, defense, oceanographic and research applications.

Email: marketing@odi.com
Web: www.odi.com

Teledyne Impulse

Teledyne Impulse 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, Teledyne Impulse is your source for the widest range of high quality, cost effective connection solutions.

Email: impulse@impulse-ent.com
Web: www.impulse-ent.com

Teledyne Benthos

Teledyne Benthos is a member of Teledyne Marine and is a provider of oceanographic instrumentation and sensor solutions for use in marine environments. Products include: acoustic releases, telesonar modems; hydrophones; geophysical survey systems; ROVs; glass flotation spheres and instrument housings; and locating devices.

Email: benthos@teledyne.com
Web: www.benthos.com

Teledyne TSS

Teledyne TSS designs and manufactures motion sensors for the accurate measurement of roll, pitch and heave, together with inertial navigation systems and gyrocompasses; and underwater pipe and cable detection/tracking system. All subsea systems are rated to minimum 3000m.

Email: tssusa@teledyne.com
Web: www.teledyne-tss.com

Teledyne Webb Research

Teledyne Webb Research Corporation designs and manufactures scientific instruments for oceanographic research and monitoring. The company specializes in three areas of ocean instrumentation: Neutrally buoyant, autonomous drifters and profilers; autonomous underwater gliding vehicles; and moored underwater sound sources.

Email: dwebb@webbresearch.com
Web: www.webbresearch.com

TRELLEBORG

BOOTH 704

Trelleborg is a global industrial group whose leading positions are based on advanced polymer technology and in-depth applications know-how. We develop high-performance solutions that damp, seal and protect in demanding industrial environments. The Houston facility is geared to high volume production of products servicing the oil, gas and tele-communications industries.

Email: offshoresales@trelleborg.com
Web: www.trelleborg.com/offshore

WETSAT

BOOTH 413

WETSAT, a unique collaboration of two leaders in the field of water quality monitoring solutions, was formed to fill the gap between sensing technology and operational observing systems. WETSAT, WET Labs, and Satlantic operate as a single, unified team to meet your needs. Combined, we provide the best solutions for your unique challenges. With the strength of our three-company team, you can be sure of a comprehensive and coordinated approach.

Web: www.wetsat.com

OES AWARDS

The IEEE Oceanographic Engineering Society 2008 Distinguished Technical Achievement Award will be presented to Dr. Thomas B. Sanford. Since 1979, Dr. Sanford has served at the University of Washington in dual roles: Professor in the School of Oceanography and Principal Oceanographer at the Applied Physics Laboratory. His creative research work, inventing revolutionary water current profiling instruments and applying them with students and colleagues – American and International – is published in highly reputable, refereed journals. He has built a sequence of velocity profiling tools for making innovative observations. He has tackled, often for the first time, observing and interpreting a wide range of oceanic motions and their vertical structure.

The IEEE Oceanographic Engineering Society 2008 Distinguished Service Award will be presented to Archie Todd Morrison III. Since 2001, Dr. Morrison has been the IEEE Oceanographic Engineering Society Webmaster. In cooperation with René Garello, he has developed the OCEANS Conference web tools. He maintained the link with the Web developers, supervised the evolution of the services, and provided conference organizers with training and liaison services.

MTS AWARDS

MTS Fellows and MTS Awards are listed below. Let us know how these names will be displayed in the conference program and if it is possible that MTS could highlight award recipients in the conference program by listing a description of the each award, naming the award recipients, and giving a brief biography.

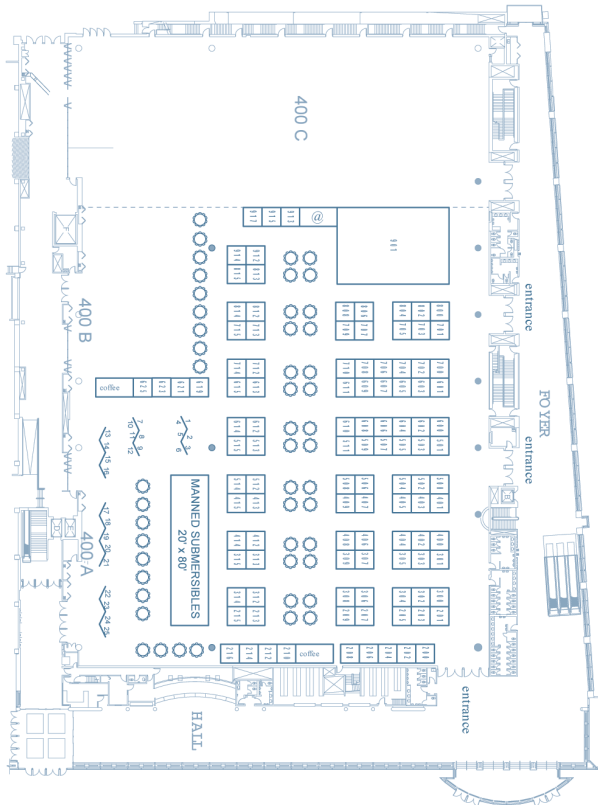
2008 MTS AWARDS

- Compass Distinguished Achievement Award :
James R. McFarlane, International Submarine Engineering
- Compass Industrial Award : Samson Rope Technologies
- Compass International Award :
International Submarine Engineering
- Lockheed Award for Ocean Science and Engineering :
Mark R. Patterson, Virginia Insti-tute of Marine Science
- MTS Outstanding Committee Award :
Ropes & Tension Members Committee
- MTS Outstanding Section Award : Houston Section
- MTS Outstanding Service Award : Thomas Consi
- MTS Outstanding Student Section Award : 13Seas (M.I.T.)
- MTS Special Commendation and Award :
The International SeaKeepers Society

FELLOWS :

1. Daniel S. Schwartz
2. Sandor A. Karpathy
3. Ted Brockett
4. Richard W. Spinrad
5. Mark S. Olsson
6. Dietmar R. Deter

EXHIBIT FLOOR LAYOUT



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MTS/IEEE

OCEANS 2008

Québec, Canada
September 15-18, 2008



IEEE

