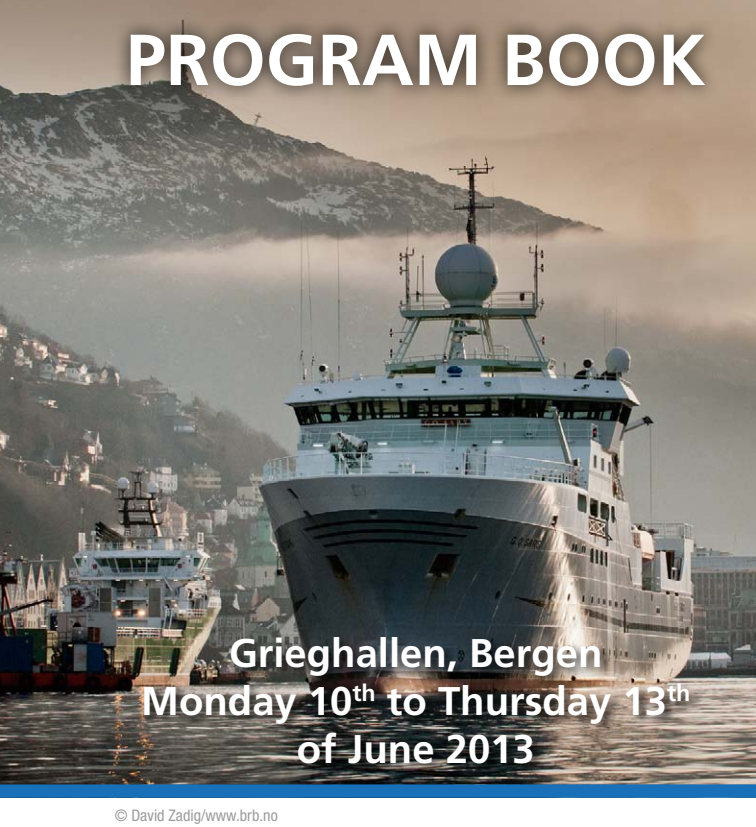
The Challenges of The Northern Dimension

OCEANS'13

MTS/IEEE - Bergen, Norway - June 10th-13th

The Northern Dimension and Challenges

PROGRAM BOOK



Grieghallen, Bergen
Monday 10th to Thursday 13th of June 2013

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MTS marine technology society · IEEE · OES

OCEANS13 MTS IEEE BERGEN

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NOTES

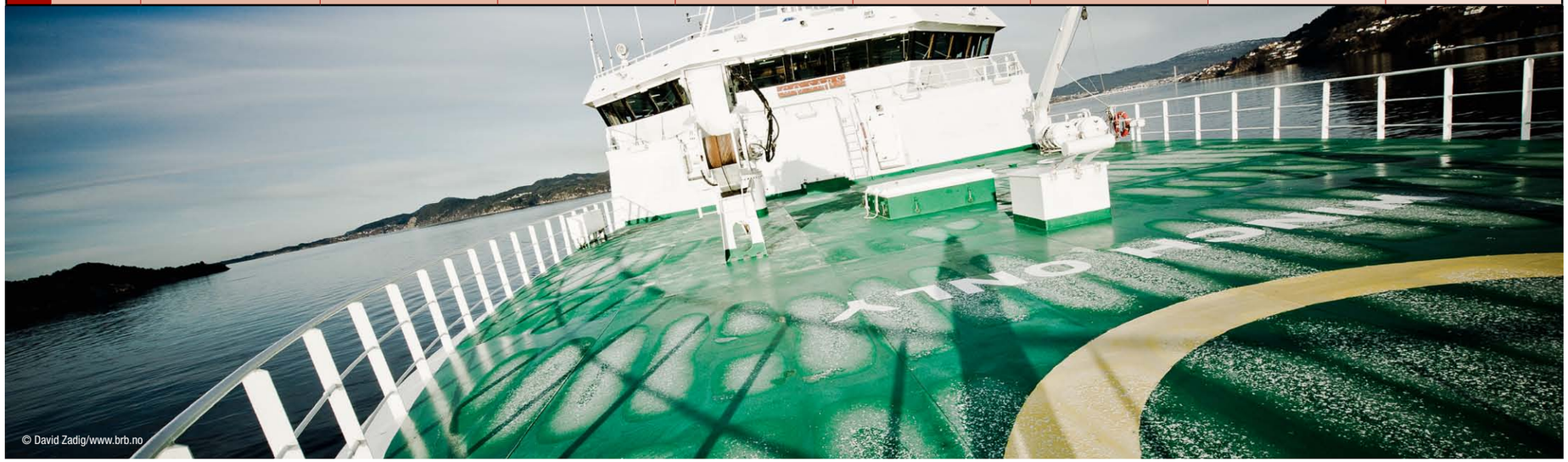
Monday June 10th 2013

	Room A: Concert Hall	Room B: Klokkeklang	Grieghallen	Grieghallen	Room E: Troldtog	Room F: Gjendine	Room G: Nina	Exhibition Hall
8:00 AM	Registration for Tutorial Participants and Exhibition Riggers from 8:00 AM. Location: Secretariat desk located in the Grieghallen, Main Entrance							
8:30 AM to 12:30 PM		**TUTORIAL 1: TECHNOLOGIES FOR MONITORING MARINE ORGANISMS AND HAZARDS**	**TUTORIAL 3: OPERATIONAL OCEANOGRAPHY.** Meet at Grieghallen for Registration at 8:00 AM Bus transfer to the Nansen Environmental and Remote Sensing Center in Bergen at 8:25AM	Technical Visit / Field Trip to Coast Center Base, Ågotnes, outside Bergen. Onsite visit: Registration at Grieghallen from 8:00AM. Departure at 9:00AM by coach. Return to Grieghallen at 2.30pm Optional tour. Pre booking required.				Exhibition Rigging
1:00 PM to 5:00 PM		**TUTORIAL 2: UNDERWATER ACOUSTIC COMMUNICATIONS:** Channel Modelling and Signal Processing	**TUTORIAL 4: HF-RADAR OPERATION AND APPLICATION** Bus transfer to the Nansen Environmental and Remote Sensing Center in Bergen at 12:25 PM					
6:00 PM	**SOCIAL EVENT: Bergen City Reception at the historic Haakons Hall. End at 7:00PM.**							

Tuesday June 11th 2013

	Room A: Concert Hall	Room B: Klokkeklang	Room C: Peer Gynt Hall	Room D: Stage	Room E: Troldtog	Room F: Gjendine	Room G: Nina	Exhibition Hall
8:00 AM	Registration for OCEANS13 MTS IEEE Participants and and Exhibitors from 8:00 AM. Location: Secretariat desk located in the Grieghallen, Main Entrance							
9:00 AM to 10:30 AM	**Opening Key Note Session**							Student Competition Posters & Exhibition
10:30 AM	Exhibition Opens							
12:00 PM	Luncheons in the Exhibition Hall							
1:00 PM to 2:40 PM	**Bio Acoustics**	**Optics and Imaging I**	**Oil & Gas**	**Networks**	**Bio-inspired ROVs**	**Navigation and control I**	**GEO HF Radar Meeting.**	
2:40 PM	Coffee Break in the Exhibition Hall							
3:10 PM to 4:40 PM	**Eco-systems**	**Optics and Imaging II**	**Marine spatial planning**	**Networks I**	**Smart ROV Systems I**	**Navigation and control II**	**GEO HF Radar Meeting Continues**	
4:40 PM	**SOCIAL EVENT: Get Together in the Exhibition Hall. End at 7:00PM**							

		Room A: Concert Hall	Room B: Klokkeklang	Room C: Peer Gynt Hall	Room D: Stage	Room E: Troldtog	Room F: Gjendine	Room G: Nina	Exhibition Hall
Wednesday June 12th 2013	8:00 AM	Registration for new OCEANS13 MTS IEEE Participants and and Exhibitors from 8:00 AM. Location: Secretariat desk located in the Grieghallen, Main Entrance							
	9:00 AM to 10:40 AM	**Town Hall Meeting**	**Optics and Imaging III**	**Smart Instruments I**	**Networks II**	**Smart ROV Systems II**	**Ship Design and Environmental Aspects**		Student Competition Posters & Exhibition
	10:40 AM	Coffee Break in the Exhibition Hall							
	11:10 AM to 12:50 PM	**Integrated Observing Systems I**	**Offshore Wind**	**Smart Instruments II**	**Networks III**	**Smart ROV Systems III**	**Ropes**		
	12:50 PM	Luncheons in the Exhibition Hall							
	1:50 PM to 3:30 PM	**Integrated Observing Systems II**	**Wave and Tidal Energy**	**Sonars and Sensors I**	**Links I**	**Smart ROV Systems IV**	**Maritime Archeology I**		
	3:30 PM	Coffee Break in the Exhibition Hall							
	4:00 PM to 5:40 PM	**Gliders**	**Emerging Concepts**	**Sonars and Sensors II**	**Links II**	**Smart ROV Systems V**	**Maritime Archeology II**		
	7:30 PM	**SOCIAL EVENT: Conference Dinner in Grieghallen. End at 11:00PM**							
Thursday June 13th 2013	8:00 AM	Registration for new OCEANS13 MTS IEEE Participants and and Exhibitors from 8:00 AM. Location: Secretariat desk located in the Grieghallen, Main Entrance							
	9:00 to 10:40 AM	**Observatories I**	**Arctic Operations**	**Sonars and Sensors III**	**Communication Channels**	**Smart ROV Systems VI**	**Surface Remote Sensing I**		Student Competition Posters & Exhibition
	10:40 AM	Coffee Break in the Exhibition Hall							
	11:10 AM to 12:50 PM	**Observatories II**	**Observing Platforms**	**Acoustics and Physics I**	**Survey Systems**	**Smart ROV Systems VII, MORPH I**	**Surface Remote Sensing II**		
	12:50 PM	Luncheons in the Exhibition Hall							
	1:50 PM to 3:30 PM	**Forecasting**	**Oceans Space Surveillance I**	**Acoustics and Physics II**	**Ship Robotics**	**Smart ROV Systems VIII, MORPH II**	**Underwater Remote Sensing**		



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Welcome from the General Chair

Dear Conference Attendees, Exhibitors and Guests:

On behalf of the Marine Technology Society (MTS) and the Oceanic Engineering Society of IEEE Norway Chapters and with support from our Patrons, the SFE Power, the Norwegian Defense Research Establishment (FFI), Marintek and the Institute of Marine Research (IMR) as well as our Exhibitors, it is a true pleasure to welcome you the OCEANS13 conference in Bergen

OCEANS'13 MTS/IEEE Bergen features tutorials on special interest topics, a comprehensive technical program of lectures and presentations, a Student Poster Program and a Exhibition emphasizing in particular on

"The Challenges of the Northern dimension"

Bergen - recognized as the unofficial capital of Western Norway and sometimes also referred to as the "Gateway to the Norwegian Fjords", is the perfect venue for OCEANS'13.

We trust that you will enjoy both the Technical program and the social events we have in store for you. We encourage active participation in the sessions you attend as all of us will benefit from the knowledge you all bring to this conference. We also encourage active interaction with our exhibitors.

Enjoy wonderful Bergen and the OCEANS13 MTS IEEE BERGEN!

Sincerely,
Terje Gjengedal
General Chair

Useful Information:

Conference Venue
The Grieghallen is the primary conference venue in Bergen. It is situated in the city within max 10 minutes walking distance from all the Oceans Hotels and city service facilities

Transportation hotels – Grieghallen
The conference venue Grieghallen, is situated within walking distance to all hotels.

Travel between Bergen airport and down town Bergen
The airport is situated some 30 min by bus from the city centre. Public airport bus departs every 15 minutes and stops close to all hotels.
Price approx. NOK 100.- Taxi costs approx. NOK 350.
To view the departure points and time schedule of the public Airportbus, see www.flybussen.no
The airport Bus departs from the Radisson Bly Hotel Norge and from the Bus Station 'Bystasjonen'. The Bus station is located 5 min walk from the Grieghallen. Ask the Secretariat for directions.

To order a taxi from the Grieghallen, please contact the Secretariat.

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From all other pick up points, call Bergen Taxi on telephone number: (+47) 07000 or from the hotel lobbies.

Rental cars:
All major car rental companies are represented in Bergen. The closest to the Grieghallen is the AVIS office, only 3 min walk. Address: Nygaardsgaten 43, Tel: +47 55553955

Medical Emergency/ Hospital:
The conference venue are staffed and equipped to handle medical emergencies. If in need of Medical assistance, please contact the Grieghallen guards or the Secretariat personnel.

The Public Medical Emergency Room Services is called 'Legevakten' and is situated approx. 4 min walk from the Grieghallen. Please ask for directions. Telephone Emergency Room: (+47) 55 56 87 60

The city hospital is Haukeland University Hospital, located approx. 10 min by car from the city centre.
Id in need of ambulance or in acute emergency – call 113.

Police:
Telephone number to the police in an emergency is 112

Fire Department:
Call 110.

General Area Information:
The Tourist Information Centre is located on the Fish Market in the Town harbor basin.
www.visitbergen.com

International Calling code:
Norway: 0047.

Local currency:
Norwegian Kroner (NOK) .
Exchange rate: 1 Euro = 7,65 NOK. 1 USD = 6 NOK.

Language:
Norwegian, English widely spoken.

Global Positioning:
Latitude and longitude position of the City of Bergen:
60°20'N, 05°20'E

Conference Information, Internet Connection, Social Events:

WLAN Internet:
The Grieghallen offer free wireless internet connection:
Network name:
Oceans13
Password:
Oceans13
This is available throughout the building, including the Exhibit Hall.

Onsite Registration
Registration from the Secretariat desk in the Grieghallen, main entrance.
Opening hours:

Monday June 10: 8:00am to 5:00pm
Tuesday June 11: 8:00am to 5:00pm
Wednesday June 12: 8:00am to 5:00pm
Thursday June 13th: 8:00am to 4:00pm

Tutorials
Monday June 10: 8:30am – 12:30pm and 1pm-5pm.
Tutorials 1 and 2 takes place at the Grieghallen.
Tutorials 3 and 4 takes place at the Nansen Remote Sensing Center, but registration and return transportation from Grieghallen.

All tutorial participants check in/register at the Secretariat desk in the Grieghallen.

Exhibit Hall hours:
The OCEANS13 MTS IEEE BERGEN Exhibit Hall at Grieghallen will be open as follows:
Tuesday June 11:
10:30am to 7:00pm

Wednesday June 12:
8:00am to 5:00pm

Thursday June 13th:
8:00am to 3:30pm

Unauthorized Audio/Video Recording
Unauthorized Audio/Video Recording of tutorials, plenary or technical sessions is not permitted.

Social Events:

Monday June 10th
On the eve of the conference, all registered Oceans13 participants will be invited to attend the Bergen City Reception at the historic Haakon's Hall hosted by the mayor of Bergen, Starting at 6pm. Ends at 7pm. See Bergen map in this program book for directions. Håkonshallen – the Haakon's Hall – is situated at Bergenhus Fortress, (large stone building by

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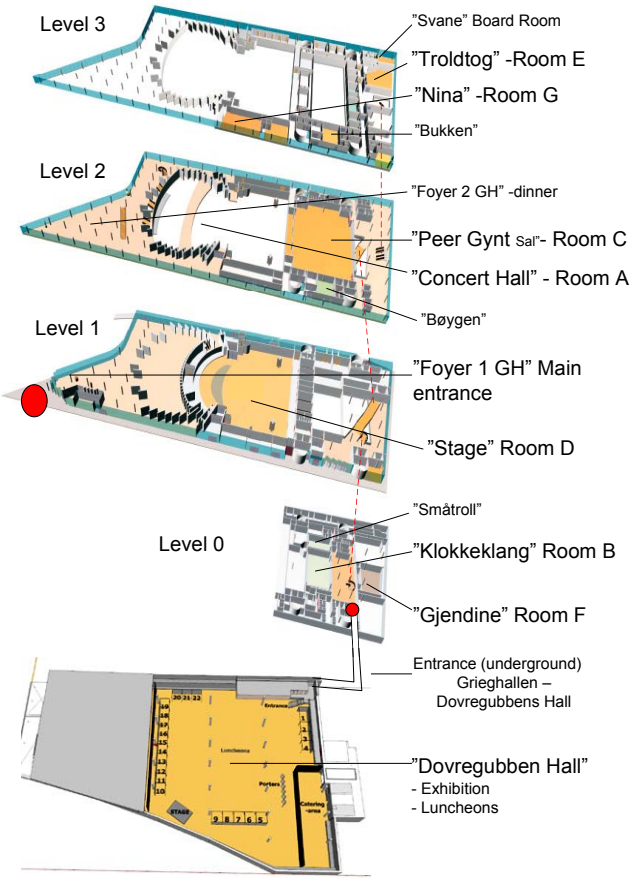
the harbor, you see it on the right hand side of the harbor when you walk from the fish market along long the Bryggen Wharf (wooden row of Ware houses/shops along the water front, downtown Bergen. "Every" local person knows where it is, so do not be shy to ask for directions.
Oceans13 event ticket is required to get in. For those of you who do not get to register at the Secretariat in the Grieghallen, we will have the participant list handy as a back up at the door.
Walking distance from the Grieghallen: 12 minutes.

Tuesday June 11th:
The traditional Get together in the Exhibition Hall after the scientific program end that day. Great opportunity to meet and interact with our valued patrons and exhibitors. Starts right after the end of the scientific program at 4:40pm ends at 7pm. Norwegian delicatessen Finger Food & 1 unit Beer/wine included.. Cash bar for additional beverages. Oceans13 event ticket is required to get in. Please remember also to bring your Beverage Coupon.

Wednesday June 12th:
The OCEANS13 MTS/IEEE BERGEN conference dinner will be hosted in the Grieghallen's spacious glass foyer, 1st floor. Entrance through the main entrance. 3 course set dinner with beverages.
Doors open at 7:30pm. Please be on time! Oceans13 event ticket is required to get in.
Ends at 11:00pm.

Secretariat:
The secretariat is staffed by the local PCO Travel Planners of Scandinavia.
The Secretariat is located at the main entrance of the Grieghallen.
Tel: (+47) 93459672 or (+47) 93459676
Managing Director: Harald Riisnaes
reg@oceans13mtsieeebergen.org
www.travelplanners.no



Exhibitor List

Organization	Stand Allocation
Aanderaa Data Instruments	1
Christian Michelsen Research	2
Chukar Water Jets	8
CodarNor	10
EvoLogics GmbH	14
IEEE OES	19
Kongsberg Maritime	7
Marintek	5
MTS	9
NCE Subsea	4
Nortek	11
Norwegian Defense Research Establishment (FFI)	6
OCEANS13 MTS IEEE SAN DIEGO	18
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Prevco Europe	12
Sea Tech Week Brest/France 2014	21
The Institute of Marine Research (IMR)	22
Transmark Subsea	3
Universitat de Girona	15
Valeport Ltd	13

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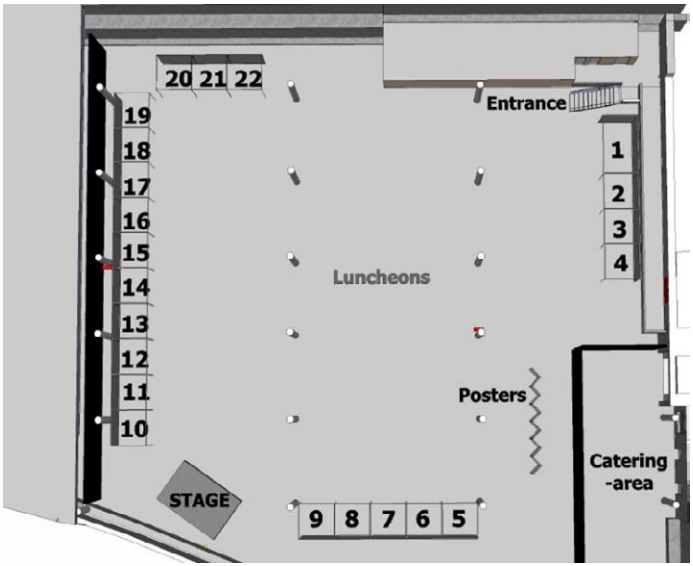
Exhibitor Map



Exhibitor Profiles

AANDERAA – A XYLEM BRAND

Booth # 1

P.O.Box 103 Midtun
Sanddalsringen 5b
Bergen, 5828 Norway
Tel: 0047 55 60 49 36
http://www.aanderaa.com/
Elin.auganes@xyleminc.com

Xylem Analytics will be present with a joint stand at Oceans MTS/IEEE Bergen showcasing YSI, SonTek and Aanderaa featuring a wide spectrum of monitoring solutions. Visit our booth No. 34/35 to see our state of the art products and systems. We will be showing the new Aanderaa dedicated single point current meter RCM Blue, the SmartGuard datalogger used for harbour installations and Hyd/Met monitoring systems, and the SOOGuard (FerryBox). For high quality environmental monitoring in lakes and coastal water the new EXO sonde from YSI and the CastAway CTD from SonTek are optimal. From SonTek we will also be showing the Argonaut XR and the HydroSurveyor.

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CHRISTIAN MICHELSEN RESEARCH AS

Booth # 2

P.O.Box 6031
Bergen, NO-5892 Norway
+47916 52 190
http://cmr.no/About%20CMR
david.peddie@cmr.no

The vision of Christian Michelsen Research AS (CMR) is to conduct research for industrial development. CMR is a technology research company that focuses on commercial research and development. The purpose of the company is to be beneficial to society, and it undertakes commissions from private and public enterprises. The company creates value for Norwegian and international clients, as well as for society through its ability to translate ideas and research results into commercial products and industrial solutions.

Fields of operation: With 180 employees, CMR is organised as a group, with three business units:

CMR Instrumentation, CMR Computing and CMR Energy and two subsidiaries GexCon AS and Prototech AS.

We offer our clients analyses of complex issues, as well as solutions, through prototypes and

demonstrators. Our guiding principles, «From an idea to a product», places us in the intersection between research and industry Most of CMR?s contract work is in the sectors of oil and gas, renewable energy, energy technology, space, fisheries, the environment and security and preparedness. The group is active globally, but most of its revenues come from the sales of products and services in Norway and Europe.

CHUKAR WATER JETS Inc

Booth # 8

12070 43rd St. N.E.
St. Michael,, MN MN 55376 USA
United States of America
+1-763-497-8749
http://www.chukarwaterjet.com/
WarrenC@chukarwaterjet.com

CODARNOR AS

Booth # 10

Edvardsvei 35
Nesoddtangen, 1450 Norway
+1 (408) 773-8240 x15
http://www.codar.com/
laura@codar.com;

CODARNor AS and CODAR Ocean Sensors, Ltd. are pleased to offer the SeaSonde® ocean current and wave measurement HF radar system.

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EvoLogics GmbH

Booth # 14

Ackerstrasse 76
Berlin, DE 13355 Germany
+4930467986221
http://www.evologics.de/
kebkal@evologics.de EvoLogics underwater ICT systems have become enabling technologies for deep water exploration, monitoring and production. EvoLogics offers flexible and cost effective integrated solutions for numerous deep or shallow water applications even in the most adverse environments. Expandable networks open new frontiers for underwater communication, positioning, navigation and monitoring applications.

IEEE OES

Booth # 19

15 Rocky Brook Road
East Windsor, VA 08512 United States of America
+1-609-865-6797
www.ieeeoes.org
elcreed@ieee.org The Oceanic Engineering Society (OES) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) seeks to advance the science and technology of Ocean Engineering. Its objectives are scientific, literary, and educational in character. The Society strives for the advancement of the theory and practice of electro-technology applied to the ocean environment

not only by ocean engineers but also by individuals in allied branches of engineering and related arts and sciences. The Society maintains a high level of professional standards among its members and affiliates and through them promotes technical excellence and actively encourages the exchange of information through conferences, meetings, workshops and publications. Stop by the IEEE/OES booth for membership information.

KONGSBERG MARITIME

Booth # 7

Horten, norway 3183 Norway
004733034100
http://www.km.kongsberg.com/
Katharina.Halvorsen.Nygaard@kongsberg.com Kongsberg Maritime deliver systems for dynamic positioning and navigation, marine automation, safety management, cargo handling, subsea survey and construction, maritime simulation and training, and satellite positioning. Our solutions enhance efficiency and safety throughout the whole maritime technology spectrum and we offer additional competence in providing turnkey engineering services within the shipbuilding and floating production sectors.

MARINTEK

Booth # 5

http://www.sintef.no/home/marintek/
Fritz.Bekkadal@marintek.sintef.no;Jo.Stein.Moen@marintek.sintef.no
MARINTEK is an independent, internationally leading non-profit marine technology research company in the Norwegian SINTEF Group, one of Europe's largest independent research organisations. MARINTEK comprises three divisions: maritime (shipping, shipbuilding and ship equipment); offshore oil and gas; renewable ocean energy including offshore wind. Activities cover advanced laboratory services and analyses in marine hydrodynamics and construction technology, marine ICT services, logistics and maintenance technology, in addition to energy and environmental technology. Laboratory and testing facilities include: ocean basin, towing tank, cavitation tunnel, marine structure laboratory and an energy & machinery laboratory.

MTS

Booth # 9

1100 H Street NW
Washington, DC 20005 United States of America
202-717-8705
https://www.mtsociety.org
rich.lawson@mtsociety.org The international Marine Technology Society offers extraordinary resources and networking opportunities to ocean engineers, technologists, government, industry and academia. MTS' passion for the advancement and application of marine technology assists members through 28 specialized committees (seafloor technologies, ocean observing, underwater vehicles, marine security, and more), conferences, workshops, a professional journal, and newsletters. MTS maintains a website with news for and about the maritime community.

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NCE SUBSEA

Booth # 4

PB 27
Kystbasen Ågotnes, 5347 Norway
47 916 31 450
www.ncesubsea.no
heidi.skalevik@ncesubsea.no
NCE Subsea is an initiative by the subsea industry for the strengthening and internationalization of business, R&D and education. We bring together and promote the Norwegian subsea industry, which constitutes a world leading environment for subsea solutions.

NORTEK AS

Booth # 11

Vangkroken 2
Rud, 1351 Norway
4767174500
http://nortek.no/en
inquiry@nortek.no Nortek AS develops and manufactures acoustic instrumentation for high precision measurements of currents and waves in oceans and along coastlines. Applications include long range current profiles, boundary profile measurements, turbulence, and single point current speed and direction measurements. In addition, wave height, period and direction is measured from submerged platforms that are out of harms way.

Norwegian Defense Research Establishment (FFI)

Booth # 6

PB 25,
KJELLER, 2027 Norway
63807138
http://www.ffi.no/en/Sider/default.aspx
wenche.gerhardsen@ffi.no
Norwegian Defense Research Establishment (FFI) is the prime institution responsible for defence-related research in Norway.

FFI's research covers mathematics, physics, information technology, chemistry, biology, medicine, psychology, political science and economy. The Establishment is the chief adviser on defense-related science and technology to the Ministry of Defense and the Norwegian Armed Forces. FFI is situated at Kjeller close to Lillestrøm, and has a naval research unit in Karljohansvern in Horten.

FFI's marine related research is diverse. Norway's first operative satellite, AISSat-1, was developed at FFI. It is now circulating in polar orbit and keeps all AIS-ships under surveillance. The autonomous underwater vehicle HUGIN was developed at FFI. Today it is a tool e.g. for the Norwegian Navy. Other research

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environments at FFI specialize in sonars and marine life, security policy issues in the High North and other fields of interest in the northern coastline.

OCEANS13 MTS IEEE SAN DIEGO

Booth # 18

11775 La Colina Rd
San Diego, CA 92131 United States of America
01 858 229 2944
http://www.oceans13mtsieeesandiego.org/
rwernli@san.rr.com;bfletch@kuokoa.net The OCEANS '13 MTS/IEEE San Diego committee invites you to beautiful San Diego to participate in the world's most diverse and prestigious conference and exposition regarding our most critical resource - the oceans. This will be the 7th time the OCEANS conference has come to San Diego. The team that orchestrated the OCEANS'03 San Diego conference, the largest OCEANS conference to date, has returned to raise the bar even higher. The '03 conference, which was a cornerstone of the Scripps Institution of Oceanography's Centennial, had a total event attendance of 5,400, the exhibition included 301 booths and the technical program exceeded 800 excellent presentations. That international audience, from 46

countries, helped us establish the theme for the OCEANS '13 conference. An Ocean in Common.

The OCEANS conference is jointly sponsored by the IEEE Oceanic Engineering Society (IEEE/OES) and the Marine Technology Society (MTS). This international conference is a major forum for scientists, engineers and those with an interest in the oceans to gather and exchange their knowledge and ideas regarding the future of the world's oceans. In addition, a two night film festival and weekend golf tourney will kick-off the week's activities that will also include a day of tutorials and a banquet on the USS Midway aircraft carrier in San Diego Bay.

And for those who'd like to add a little holiday time to their trip, San Diego offers a variety of entertainment and activities that include the Birch Aquarium, the San Diego Maritime Museum, Sea World, Mexico, San Diego Zoo and the Safari Park, all just a short ride from the Town and Country Resort and Conference Center. Combine all that with a spectacular coastline sporting magnificent beaches, great shopping, and the cuisine of the wide range of international restaurants, and you can see why San Diego is one of the most

desirable destinations in the world. We look forward to greeting you in September, 2013, at OCEANS '13 MTS/IEEE San Diego.

OCEANS14 MTS/IEEE ST.JOHNS, New Foundland & Labrador

Booth # 17

Box 12093
St. John's, NF A1B 3T5 Canada
709-738-7059
http://www.oceans14mtsieeestjohns.org
cathy.hogan@oceans14mtsieeestjohns.org OCEANS'14 COME JOIN US IN BEAUTIFUL ST JOHN'S, NEWFOUNDLAND ~ YYT

In 2014 the IEEE-OES-MTS OCEANS Conference will take place in St. John's, Newfoundland and Labrador from September 14 to September 19. The combined IEEE-OES-MTS joint societies will feature world renowned scientists presenting 350 technical papers relating to various oceans themes outlined later in this proposal. As well we predict there will be a minimum of 125 exhibitors from around the world with booths showcasing their goods and services. In addition to all of this there will be Tutorials, Student Poster Competitions and Presentations; A Teacher?s Day, Two Awards Luncheons,

Receptions and various other Business and Social Events.

OCEANS14 MTS IEEE TAIPEI

Booth # 16

73 Chou-Shan Road
Taipei, 10617 Taiwan
886-2-33665739
http://www.oceans14mtsieeetaipei.org/
jguo@ntu.edu.tw IEEE Oceanic Engineering Society (OES) and Marine Technology Society (MTS) will host the OCEANS 14 MTS/IEEE Conference on April 7 to 10, 2014, in Taipei, Taiwan. The OCEANS 14 Conference in Taipei will be a memorable event, allowing for colleagues and friends worldwide to establish friendships, thereby promoting academic exchange at an international and interdisciplinary level. The conference theme of OCEANS REGENERATION speaks to the need to promote scientific methods and research to address environmental concerns about the preservation and betterment of our living Oceans. Our vision for this conference is to develop new ocean research paradigms based on work by experts in all areas of OCEANS. On behalf of the organizing committee, it gives us great pleasure to invite you and your colleagues to attend this conference.

OCEANS15 MTS IEEE GENOVA

Booth # 20

Prof. Andrea Calit
andrea.caiti@dsea.unipi.it

OCEANS'15 MTS/IEEE GENOVA: DISCOVERING SUSTAINABLE OCEAN ENERGY FOR A NEW WORLD

The Italian IEEE-OES Chapter and the Organizing Committee are delighted to invite you to the OCEANS'15 MTS/IEEE Genova conference to be held in the town of Genova , Italy, on May 18 -21 2015.
Situated at the centre of the Italian Riviera, the town of Genova has a long history linked to the sea, dating back from the time of the "Maritime Republics", when Genova was the dominant naval power in the Western Mediterranean, and homeland of the Renaissance navigators that led to the discovery of Americas, most prominent among them Cristopher Columbus.
Today, Genova is still at the centre of a dense concentration of industrial and research organizations devoted to marine and maritime activities, shipyards, Navy bases. This makes it an ideal setting for the prestigious OCEANS conference, the major

international forum for scientists, engineers and predominant ocean users to promote, disseminate and exchange knowledge and ideas in the fields of Marine Technologies and Oceanic Engineering .
The conference venue is at the "Magazzini del Cotone" (the cotton storehouse), an historical building now renovated as a modern conference and exhibit centre, overlooking the seafront and at the heart of the Old Town. The surrounding setting with the Aquarium, the Sea Museum, recreational opportunities, shops, bars and restaurants, will make it an enjoyable and productive opportunity for all the researchers in our community.

PREVCO EUROPE

Booth # 12

Pantiles Chambers, 85 High Street
Royal Tunbridge Wells
Kent, TN1 1XP United Kingdom
+44 (0) 1892-731528
http://prevco.com/
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housings can be air-filled or pressure compensated. Underwater enclosures are often used for containing batteries, hydrophones, data-loggers and other data recording and monitoring equipment. Our cans/bottles have connector interfaces and are used extensively with Remotely Operated Vehicles (ROVs), Autonomous Underwater Vehicles (AUVs) and for many other applications in the Oil and Gas Industry, Defense, Research, Environmental Monitoring and Offshore Renewables.

SEA TECH WEEK BREST/FRANCE 2014

Booth # 21

International conference, Oceanography, Brest-France, 13th to 17th october 2014

THE INSTITUTE OF MARINE RESEARCH (IMR)

Booth # 22

With a staff of almost 700 the Institute of Marine Research is Norway's largest Centre of marine science. Our main task is to provide advice to Norwegian authorities on aquaculture and the ecosystems of the Barents Sea, the Norwegian Sea, the North Sea and the Norwegian coastal zone. For this reason, about fifty percent of our activities are financed by the Ministry of Fisheries and Coastal Affairs. http://www.imr.no

TRANSMARK SUBSEA AS

Booth # 3

Hegrenesveien 15B
Bergen, 5042
http://www.transmark-subsea.com/
Tomas@transmark-subsea.com

UNIVERSITAT DE GIRONA

Booth # 15

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Pic de Peguera, s/n
Girona , 17003 Spain
+34 972 41 89 05
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cirs@eia.udg.edu CIRS is the Underwater Robotics Reseach Center of the University of Girona located in its Scientific and Technological Park. We are a leader team in the research and development of Autonomous

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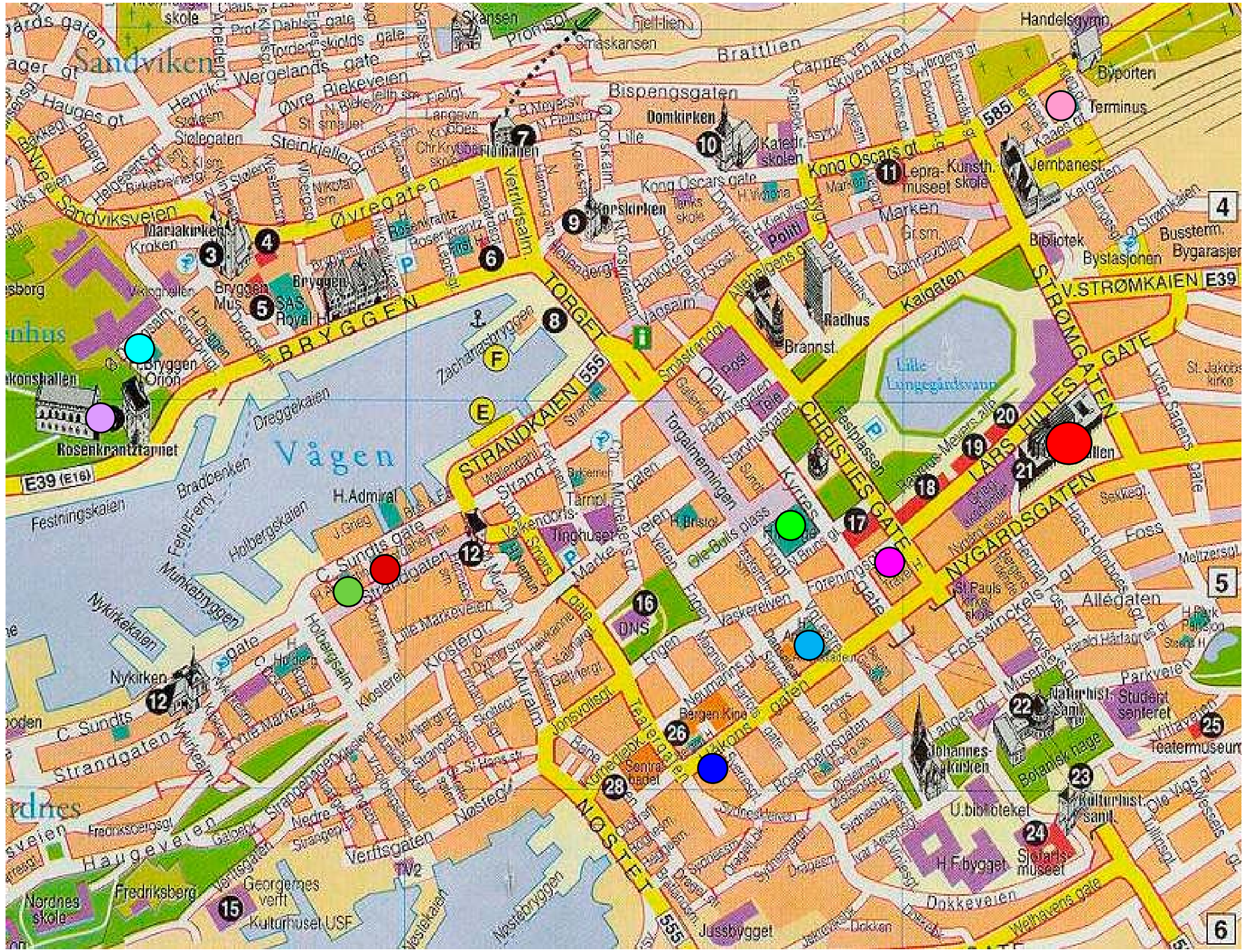

CONFERENCE VENUE

GRIEGHALLEN

OCEAN13 HOTELS

AUGUSTIN HOTEL
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GRAND HOTEL TERMINUS
P-HOTEL
RADISSON BLU HOTEL NORGE
RICA BERGEN HOTEL
SCANDIC BERGEN CITY
THON HOTEL BERGEN BRYGGE

HÅKONSHALLEN

Tutorials and Technical visit Options Monday June 10th 2013

TUTORIALS

Tutorials 1 & 2 will take place at the Oceans13 Mts/IEEE conference venue Grieghallen. Tutorails 3 & 4 will take place at the Nansen Environmental and Remote Sensing Center in Bergen, but there will be registration and coach transportation from the Grieghallen to the Nansen Center.

TUTORIAL 1 ***(Half-Day Tutorial - Morning)***
TECHNOLOGIES FOR MONITORING MARINE ORGANISMS AND HAZARDS
Jaume Piera
Venue: Grieghallen. Room: Klokkeklang. (max Capacity 120 participants)
Date: Monday June 10th2013.
Timing: 08:30-12:30

This tutorial will address technologies for monitoring marine organisms and hazards. Marine

environments are influenced by a wide diversity of plankton organisms and substances suspended in the water column. Real-time measurements of such organisms and substances, across a range of spatial scales are required to understand adequately ecosystem dynamics or monitor those components that may have adverse effects on human health and ecosystems. Many aspects of how plankton communities, nutrients or harmful substances are distributed in the water body, and how they modify their distribution due transport processes remain poorly understood, in large part because we lack critical observational tools. Traditional organism-level sampling strategies are not amenable to high-frequency, long duration implementations. Methods such as conventional microscopic or chemical analysis, for instance, are prohibitively labour intensive and time consuming. In recent years, significant technological advancements have been made for the detection and analysis of organisms and marine hazards. In particular, sensors deployed on a variety of mobile and fixed-point

observing platforms provide a valuable means to characterize plankton dynamics and assess hazards. Progress in sensor technology is expected to depend on the development of small-scale sensor technologies with a high sensitivity and specificity towards target compounds or organisms. A variety of platforms are needed to support sensing systems in the ocean, including multiplex and integrated observational technologies. Instruments on satellites, airborne or unmanned aerial vehicles (UAVs) can yield broad spatial synoptic measurements of the surface ocean (with different resolution in each case), but are of limited use in the vertical dimension. Underwater sensor networks with profiling moorings are essential to resolve different physical, chemical, and biological processes that occur between the sea surface and the sea floor and cover a wide range of temporal variability (from short-lived episodic events to climatic trends). The tutorial is directed mainly toward specialists on observational technologies and marine scientists that are interested on marine technologies

applied to marine biological research, but can be also useful for different users involved in environmental monitoring and also modelers interested on assimilating marine biological data.

Short CV: Jaume Piera is B.S. in Telecommunications Engineering, Technical University of Catalonia (1991); B.S. in Biology, University of Barcelona (1998); Ph.D. in Environmental Sciences University of Girona (2002). From 2001 to 2004, he was Lecturer in the Department of Signal Theory and Communications at the Technical University of Catalonia. Since 2005 he is a Scientist of the Spanish National Research Council (CSIC) working in the Marine Technology Unit in Barcelona (Spain).Over 20 years of experience in multidisciplinary research programs his research interests are focused on Information Technologies applied to Marine Biology and particularly on Hyperspectral Technologies, Autonomous Platforms, Signal Processing and Bio-optical based Pattern Recognition Techniques.At present he is involved in different projects related to underwater

sensors networks, and autonomous based platforms (AUV, UAV) for characterization of coastal processes. Currently he is also leading the development of a new profiling system for concurrent characterization of physical and biological processes at small scale (ANERIS).

TUTORIAL 2 *(Half-day tutorial Afternoon)*
Underwater Acoustic Communications: Channel Modelling and Signal Processing
Milica Stojanovic
Venue: Grieghallen. Room: Klokkeklang. (max Capacity 120 participants)
Date: Monday June 10th2013.
Timing: 13:00-17:00

Summary: This half-day tutorial focuses on the fundamental concepts of underwater acoustic communication system design. Beginning with the basic propagation characteristics, it builds a statistical model of a time-varying multipath acoustic channel. The notions of large-scale and small-scale random variations are introduced. The channel distortions are discussed

in light of a wideband acoustic communication signal (frequency-selectivity, Doppler shifting and spreading). Two types of modulation methods are considered: single-carrier linear modulation and multi-carrier (OFDM) methods. The basic signal processing techniques for each type of modulation are then analyzed: synchronization (initial acquisition and fine tracking), adaptive channel estimation / equalization, and multiple-input multiple-output (MIMO) processing for spatial diversity or spatial multiplexing. Throughout the lecture, the emphasis is on fundamental differences between acoustic and radio systems, and various signal processing concepts are illustrated through experimental data examples, including transmission over shallow and deep water channels at highest bit-rates demonstrated to date.

Purpose: Underwater acoustic communications are an essential part of many autonomous systems with applications to search and survey, environmental monitoring, equipment inspection, etc. As the demands on acoustic modem

technology grow (higher bit rates, improved reliability), so do the research challenges in signal processing for communications. In this tutorial, communication methods used in the existing acoustic modems are explained, followed by an introduction into the modern research concepts (many of which are addressed in conference presentations). The tutorial is intended for graduate students and engineers who are either beginning a career in underwater acoustic communications, or who wish to expand or re-visit system design issues in a systematic manner. A general background in wireless communications and signal processing is assumed. The treatment is of a scholarly nature, with focus on mathematical details and their link to the practical issues.

Milica Stojanovic(SM'08,F'10) graduated from the University of Belgrade, Serbia, in 1988, and received the M.S. and Ph.D. degrees in electrical engineering from Northeastern University, Boston, MA, in 1991 and 1993. After a number of years with the Massachusetts Institute of

Technology, where she was a Principal Scientist, she joined the faculty of Northeastern University in 2008, where she is currently a Professor of Electrical and Computer Engineering. She is also a Guest Investigator at the Woods Hole Oceanographic Institution, and a Visiting Scientist at MIT. Her research interests include digital communications theory, statistical signal processing and wireless networks, and their applications to underwater acoustic communication systems. Milica is an Associate Editor for the IEEE Journal of Oceanic Engineering, an Associate Editor for the IEEE Transactions on Signal Processing, and an Advisory Board Member of the IEEE Communication Letters. She also serves as the Chair of the IEEE Ocean Engineering Society's Technical Committee for Underwater Communications.

TUTORIAL 3 (half-day, Morning)
Operational Oceanography.
Laurent Bertino, NERSC
Venue: Nansen Environmental and Remote Sensing Center in Bergen (max 80 Participants)
Date: Monday June 10th 2013.
Timing: 08:30-12:30

The tutorial aims at teaching the basic methods of operational oceanography and make sure the attendees find the online data resources relevant for their operations. Operational Oceanography can be defined as the activity of systematic and long-term routine measurements of the seas, their rapid interpretation into ocean forecasting systems and dissemination. Important services derived from operational oceanography are:

- nowcasts providing the most usefully accurate description of the present state of the sea including living resources
- forecasts providing continuous forecasts of the future condition of the sea for as far ahead as possible
- reprocessing and reanalyses assembling long term data sets which will provide data for description of past states,

and time series showing trends and changes

Operational Oceanography usually proceeds by the rapid transmission of observational data to data assimilation centres. There, powerful computers using numerical forecasting models process the data. The outputs from the models are used to generate data products, often through intermediary value-adding organizations. Examples of final products include warnings (of coastal floods, ice and storm damage, harmful algal blooms and contaminants, etc.), electronic charts, optimum routes for ships, prediction of seasonal or annual primary productivity, ocean currents, ocean climate variability etc. The final products and forecasts must be distributed rapidly to industrial users, government agencies, and regulatory authorities.

The tutorial will be cross-cutting to the 6 special topics (marine policy and ocean management; oil and gas; integrated environmental surveillance; Arctic shipping; maritime communication and

information technology; and marine renewable energy) and will address:

- the current state-of-the-art in operational oceanography (global observing systems, modelling and data assimilation);
- the significant advances in the science of ocean forecasting in the last few years;
- the online services offered (discovery of datasets, dynamic visualization, downloading, subsetting)
- major challenges ahead

Many examples will be taken from the European MyOcean system (http://www.myocean.eu) as well as from its counterparts in the USA, Australia, etc. *Prerequisite*: The attendees are expected to have an ocean engineering background (MSc or equivalent) and basic use of metocean services (using a GIS, Matlab or equivalent).

Short CV: Laurent Bertino holds a PhD in data assimilation from the Ecole des Mines de Paris (2001) and has since then been researcher at the Nansen Environmental and Remote Sensing Center (NERSC) in Bergen, developing the TOPAZ coupled ice-ocean forecasting system which has since then been transferred for exploitation into met.no's operational suite and has become MyOcean's Arctic Marine Forecasting System (http://myocean.met.no). His interests reside in data assimilation, ocean modelling, climate research and applied mathematics problems in the applications of operational oceanography.

TUTORIAL 4 (half-day, Afternoon)
HF-radar operation and application
Dr. Hugh Roarty, Dr. Josh Kohut, Dr. Scott Glenn and Mr. Chad Whelan (Rutgers University)
Venue: Nansen Environmental and Remote Sensing Center in Bergen (max 80 Participants)
Date: Monday June 10th2013.
Timing: 13:00-17:00

The tutorial course will provide an introduction to the principles and current state of the art technology for High Frequency radar applications. The course will touch upon the following topics:

- ***What is an HF Radar?***Principles of operation, data products & state-of-the-art.
- ***Operating an HF Radar Network***: What does a network look like and what does it take to manage? How does one process, analyze and visualize the surface current data? How are

the products quality controlled?

- ***Applications & Case Studies***: How are HF data products currently used in operational oceanography? Case Studies will be shown for recent events including search and rescue operations, the Deepwater Horizon oil spill response and Hurricanes Irene and Sandy.

Specific Content for the HF Radar Course

- Principles of operation & data products (0.5 hours)
- State-of-the-Art in HF radar technology (0.5 hours)
- Data visualization & QA/QC (0.5 hours)
- Introduction to US National and Global HF Radar Networks (0.5 hours)

- Search and rescue applications (0.5 hours)
- Pollution floatables tracking (0.5 hours)
- Deepwater Horizon, model validation (0.5 hours)
- Storm forecasting (0.5 hours)

Scott Glenn

For 20 years at Rutgers, Prof. S. Glenn has designed, constructed, operated and utilized the world's most advanced Ocean Observatories for integrated research and education. He lead diverse distributed teams that (a) develop new remote and robotic technologies for autonomous surface and undersea sampling, (b) use previously unobtainable observations to investigate ocean processes that improve understanding, and (c) pilot new education programs that prepare our youth for the challenges of a truly global generation. His approach to education is to combine the excitement of ocean exploration with the power of observatory technologies to bring the ocean into the full range of K-

20 classrooms and informal learning environments. By enabling students to participate in exploratory ocean science, we can inspire a wider spectrum of students, increase ocean literacy, and broaden the definition of who can be an oceanographer. Nowhere is this transformation more significant than at the undergraduate level.

Hugh Roarty

Dr. Roarty is a Research Project Manager with the Coastal Ocean Observation Laboratory, Rutgers University. His research interests focus on improving the remote sensing and in situ instrumentation used to measure the physical and biological aspects of the ocean. This instrumentation includes High Frequency radar systems, autonomous under water vehicles (AUVs), and acoustic velocity meters. High Frequency (HF) radar systems are able to measure ocean surface currents and wave parameters. Some applications of these measurements are to mitigate oil spills, predict rip current formation, aid in Coast Guard search and rescue exercises, study river discharge plumes and predict coastal

inundation during storm events. He is also interested in exploring the dual use capability of the HF radar for environmental monitoring and target detection. His graduate research focused on coastal processes and bottom boundary layer dynamics. Dr. Roarty holds a BS in Civil Engineering from Rutgers University and a PhD in Ocean Engineering from Stevens Institute of Technology.

Technical Visit Options Monday

Oceans13 MTS/IEEE wants to showcase some samples of the world leading Bergen based marine industry by offering two technical onsite visits on Monday June 10th 2013, open to all Oceans13 participants. Both visits run parallel to each other and the tutorials. The price per visit is NOK 650 and it will include lunch.

Visit A:
Visit the largest Subsea base in the world at the Coast Center Base, Ågotnes, outside Bergen.
Location: Coast Center Base (CCB) at Ågotnes, 40 minutes outside Bergen
Date: Monday June 10th 2013.
Timing: 0900-1430

Since the early 1980s the subsea industry in the Bergen area, Norway, has grown to become one of the world's most complete environments for subsea technology. The cluster's world leading position and the established interaction between participants formed the basis for

the Norwegian government's appointment of the cluster as a Norwegian Centre of Expertise for subsea technology in 2006. More than 150 companies in the Bergen region are involved in the subsea industry.
The venue for this visit, Coast Center Base (CCB), at Aagotnes outside Bergen is the largest subsea base in the world.
Nowhere in the world will you find as much subsea equipment gathered at one geographical site. There you will find Aker Solutions and FMC Technologies main aftermarket facilities, Statoil's main Subsea Pool, and a wide range of small and medium sized companies focusing on subsea products and services.
The visit will give an introduction to the regional and global oil and gas subsea industry and subsea technology. You will visit workshops and see subsea hardware and control systems yet not installed in the ocean, as well as equipment being refurbished after many years of operation at the North Sea seabed.

Time	Event
0900-	Transport Grieghallen –

0940	Coast Center Base
0945-1015	Presentation Coast Center Base Supplying oilfields Base activities IMR for rigs
1015-1045	Presentation NCE Subsea West Coast Norway Subsea Cluster Global Subsea Industry Outlook Cluster activities and results
1045-1115	Presentation by Statoil Historical subsea milestones Subsea Fast track projects Ongoing major subsea technology projects (gas compression)
1115 - 1215	Lunch on-site.
1215-1240	Aker Solutions Life Cycle Services Aker Solutions Subsea in briefSubsea Technology, how it works
1240-	Transport to Aker Solution

1300	SLS
1300 – 1345	Tour at Aker Solutions SLS facilities/workshop See actual subsea equipment/hardware
1345-1430	Transport from CCB back to Grieghallen

Visit B:
Visit one of the most modern fish reserarch labs in the world, the IMRs Matre Research Station Location: Institute of Marine Research's Matre Research Station, 1,5 hours outside Bergen.
Date: Monday June 10th2013.
Timing: 0900-1600

This visit has been cancelled due to low participation bookings.

OPENING KEY NOTE SESSION

Tuesday June 11th Location:
Room A: Concert Hall.
Time: 9:PM to 10:30PM
Session Chair:
Peter M Haugan, Technical Co-Chair Oceans13 MTS IEEE Bergen

Monitoring and Management of Ocean Resources in the High North
Tore Nepstad, Director, Institute of Marine Research.

Education:
University of Bergen
Royal Norwegian Naval Academy
Norwegian Council for Management Development (Phd scholarship)

Work experience:

Institute of Marine Research:
Managing Director

Haukeland University Hospital:
CEO/COO

NUTEC A/S:
Vice President

Royal Norwegian Navy:
Officer

Maritime Technological Challenges in the High North
Ørnulf J. Rødseth, Research Director MARINTEK

Ørnulf Jan Rødseth got his masters degree in electronic engineering in 1983. From 1983 to today he has worked in research organisations and private industry, most of the time with maritime information and communication technology. He is currently the research director of the Maritime Transport Systems department in MARINTEK and works with intelligent maritime transport systems. He has participated in several EU project in the maritime area, including investigations into unmanned merchant shipping, integrated information management and e-Maritime. He is also active in international maritime standardisation through IMO, ISO and IEC and has published more than 50 papers and articles in a number of conferences, journals and magazines.

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TUESDAY

Satellite Information for Polar and Marine Applications
Johnny Johannessen, Research Director at NERSC (Nansen Environmental and Remote Sensing Center)

Prof. Johnny A. Johannessen is Vice Director at the Nansen Environmental and Remote Sensing Center, Bergen, Norway, and hold a professor 2-position at the Geophysical Institute, University of Bergen. He has a Cand. Real. in Physical Oceanography from University of Bergen in 1979 and a Dr. Phil. from the same University in 1997. Johannessen has long and broad experience in satellite remote sensing in oceanography and sea ice research. From 1994 to 2000 he was employed at the European Space Agency (ESA) Scientific and Technical Center in the Netherlands where he took part in the development of the new ESA Living Planet Program for Earth Observations with focus on the satellite based observations of the ocean and the sea ice field. In the last 10 years he has also been involved in development and implementation of operational oceanography both at national and international level associated with

the establishment of the European Marine Service under the Global Monitoring for Environment and Security initiative.

Subsea Technology and Market Developments
Trond Olsen, CEO at NCE Subsea

Trond Olsen has a varied background from positions in public and private business sector. He spent 15 years in the Navy in operational and project administrative positions. In the private business sector he has been employed by small and medium sized enterprises, among them at Operations Manager for a subsea company, as well as being the manager and owner of his consultancy company.Trond is graduated from the Royal Norwegian Naval Academy, and holds a masters degree in Management from the Norwegian School of Management (BI). Since 2006 he has been CEO of one of twelve Norwegian Centres of Expertise (NCE) projects in Norway, NCE Subsea – a cluster facilitator for the Norwegian subsea industry. He is also

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Chairman of the program Committee for the Underwater Technology Conference and Exhibition Chair for Oceans 13 in Bergen.

TUESDAY

Technical Program
Tuesday June 11th 2013

Bio Acoustics

Location: A: Concert Hall
Tuesday, June 11 (1:00PM - 2:40PM)
Co-Chairs:
Olav Godø, Institute of Marine Research
Jules Jaffe, Scripps Institution of Oceanography

The use of echosounders for long-term studies of the overwintering ecology of sprat (Sprattus sprattus)
Ingrid Solberg, *King Abdullah University of Science and Technology*
Stein Kaartvedt, *King Abdullah University of Science and Technology*
Thor Klevjer, *Institute of Marine Research*

Acoustical Monitoring of Ocean Environment at the Very Shallow Area
Hanako Ogasawara, *National Defense Academy*
Kazuyoshi Mori, *National Defense Academy*
Toshiaki Nakamura, *National Defense Academy*

Operational requirements for observing marine ecosystems with acoustics
Olav Godø, *Institute of Marine Research*

Measuring fish and zooplankton with a broadband split beam echo sounder
Egil Ona, *Institute of Marine Research*
Lars Andersen, *Simrad*
Gavin Macaulay, *Institute of Marine Research*

An overview of underwater acoustics applied to observe fish behaviour at the Institute of Marine Research
Nils Olav Handegard, *Institute of Marine Research*

TUESDAY

Optics and Imaging I

Location: B: Klokkeklang
Tuesday, June 11 (1:00PM - 2:40PM)
Co-Chairs:
Peter Thomas, Christian Michelsen Research AS
Xuedan Zhang, Tsinghua University

Optimal Design of Preamplifiers for BB Passive Sonar
Yujin Gao, *Thales Australia*

Performance Analysis of Model-Based Localization of High-Frequency Acoustic Sources in 3D
Ehsan Zamanizadeh, *Instituto Superior Técnico (IST), Technical University of Lisbon (UTL)*
João Gomes, *Instituto Superior Técnico (IST), Technical University of Lisbon (UTL)*
Jose Bioucas Dias, *Technical University of Lisbon (UTL)*
Ilkka Karasalo, *KTH Royal Institute of Technology*

Data Compression in an Underwater Acoustic Image on Demand System
Yangze Dong, *Shanghai Marine Electronic Equipment Research Institute*
Pingxiang Liu, *Shanghai Marine Electronic Equipment Research Institute*

Oil & Gas

Location: C: Per Gynt Hall
Tuesday, June 11 (1:00PM - 2:40PM)
Co-Chairs:
Josh Kohut, Rutgers University
Dewayany Sutrisno, Geospatial Information Agency

Underwater pipeline and cable inspection using autonomous underwater vehicles
Marco Jacobi, *Fraunhofer IOSB*
Divas Karimanzira, *Fraunhofer IOSB*
A System of Systems Engineering Approach for Intelligent Control and Supervision of Subsea Production Systems
Edmary Altamiranda, *GE Oil & Gas*
Eliezer Colina, *Universidad de Los Andes*

TUESDAY

Multi-use offshore platform configurations in the scope of the FP7 TROPOS Project

Eduardo Quevedo, *Oceanic Platform of the Canary Islands*
Jochen Bard, *Fraunhofer Institute for Wind Energy and Energy Systems Technology IWES*
Henry Jeffrey, *University of Edinburgh*
Nikos Papandroulakis, *Hellenic Centre for Maritime Research*
Manuel Cartón, *Oceanic Platform of the Canary Islands*
José de Lara, *Polytechnic University of Madrid*
Eric Delory, *Oceanic Platform of the Canary Islands*
Ayoze Castro, *Oceanic Platform of the Canary Islands*
Joaquín Hernández, *Oceanic Platform of the Canary Islands*
Octavio Llinás, *Oceanic Platform of the Canary Islands*
David Ingram, *University of Edinburgh*
Panayiotis Anastasiadis, *Hellenic Centre for Maritime Research*
Johanna Wesnigk, *Universität Bremen MARUM*

Constrained MPC Design for Heave Disturbance Attenuation in Offshore Drilling Systems

Amir Hossein Nikoofard, *NTNU*
Tor Arne Johansen, *NTNU*
Hessam Mahdianfar, *NTNU*
Alexey Pavlov, *Statoil Research Center*

Dynamic Behaviour of Sound Generated by Gas Bubbles Injected Underwater

Hannan Lohrasbipeydeh, *University of Victoria*
Adam Zielinski, *University of Victoria*
T.Aaron Gulliver, *University of Victoria*

TUESDAY

Networks

Location: D: Stage
Tuesday, June 11 (1:00PM - 2:40PM)
Co-Chairs:
Soo-Hyun Park, Kookmin University
Roald Otnes, Norwegian Defence Research Establishment

A MAC Protocol based on Flexible RWT for Underwater Mobile Ad-hoc Networks
Jin-Young Lee, *Kookmin University*
Nam-Yeol Yun, *Kookmin University*
Seung-Won Shin, *Kookmin University*
Soo-Hyun Park, *Kookmin University*
Sardorbek Muminov, *PSPACE Technology*
Changhwa Kim, *Gangneung-Wonju National University*

Network Coding in Underwater Sensor Networks
Claude Manville, *University of Connecticut*
Abdulaziz Miyajan, *University of Connecticut*
Ayman Alharbi, *University of Connecticut*

Haining Mo, *University of Connecticut*
Michael Zuba, *University of Connecticut*
Jun-Hong Cui, *University of Connecticut*

Duplicate reduction with adaptive backoff for a flooding-based underwater network protocol
Roald Otnes, *Norwegian Defence Research Establishment*
Svein Haavik, *Norwegian Defence Research Establishment*

Scalability Analysis of Underwater Sensor Networks
Gunnar Brataas, *SINTEF*
Arne Lie, *SINTEF*
Tor Reinen, *SINTEF*

Variability in link performance of an underwater acoustic network
Mandar Chitre, *National University of Singapore*
Iulian Topor, *ARL, National University of Singapore*
Rohit Bhatnagar, *ARL, National University of Singapore*
Venugopalan Pallayil, *ARL, National University of Singapore*

TUESDAY

TUESDAY

Bio-inspired ROVs

Location: E: Troldtog
Tuesday, June 11 (1:00PM - 2:40PM)
Co-Chairs:
João Sousa, FEUP - Porto University
Stan Dosso, University of Victoria

A Bio-inspired Distributed Approach for Searching Underwater Acoustic Source using a team of AUVs
Mansoor Shaukat, *National University of Singapore*
Mandar Chitre, *National University of Singapore*
SH Ong, *National University of Singapore*

Improving Underwater Thruster Performance Through Jellyfish Biomimicry and 2D Jet Velocity
MIchael Krieg, *University of Florida*
Kamran Mohseni, *University of Florida*

Development of Seabed Walking Robot CR200
Bong Huan Jun, *KIOST*
Hyungwon Shim, *KIOST*
Banghyun Kim, *KIOST*
Jin-Yeong Park, *KIOST*
Hyuk Baek, *KIOAT*
Seongyeol Yoo, *KIOST*
Pan-Mook Lee, *KIOST*

Development of Underwater Robotic Arm and Leg for Seabed Robot, CRABSTER200
Hyungwon Shim, *Korea Institute of Ocean Science & Technology*
Bong-Huan Jun, *Korea Institute of Ocean Science & Technology*
Hangoo Kang, *Korea Institute of Ocean Science & Technology*
Seongyeol Yoo, *Korea Institute of Ocean Science & Technology*
Gyeong-Mok Lee, *KIOST*
Pan-Mook Lee, *KIOST*

Operating Software for a Multi-legged Subsea Robot CR200
Banghyun Kim, *KIOST*
Hyungwon Shim, *KIOST*
Seong-Yeol Yoo, *KIOST*
Bong-Huan Jun, *KIOST*
Sung-Woo Park, *KIOST*
Pan-Mook Lee, *KIOST*

TUESDAY

TUESDAY

Navigation and control I

Location: F: Gjendine
Tuesday, June 11 (1:00PM - 2:40PM)
Co-Chairs:
José Melo, INESC TEC (formerly INESC Porto) and Faculty of Engineering, University of Porto
Zhiquan Liu, Harbin Engineering University

Robust Trajectory Control for an Autonomous Underwater Vehicle
Ya-Chao Yang, *Taiwan Ocean Research Institute*
Chin-Yin Chen, *Taiwan Ocean Research Institute*
Chin-Yin Chen, *Taiwan Ocean Research Institute*

A systematic method for dynamic modeling and identification of a small-sized Autonomous Surface Vehicle using Simulated Annealing techniques
Gabriele Ferri, *NATO Centre for Maritime Research and Experimentation*
Alessandro Manzi, *The BioRobotics Institute, Marine Robotics Lab, Scuola Superiore Sant'Anna*
Francesco Fornai, *The BioRobotics Institute, Marine Robotics Lab, Scuola Superiore Sant'Anna*
Francesco Ciuchi, *The BioRobotics Institute, Marine Robotics Lab, Scuola Superiore Sant'Anna*
Cecilia Laschi, *The BioRobotics Institute, Marine Robotics Lab, Scuola Superiore Sant'Anna*

Finite Element Analysis of Carbon Fiber Reinforced Plastic Body Frame for Seabed Robot, Crabster200
Seongyeol Yoo, *Korea Institute of Ocean Science & Technology*
Bong-Huan Jun, *Korea Institute of Ocean Science & Technology*
Hyungwon Shim, *Korea Institute of Ocean Science & Technology*
Pan-Mook Lee, *KIOST*
Boram Kim, *Korea Institute of Ocean Science & Technology*

Underwater communication and distributed localization of AUV teams
Andrea Munafo, *University of Pisa*
Andrea Caiti, *University of Pisa*
Vincenzo Calabrò, *University of Pisa*

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Development of A Human-portable Underwater Robot for Soil Core Sampling
Norimitsu Sakagami, *Tokai University*
Shinnosuke Sasaki, *Ritsumeikan University*
Michitaka Kawabata, *Ritsumeikan University*
Kenshirou Yokoi, *Ritsumeikan University*
Sadao Kawamura, *Ritsumeikan University*
Shinji Matsuda, *Oyo Corporation*
Atsushi Mitsui, *Oyo Corporation*
Ko Sano, *Oyo corporation*
Kouichi Tago, *Oyo corporation*

GEO HF Radar Meeting:

Group on Earth Observing (GEO) Global High Frequency (HF) Radar Meeting.
Location: G: Nina
Tuesday, June 11 (1:00PM - 4:40PM)

The GEO Global HF Radar meeting will focus on the three topics of its Working Groups plus Radio Frequency Sharing.
The working group names, presenter and presenter's affiliation are:

A) Data Management (Lisa Hazard, Scripps Institution of Oceanography, USA)

B) Applications and Success Stories (Hugh Roarty, Rutgers University, USA)

C) Best Practices in Deployment & Operation: Capacity Building (Lucy Wyatt, James Cook University, Australia)

Eco-systems

Location: A: Concert Hall
Tuesday, June 11 (3:10PM - 4:40PM)
Co-Chairs:
Egil Ona, Institute of Marine Research
Alexios Korakas, Norwegian University of Science and Technology

Spatial variability of environmental conditions in fjords and the importance for aquaculture
Lars Asplin, *Institute of Marine Research*
Anne Sandvik, *Institute of Marine Research*
Ingrid Johnsen, *Institute of Marine Research*

Jon Albretsen, *Institute of Marine Research*
Henning Wehde, *Institute of Marine Research*
Vegard Hovstein, *Maritime Robotics AS*

Video-based Real-time Automated Distance Estimation at Sea (RADES) for Marine Mammal Mitigation
Abdulquadir Baruwa, *University of Bath*
Adrian Evans, *University of Bath*
Robert Watson, *University of Bath*
Roy Wyatt, *Seiche Measurements Limited*

Analysis of long time series of ADCP backscatter data in the Ligurian Sea to investigate the Zooplankton variability
Elisabetta Schiano, *National Research Council of Italy*
Paola Picco, *ENEA-CRAM*
Sara Pensieri, *National Research Council of Italy*
Roberto Bozzano, *National Research Council of Italy*

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iSAT: the mega-fauna acoustic tracking system
Pedro De La Torre, *King Abdullah University of Science and Technology*
Michael Berumen, *King Abdullah University of Science and Technology*
E Smith, *King Abdullah University of Science and Technology*
Ajay Sancheti, *King Abdullah University of Science and Technology*
Khaled Salama, *King Abdullah University of Science and Technology*

Long-term real-time monitoring system for the Ganges River Dolphins using Two set of 6-Hydrophone Array Systems
Junichi Kojima, *KDDI R&D Laboratories*
Harumi Sugimatsu, *The University of Tokyo*
Tamaki Ura, *Kyushu Institute of Technology*
Rajendar Bahl, *Indian Institute of Technology - Delhi*
Sandeep Behera, *WWF-India*
Hari Singh, *WWF-India*
Vivek Sagar, *WWF-India*

TUESDAY

Optics and Imaging II

Location: B: Klokkeklang
Tuesday, June 11 (3:10PM - 4:40PM)
Co-Chairs:
Jules Jaffe, Scripps Institution of Oceanography
Steven Perhirin, ENIB

On Impulse Response for Underwater Wireless Optical Links
Shijian Tang, *Tsinghua University*
Xuedan Zhang, *Tsinghua University*
Yuhan Dong, *Tsinghua University*

Optical gas monitoring in sea water: Robust reliable and highly flexible
Peter Thomas, *Christian Michelsen Research AS*
Jostein Hovdenes, *Aanderaa Data Instruments AS*
Arnfinn Hide, *MMC Tendos AS*
Dariia Atamanchuk, *Gothenburg University*
Geir Pedersen, *Christian Michelsen Research AS*
Per Hall, *University of Gothenburg*
Anders Tengberg, *Aanderaa Data Instruments AS*
Athanas Apostolidis, *PreSens GmbH*
Christian Huber, *PreSens GmbH*

Raymond Putnam, *Photonic Biosystems, Inc.*
Jason Putnam, *Photonic Biosystems, Inc.*

3D Reconstruction for Underwater Laser Line Scanning
Yu Yang, *Ocean University of China*
Hai-yong Zheng, *Ocean University of China*
Bing Zheng, *Ocean University of China*

Single Hydrophone Passive Source Range and Depth Estimation in Shallow Water
Hannan Lohrasbipeydeh, *University of Victoria*
T.Aaron Gulliver, *University of Victoria*
Adam Zielinski, *University of Victoria*
Tom Dakin, *University of Victoria*

TUESDAY

TUESDAY

Marine spatial planning

Location: C: Per Gynt Hall
Tuesday, June 11 (3:10PM - 4:40PM)
Co-Chairs:
Marco Jacobi, Fraunhofer IOSB
Edmary Altamiranda, GE Oil & Gas

Toward Dynamic Marine Spatial Planning Tools: An example with butterfish Assessment in the Mid-Atlantic Bight.
Josh Kohut, *Rutgers University*
John Manderson, *NOAA*
Greg DiDomenico, *Garden State Seafood Association*
Matthew Oliver, *University of Delaware*
Laura Palamara, *Rutgers University*
Enrique Curchitser, *Rutgers University*

Deriving Fishing Monthly Effort and Caught Species from Vessel Trajectories
Gianpaolo Coro, *ISTI-CNR*
Luigi Fortunati, *ISTI-CNR*
Pasquale Pagano, *ISTI-CNR*

TUESDAY

Application of ICT and automatic resource estimation for coastal fishery using real-time fishery information
Ramadhona Saville, *Tokyo University of Agriculture*
Katsumori Hatanaka, *Tokyo University of Agriculture*
Minoru Sano, *Hokkaido Research Organization*
Masaaki Wada, *Future University Hakodate*
Makoto Okamoto, *Future University Hakodate*

Development of a ubiquitous GIS plotter utilizing mobile facilities for fishery industries
Masaaki Wada, *Future University Hakodate*
Minoru Sano, *Hokkaido Research Organization*
Katsumori Hatanaka, *Tokyo University of Agriculture*
Hiroaki Taka, *Future University Hakodate*
Makoto Okamoto, *Future University Hakodate*

MARINE SPATIAL PLANNING: AN ECOLOGICAL AND ECONOMICAL APPROACH
Dewayany Sutrisno, *Geospatial Information Agency*
Atie Rahadiati, *Geospatial Information Agency*

Networks I

Location: D: Stage
Tuesday, June 11 (3:10PM - 4:40PM)
Co-Chairs:
David Gandul, SARTI-UPC
Roberto Petroccia, La Sapienza, University of Rome / WSENSE s.r.l.

Network coding for underwater acoustic sensor networks
Veronika Kebkal, *Evologics GMBH*
Oleksij Kebkal, *Evologics GMBH*
Konstantin Kebkal, *Evologics GMBH*

Contribution to COBS synchronization with PTP IEEE std. 1588
Oriol Pallares, *SARTI*
Javier Cadena, *SARTI*
Normandino Carreras, *SARTI*
Daniel Toma, *SARTI*
Joaquín Río, *SARTI*

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Under Ice Positioning and Communications for Unmanned Vehicles
Justin Manley, *Teledyne Benthos*
Andrey Morozov, *Teledyne Webb Research*
Clayton Jones, *Teledyne Webb Research*

TLPC: A Two-Level Power Control MAC Protocol for Collision Avoidance in Underwater Acoustic Networks
Yen-Da Chen, *Lunghwa Univ. of Science and Technology*
Chan-Ying Lien, *Tamkang University*
Yan-Siang Fang, *Tamkang University*
Kuei-Ping Shih, *Tamkang University*

Automatic marine instruments servicies discovery on IP networks
Daniel Toma, *Universidad Politecnica de Catalonia*
Joaquin del Rio, *SARTI-UPC*
Antoni Manuel, *Universidad Politecnica de Catalonia*
Tom O'Reilly, *Monterey Bay Aquarium Research Institute*

TUESDAY

Smart ROV Systems I

Location: E: Troldtog
Tuesday, June 11 (3:10PM - 4:40PM)
Co-Chairs:
David Peddie, CMR
Francisco Font, University of the Balearic Islands

The Light Autonomous Underwater Vehicle: Evolutions and Networking
Luis Madureira, *OceanScan - Marine Systems & Technology, Lda.*
Alexandre Sousa, *OceanScan - Marine Systems & Technology, Lda.*
José Braga, *Porto University*
Pedro Calado, *Porto University*
Paulo Dias, *Porto University*
Ricardo Martins, *Porto University*
José Pinto, *Porto University*
João Sousa, *Porto University*

AUV Localization in an Acoustic Positioning System
Dugald Thomson, *Canadian Forces*
Stan Dosso, *University of Victoria*

TUESDAY

Scientific operations combining ROV and AUV in the Trondheim Fjord
Martin Ludvigsen, *NTNU*
Geir Johnsen, *NTNU*
Asgeir Sørensen, *NTNU*
Petter Lågstad, *FFI*
Øyvind Ødegård, *NTNU*

State Estimation of Multiple Autonomous Underwater Vehicles for Wide Area Survey of Seafloor
Takumi Matsuda, *University of Tokyo*
Toshihiro Maki, *University of Tokyo*
Takashi Sakamaki, *University of Tokyo*
Tamaki Ura, *Kyushu Institute of Technology*

Potential games and AUVs cooperation: first results from the THESAURUS project
Andrea Munafo, *University of Pisa*
Andrea Caiti, *University of Pisa*
Tommaso Fabbri, *University of Pisa*
Davide Fenucci, *University of Pisa*

TUESDAY

Navigation and control II

Location: F: Gjendine
Tuesday, June 11 (3:10PM - 4:40PM)
Co-Chairs:
Francesco Fornai, Scuola Superiore Sant'Anna
ya-chao Yang, Taiwan Ocean Research Institute

On the use of Particle Filters for Terrain Based Navigation of sensor-limited AUVs
José Melo, *INESC TEC (formerly INESC Porto) and Faculty of Engineering, University of Porto*
Anibal Matos, *INESC TEC (formerly INESC Porto) and Faculty of Engineering, University of Porto*

Modeling for ship roll-added-resistance and its application on fin stabilizer control system
Zhiquan Liu, *Harbin Engineering University*
Hongzhang Jin, *Harbin Engineering University*

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Resolving Subsea Navigation, Tracking and Positioning Issues by Utilising Smart ROV Control System Software
Mahesh Menon, *Soil Machine Dynamics Ltd*
Ioseba Tena, *SeeByte*
Tony Dixon, *SMD Ltd*

Passive Nonlinear Observer Design for Specifically Structure Vessels
Xingchao Shao, *Harbin Engineering University*
Guoqing Xia, *Harbin Engineering University*
Hongjian Wang, *Harbin Engineering University*
Le Yu, *Harbin Engineering University*

TUESDAY

Technical Program

Wednesday June 12th 2013

Town Hall Session:

Location: A: Concert Hall
Wednesday, June 12 (9:00AM - 10:40AM)
Chair: Dr Rick Spinrad, Vice President for Research, Oregon State University

GEO/GOOS/Blue Planet town hall on advancing the understanding on the importance of ocean observing
This will be a Town Hall panel discussion on the importance of the global ocean. Moderated by MTS President (elect) and US IOOS Advisory Committee chair, Rick Spinrad. The session will begin with a short presentation by panel members representing Group on Earth Observations, Global Ocean Observing System and GEO – Blue Planet. This event will continue GEO's efforts to solicit input on GEO post 2015.

OCEANS Conference, jointly sponsored by the Marine Technology Society (MTS) and the Oceanic Engineering Society of

the institute of Electrical and Electronic Engineers (IEEE/OES), is a major international forum for scientists, engineers and responsible ocean users to promote, disseminate and exchange their knowledge, ideas, applications and scientific-technical advances in Oceanic Engineering and Marine Technology. This is done with the purpose of raising awareness regarding the important role played by the sea in our lives and our environment, and the use of technology to preserve it.

Purpose/objective:

To focus the presentations please focus on the following points:

- How are nation based ocean observing systems successfully delivering needed services to their citizens?
- How can individual national OOS's be completed by global intergovernmental and international coordination
- What to the OOS contribute to and gain from intergovernmental and international coordination

Opening Remarks: Dr. Rick Spinrad

Panelists:

1. GEO: Brab Ryan
2. GOOS: Albert Fischer (virtually)
3. Blue Planet: Doug Cripe
4. US IOOS: Zdenka Willis
5. IMOS: Lucy Wyatt
6. North West European Shelf Operational Oceanographic System (NOOS)/EUROGOOS: Henning Wehde
7. GEO - Global HF Radar Task: Jack Harlan and Lucy Wyatt

Group on Earth Observation (GEO): The Group on Earth Observations is coordinating efforts to build a Global Earth Observation System of Systems, or GEOSS. GEO was launched in response to calls for action by the

2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialized countries. These high-level meetings recognized that international collaboration is essential for exploiting the growing potential of Earth observations to support decision making in an increasingly complex and environmentally stressed world.

GEO is a voluntary partnership of governments and international organizations. It provides a framework within which these partners can develop new projects and coordinate their strategies and investments. As of March 2012, GEO's Members include 88 Governments and the European Commission. In addition, 67 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations.

GEO is constructing GEOSS on the basis of a 10-Year Implementation Plan for the period 2005 to 2015. The Plan defines a vision statement for GEOSS, its purpose and scope, expected

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benefits, and the nine "Societal Benefit Areas" of disasters, health, energy, climate, water, weather, ecosystems, agriculture and biodiversity.

Global Ocean Observing System (GOOS): The ocean is active in all of the cycles of life on the planet: playing a key role in controlling precipitation on land and the climate, absorbing carbon, generating oxygen, and recycling nutrients. Human activity is having increasing impact on the ocean and its ecosystems. Human well-being is also intimately linked with the ocean and coasts, through exposure to coastal hazards, intensive use of the ocean and its ecosystem goods and services, and the need to adapt to climate variability and change. We cannot manage what we do not measure: sustained ocean observations are needed to improve scientific knowledge about the ocean and coast and apply it to an early warning system, forecasts and projections, assessments and sound management action. The Global Ocean Observing System (GOOS) is a collaborative system of sustained observations, built on consensus requirements to

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address societal challenges, providing a platform for coordination and collaboration between observing networks, both satellite and in situ, funded by operational and sustained research funds, and linked to data management and ocean analysis and forecasting activities. The GOOS programme is hosted by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, and co-sponsored by the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the International Council for Science (ICSU). GOOS is implementing a Framework for Ocean Observations, with activities in defining requirements for sustained observation of Essential Ocean Variables (EOVs), coordination of observing network implementation, standards and best practices, and evaluation of the fitness-for-purpose of the system outputs for science and for societal benefit. Its work plan is based on sustaining present observing networks, developing new capabilities to respond to additional challenges, and developing the capacity of all IOC

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Member States to benefit from and participate in GOOS. GOOS is composed of global observing networks, regional cooperation often focused on GOOS Regional Alliances, and the implementing programmes of Member States. GOOS is the ocean component of GEOSS, the Global Earth Observing System of Systems.

Blue Planet: The Blue Planet task focuses on the ocean domain, which is crucial in all of the cycles of life on earth. Much of it is an area beyond national jurisdiction, and the common heritage of all humankind. Physical observations of the ocean are critical to monitoring climate variability and change, and to generating forecasts and projections of climate that can be used in climate services. Ocean observations help improve predictions of longer-range weather forecasts, and ocean-related hazards such as tsunamis, storm surges, and extreme waves require ocean observations for early warning systems. Because of their role in climate, ocean observations also provide important information for the forecasts of precipitation and drought, and of climate events that

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can lead to public health events or changes in energy demand. Ocean biological observations are critical in monitoring the health of ocean ecosystems and biodiversity, and the way ecosystem services are being impacted by a changing environment. They are also important in managing fisheries, which fall into the Agriculture SBA

Optics and Imaging III

Location: B: Klokkeklang
Wednesday, June 12 (9:00AM - 10:40AM)
Co-Chairs:
Eugene Stytsenko, Callaghan Innovation
Yujin Gao, Thales Australia

A Power-Over-Fiber System and Its Low Consumption Remote Equipment for Submarine Applications
Steven Perhirin, *ENIB*
Frédéric Audo, *ENIB*
Mikael Guegan, *ENIB*
Véronique Quintard, *ENIB*
André Pérennou, *ENIB*
Serge De Blasi, *IFREMER*
Laura Ghisa, *ENIB*
Yves Auffret, *IFREMER*

Numerical Simulation of Underwater Inhomogeneous Illumination
Zitao Wang, *Ocean University of China*
Bing Zheng, *Ocean University of China*
Haiyong Zheng, *Ocean University of China*

A Historical Perspective on Underwater Optical Imaging
Jules Jaffe, *Scripps Institution of Oceanography*

A Contemporary Perspective on Underwater Optical Imaging
Jules Jaffe, *Scripps Institution of Oceanography*

A High Pressure and High Optical Power Characterization Method Designed for Underwater Optical Elements
Serge De Blasi, *IFREMER*
Yves Auffret, *IFREMER*
Florent Colas, *IFREMER*
Jean-François Rolin, *IFREMER*
Christian Podeur, *IFREMER*
Frédéric Audo, *ENIB*
Steven Perhirin, *ENIB*
Véronique Quintard, *ENIB*
Mikaël Guegan, *ENIB*
André Pérennou, *ENIB*

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Smart Instruments I

Location: C: Per Gynt Hall
Wednesday, June 12 (9:00AM - 10:40AM)
Co-Chairs:
Paul van Walree, Norwegian Defence Research Establishment
Konstantin Kebkal, Evologics GmbH

Vector Averaging in a Wave Field
Albert Williams, *WHOI*
Archie Morrison, *Nobska Development, Inc.*
James Irish, *University of New Hampshire*

Coordinated formation control of nonlinear marine vessels under directed communication topology
Mingyu Fu, *Harbin Engineering University*
Jianfang Jiao, *Harbin Engineering University*
Jianxu Liu, *Harbin Engineering University*
Yuanhui Wang, *Harbin Engineering University*

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Scenario Based Fault Tolerant Model Predictive Control for Diesel-Electric Marine Power Plant
Torstein Bø, *Center for Autonomous Marine Operations and Systems*
Tor Arne Johansen, *Center for Autonomous Marine Operations and Systems*

Seabed shear-wave velocity estimation by interface-wave dispersion using different inversion methods
Hefeng Dong, *Norwegian University of Science and Technology*

Layered Model Sound Speed Profile Estimation
Hisashi Shiba, *NEC Corporation*

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Networks II

Location: D: Stage
Wednesday, June 12 (9:00AM - 10:40AM)
Co-Chairs:
Tor Reinen, SINTEF
Mandar Chitre, National University of Singapore

Low cost OFDM based transmitter for underwater acoustic communications
David Gandul, *SARTI-UPC*
Joaquin Fernandez, *SARTI-UPC*
Oriol Valls, *SARTI-UPC*
Antoni Mànuel-Làzaro, *UPC*

The LSTS tool chain for networked vehicle systems
José Pinto, *Porto University*
Paulo Dias, *FEUP - Porto University*
Ricardo Martins, *FEUP - Porto University*
Joao Fortuna, *University of Porto*
Eduardo Marques, *FEUP - Porto University*
João Sousa, *FEUP - Porto University*

Comparing the SUNSET and DESERT Frameworks for In Field Experiments in Underwater Acoustic Networks
Roberto Petroccia, *La Sapienza, University of Rome / WSENSE s.r.l.*
Daniele Spaccini, *La Sapienza, University of Rome / WSENSE s.r.l.*

A Back-Seat Driver for Remote Control of Experiments in Underwater Acoustic Sensor Networks
Roberto Petroccia, *La Sapienza, University of Rome / WSENSE s.r.l.*
Daniele Spaccini, *La Sapienza, University of Rome / WSENSE s.r.l.*

Adaptive Neural Network Controller applied to Dynamic Positioning of a Remotely Operated Vehicle
Chengcheng Pang, *Harbin Engineering University*
Guoqing Xia, *Harbin Engineering University*
Hongjian Wang, *Harbin Engineering University*
Le Yu, *Harbin Engineering University*

Smart ROV Systems II

Location: E: Troldtog
Wednesday, June 12 (9:00AM - 10:40AM)
Co-Chairs:
Mansoor Shaukat, National University of Singapore
Kamran Mohseni, Department of Mechanical and Aerospace Engineering, Department of Electrical and Computer Engineering, Institute for Networked Autonomous Systems, University of Florida

Near surface oceanographic measurements results using the SailBuoy
David Peddie, *CMR*
Ilker Fer, *UiB*

Multisensor Aided Inertial Navigation in 6DOF AUVs using a Multiplicative Error State Kalman Filter.
Francisco Font, *University of the Balearic Islands*
Joan Beltran, *SOCIB*
Gabriel Oliver-Codina, *University of the Balearic Islands*

Adaptive Space Time - Time Division Multiple Access Protocol (AST-TDMA) for an Underwater Swarm of AUV's
Gunilla Burrowes, *The University of Newcastle*
Jason Brown, *The University of Newcastle*
Jamil Khan, *The University of Newcastle*

A novel self-locking mechanism to connect two ROVs
Francesco Fornai, *Scuola Superiore Sant'Anna*
Gabriele Ferri, *Scuola Superiore Sant'Anna*
Daniel Toal, *University of Limerick*
Gerard Dooly, *University of Limerick*
Gerard Dooly, *University of Limerick*

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Ship Design and Environmental Aspects

Location: F: Gjendine
Wednesday, June 12 (9:00AM - 10:40AM)
Co-Chairs:
Fredrik Søreide, Promare
Ole Grøn, Strandingsmuseum
St. George, Center for Maritime Archaeology

Sequential Threat Detection for Harbor Defense: An X-ray Physics-Based Bayesian Approach
James Candy, *Lawrence Livermore National Laboratory*

Integrated Decision Support Approach for Ship Design
Matthias Peter Nowak, *MARINTEK*
Dariusz E. Fathi, *MARINTEK*
Audun Grimstad, *Det Norske Veritas (DNV)*
Trond Andreas Johnsen, *MARINTEK*
Magnus Stålhane, *MARINTEK*

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Underwater Noise Property of Water Jet Propelled Electric Boat
Masato Nishimura, *Tokyo University of Marine Science and Technology*
Etsuro Shimizu, *Tokyo University of Marine Science and Technology*

Line following for an autonomous sailboat using potential field method
Frederic Plumet, *ISIR - UPMC*
Hadi Saoud, *ISIR - UPMC*
Minh-Duc Hua, *ISIR - UPMC*

Evaluation and perspective on hydrodynamics and sediment dynamics in a man-made estuary
Margaret Chen, *Vrije Universiteit Brussel*
Florimond De Smedt, *Vrije Universiteit Brussel*
Stanislas Wartel, *Vrije Universiteit Brussel*

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Integrated Observing Systems I

Location: A: Concert Hall
Wednesday, June 12 (11:10AM - 12:50PM)
Co-Chairs:
Hugh Roarty, Rutgers University
Anna Rubio, AZTI-TECNALIA

US Integrated Ocean Observing System (IOOS®) delivering benefits and the Global HF Radar and Glider Initiative
Zdenka Willis, *US IOOS*

A comparison between SeaSonde and WERA HF radar current measurements
Lucy Wyatt, *James Cook University*
Dan Atwater, *James Cook University*
Arnstein Prytz, *James Cook University*
Sven Rehder, *James Cook University*

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Oceanographic Radar Timing Stability Required for New ITU Spectral Allocations
Donald Barrick, *CODAR Ocean Sensors*
Chad Whelan, *CODAR Ocean Sensors*
Jack Harlan, *National Oceanic and Atmospheric Administration*

Simulations of a moored power cable at OBSEA platform
Joana Prat, *Universitat Politecnica de Catalunya (UPC)*
Imma Massana, *Universitat Politècnica de Catalunya*
Joaquin Del Rio, *SARTI-UPC*

Offshore Wind
Location: B: Klokkeklang
Wednesday, June 12 (11:10AM - 12:50PM)
Co-Chairs:
Malcolm Heron, James Cook University
Alessia Viola, University of Palermo

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Grid Integration of Offshore Wind Power and Multiple Oil and Gas Platforms.
Magne Kolstad, *NTNU*
Tore Undeland, *NTNU*
Kamran Sharifabadi, *Statoil Research Center*
Atle Årdal, *SINTEF*

Preliminary plan of underwater environmental monitoring in the offshore wind farm in the western sea of Taiwan
Hsiang-Chih Chan, *Ship and Ocean Industries R&D Center*
Chan-Han Lin, *Ship and Ocean Industries R&D Center*
Ming-En Fang, *Ship and Ocean Industries R&D Center*
Ying-Chao Liao, *Ship and Ocean Industries R&D Center*
Sheng-Hua Chen, *Ship and Ocean Industries R&D Center*
Chia-Chuan Ou, *Ship and Ocean Industries R&D Center*

Dynamic performance of the modular series connected converter in a 100 kVdc-transformerless offshore wind turbine
Sverre Gjerde, *NTNU*
Tore Undeland, *NTNU*

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Smart Instruments II

Location: C: Per Gynt Hall
Wednesday, June 12 (11:10AM - 12:50PM)
Co-Chairs:
Albert Williams, WHOI
Torstein Bø, Center for Autonomous Marine Operations and Systems

Improvements in the Estimated Time of Flight of Acoustic Signals for AUV Localization
Breno Pinheiro, *Federal University of Santa Catarina*
Ubirajara Moreno, *Federal University of Santa Catarina*
João Tasso de Sousa, *University of Porto*
Orlando Rodríguez, *Algarve University*

Mathematic and Experimental Evaluation of Phase Errors when Receiving Hydro-Acoustic PSK-Signals with Sweep-Spread Carrier in Reverberant Underwater Environments
Konstantin Kebkal, *Evologics GmbH*
Anzhelika Kebkal, *Evologics GmbH*
Gleb Ermolin, *State Oceanarium of Ukraine*

WEDNESDAY

Comparing the resolution of Bartlett and MVDR estimators for bottom parameter estimation using pressure and vector sensor short array data
Paulo Felisberto, *LARSyS, University of Algarve*
Joseph Schneiderwind, *LARSyS, University of Algarve*
Paulo Santos, *LARSyS, University of Algarve*
Orlando Rodriguez, *LARSyS, University of Algarve*
Sérgio Jesus, *LARSyS, University of Algarve*

UWA Interference Analysis for Cognitive Access
Mauro Biagi, *University of Rome, Sapienza*
Stefano Rinauro, *University of Rome, Sapienza*
Roberto Cusani, *University of Rome, Sapienza*

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Networks III

Location: D: Stage
Wednesday, June 12 (11:10AM - 12:50PM)
Co-Chairs:
Mandar Chitre, National University of Singapore
Roald Otnes, Norwegian Defence Research Establishment

Aqua-Net Mate: a Real-time Virtual Channel/Modem Simulator for Aqua-Net
Yibo Zhu, *University of Connecticut*
Son Le, *University of Connecticut*
Lina Pu, *University of Connecticut*
Xiaoyan Lu, *University of Connecticut*
Zheng Peng, *University of Connecticut*
Jun-Hong Cui, *University of Connecticut*
Michael Zuba, *University of Connecticut*

WEDNESDAY

Connectivity prediction in underwater acoustic networks based on hydrodynamic modeling
Tor Reinen, *SINTEF*
Dag Slagstad, *SINTEF*

Preliminary OFDM based acoustic communication for underwater sensor networks synchronization
Oriol Pallares, *SARTI*
David Sarria, *SARTI*
Carlos Viñolo, *SARTI*
Joaquín del Rio, *SARTI-UPC*
Antoni Mànuel Làzaro, *SARTI*

Smart ROV Systems III

Location: E: Troldtog
Wednesday, June 12 (11:10AM - 12:50PM)
Co-Chairs:
Hongjian Wang, Automation College
Francesco Fornai, Scuola Superiore Sant'Anna

Visual Odometry for Autonomous Underwater Vehicles
Stephan Wirth, *University of the Balearic Islands*
Pep Lluis Negre Carrasco, *University of the Balearic Islands*
Gabriel Oliver-Codina, *University of the Balearic Islands*
Single Cluster PHD SLAM: Application to Autonomous Underwater Vehicles using Stereo Vision
Sharad Nagappa, *University of Girona*
Narcis Palomeras, *University of Girona*
Chee-Sing Lee, *University of Girona*
Nuno Gracias, *University of Girona*
Daniel Clark, *Heriot-Watt University*
Joaquim Salvi, *University of Girona*

Cooperative distributed algorithms for AUV teams: a minimum entropy approach
Andrea Caiti, *Interuniv. Ctr. Integrated Systems for the Marine Environment & Piaggio Ctr.*
Francesco Di Corato, *University of Pisa*
Daniele Meucci, *Research Center*
Andrea Munafo, *University of Pisa*

Low cost AUV in multiple deployment configuration for oceanographic research.
Javier Busquets, *NTNU*
Jose Vicente Busquets, *Universidad Politecnica de Valencia*
Federico Zilic, *UACh*
Francisco Perez, *UPV*
Dionisio Tudela, *UPCT*
Gonzalo Tampier, *UACh*
Esteban Patroni, *UACh*
Javier Gilabert, *Universidad Politecnica de Cartagena*
Jesus Busquets-Carbonell, *Professional Advisor*
Francinet Gonzalez, *Universidad Austral de Chile UACh*
Francisco Almonacid, *Universidad Austral de Chile UACh*
Christian Lazo, *Universidad Austral de Chile UACh*
Oscar Parra, *Universidad Austral de Chile UACh*
Rodolfo Boetcher, *Universidad Austral de Chile UACh*
Claudio Aron, *Universidad Austral de Chile UACh*
Ricardo Manzoliz, *Universidad Austral de Chile UACh*

Novel method for underwater navigation aiding using a companion underwater robot as a guiding platform
Vladimir Djapic, *NATO Centre for Maritime Research and Experimentation*
Dula Nad, *University of Zagreb*
Gabriele Ferri, *NATO Centre for Maritime Research and Experimentation*
Edin Omerdic, *University of Limerick*
Dan Toal, *University of Limerick*
Zoran Vukic, *University of Zagreb*
Gerard Dooly, *University of Limerick*

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WEDNESDAY

Ropes

Location: F: Gjendine
Wednesday, June 12 (11:10AM - 12:50PM)
Co-Chairs:
Matthias Peter Nowak, MARINTEK
James Candy, Lawrence Livermore National Laboratory

Improved High Tenacity/High Modulus Polyester for Stiffer Mooring Ropes
Milton Bastos, *MBB Enterprises, Inc.*

Testing Polyester Fiber Rope for Six Change-in-Length Properties (CILP)
John Flory, *Tension Technology International*
Vidar Ahjem, *Det Norske Veritas*

Use of Six Change-in-Length Properties (6 CILP) In Designing Fiber Rope Mooring Systems
John Flory, *Tension Technology International*
Vidar Ahjem, *Det Norske Veritas*

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Inspection Criteria for HMPE Rope
Dustin Heins, *Samson Rope Technologies*
Greg Mozsgai, *Samson Rope Technologies*
Angelo Tanzarella, *Endenburg*

'What If' scenario testing of deepwater ropes - new mooring practices
David Rowley, *Offspring International Ltd*
Sergio Leite, *LANKHORST EURONETE PORTUGAL, SA*

Integrated Observing Systems II
Location: A: Concert Hall
Wednesday, June 12 (1:50PM - 3:30PM)
Co-Chairs:
Mario Brito, National Oceanography Centre
Marco Cococcioni, Dipartimento di Ingegneria dell'Informazione

Improving the Measurements of High Frequency Radar: Reduced Averaging Times and Bistatics
Hugh Roarty, *Rutgers University*
Chad Whelan, *CODAR Ocean Sensors*
Josh Kohut, *Rutgers University*
Scott Glenn, *Rutgers University*

WEDNESDAY

Max Hubbard, *CODAR Ocean Sensors*

Surface circulation and Lagrangian transport in the SE Bay of Biscay from HF radar data
Anna Rubio, *AZTI-TECNALIA*
Lohitzune Solabarrieta, *AZTI-TECNALIA*
Manuel González, *AZTI-TECNALIA*
Sonia Castanedo, *IH Cantabria*
Raul Medina, *IH Cantabria*
Guillaume Charria, *IFREMER*
Julien Mader, *AZTI-TECNALIA*
José Antonio Aranda, *Directorate of Emergency Attention and Meteorology (Euskalmet)*

Towards ocean wave spectrum estimation from marine radar data by the Polar Fourier Transform
Al-Abbass Al-Habashneh, *Memorial University of Newfoundland*
Cecilia Moloney, *Memorial University of Newfoundland*
Eric Gill, *Memorial University of Newfoundland*

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Station Keeping of an Autonomous Surface Vehicle in Surf Zone
Edward Chen, *National Taiwan University*
Sheng-Wei Huang, *National Taiwan University*
Yu-Cheng Lin, *National Taiwan University*
Jen-Hwa Guo, *National Taiwan University*

Novel platform for ocean survey and autonomous sampling using multi-agent system
Tawfiq Taher, *Singapore MIT Alliance for Research and Technology*
Gabriel Weymouth, *Singapore MIT Alliance for Research and Technology*
Tony Varghese, *Singapore MIT Alliance for Research and Technology*

WEDNESDAY

Wave and Tidal Energy

Location: B: Klokkeklang
Wednesday, June 12 (1:50PM - 3:30PM)
Co-Chairs:
Hendrik Hans, Nanyang Technological University
Ju Young Kang, NTNU

Mapping Currents at Tidal Turbine Sites Using VHF High Resolution Ocean Radar
Malcolm Heron, *James Cook University*

Evaluation of the Potential Energy from Wave Motion on the Sicilian coast
Alessia Viola, *University of Palermo*
Vincenzo Franzitta, *University of Palermo*
Marco Trapanese, *University of Palermo*

Numerical Simulation of a Wave Generator: a Case of Study
Alessia Viola, *University of Palermo*
Vincenzo Franzitta, *University of Palermo*
Marco Trapanese, *University of Palermo*

Enrico Napoli, *University of Palermo*
Valeria Mamola, *University of Palermo*

A Numerical Study of Tidal Farm Efficiency in the Western Passage, US and Canada
Huijie Xue, *University of Maine*
Min Bao, *Ocean University of China*
Xianwen Bao, *Ocean University of China*
Matthew Cameron, *University of Maine*

Hydrodynamic Coefficients and Wave Loads for a WEC Device in Heaving Mode
Sébastien Olaya, *ENIB/EA 4325*
Jean-Matthieu Bourgeot, *ENIB/EA 4325*
Mohamed Benbouzid, *University of Brest*

WEDNESDAY

Sonars and Sensors I

Location: C: Per Gynt Hall
Wednesday, June 12 (1:50PM - 3:30PM)
Co-Chairs:
Asha Vijayakumar, EADS Innovation Works South Asia
Pauline Vincent, Telecom Bretagne

Angle of Arrival Estimation using MIMO Antenna
Zekeriya Aliyazicioglu, *California State Polytechnic University, Pomona*
Hua Hwang, *California State Polytechnic University, Pomona*

Robust superdirective end-fire arrays
Andrea Trucco, *DITEN - University of Genoa*
Federico Traverso, *DITEN - University of Genoa*
Marco Crocco, *Istituto Italiano di Tecnologia*

Towards Automated Performance Assessment in Synthetic Aperture Sonar
Roy Hansen, *Norwegian Defence Research Establishment*
Torstein Sæbø, *Norwegian Defence Research Establishment*

Mid-range 3D sonar
Eugene Stytsenko, *Callaghan Innovation*
David Greager, *Callaghan Innovation*
Jeremie Barrel, *Callaghan Innovation*
Neil Scott, *Callaghan Innovation*

Links I

Location: D: Stage
Wednesday, June 12 (1:50PM - 3:30PM)
Co-Chairs:
Youngchol Choi, KIOST
Sung-Joon Park, Gangneung-Wonju National University

Tuning an underwater communication link
Satish Shankar, *National University of Singapore*
Mandar Chitre, *National University of Singapore*

Hydrophone Array-Assisted Doppler Spread Compensation for Underwater Acoustic Communication
Tadashi Ebihara, *University of Tsukuba*

WEDNESDAY

On Path Loss of NLOS Underwater Wireless Optical Communication Links
Shijian Tang, *Tsinghua University*
Yuhan Dong, *Tsinghua University*
Xuedan Zhang, *Tsinghua University*

A Robust OFDM Modem for Underwater Acoustic Communications
Arnaud Bourré, *Institut Mines-Telecom, Telecom Bretagne*
Said Lmai, *Institut Mines-Telecom, Telecom Bretagne*
Christophe Laot, *Institut Mines-Telecom, Telecom Bretagne*
Sébastien Houcke, *Institut Mines-Telecom, Telecom Bretagne*

Covert underwater acoustic communication using whale noise masking on DSSS signal
Songzuo Liu, *Harbin Engineering University*
Gang Qiao, *Harbin Engineering University*
Asim Ismail, *Harbin Engineering University*
Bingjie Liu, *Harbin Engineering University*
Luwei Zhang, *Harbin Engineering University*

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Smart ROV Systems IV

Location: E: Troldtog
Wednesday, June 12 (1:50PM - 3:30PM)
Co-Chairs:
Francesco Baralli, NATO STO CMRE
Hongjian Wang, Automation College

Navigation and Control of an AUV affected by Asymmetric Thruster Response
Vincenzo Calabrò, *Kongsberg Maritime AS*
Francesco Di Corato, *University of Pisa*
Andrea Caiti, *Centro E. Piaggio - University of Pisa*

Simulation of Multiple AUVs Underwater Wireless Recharging
Hongjian Wang, *Automation College*
Le Yu, *Automation College*
Cun Li, *Automation College*
Juan Li, *Automation College*
Guoqing Xia, *Automation College*

WEDNESDAY

A Vector Polar Histogram Method Based Obstacle Avoidance Planning for AUV
Hongjian Wang, *Automation College*
Linlin Wang, *Automation College*
Juan Li, *Automation College*
Lixin Pan, *Beijing Institute of Control Engineering*

Design of a small sized self-powered robot for monitoring the ocean water column
Francesco Fornai, *Scuola Superiore Sant'Anna*
Gabriele Ferri, *Scuola Superiore Sant'Anna*
Cecilia Laschi, *Scuola Superiore Sant'Anna*
Barbara Mazzolai, *Istituto Italiano di Tecnologia*

Energy-efficient path planning for fully propelled AUVs in congested coastal waters
Teong-Beng Koay, *National University of Singapore*
Mandar Chitre, *National University of Singapore*

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Maritime Archeology I
Location: F: Gjendine
Wednesday, June 12 (1:50PM - 3:30PM)
Co-Chairs:
Jean-Pierre Hermand, Université Libre de Bruxelles
Øyvind Ødegård, NTNU

Archaeology and Biology in the Deep Sea - The Ormen Lange Marine Archaeology Project
Fredrik Søreide, *Norwegian University of Science and Technology*
Torkild Bakken, *Norwegian University of Science and Technology*
Marek Jasinski, *Norwegian University of Science and Technology*

Investigation of deep Stone Age settlements covered by sea floor sediments. Preliminary methodological considerations.
Ole Grøn, *Strandingsmuseum St. George, Center for Maritime Archaeology*
Antonio Dell'Anno, *Department of Life and Environmental Sciences (DiSVA)*
Jean-Pierre Hermand, *Université Libre de Bruxelles*

WEDNESDAY

Sub-bottom profiling for large-scale maritime archaeological survey: An experience-based approach
Ole Grøn, *Strandingsmuseum St. George, Center for Maritime Archaeology*
Lars Boldreel, *University of Copenhagen*

Mapping the Moon: Using a lightweight AUV to survey the site of the 17th Century ship 'La Lune'
Nuno Gracias, *University of Girona*
Pere Ridao, *University of Girona*
Rafael Garcia, *University of Girona*
Javier Escartin, *IPGP/CNRS*
Michel L'Hour, *DRASSM*
Franca Cibecchini, *DRASSM*
Ricard Campos, *University of Girona*
Marc Carreras, *University of Girona*
David Ribas, *University of Girona*
Narcis Palomeras, *University of Girona*
Lluis Magi, *University of Girona*
Albert Palomer, *University of Girona*
Tudor Nicosevici, *University of Girona*
Ricard Prados, *University of Girona*

Ramon Hegedus, *Max Planck Institute for Informatics*
Laszlo Neumann, *ICREA / University of Girona*
Francesco de Filippo, *Università della Calabria*
Angelos Mallios, *University of Girona*

Gliders

Location: A: Concert Hall
Wednesday, June 12 (4:00PM - 5:40PM)
Co-Chairs:
Thomas Soltwedel, Alfred Wegener Institute for Polar and Marine Research
Stewart Chalmers, University of Aberdeen

Ocean Coverage Management Process for Gliders Operations
Mario Brito, *National Oceanography Centre*
David Smeed, *National Oceanography Centre*
Gwyn Griffiths, *Autonomous Analytics*

WEDNESDAY

Making the Optimal Sampling of the Ocean Simpler: an Automatic Tool for Planning Glider Missions Using Forecasts Downloaded From MyOcean

Marco Cococcioni, *Dipartimento di Ingegneria dell'Informazione*
Gabriele Ferri, *Centre for Maritime Research & Experimentation (CMRE)*
Alberto Alvarez, *Centre for Maritime Research & Experimentation (CMRE)*
Beatrice Lazzerini, *Dipartimento di Ingegneria dell'Informazione*

Sampling on-demand with fleets of underwater gliders

Gabriele Ferri, *NATO Centre for Maritime Research and Experimentation*
Alberto Alvarez, *NATO Centre for Maritime Research and Experimentation*
Marco Cococcioni, *Dipartimento dell'Informazione, University of Pisa*

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Highlights from latest Sea-Operations in the Macaronesian region with Unmanned Autonomous Marine Gliding Vehicles

Carlos Barrera, *Oceanic Platform of the Canary Islands*
Tania Morales, *Oceanic Platform of the Canary Islands*
Josue Viera, *Oceanic Platform of the Canary Islands*
Alvaro Lorenzo, *Oceanic Platform of the Canary Islands*
Daura Vega, *Oceanic Platform of the Canary Islands*
Jose Rueda, *Instituto Canario de Ciencias Marinas (ICCM)*
Octavio Llinás, *Oceanic Platform of the Canary Islands*

WEDNESDAY

Emerging Concepts

Location: B: Klokkeklang
Wednesday, June 12 (4:00PM - 5:40PM)
Co-Chairs:
Stan Dosso, University of Victoria
Hugh Roarty, Rutgers University

Whisker-like Geometries And Their Force Reduction Properties
Hendrik Hans, *Nanyang Technological University*
Gabriel Weymouth, *University of Southampton*
Jianmin Miao, *Nanyang Technological University*
Michael Triantafyllou, *Massachusetts Institute of Technology*

Application of Morphing Technique and Cartesian Grid to Airfoil Design
Ju Young Kang, *NTNU*

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Design and performance analysis of the mechanical structure of a piezoelectric generator by Von Karman vortexes for underwater energy harvesting
Andrea Perelli, *UNIGE*
Davide Leoncini, *OGS*
Giovanni Sandroni, *UNIGE*
Maurizio Soldani, *OGS*
Osvaldo Faggioni, *OGS*
Rodolfo Zunino, *University of Genoa*

Sonars and Sensors II

Location: C: Per Gynt Hall
Wednesday, June 12 (4:00PM - 5:40PM)
Co-Chairs:
Natàlia Hurtós, University of Girona
Bahattin Karakaya, Qatar University

Detection performance analysis for sonar compressive signal processing
Asha Vijayakumar, *EADS Innovation Works South Asia*
Timo Bretschneider, *EADS Innovation Works South Asia*

WEDNESDAY

Multibeam interferometric sounding quality for FM signals: modelling and comparison with field data
Pauline Vincent, *Telecom Bretagne*
Frederic Maussang, *Telecom Bretagne*
Xavier Lurton, *IFREMER*
Rene Garello, *Telecom Bretagne*
Christophe Sintes, *Telecom Bretagne*

Automatic target classification for low-frequency anti-submarine warfare sonars
Karl Thomas Hjelmervik, *FFI*
Henrik Berg, *FFI*

Adaptive Subarrays Beamforming
Gilles Gaonach, *Thales Underwater Systems*
Marie Gehant, *Thales Underwater Systems*

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Links II

Location: D: Stage
Wednesday, June 12 (4:00PM - 5:40PM)
Co-Chairs:
Hee-Chun Song, Scripps Institution of Oceanography
Karsten Wiedmann, University of Rostock

Comparison of modeling approaches to low-frequency noise propagation in the ocean
Alexios Korakas, *Norwegian University of Science and Technology*
Jens M. Hovem, *Norwegian University of Science and Technology*
On the definition of receiver output SNR and the probability of bit error
Paul van Walree, *Norwegian Defence Research Establishment*

Geographical AODV protocol for multi-hop maritime communications
Youngchol Choi, *KIOST*
Yong-kon Lim, *KIOST*
A novel cophasing method for reliable underwater acoustic communications
Sung-Joon Park, *Gangneung-Wonju National University*

WEDNESDAY

Smart ROV Systems V

Location: E: Troldtog
Wednesday, June 12 (4:00PM - 5:40PM)
Co-Chairs:
Edmund Brekke, ARL / TMSI / NUS
Enrico Simetti, DIBRIS - University of Genova

Mathematical model of the Guanay II AUV
Julian González, *Universitat Politècnica de Catalunya*
Ivan Masmitja, *Universitat Politècnica de Catalunya*
Spartacus Gomariz, *Universitat Politècnica de Catalunya*
Carles Batlle, *Universitat Politecnica de Catalunya*
David Sarria-Gandul, *Universitat Politecnica de Catalunya*
Joaquin Del-Rio-Fernandez, *Universitat Politecnica de Catalunya*

Design, Construction of a Small Unmanned Underwater Vehicle
Hongjian Wang, *Automation College*
Long XI, *Automation College*
Juan Li, *Automation College*
Huinan Zhou, *Automation College*

Vision-based localization and mapping system for AUV intervention
Narcís Palomeras, *University of Girona*
Sharad Nagappa, *University of Girona*
David Ribas, *University of Girona*
Nuno Gracias, *University of Girona*
Marc Carreas, *University of Girona*

GPU-Based Real-Time Synthetic Aperture Sonar Processing On-Board Autonomous Underwater Vehicles
Francesco Baralli, *NATO STO CMRE*
Jesus Ortiz, *Istituto Italiano di Tecnologia*
Michel Couillard, *NATO STO CMRE*
Darwin Caldwell, *Istituto Italiano di Tecnologia*

Maritime Archeology II

Location: F: Gjendine
Wednesday, June 12 (4:00PM - 5:40PM)
Co-Chairs:
Ole Grøn, Strandingsmuseum St. George, Center for Maritime Archaeology
Nuno Gracias, University of Girona

Geoacoustic characterization of Stone Age cultural layers: Preliminary FE modelling
Jean-Pierre Hermand, *Université Libre de Bruxelles*
Rostand Tayong, *Université Libre de Bruxelles*

Using Synthetic Aperture Sonar in Marine Archaeological Surveys - some first experiences
Øyvind Ødegård, *NTNU*
Petter Lågstad, *Norwegian Defence Research Establishment*
Martin Ludvigsen, *NTNU*

Marine Archaeological Resources Management in Indonesia's Coastal Zone
Ira Dillenia, *Ministry of Marine Affairs and Fisheries Republic of Indonesia*

Technical Program

Thursday June 13th 2013

Observatories I

Location: A: Concert Hall
Thursday, June 13 (9:00AM - 10:40AM)
Co-Chairs:
Hans Waldmann, Bremen University/MARUM
Jay Pearlman, IEEE

FRAM - Permanent Observations in a Gateway to the Arctic Ocean
Thomas Soltwedel, *Alfred Wegener Institute for Polar and Marine Research*
Ursula Schauer, *Alfred Wegener Institute for Polar and Marine Research*
Olaf Boebel, *Alfred Wegener Institute for Polar and Marine Research*
Eva-Maria Nöthig, *Alfred Wegener Institute for Polar and Marine Research*
Astrid Bracher, *Alfred Wegener Institute for Polar and Marine Research*
Katja Metfies, *Alfred Wegener Institute for Polar and Marine*

Research
Ingo Schewe, *Alfred Wegener Institute for Polar and Marine Research*
Michael Klages, *University of Gothenburg*
Antje Boetius, *Alfred Wegener Institute for Polar and Marine Research*

Design and Implementation of a Low-Cost Near-Shore Cabled Observatory
Stewart Chalmers, *University of Aberdeen*
Alan Jamieson, *University of Aberdeen*
John Polanski, *University of Aberdeen*
Imants Priede, *University of Aberdeen*
Philip Bagley, *Aker Solutions*

The design and deployment of a real-time wide spectrum acoustic monitoring system for the ocean energy industry
Harry Kolar, *IBM Research*
Eugene McKeown, *Biospheric Engineering, Ltd.*
Mark Purcell, *IBM Research*
Paul Gaughan, *SmartBay*
A. Westbrook, *Marine Institute of Ireland*
Michael Barry, *IBM Research*

Albert Akhriev, *IBM Research*
Jer Hayes, *IBM Research*
Antonino Castelfranco, *IBM Research*
Glenn Nolan, *Marine Institute of Ireland*
Damien Glynn, *P & O Maritime*
Declan Murray, *P & O Maritime*
Kieran Adlum, *P & O Maritime*

Long term subsea monitoring of academic research sites and oil and gas industrial sites: common standards and interoperability?
Jean-Francois Rolin, *IFREMER*
Xavier Bompais, *IFREMER*
Yvon Le Guen, *IFREMER*

Low-cost moored instrumentation for citizens' education and participation in environmental stewardship
Raul Bardají, *CSIC*
Jaume Piera, *CSIC*

THURSDAY

Arctic Operations

Location: B: Klokkeklang
Thursday, June 13 (9:00AM - 10:40AM)
Co-Chairs:
Vincenzo Franzitta, University of Palermo
Anders Tengberg, University of Gothenburg

Three-dimensional acoustic localization in the Arctic using an ice-mounted geophone
Stan Dosso, *University of Victoria*

Multi-Use HF Radar for Arctic Maritime Domain Awareness
Hugh Roarty, *Rutgers University*
Hank Statscewich, *University of Alaska, Fairbanks*
Michael Smith, *Rutgers University*
Chad Whelan, *CODAR Ocean Sensors*
Scott Glenn, *Rutgers University*
Donald Barrick, *CODAR Ocean Sensors*
Tom Weingartner, *University of Alaska, Fairbanks*

Maritime Operations in Arctic Waters
Kay Fjørtoft, *MARINTEK*
Fritz Bekkadal, *MARINTEK*
Pawel Kabacik, *Wroclaw University of Technology*

Sonars and Sensors III

Location: C: Per Gynt Hall
Thursday, June 13 (9:00AM - 10:40AM)
Co-Chairs:
Konstantinos Pelekanakis, National University of Singapore
Xuedan Zhang, Tsinghua University

Evaluation of Registration Methods on Two-Dimensional Forward-Looking Sonar Imagery
Natàlia Hurtós, *University of Girona*
Sharad Nagappa, *University of Girona*
Xavier Cufí, *University of Girona*
Yvan Petillot, *Ocean Systems Laboratory*
Joaquim Salvi, *University of Girona*

Multi-Resampling Doppler Compensation in Cooperative Underwater OFDM Systems
Bahattin Karakaya, *Qatar University*
Mazen Hasna, *Qatar University*
Tolga Duman, *Bilkent University*
Murat Uysal, *Özyegin University*
Ali Ghrayeb, *Texas A&M University at Qatar*

THURSDAY

Automatic Detection of Underwater Chain Links using a Forward-Looking Sonar
Natàlia Hurtós, *University of Girona*
Narcís Palomeras, *University of Girona*
Sharad Nagappa, *University of Girona*
Joaquim Salvi, *University of Girona*

Empirical Acoustic Attenuation of the Seawater
Xavier Roset-Juan, *UPC*
Albert Garcia-Benadi, *UPC*
Joaquin del Rio, *SARTI-UPC*
Mike Vanderschaa, *LAB*
Antoni Manuel-Lazaro, *UPC*

Communication Channels

Location: D: Stage
Thursday, June 13 (9:00AM - 10:40AM)
Co-Chairs:
Fredrik Søreide, Promare
Mike Eichhorn, Ilmenau University of Technology

How best to utilize bandwidth in underwater acoustic communication?
Hee-Chun Song, *Scripps Institution of Oceanography*

Constellation-Constrained Capacities for Parametric Underwater Communication
Karsten Wiedmann, *University of Rostock*
Tobias Weber, *University of Rostock*

Coastal Coverage for Maritime Broadband Communications
Terje Roste, *Norwegian University of Science and Technology*
Kun Yang, *Norwegian University of Science and Technology*
Fritz Bekkadal, *MARINTEK*

Adaptive turbo equalization for underwater acoustic communication
Loris Cannelli, *Delft University of*

THURSDAY

Technology
Geert Leus, *Delft University of Technology*
Henry Dol, *TNO*
Paul van Walree, *FFI*

Partial FFT demodulation for Coherent Detection of OFDM Signals Over Underwater Acoustic Channels
Yashar Aval, *Northeastern University*
Milica Stojanovic, *Northeastern University*

Smart ROV Systems VI

Location: E: Troldtog
Thursday, June 13 (9:00AM - 10:40AM)
Co-Chairs:
Andreas Haeusler, Instituto Superior Tecnico
Enric Galceran, University of Girona

Bayesian Multi-Hypothesis Scan Matching
Edmund Brekke, *ARL / TMSI / NUS*
Mandar Chitre, *ARL / TMSI / NUS*

Experimental Results on Task Priority and Dynamic Programming Based Approach

to Underwater Floating Manipulation
Enrico Simetti, *DIBRIS - University of Genova*
Giuseppe Casalino, *DIBRIS - University of Genova*
Sandro Torelli, *DIBRIS - University of Genova*
Alessandro Sperinde, *DIBRIS - University of Genova*
Alessio Turetta, *DIBRIS - University of Genova*

Development of Fuel Cell System for Underwater Power Source
Tadahiro Hyakudome, *JAMSTEC*
Hiroshi Yoshida, *JAMSTEC*
Takeshi Nakatani, *JAMSTEC*
Yutaka Ota, *JAMSTEC*
Toshihiro Tani, *Mitsubishi Heavy Industres Ltd.*
Koki Sugihara, *Mitsubishi Heavy Industres Ltd.*
Takuya Moriga, *Mitsubishi Heavy Industres Ltd.*
Takashi Iwamoto, *The Japan Steel Works LTD.*
Yoshinori Kawaharazaki, *The Japan Steel Works LTD.*
Tomomasa Oda, *The Japan Steel Works LTD.*
Yasuhiro Fujita, *The Japan Steel Works LTD.*

THURSDAY

Biogeochemical Research with an Autonomous Underwater Vehicle: Payload Structure and Arctic Operations
Thorben Wulff, *Alfred Wegener Institute for Polar and Marine Research*
Sascha Lehmenhecker, *Alfred Wegener Institute for Polar and Marine Research*
Eduard Bauerfeind, *Alfred Wegener Institute for Polar and Marine Research*
Ulrich Hoge, *Alfred Wegener Institute for Polar and Marine Research*
Kimberly Shurn, *Bluefin Robotics Corporation*
Michael Klages, *University of Gothenburg*

Development of P-SURO II AUV and its experimental study
Ji-Hong Li, *KIRO*
Mun-Jik Lee, *KIRO*
Sang-Hyun Park, *KIRO*
Jong-Geol Kim, *KIRO*
J. T. Kim, *KIRO*
J. H. Suh, *KIRO*

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Surface Remote Sensing I

Location: F: Gjendine
Thursday, June 13 (9:00AM - 10:40AM)
Co-Chairs:
Takero Yoshida, The University of Tokyo
Hongkun Li, LUNAM Université - Université de Nantes

A Two-pass Unsupervised Clustering Algorithm for Polarimetric SAR Image Segmentation
Jianchao Fan, *National Marine Environmental Monitoring Center*
Jun Wang, *The Chinese University of Hong Kong*

Thermal IR emissivity of oil films on sea surfaces at moderate winds
Nicolas Pinel, *University of Nantes*
Christophe Bourlier, *University of Nantes*
Irina Sergievskaya, *Russian Academy of Sciences*

Analysis of simulated reflected L-Band signals from a sea surface using time-frequency representations
Alexandre Baussard, *ENSTA Bretagne*
Arnaud Coatanhay, *ENSTA Bretagne*

Side-scan sonar simulation for a kernelized seafloor shape reconstruction approach
Philipp Woock, *Fraunhofer IOSB*

Observatories II
Location: A: Concert Hall
Thursday, June 13 (11:10AM - 12:50PM)
Co-Chairs:
Scott Glenn, Rutgers University
Yang-Ming Fan, National Cheng Kung University

The W1-M3A Multidisciplinary Off-shore Observing System
Sara Pensieri, *National Research Council of Italy*
Roberto Bozzano, *National Research Council of Italy*
Elisabetta Schiano, *National Research Council of Italy*
Paola Picco, *ENEA-CRAM*
Elisa Canepa, *National Research Council of Italy*
Laura Pensieri, *Private Consultant*

The M3A Network of Open Ocean Observatories in the Mediterranean Sea
Roberto Bozzano, *National Research Council of Italy*
Sara Pensieri, *National Research Council of Italy*
Tatiana Tsagaraki, *Hellenic Center for Marine Research*
Vanessa Cardin, *Istituto Nazionale di Oceanografia e di Geofisica Sperimentale*
Laura Pensieri, *Private Consultant*
George Petihakis, *Hellenic Center for Marine Research*
Fabio Brunetti, *Istituto Nazionale di Oceanografia e di Geofisica Sperimentale*
Manolis Ntoumas, *Hellenic Center for Marine Research*
Dimistris Podaras, *Hellenic Center for Marine Research*
Leonidas Perivoliotis, *Hellenic Center for Marine Research*
Manuel Bensi, *Istituto Nazionale di Oceanografia e di Geofisica Sperimentale*

THURSDAY

COOPEUS - A framework for improving the transatlantic cooperation on ocean obsering infrastructures
Hans Waldmann, *Bremen University/MARUM*
Jay Pearlman, *IEEE*

Inter-disciplinary Ocean Research, a path forward
Jay Pearlman, *IEEE*
Albert Williams, *IEEE*

Observing Platforms

Location: B: Klokkeklang
Thursday, June 13 (11:10AM - 12:50PM)
Co-Chairs:
Ole Grøn, Strandingsmuseum
St. George, Center for Maritime Archaeology
Karl Thomas Hjelmervik, FFI

Design and experimental test of a low cost weather buoy
Vincenzo Franzitta, *University of Palermo*
Marco Trapanese, *University of Palermo*
Carlo Giaconia, *University of Palermo*
Alessia Viola, *University of Palermo*
Paolo Ferrara, *University of Palermo*

Multi-parameter observations from coastal waters to the deep sea: focus on quality control and sensor stability
Anders Tengberg, *University of Gothenburg*
Mikhail Kononets, *University of Gothenburg*
Daria Atamanchuk, *University of Gothenburg*
Per Hall, *University of Gothenburg*
Christoph Waldmann, *University of Bergen*

Ocean Ambient Noises Modulated by Internal Solitary Waves
Yiing Yang, *Department of Marine Science/Naval Academy*
Hsian-Chih Chan, *Ship and Ocean Industries R&D Center*
Jeff Wu, *National Taiwan University*
Wen-Der Liang, *Department of Marine Science/Naval Academy*
Chi-Fang Chen, *National Taiwan University*
Ruey-Chang Wei, *National Sun Yat-sen University*

THURSDAY

Visualization of sonar performance within environmental information
Elin Dombestein, *Norwegian Defence Research Establishment*
Svein Mjølsnes, *Norwegian Defence Logistic Organisation*
Fredrik Hermansen, *Norwegian Defence Research Establishment*

Preliminary study on higher-order modified Boussinesq equations for internal waves in a two-fluid system
Chi-Min Liu, *Chienkuo Technology University*

Acoustics and Physics I

Location: C: Per Gynt Hall
Thursday, June 13 (11:10AM - 12:50PM)
Co-Chairs:
Olga Lopera, Royal Military Academy
Frédéric Audo, ENIB

A class of affine projection filters that exploit sparseness under symmetric alpha-stable noise
Konstantinos Pelekanakis, *National University of Singapore*
Mandar Chitre, *National University of Singapore*

Flow and Scour around Cylindrical Objects in Laboratory Experiments.
Peter Menzel, *University of Rostock*
Alfred Leder, *University of Rostock*
Tom Rückborn, *University of Rostock*
Channel Estimation or Prediction for UWA?
Mauro Biagi, *University of Rome, Sapienza*
Stefano Rinauro, *University of Rome, Sapienza*
Roberto Cusani, *University of Rome, Sapienza*

THURSDAY

Sound Pressure Field Focused by Doublet with Acrylic Plano-Concave Lens and Silicon-Rubber Fresnel Lens
Toshiaki Nakamura, *National Defense Academy*
Yuji Sato, *University of Tsukuba*
Hanako Ogasawara, *National Defense Academy*
Koichi Mizutani, *University of Tsukuba*

Reverberation tails in power delay profiles: Effects and modeling
Trond Jenserud, *FFI*
Roald Otnes, *FFI*

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Survey Systems

Location: D: Stage
Thursday, June 13 (11:10AM - 12:50PM)
Co-Chairs:
Marco Bibuli, CNR-ISSIA
Ove Hagen, Norwegian Defence Research Establishment

Ultradeep-Sea Exploration in the Puerto Rico Trench
Fredrik Søreide, *Promare*
Alan Jamieson, *University of Aberdeen*

Modular AUV System for Sea Water Quality Monitoring and Management
Mike Eichhorn, *Ilmenau University of Technology*
Christoph Ament, *Ilmenau University of Technology*
Torsten Pfuetzenreuter, *Fraunhofer Application Center*
Marco Jacobi, *Fraunhofer Application Center*
Ralf Taubert, *Ilmenau University of Technology*

THURSDAY

Bathymetry-based SLAM with Difference of Normals Point-Cloud subsampling and probabilistic ICP registration
Albert Vila, *Universitat de Girona*
Pere Ridao Rodríguez, *University of Girona*
David Ribas Romagos, *University of Girona*
Angellos Mallios, *Universitat de Girona*
Guillem Vallicrosa, *Universitat de Girona*
Nuno Gracias, *University of Girona*

MESSOR - A towed underwater vehicle for quantifying and describing the distribution of pelagic organisms and their ambient physical environment
Tor Knutsen, *Institute of Marine Research*
Webjørn Melle, *Institute of Marine Research*
Espen Strand, *Institute of Marine Research*
Arnt-Lennard Fuglestad, *GexCon AS*
Magnar Mjanger, *Institute of Marine Research*
Harald Fitje, *Institute of Marine Research*
Ove Ørjansen, *Sevan Marine ASA*
Terje Vedeler, *Aker Solutions*
Cecilie Broms, *Institute of Marine*

Research
Espen Bagøien, *Institute of Marine Research*

Temporal Statistics of Irradiance in Moving Turbulent Ocean
Shijian Tang, *Tsinghua University*
Xuedan Zhang, *Tsinghua University*
Yuhan Dong, *Tsinghua University*

Smart ROV Systems VII,

MORPH I
Location: E: Troldtog
Thursday, June 13 (11:10AM - 12:50PM)
Co-Chairs:
Marcus Hamann, Ilmenau University of Technology
Max Pfingsthorn, Jacobs University Bremen

The MORPH Concept and Its Application in Marine Research
Joerg Kalwa, *Atlas Hydrographic*
Marina Silva, *Universidade dos Açores*
Fernando Tempera, *Universidade dos Açores*
António Pascoal, *Instituto Superior Tecnico*
Jorge Fontes, *Instituto do Mar (IMAR)*
Thomas Glotzbach, *Technische*

THURSDAY

Universität Ilmenau
Joao Alves, *CMRE*
Lorenzo Brignone, *IFREMER*
Pere Ridao, *University of Girona*
Massimo Caccia, *CNR-ISSIA*
Andreas Birk, *Jacobs University Bremen*

Towards Innovative Approaches of Team-Oriented Mission Planning and Mission Languages for Multiple Unmanned Marine Vehicles in Event-Driven Mission Scenarios
Sebastian Eckstein, *Ilmenau University of Technology*
Thomas Glotzbach, *Ilmenau University of Technology*
Christoph Ament, *Ilmenau University of Technology*

Cooperative AUV Motion Planning using Terrain Information
Andreas Haeusler, *Instituto Superior Tecnico*
Alessandro Saccon, *Eindhoven University of Technology*
Antonio Aguiar, *University of Porto*
John Hauser, *University of Colorado at Boulder*
Antonio Pascoal, *Instituto Superior Tecnico*

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Complex Structure Profile Estimation and Following with the GIRONA500 AUV
Enric Galceran, *University of Girona*
Marc Carreras, *University of Girona*
Narcís Palomeras, *University of Girona*
Pere Ridao, *University of Girona*

Surface Remote Sensing II

Location: F: Gjendine
Thursday, June 13 (11:10AM - 12:50PM)
Co-Chairs:
Miquel Massot-Campos, University of the Balearic Islands
Céline Danilo, CEA

Spatio-temporal segmentation of mesoscale ocean surface dynamics using satellite SST and SSH observations
Pierre Tandeo, *Telecom Bretagne*
Ronan Fablet, *Telecom Bretagne*
René Garello, *Telecom Bretagne*

Research on SAR Imaging Mechanism for Ocean Wave Propagating in Azimuth Direction by Using Numerical Simulation
Takero Yoshida, *The University of Tokyo*
Chang-Kyu Rheem, *University of Tokyo*

Cross-polarizations in sea surface infrared reflectivity
Hongkun Li, *LUNAM Université - Université de Nantes*
Nicolas Pinel, *LUNAM Université - Université de Nantes - IETR Laboratory*
Christophe Bourlier, *LUNAM Université - Université de Nantes - IETR Laboratory*

Power Cepstra Measured in Shallow Waters
Yujin Gao, *Thales Australia*

On the Use of Statistical Tests on Homomorphic Filtered SAS Images
Imen Mandhouj, *Telecom Bretagne*
Frederic Maussang, *Telecom Bretagne*
Basel Solaiman, *Telecom Bretagne*
Hamid Amiri, *National School of Engineering of Tunis (ENIT)*

Forecasting

Location: A: Concert Hall
Thursday, June 13 (1:50PM - 3:30PM)
Co-Chairs:
Hans Waldmann, Bremen University/MARUM
Jay Pearlman, IEEE

Ensemble wave forecasting over typhoon period
Yang-Ming Fan, *National Cheng Kung University*
Shunqi Pan, *Cardiff University*
Jia—Ming Chen, *National Cheng Kung University*
Chia Chuen Kao, *National Cheng Kung University*

Process-driven Improvements to Hurricane Intensity and Storm Surge Forecasts in the Mid-Atlantic Bight.
Scott Glenn, *Rutgers University*
Greg Seroka, *Rutgers University*
Travis Miles, *Rutgers University*
Yi Xu, *Rutgers University*
Louis Bowers, *Rutgers University*
John Kerfoot, *Rutgers University*
Laura Palamara, *Rutgers University*
Rich Dunk, *Rutgers University*
Hugh Roarty, *Rutgers University*
Josh Kohut, *Rutgers University*
Nickitas Georges, *Stevens*

THURSDAY

Institute of Technology
Oscar Schofield, *Rutgers University*
Alan Blumberg, *Stevens Institute of Technology*

Optimization of operative wave forecasting by Artificial Intelligence
Giulia De Masi, *Saipem*
Floriano Gianfelici, *Saipem*
Yu Poh Foo, *Saipem*

Operational models hierarchy for short term marine predictions: the Adriatic Sea example
Aniello Russo, *DISVA, Università Politecnica delle Marche*
Alessandro Coluccelli, *DISVA, Università Politecnica delle Marche*
Andrea Valentini, *SIMC-ARPA-ER*
Tiziana Paccagnella, *SIMC-ARPA-ER*
Sandro Carniel, *ISMAR-CNR*
Alvise Benetazzo, *ISMAR-CNR*
Mariangela Ravaioli, *ISMAR-CNR*
Giovanni Bortoluzzi, *ISMAR-CNR*

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Management of beach pollution by automatic control
Yolanda Bolea, *Technical University of Catalonia*
Antoni Grau, *Technical University of Catalonia*

Oceans Space Surveillance I

Location: B: Klokkeklang
Thursday, June 13 (1:50PM - 3:30PM)
Co-Chairs:
Elin Dombestein, Norwegian Defence Research Establishment
Yiing Yang, Department of Marine Science/Naval Academy

Ocean space surveillance system OSS
Knut Grythe, *SINTEF*
Morten Alver, *SINTEF*
Grim Eidnes, *SINTEF*
Irene Jensen, *SINTEF*
Arne Lie, *SINTEF*
Finn Michelsen, *SINTEF*
Mark Reed, *SINTEF*
Tor Reinen, *SINTEF*
Dag Slagstad, *SINTEF*

THURSDAY

Time-Evolving Acoustic Propagation Modelling in a Complex Ocean Environment

Mathieu Colin, *TNO*
Tim Duda, *WHOI*
Lianke Te Raa, *TNO*
Tim van Zon, *TNO*
Patrick Haley, *MIT*
Pierre Lermusiaux, *MIT*
Wayne Leslie, *MIT*
Chris Mirabito, *Massachusetts Institute of Technology*
Frans Peter Lam, *TNO*
Arthur Newhall, *WHOI*
Ying-Tsong Lin, *WHOI*
James Lynch, *WHOI*

Improved estimation of oceanographic climatology using empirical orthogonal functions

Karl Thomas Hjelmervik, *FFI*
Karina Hjelmervik, *Vestfold University College*

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Monitoring the Oceanic Environment Through Passive Underwater Acoustics

Sara Pensieri, *National Research Council of Italy*
Roberto Bozzano, *National Research Council of Italy*
Marios Anagnostou, *National Observatory of Athens*
Emmanouil Anagnostou, *Civil and Environmental Engineering, University of Connecticut*
Renzo Bechini, *Agenzia Regionale per la Protezione Ambientale Piemonte*
Jeff Nystuen, *Applied Physics Laboratory, University of Washington*

Match Elimination using Cycle Basis in Underwater Optical Mapping

Armagan Elibol, *KAIST*
Jinwhan Kim, *KAIST*
Son-Cheol Yu, *POSTECH*
Nuno Gracias, *University of Girona*
Rafael Garcia, *University of Girona*

Acoustics and Physics II

Location: C: Per Gynt Hall
Thursday, June 13 (1:50PM - 3:30PM)
Co-Chairs:
Trond Jenserud, FFI
Gilles Gaonach, Thales Underwater Systems

Target classification from HR sonar images
Olga Lopera, *Royal Military Academy*
Yves Dupont, *Ministry of Defence*

Study of the Optical Phenomena occurring in a 10 km Long Optically Powered Data Link Dedicated to a Submarine Cabled Observatory
Frédéric Audo, *ENIB*
Steven Perhirin, *ENIB*
Véronique Quintard, *ENIB*
Mikael Guegan, *ENIB*
Laura Ghisa, *ENIB*
André Pérennou, *ENIB*

Small-sized model for Pressure-tight Ceramic Housings with a elongated ceramic cylinder
Kenichi Asakawa, *Japan Agency fo Marine-Earth Science and Technology*
Yosaku Maeda, *JAMSTEC*

Tadahiro Hyakudome, *JAMSTEC*
Masa Yoshida, *Kyocera Corporation*
Naoyuki Okubo, *Kyocera Corporation*

Ship Robotics

Location: D: Stage
Thursday, June 13 (1:50PM - 3:30PM)
Co-Chairs:
Albert Vila, Universitat de Girona
Andreas Haeusler, Instituto Superior Tecnico

Cooperative Robotic Maneuvers for Emergency Ship Towing Operations
Gabriele Bruzzone, *CNR-ISSIA*
Marco Bibuli, *CNR-ISSIA*
Massimo Caccia, *CNR-ISSIA*
Enrica Zereik, *CNR-ISSIA*

Construction of a Marine Traffic Monitoring System Around the World
Hiroaki Taka, *Future University Hakodate*
Masaaki Wada, *Future University Hakodate*
Daisuke Shibata, *Future University Hakodate*
Hirohumi Matsumoto, *National Fisheries University*

THURSDAY

Katsumori Hatanaka, *Tokyo University of Agriculture*

Robust surface vessel navigation using terrain navigation
Ove Hagen, *Norwegian Defence Research Establishment*
Kjetil Ånonsen, *Norwegian Defence Research Establishment*
Atle Skaugen, *Norwegian Defence Research Establishment*

Communication architecture for an unmanned merchant ship
Ørnulf Rødseth, *MARINTEK*
Beate Kvamstad, *MARINTEK*
Thomas Porathe, *Chalmers University of Technology*
Hans-Christoph Burmeister, *Fraunhofer CML*

Open Data Buoy to Analyze Weather and Sea Conditions for Sailing Regattas
Ronan Douguet, *Lab-STICC, UBS University*
Jean-Philippe Diguet, *Lab-STICC, CNRS*
Johann Laurent, *Lab-STICC, UBS University*
Yann Riou, *Groupama Sailing Team*

Smart ROV Systems VIII, MORPH II

Location: E: Troldtog
Thursday, June 13 (1:50PM - 3:30PM)
Co-Chairs:
Joerg Kalwa, Atlas Hydrographic
Sebastian Eckstein, Ilmenau University of Technology

Simulation of a laser tracker system for relative positioning of autonomous underwater vehicles
Marcus Hamann, *Ilmenau University of Technology*
Mike Eichhorn, *Ilmenau University of Technology*
Thomas Glotzbach, *Ilmenau University of Technology*
Christoph Ament, *Ilmenau University of Technology*

Large-Scale Mosaicking with Spectral Registration based Simultaneous Localization and Mapping (iFMI-SLAM) in the Ligurian Sea
Max Pfingsthorn, *Jacobs University Bremen*
Heiko Buelow, *Jacobs University Bremen*
Andreas Birk, *Jacobs University Bremen*

THURSDAY

Fausto Ferreira, *CNR-IEIIT*
Gianmarco Veruggio, *CNR-IEIIT*
Massimo Caccia, *CNR-ISSIA*
Gabriele Bruzzone, *CNR-ISSIA*

Underwater Stereo Data Acquisition and 3D Registration with a Spectral Method
Heiko Buelow, *Jacobs University Bremen*
Igor Sokolovski, *Jacobs University Bremen*
Max Pfingsthorn, *Jacobs University Bremen*
Andreas Birk, *Jacobs University Bremen*

Initial Results of Cooperative AUV Exploration in a High-Fidelity Simulation using Real-World Data from Monte da Guia, Azores
Ravi Rathnam, *Jacobs University Bremen*
Andreas Birk, *Jacobs University Bremen*

Discrete-Time AUV Tracking Controller Design Based on Disturbance Rejection and Dynamic Trajectory Planning
Remon Al Azrak, *Ilmenau University of Technology*
Kai Treichel, *Ilmenau University of Technology*
Johann Reger, *Ilmenau University of Technology*

Underwater Remote Sensing

Location: F: Gjendine
Thursday, June 13 (1:50PM - 3:30PM)
Co-Chairs:
Yujin Gao, Thales Australia
Hongkun Li, LUNAM Université - Université de Nantes

Texture Analysis of Seabed Images: Quantifying the Presence of Posidonia Oceanica at Palma Bay
Miquel Massot-Campos, *University of the Balearic Islands*
Gabriel Oliver-Codina, *University of the Balearic Islands*
Margaret Miró-Julià, *University of the Balearic Islands*
Laura Ruano-Amengual, *University of the Balearic Islands*

THURSDAY

Bathymetry estimation from wave motion with optical imagery: influence of acquisition parameters
Céline Danilo, *CEA*
Renaud Binet, *CNES*

Survey of lotus root habitat under the lake bottom using a single-beam acoustic technique: in Lake Izunuma
Katsunori Mizuno, *University of Tokyo*
Kazuki Abukawa, *The University of Tokyo*
Akira Asada, *The University of Tokyo*
Yasufumi Fujimoto, *The Miyagi Prefectural Izunuma-Uchinuma Environmental Foundation*
Tetsuo Shimada, *The Miyagi Prefectural Izunuma-Uchinuma Environmental Foundation*

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Field Test Experience of an Underwater Wireless Network in the Atlantic Ocean
Zheng Peng, *University of Connecticut*
Son Le, *University of Connecticut*
Michael Zuba, *University of Connecticut*
Haining Mo, *University of Connecticut*
Hao Zhou, *University of Connecticut*
Jun-Hong Cui, *University of Connecticut*
Shengli Zhou, *University of Connecticut*
Zaihan Jiang, *U.S. Naval Research Laboratory (NRL)*
Jeff Schindall, *U.S. Naval Research Laboratory (NRL)*

Research on Cooperation Mission Control of AUVs Based on Semantic Knowledge Framework
Hongjian Wang, *Automation College*
Bingling Tang, *Automation College*
Feng Li, *Automation College*
Juan Li, *Automation College*

THURSDAY

Student Poster Competition

Location: Exhibition Hall

A new time-frequency representation for underwater acoustic signals: the denoised Hearingogram
Samir Ouelha, *DCNS*
Philippe Courmontagne, *ISEN Toulon / IM2NP*
Fabien Chaillan, *DCNS*
Poster 1

Underwater Acoustic Noise with Generalized Gaussian Statistics: Effects on Error Performance
Sharbari Banerjee, *Indian Institute of Technology - Delhi*
Monika Agrawal, *Indian Institute of Technology - Delhi*
Poster 2

MUST-READ: MUltichannel Sample-by-sample Turbo Resampling Equalization And Decoding
Thomas Riedl, *University of Illinois*
Andrew Singer, *University of Illinois*
Poster 3

Evolving Offshore Wind: Genetic Algorithm-Based Optimization of Floating Wind Turbine Platforms
Matthew Hall, *University of Victoria*
Brad Buckham, *University of Victoria*
Curran Crawford, *University of Victoria*
Poster 4

Hybrid method to extract striation features from ship noise spectrogram
Qunyan Ren, *LISA - EHL, Université libre de Bruxelles (U.L.B.)*
Olivier Debeir, *UiB*
Jean-Pierre Hermand, *Université Libre de Bruxelles*
Poster 5

Diagnostic methods of quay wall with acoustic measurement systems
Kazuki Abukawa, *The University of Tokyo*
Akira Asada, *University of Tokyo*
Katsunori Mizuno, *University of Tokyo*
Tadashi Igarashi, *Civil Engineering Research Institute for Cold Region*
Norihito Kishi, *Civil Engineering Research Institute for Cold Region*
Kazumi Akimoto, *Center for*

Marine Environment studies, Kuamoto University
Poster 6

Acquisition and Registration of Bathymetric Acoustic Data and MOFSLI (Multiple Overlapping Field of View Serial Laser Imager)
Serena Parton, *Florida Atlantic University*
Fraser Dalgleish, *Harbor Branch Oceanographic Institute*
Bing Ouyang, *Harbor Branch Oceanographic Institute*
Pierre Beaujean, *Florida Atlantic University*
Frank Caimi, *Harbor Branch Oceanographic Institute*
Poster 7

AUV and ASV in twinned navigation for long term multipurpose survey applications
Javier Busquets, *NTNU*
Federico Zilic, *Universidad Austral de Chile UACh*
Claudio Aron, *UACh*
Ricardo Manzoliz, *Universidad Austral de Chile UACh*
Poster 8

Interacting Multiple Model Particle Filters for Side Scan Bathymetry
Augustin Saucan, *Institut Mines-Telecom, Telecom Bretagne*
Thierry Chonavel, *Institut Mines-Telecom, Telecom Bretagne*
Christophe Sintes, *Institut Mines-Telecom, Telecom Bretagne*
Jean-Marc Le Caillec, *Institut Mines-Telecom, Telecom Bretagne*
Poster 9

Binary visual features for ROV motion estimation
Fausto Ferreira, *CNR-IEIIT*
Gianmarco Veruggio, *CNR-IEIIT*
Massimo Caccia, *CNR-ISSIA*
Gabriele Bruzzone, *CNR-ISSIA*
Poster 10

Automated classification and thematic mapping of bacterial mats in the North Sea
Asm Shihavuddin, *University of Girona*
Nuno Garcias, *Universitat De Girona (UDG)*
Rafael Garcia, *Universitat De Girona (UDG)*
Javier Escartín, *CNRS*
Rolf Pedersen, *University of Bergen*
Poster 11

Towards valve turning with an AUV using Learning by Demonstration
Arnau Carrera Viñas, *University of Girona*
Petar Kormushev, *Istituto Italiano di tecnologia*
Marc Carreras, *University of Girona*
Narcís Palomeras, *University of Girona*
Sharad Nagappa, *University of Girona*
Poster 12

Sidescan Sonar Imagery Segmentation with a Combination of Texture and Spectral Analysis
Ahmed Nait-Chabane, *ENSTA Bretagne*
Benoit Zerr, *ENSTA Bretagne*
Gilles Le Chenadec, *ENSTA Bretagne*
Poster 13

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Influence of different phenomena on the errors in distance measurement using underwater acoustics coded signals
Joaquín Aparicio Sosa, *University of Alcalá*
Ana Jiménez Martín, *University of Alcalá*
Fernando Álvarez Franco, *University of Extremadura*
Jesús Ureña Ureña, *University of Alcalá*
Carlos De Marziani, *National University of the Patagonia San Juan Bosco/CONICET*
Cristina Diego Guijarro, *University of Alcalá*
Poster 14

Effective soft decision feedback equalizer for channels with low SNR in underwater acoustic communications
Xiaoxia Yang, *Chinese Academy of Sciences*
Sebastien Houcke, *Institut Mines-Telecom, Telecom Bretagne*
Christophe Laot, *Institut Mines-Telecom, Telecom Bretagne*
Haibin Wang, *Chinese Academy of Sciences*
Poster 15

Velocity Error Analysis of Dual Time Interval Pulse-to-Pulse Coherent Doppler Sonar
Peng Liu, *KOBE University*
Nobuyoshi Kouguchi, *Kobe University*
Poster 16

Sea Surface Wind Retrieval from GNSS Delay-Doppler Map Using Two-Dimensional Least-Squares Fitting
Chen Li, *Memorial University*
Weimin Huang, *Memorial University*
Poster 17

Parallel Combinatory Multicarrier Frequency-Hopped Spread Spectrum For Long Range and Shallow Underwater Acoustic Communications
Chaowu Zhan, *Xiamen University*
Fang Xu, *Xiamen University*
Xiaoyi Hu, *Xiamen University*
Poster 18

Sea motion electrical energy generator for low-power applications
Carlos Vinolo, *Polytechnic University of Catalonia*
Daniel Toma, *Polytechnic University of Catalonia*
Joaquin del Rio, *Polytechnic*

University of Catalonia
Antoni Manuel, *Polytechnic University of Catalonia*
Poster 19

Dynamic Spectral-Based Underwater Colour Correction
Daniel Bongiorno, *University of Sydney*
Mitch Bryson, *University of Sydney*
Stefan Williams, *University of Sydney*
Poster 20

Robust Strong Tracking Extended Kalman Filter Design for Dynamic Positioning Vessel
Wenbo Xie, *Harbin Engineering University*
Mingyu Fu, *Harbin Engineering University*
Fuguang Ding, *Harbin Engineering University*
Jian Zhang, *Harbin Institute of Technology*
Poster 21

Simulation of internal waves in the western Bay of Bengal using MITGCM: A case study

Himansu Pradhan, *Indian Institute of Technology - Delhi*
Madhu Joshi, *Indian Institute of Technology - Delhi*
A Rao, *Indian Institute of Technology - Delhi*

Poster 22

Student Poster Patron: