

OCEANS 2013 - NORWAY

**Bergen, Norway
10 – 14 June 2013**

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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

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***

**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*

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*

Bio-inspired ROVs

Location: E: Troidtog
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

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

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*

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*

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*

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

**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*

**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
services discovery on IP
networks**

Daniel Toma, *Universitat
Politecnica de Catalonia*
Joaquín del Río, *SARTI-UPC*
Antoni Manuel, *Universitat
Politecnica de Catalonia*
Tom O'Reilly, *Monterey Bay
Aquarium Research Institute*

Smart ROV Systems I

Location: E: Troidtog
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

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*

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

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

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

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

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

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

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*

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*

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

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: Troidtog

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

**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

**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**

***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

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
Politécnica 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

**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*

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 Rodriguez, *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*

**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*

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*

**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 Río, *SARTI-UPC*
Antoni Mànuel Làzaro, *SARTI*

Smart ROV Systems III

Location: E: Trolldog
**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 Lluís 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 Manzoli, *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*

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

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

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*

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*

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

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 sonarI H
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

**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*

Smart ROV Systems IV

Location: E: Troidtog
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*

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*

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*

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*
Lluís 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*

**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*

**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*

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

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*

**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 Sintès, *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

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

Smart ROV Systems V

Location: E: Troidtog

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*

Politécnica de Catalunya

Ivan Masmitja, *Universitat*

Politécnica de Catalunya

Spartacus Gomariz, *Universitat*

Politécnica de Catalunya

Carles Batlle, *Universitat*

Politécnica de Catalunya

David Sarria-Gandul, Universitat

Politécnica 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 B#5

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*

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 Ghayeb, *Texas A&M University at Qatar*

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*

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: Trolldog

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
Industries Ltd.*

Koki Sugihara, *Mitsubishi Heavy
Industries Ltd.*

Takuya Moriga, *Mitsubishi Heavy
Industries 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.*

**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*

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**

**COOPEUS - A framework for%“
improving the transatlantic
cooperation on ocean observing
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*

Visualization of sonar performance within environmental information

Elin Dombestein, *Norwegian Defence Research Establishment*
Svein Mjølhusnes, *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*

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*

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

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: Trolldog

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 Técnico*

Jorge Fontes, *Instituto do Mar (IMAR)*

Thomas Glotzbach, *Technische*

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

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*

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*

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*

**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*

**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

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 Diguët, *Lab-STICC, CNRS*
Johann Laurent, *Lab-STICC, UBS University*
Yann Riou, *Groupama Sailing Team*

Smart ROV Systems VIII, MORPH II

Location: E: Troidtog
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*

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*

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*

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*

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 3D
Bathymetric Acoustic Data and
MOFSLI (Multiple Overlapping
Field of View Serial Laser
Imager)**

Serena Parton, *Florida Atlantic
University*

Fraser Dalglish, *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 Manzoli, *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 Sintès, *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

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:



Additional Papers:

**Misalignment Considerations in Point-to-Point Underwater Wireless Optical
Links 1630**

C. Gabriel, M. Khalighi, S. Bourennane, P. Leon, V. Rigaud

Design for Underwater Code Division Multiple Access Transceiver 1635

B. Seo, J. Cho, K. Son, H. Cho

An Underwater Cooperative Navigation Scheme 1640

M. Nogueira, J. Souza, F. Pereira