4th Underwater Acoustics Conference and Exhibition
UACE2017

Sunday 3rd through Friday 8th September, 2017
Skiathos Island. Greece

Conference Programme

Conference logo by Yorgis Androulakis, IACM-FORTH

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Welcome

Dear participant,

A warm welcome to the island of Skiathos and to UACE2017, the 4th Underwater Acoustics Conference and Exhibition, dedicated to the memory of Leif Bjørnø.

Professor Leif Bjørnø had the original idea and has been a co-organizer and a co-chairman with myself, for a series of Conferences starting in early 2000.

Specifically, Leif and I have organized four conferences under the title 'Underwater Acoustic Measurements: Technologies and Results', (Heraklion in 2005 and 2007 – Nafplion in 2009 – Kos in 2011), and three conferences under the title 'Underwater Acoustics Conference and Exhibition', (Corfu in 2013, Rhodes in 2014 and Chania in 2015)

In September 2015, with the approval of the Scientific Committee, we decided to organize the next Conference in Skiathos in 2017. Unfortunately, Leif passed away in October. I felt that I should continue with the organization so I asked the assistance of the good friends and colleagues Philippe Blondel, David Bradley, Mike Buckingham, Ross Chapman and Qihu Li to form an Organizing Committee and help with the organization of the Conference.

The first decision of the Organizing Committee was to dedicate the 2017 Conference to the memory of Leif Bjørnø.

We have also decided that the Competition on the best paper presented by graduate students will also be named after Leif, and from now on will be called Prof. Leif Bjørnø Award. The Institute of Computational and Applied Mathematics of the Foundation for Research and Technology-Hellas (IACM-FORTH) will again this year give a stipend of 600 euros to the best paper presented by a graduate student. A Committee, formed by David Bradley, Jennifer Miksis-Olds and Michael Taroudakis will conduct an evaluation and present the award at the closing ceremony on Friday morning.

Now, some necessary information:

This Programme Book includes 249 presentations; among them a very large number of papers offering significant contributions to the most important fields of Underwater Acoustics. Invited as well as contributed papers are allotted 20 minutes for presentation, including time for questions.

The Programme Book at hand does not include the abstracts, as it was in the past. Both abstracts and full papers will be freely accessible at the UACE2017 website uaconferences.org during the Conference.

It is obvious that the success of UACE2017 is due to the efforts and hard work of the Structured Session Organizers and their invitees, and I am most grateful to them.

I would like to thank the Office of Naval Research Global for their continuous support and financial contributions throughout the history of these Conferences

Our exhibitors are most welcome and their participation in UACE2017 is much appreciated.

I also appreciate the sponsoring of UACE2017 by two major societies, EAA and ASA. And of course, I would like to acknowledge the continuous support of IACM-FORTH. Finally, a warm thank you to all members of the Scientific Committee for their helpful suggestions and advices.

On behalf of our missing Co-Chairman and myself, I welcome you to Skiathos and wish you an interesting, fruitful and enjoyable UACE2017.

John Papadakis

Organizing Committee

- *John Papadakis, F.O.R.T.H., Greece (Chairman)*
- *Philippe Blondel, University of Bath, UK*
- *David Bradley, ARL, Penn State University, USA*
- *Mike Buckingham, MPL, Scripps, USA*
- *Ross Chapman, University of Victoria, Canada*
- *Qihu Li, Institute of Acoustics, Acad. Sinica, China*

Technical Issues

Yorgis Androulakis, IACM - FORTH

Secretariat

Yiota Rigopoulou, IACM - FORTH

Supported by

- *Office of Naval Research Global, London, UK*
- *IACM-FORTH*

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- *European Acoustics Association, EAA*
- *Acoustical Society of America, ASA*

Scientific Committee

- John Papadakis, F.O.R.T.H., Greece (Chairman)
- Michael Ainslie, TNO, The Netherlands
- Tuncay Akal, Tubitak, Turkey
- Philippe Blondel, University of Bath, UK
- David Bradley, ARL, Penn State University, USA
- Mike Buckingham, MPL, Scripps, USA
- Andrea Caiti, ISME/DII, Italy
- Chris Capus, Heriot-Watt Univ., Edinburgh, Scotland
- Ross Chapman, University of Victoria, Canada
- Chi-Fang Chen, National Taiwan University, Taiwan
- Nick Chotiros, Office of Naval, Research Global, London
- Alexander Gavrilov, Curtin University, Australia
- Peter Gerstoft, MPL, Scripps, USA
- Grazyna Grelowska, Naval Academy, Gdynia, Poland
- Hiroyuki Hachiya, Tokyo Inst. Technology, Japan
- Roy Edgar Hansen, FFI, Norway
- Jean-Pierre Hermand, Univ. Libre de Bruxelles, Belgium
- Charles Holland, ARL, Penn State Univ., State College, USA
- Marcia Isakson, Univ. Texas at Austin, USA
- Kirk Jenne, NSWC HQ, Washington DC, USA
- Sergio Jesus, Univ. Algarve, Faro, Portugal
- Arata Kaneko, Hiroshima University, Japan
- Eugeniusz Kozaczka, Techn. Univ. Gdansk, Poland
- Tim Leighton, University of Southampton, UK
- Tony Lyons, University of New Hampshire, USA
- Qihu Li, Institute of Acoustics, Acad. Sinica, China
- Alain Maguer, CMRE, NATO Sci. & Techn. Org., Italy
- Jennifer Miksis-Olds, University of New Hampshire, USA
- Purnima Ratilal, Northeastern Univ., Boston, USA
- Jean-Pierre Sessarego, CNRS-LMA, Marseille, France
- Martin Siderius, Portland State University, USA
- Dick Simons, Delft Univ. Technology, The Netherlands
- Emmanuel Skarsoulis, F.O.R.T.H., Greece
- Michael Taroudakis, University of Crete & F.O.R.T.H., Greece
- Alessandra Tesei, NATO - STO CMRE, Italy
- Peter Thorne, National Oceanographic Centre, Liverpool, UK

Structured Session Organizers

- Tuncay Akal, SUASIS Underwater Systems, Turkey
- Philippe Blondel, University of Bath, UK
- Julien Bonnel, ENSTA Bretagne, LabSTICC, France
- Andrea Caiti, ISME/DII, Italy
- Ross Chapman, University of Victoria, Canada
- Nick Chotiros, ONR Global London
- Mathieu Colin, TNO, The Netherlands
- Peter Dobbins, Ultra Electronics Sonar Systems, UK
- Brian Dushaw, Nansen Environmental and Remote Sensing Center, Norway
- Frank Ehlers, WTD 71 –FWG, Germany
- Dale Ellis, Canada
- Victor Evora, USA
- Dominique Fattaccioli, DGA Techniques Navales, France
- Alexander Gavrilov, Curtin University, Australia
- Johannes Groen, Atlas Elektronik, GmbH
- Hiroyuki Hachiya, Tokyo Institute of Technology, Japan
- Georgios Haralabus, CTBTO
- Kevin Heaney, OASIS Inc, USA
- Jean-Pierre Hermand, Univ. Libre de Bruxelles, Belgium
- Charles Holland, ARL, Penn State Univ., State College, USA
- Bruce Howe, University of Hawaii, USA
- Marcia Isakson, Univ. Texas at Austin, USA
- Wolfgang Jans, WTD 71, Germany
- Sergio Jesus, Univ. Algarve, Faro, Portugal
- Arata Kaneko, Institute of Engineering, Hiroshima University, Japan
- Paul Lepper, Loughborough University, UK
- Bo Lövgren, SaabGroup
- Paul Mitchell, University of York, UK
- Vincent Myers, DRDC Atlantic, Canada
- Peter Nielsen, CTBTO
- Marten Nijhof, TNO, The Netherlands
- David Nunn , Dstl Porton Down, UK
- Yan Pailhas, Heriot-Watt University, UK
- Mike Porter, HLS Research Inc., USA
- Purnima Ratilal, Northeastern Univ., Boston, USA
- Stephen Robinson, Acoustics Group, National Physical Laboratory Teddington, UK
- Hanne Sagen, Nansen Environmental and Remote Sensing Center, Norway
- Arne Schulz, WTD 71 –FWG, Germany
- Jean-Pierre Sessarego, CNRS-LMA, Marseille, France

- *Martin Siderius, Portland State University, USA*
- *Emmanuel Skarsoulis, IACM-FORTH, Greece*
- *Mirjam Snellen, TU Delft OCW*
- *Daniel Sternlicht, Naval Surface Warfare Center, Panama City*
- *Michael Taroudakis, University of Crete and IACM-FORTH, Greece*
- *Jaroslaw Tegowski, Institute of Oceanography, University of Gdansk, Poland*
- *Alessandra Tesei, NATO - STO CMRE, Italy*
- *Cristina Tollefsen, DRDC Atlantic, Canada*
- *Charalampos Tsimenidis, Newcastle University, UK*
- *Duncan Williams, Dstl Porton Down, UK*
- *Preston S. Wilson, The University of Texas at Austin*
- *Desen Yang, Harbin Engineering University, China*
- *Mario Zampolli, CTBTO*
- *Xiaohua Zhu, Second Institute of Oceanography, SOA, China*

Tutorial Lectures

- *Ross Chapman and Dave Bradley*
  SOUNDS IN THE OCEAN: EXPERIMENTS AND MEASUREMENTS IN UNDERWATER ACOUSTICS
- *Mike Porter*
  SOUND MODELS – AN INTRODUCTION TO THEIR THEORY AND USE; A GLIMPSE AT THEIR FUTURE

Conference Program

Monday, September 4th

Registration

08:00-09:00

Welcome

Location / Date: *Lecture room A / Monday, September 4th*

09:00-09:05

WELCOME

09:05-09:25

REMEMBERING OUR CO-CHAIRMAN LEIF BJØRNØ

by Mike Buckingham and friends

Tutorial lecture

09:30-10:30

Ross Chapman and Dave Bradley

SOUNDS IN THE OCEAN: EXPERIMENTS AND MEASUREMENTS IN UNDERWATER ACOUSTICS

Location / Date: *Lecture room A / Monday, September 4th*

10:30-10:45 *COFFEE BREAK*

2a: Acoustic Monitoring of Marine Ecosystem

Organizer: Purnima Ratilal

Chairpersons: Purnima Ratilal and Heriberto Garcia

Location / Date: *Lecture room A / Monday, September 4th.*

10:45-11:05

Douglas H Cato, Rebecca A Dunlop, Michael J Noad, Robert D McCauley

A STUDY OF THE EFFECTS OF SEISMIC AIR GUN NOISE ON WHALES: A SUCCESSFUL COLLABORATION BETWEEN UNDERWATER ACOUSTICS AND MARINE BIOLOGY *[invited]*

Presenter: Douglas Cato

11:05-11:25

Michael Collins

ACOUSTICS AND FLIGHT MECHANICS OF THE IVORY-BILLED WOODPECKER *[invited]*

Presenter: Michael Collins

11:25-11:45

Byung Gu Cho, Nicholas Makris

ANALYTIC EXPRESSIONS FOR THE MEAN AND COVARIANCE OF THE ACOUSTIC FIELD FORWARD PROPAGATED THROUGH MOVING 3-D SURFACE AND VOLUME INHOMOGENEITIES IN AN OCEAN WAVEGUIDE ENABLE ACCURATE PREDICTION OF UNDERWATER SENSING AND COMMUNICATION ABILITIES *[invited]*

Presenter: Byung Gu Cho

11:45-12:05

Fannie Shabangu, Ken Findlay, Dawit Yemane, Kathleen Stafford, Marcel Marcel van den Berg, Bradley Blows

SEASONAL OCCURRENCE AND DIEL CALLING BEHAVIOUR OF ANTARCTIC BLUE WHALES AND FIN WHALES OFF THE WEST COAST OF SOUTH AFRICA *[invited]*

Presenter: Fannie Shabangu

12:05-12:25

Ernst Uzhanskii, Boris Katsnelson, Ilia Ostrovsky

DYNAMICS OF THE ECHO-REFLECTING LAYERS IN A DEEP LAKE: IMPLEMENTATION OF ACOUSTIC DOPPLER CURRENT PROFILER (ADCP) FOR ECOSYSTEM ANALYSIS

Presenter: Ernst Uzhanskii

12:25-12:45

Ilia Ostrovsky, Assaf Sukenik, Yosef Z. Yacobi, Wesley J. Moses, Boris Katsnelson, Ernst Uzhanskii

HYDROACOUSTIC ASSESSMENT OF SPATIOTEMPORAL DYNAMICS OF TOXIC CYANOBACTERIUM MICROCYSTIS: THE ROLE OF PHYSICAL FACTORS IN BLOOM FORMATION

Presenter: Ilia Ostrovsky

4a: Large Time-Bandwidth acoustic signals for target detection and tracking

Organizer: Alessandra Tesei

Chairperson: Alessandra Tesei

Location / Date: Lecture room B / Monday, September 4th.

10:45-11:05

Gaetano Canepa, Alessandra Tesei, Luigi Troiano, Stefano Biagini, Federico Aglietti, Rodney Dymond, Marco Mazzi, Arjan Vermeij, Vittorio Grandi,

COMPARISON OF COMPUTATION TIME AND ACCURACY OF THE REAL TIME IMPLEMENTATION OF TWO BEAMFORMING ALGORITHMS. *[invited]*

Presenter: Gaetano Canepa

11:05-11:25

Peter Dobbins

ENVIRONMENTALLY NEUTRAL WIDEBAND BIOMIMETIC SONAR SIGNALS *[invited]*

Presenter: Peter Dobbins

11:25-11:45

Paul van Walree, Karl Thomas Hjelmervik, Trond Jenserud

IMPACT OF CHANNEL FLUCTUATIONS ON THE DETECTION OF LARGE TIME-BANDWIDTH SIGNALS *[invited]*

Presenter: Paul van Walree

11:45-12:05

Konstantinos Pelekanakis, Jeffrey Bates, Alessandra Tesei

ADAPTIVE EQUALISATION FOR CONTINUOUS ACTIVE SONAR? *[invited]*

Presenter: Konstantinos Pelekanakis

12:05-12:25

Simon Lourey, Andrew May

ADAPTIVE FILTERING FOR ENHANCED DETECTION OF CONTINUOUS ACTIVE SONAR SIGNALS *[invited]*

Presenter: Simon Lourey

12:25-12:45

Stefan Murphy

PRELIMINARY RESULTS FROM AN ACTIVE SONAR EXPERIMENT FOR MEASURING MATCHED-FILTER LOSS VS BANDWIDTH AND DURATION *[invited]*

Presenter: Stefan Murphy

15: Design of new experimental facilities to address future problems in underwater acoustics

Organizers: Jean-Pierre Sessarego and Dominique Fattaccioli

Chairpersons: Jean-Pierre Sessarego and Dominique Fattaccioli

Location / Date: Lecture room C / Monday, September 4th.

10:45-11:05

Panagiotis Papadakis, George Piperakis, Emmanuel Skarsoulis, Emmanuel Orfanakis, Michael Taroudakis

DEVELOPMENT AND TESTING OF LOW-COST AUTONOMOUS UNDERWATER ACOUSTIC RECORDERS *[invited]*

Presenter: Panagiotis Papadakis

11:05-11:25

Dominique Fattaccioli, Gaultier Real

THE DGA "ALMA" PROJECT: AN OVERVIEW OF THE RECENT IMPROVEMENTS OF THE SYSTEM CAPABILITIES AND OF THE AT-SEA CAMPAIGN ALMA-2016 *[invited]*

Presenter: Dominique Fattaccioli

11:25-11:45

Xavier Cristol, Gaultier Real, Dominique Fattaccioli, Bruno Chalindar

ALMA 2014 : OBSERVATIONS OF MULTIPLE SOUND SCATTERING FROM RANDOM INHOMOGENEITIES TRANSPORTED BY A MEAN FLOW *[invited]*

Presenter: Xavier Cristol

11:45-12:05

Gaultier Real, Dominique Fattaccioli

ACOUSTIC COHERENCE IN FLUCTUATING OCEANS: ANALYSIS OF THE ALMA-2016 CAMPAIGN *[invited]*

Presenter: Gaultier Real

12:05-12:25

Emmanuelle Bazzali, Paul Gabrielli, Stephane Ancey, Michael Mercier, Jean-Pierre Sessarego

SMALL SCALE EXPERIMENTS TO STUDY DECOHERENCE OF ACOUSTIC SIGNALS SCATTERED BY AN ELASTIC TARGET *[invited]*

Presenter: Emmanuelle Bazzali

12:25-12:45

Aurelien Houard, Vytautas Jukna, Carles Milian, Guy Rabau, Regine Guillermin, Jérome Carbonnel, André Mysyrowicz, Dominique Fattacioli, Arnaud Couairon,

ACOUSTICS WAVE AND CAVITATION GENERATION BY ULTRASHORT LASER PULSE IN WATER *[invited]*

Presenter: Aurelien Houard

24a: Underwater Noise - Modelling and Measurements

Organizers: Emmanuel Skarsoulis, Michael Taroudakis

Chairpersons: Emmanuel Skarsoulis, Michael Taroudakis

Location / Date: Lecture room D / Monday, September 4th.

10:45-11:05

Michael Taroudakis, Emmanuel Skarsoulis, Panagiotis Papadakis, George Piperakis

QUIETMED : TOWARDS THE HARMONIZATION OF THE EUROPEAN STRATEGY ON MARINE AMBIENT NOISE CONTROL *[invited]*

Presenter: Michael Taroudakis

11:05-11:25

Aristides Prospathopoulos, Dimitris Kassis, Marios N. Anagnostou, Kalliopi Pagou, Panayotis Panayotidis

MONITORING UNDERWATER NOISE IN GREEK WATERS: KEY ISSUES IN IMPLEMENTING THE EU MARINE STRATEGY FRAMEWORK DIRECTIVE *[invited]*

Presenter: Aristides Prospathopoulos

11:25-11:45

Emmanuel Skarsoulis, George Piperakis, Emmanuel Orfanakis, Panos Papadakis, Michael Taroudakis

MODELLING OF UNDERWATER NOISE DUE TO SHIP TRAFFIC IN THE EASTERN MEDITERRANEAN SEA *[invited]*

Presenter: Emmanuel Skarsoulis

11:45-12:05

Sergio Jesus, Cristiano Soares, Friederich Zabel

TARGET DETECTION IN A AIS MODELED SHIPPING NOISE FIELD OFF THE WEST COAST OF PORTUGAL *[invited]*

Presenter: Sergio Jesus

12:05-12:25

Kostas Belibassakis

UNDERWATER NOISE GENERATION AND PROPAGATION FROM COMMERCIAL SHIP PROPELLERS *[invited]*

Presenter: Kostas Belibassakis

12:25-12:45

Patrizio Fausti, Andrea Santoni, Giovanni Semprini, Nicolò Zuccherini Martello

CONSIDERATIONS ON AIRBORNE AND UNDERWATER NOISE PRODUCED BY THE TRANSIT OF LARGE SHIPS AND CONSTRUCTION SITE ACTIVITIES

Presenter: Patrizio Fausti

12:45-14:15 *LUNCH*

2b: Acoustic Monitoring of Marine Ecosystem

Organizer: Purnima Ratilal

Chairpersons: Purnima Ratilal and Heriberto Garcia

Location / Date: Lecture room A / Monday, September 4th.

14:15-14:35

Richard Dreo, Léa Bouffaut, Laurent Guillon, Valerie Labat, Guilhem Barruol, Abdel Boudraa

ANTARCTIC BLUE WHALE LOCALIZATION WITH OCEAN BOTTOM SEISMOMETERS IN SOUTHERN INDIAN OCEAN

Presenter: Léa Bouffaut

14:35-14:55

Léa Bouffaut, Richard Dréo, Valérie Labat, Abdel Boudraa, Guilhem Barruol

REMOTE BLUE WHALE CALL DETECTION USING A PASSIVE VERSION OF THE STOCHASTIC MATCHED FILTER

Presenter: Léa Bouffaut

14:55-15:15

Svyatoslav Luzin, Igor Luzin

METHOD OF EMPIRICAL CHARACTERISTIC FUNCTION FOR DOA OF BIOACOUSTIC SIGNAL

Presenter: Svyatoslav Luzin

15:15-15:35

Eva-Marie Nosal

INVERTING FOR ARRAY ELEMENT TIMING OFFSETS WHILE LOCALIZING MULTIPLE MARINE MAMMALS

Presenter: Eva-Marie Nosal

15:35-15:55

Purnima Ratilal

CONTINENTAL SHELF-SCALE MONITORING OF MARINE MAMMALS AND SHIPS SIMULTANEOUSLY WITH PASSIVE OCEAN ACOUSTIC WAVEGUIDE REMOTE SENSING

Presenter: Purnima Ratilal

4b: Large Time-Bandwidth acoustic signals for target detection and tracking

Organizer: Alessandra Tesei

Chairperson: Alessandra Tesei

Location / Date: Lecture room B / Monday, September 4th.

14:15-14:35

Paul Hines, Stefan Murphy, Jeffrey Bates, Matthew Coffin

AMBIGUITY FUNCTIONS, WIDE BAND AND NARROW BAND APPROXIMATIONS, AND HIGH DUTY CYCLE SONARS *[invited]*

Presenter: Paul Hines

14:35-14:55

Jeffrey R. Bates, Paul C. Hines, Gaetano Canepa, Alessandra Tesei, Gabriele Ferri, Kevin D. LePage

DOPPLER ESTIMATES FOR LARGE TIME-BANDWIDTH PRODUCTS USING LINEAR FREQUENCY MODULATED ACTIVE SONAR PULSES *[invited]*

Presenter: Jeffrey Bates

14:55-15:15

Douglas Abraham

COHERENT MATCHED-FILTER REFLECTION LOSS FROM A MOVING SURFACE AS A FUNCTION OF PULSE DURATION AND ENSONIFIED AREA *[invited]*

Presenter: Douglas Abraham

15:15-15:35

Doug Grimmett, Randall Plate

HIGH DUTY CYCLE SONAR PERFORMANCE AS A FUNCTION OF PROCESSING TIME-BANDWIDTH FOR LCAS'15 DATA *[invited]*

Presenter: Doug Grimmett

15:35-15:55

Mikhail Salin, Oleg Potapov, Dmitry Razumov, Boris Salin

ON THE MECHANISMS OF SCATTERING OF LOW-FREQUENCY SOUND ON SURFACE WAVES

Presenter: Mikhail Salin

9a: Underwater Communications and Networking

Organizers: Charalampos Tsimenidis, Paul Mitchell

Chairpersons: Charalampos Tsimenidis, Paul Mitchell

Location / Date: Lecture room C / Monday, September 4th.

14:15-14:35

Konstantin Kebkal, Oleksiy Kebkal, Veronika Kebkal, Luís Sebastião, Antonio Pascoal, Jorge Ribeiro, Henrique Silva, Miguel Ribeiro, Giovanni Indivery,

UNDERWATER ACOUSTIC MODEMS WITH INTEGRATED ATOMIC CLOCKS FOR ONE-WAY TRAVEL-TIME UNDERWATER VEHICLE POSITIONING *[invited]*

Presenter: Konstantin Kebkal

14:35-14:55

Konstantin Kebkal, Oleksiy Kebkal, Veronika Kebkal, Luís Sebastião, Antonio Pascoal, Jorge Ribeiro, Henrique Silva, Miguel Ribeiro, Elbert Kelholt, Sergio Jesus

PERFORMANCE ASSESSMENT OF UNDERWATER ACOUSTIC MODEMS OPERATING SIMULTANEOUSLY AT DIFFERENT FREQUENCIES IN THE PRESENCE OF BACKGROUND IMPULSIVE NOISE EMITTED BY A SPARKER *[invited]*

Presenter: Konstantin Kebkal

14:55-15:15

Mitsuyasu Deguchi, Yukihiro Kida, Yoshitaka Watanabe, Takuya Shimura, Hiroshi Ochi

AN AT-SEA EXPERIMENT FOR UNDERWATER ACOUSTIC COMMUNICATION BETWEEN AN UNDERWATER VEHICLE AND A SURFACE VEHICLE WITH LARGE ROLL AND PITCH MOTIONS

Presenter: Mitsuyasu Deguchi

15:15-15:35

Roee Diamant, Filippo Campagnaro, Michele De Filippo, Alberto Testolin, Violeta Sanjuan, Michele Zorzi, Paolo Casari

EXPLORING THE STATISTICAL RELATION BETWEEN THE UNDERWATER ACOUSTIC AND OPTICAL CHANNELS *[invited]*

Presenter: Filippo Campagnaro

15:35-15:55

Li Liao, Benjamin Henson, Yuriy Zakharov

GRID WAYMARK BASEBAND UNDERWATER ACOUSTIC TRANSMISSION MODEL *[invited]*

Presenter: Li Liao

15:55-16:15

Ronald Kessel, Craig Hamm, Martin Taillefer

CHANNEL MODEL FOR LONG-RANGE UNDERWATER COMMUNICATION SYSTEMS

Presenter: Ronald Kessel

24b: Underwater Noise - Modelling and Measurements

Organizers: Emmanuel Skarsoulis, Michael Taroudakis

Chairpersons: Emmanuel Skarsoulis, Michael Taroudakis

Location / Date: Lecture room D / Monday, September 4th.

14:15-14:35

Alexander Pollara, Alexander Sutin, Hady Salloum

ACOUSTIC SIGNATURES OF SMALL BOATS

Presenter: Alexander Sutin

14:35-14:55

Emre Gungor

INVESTIGATION OF ACOUSTICAL SPECTRUM OF UNDERWATER PROPULSION SYSTEMS

Presenter: Emre Güngör

14:55-15:15

Joanne Garrett, Amber Griffiths, David Griffiths

FINE-SCALE MAPPING OF MARINE SOUND POLLUTION USING SONIC KAYAKS AND CITIZEN SCIENCE

Presenter: Jo Garrett

15:15-15:35

Stephan Lippert, Marco Huisman, Marcel Ruhnau, Otto von Estorff, Kees van Zandwijk

PROGNOSIS OF UNDERWATER PILE DRIVING NOISE FOR SUBMERGED SKIRT PILES OF JACKET STRUCTURES

Presenter: Stephan Lippert

15:35-15:55

Paul Cristini

FINITE SPECTRAL-ELEMENT SIMULATION OF THE PROPAGATION OF NOISE GENERATED BY PILE DRIVING: INFLUENCE OF BOTTOM TOPOGRAPHY

Presenter: Paul Cristini

16:15-16:30 *COFFEE BREAK*

2c: Acoustic Monitoring of Marine Ecosystem

Organizer: Purnima Ratilal

Chairpersons: Purnima Ratilal and Heriberto Garcia

Location / Date: Lecture room A / Monday, September 4th.

16:30-16:50

Fannie Shabangu

FACTORS INFLUENCING ACOUSTIC ATTENUATION AT 38 KHZ BY WIND-INDUCED AIR BUBBLES: A MODELLING APPROACH

Presenter: Fannie Shabangu

16:50-17:10

Vladimir Korenbaum, Anatoly Kostiv, Sergei Gorovoy, Veronika Malaeva, Irina Pochekutova, Anton Shiryaev, Andrei Fershalov

ACOUSTIC METHODS OF MONITORING RESPIRATORY SYSTEM OF SCUBA DIVERS DURING AND AFTER UNDERWATER MISSIONS

Presenter: Vladimir Korenbaum

22: Seagrass and macroalgae acoustics

Organizers: Jean Pierre Hermand, Preston S. Wilson

Chairpersons: Jean Pierre Hermand, Preston S. Wilson

Location / Date: Lecture room A / Monday, September 4th.

17:30-17:50

Jay R. Johnson, Preston S. Wilson, Jean-Pierre Hermand

DEVELOPMENTS IN LOW-FREQUENCY SOUND PROPAGATION IN SEAGRASS MEADOWS. *[invited]*

Presenter: Jay Johnson

17:50-18:10

Abdullah Rahman, Austin Greene

COMBINED USE OF SIDESCAN AND PARAMETRIC SONAR DATA FOR ESTIMATING SPATIALLY DISTRIBUTED CARBON STOCKS OF SEAGRASS MEADOWS *[invited]*

Presenter: Abdullah Rahman

18:10-18:30

Jean-Pierre Hermand, Jo Randall, Jeff Ross, Craig Johnson

ON THE USE OF ACOUSTICS FOR MEASURING PRODUCTIVITY OF TEMPERATE MACROALGAL FORESTS *[invited]*

Presenter: Jean-Pierre Hermand

20: Habitat Mapping: Procedures and Results

Organizers: Philippe Blondel, Andrea Caiti

Chairpersons: Philippe Blondel, Andrea Caiti

Location / Date: Lecture room B / Monday, September 4th.

16:30-16:50

Ellen Johanne Eidem

CORRELATION BETWEEN SEDIMENT PROPERTIES AND SEAFLOOR CHARACTERIZATION MAPS BASED ON MULTIBEAM BACKSCATTER DATA FROM THREE REGIONS OFF THE COAST OF NORWAY

Presenter: Ellen Johanne Eidem

16:50-17:10

Lukasz Janowski, Jaroslaw Tegowski, Jaroslaw Nowak

MARINE SEAFLOOR MAPPING OF MULTIBEAM ECHOSOUNDER BATHYMETRY AND BACKSCATTER DATA USING OBJECT-BASED IMAGE ANALYSIS AND MACHINE LEARNING: CASE STUDY FROM THE SOUTHERN BALTIC.

Presenter: Jaroslaw Tegowski

8: Advances in acoustic measurement systems: Technologies and applications

Organizer: Alessandra Tesei

Chairperson: Alessandra Tesei

Location / Date: Lecture room B / Monday, September 4th.

17:30-17:50

Gabriel R. Venegas, Jay R. Johnson, Craig N. Dolder, Preston S. Wilson

ADVANCES IN THE RESONANCE TUBE TECHNIQUE TO MEASURE THE LOW FREQUENCY SOUND SPEED OF MULTIPHASE OCEAN MATERIALS

Presenter: Gabriel Venegas

17:50-18:10

Christoph Zimmer, Sven Schröder, Dieter Kraus, Nils Theuerkauf, Anton Kummert

TRANSMISSION PATTERN OPTIMIZATION FOR BROADBAND ACTIVE SONAR ANTENNAS

Presenter: Christoph Zimmer

18:10-18:30

Yanqun Wu, Zhuang Cheng, Dezhi Wang, Zemin Zhou, Yongxian Wang, Wen Zhang

BOTTOM-MOUNTED ARRAY SHAPE ESTIMATION USING SHIP RADIATED NOISE

Presenter: Yanqun Wu

9b: Underwater Communications and Networking

Organizers: Charalampos Tsimenidis, Paul Mitchell

Chairpersons: Charalampos Tsimenidis, Paul Mitchell

Location / Date: Lecture room C / Monday, September 4th.

16:30-16:50

Xiao Han, Jingwei Yin, Ge Yu, Lin Li

UNDER-ICE ACOUSTIC CHANNELS AND COMMUNICATION PERFORMANCE: EXPERIMENTAL RESULTS

Presenter: Xiao Han

16:50-17:10

Siyu Xing, Gang Qiao, Charalampos Tsimenidis

A NOVEL TWO-STEP DOPPLER COMPENSATION SCHEME FOR CODED OFDM UNDERWATER ACOUSTIC COMMUNICATION SYSTEMS *[invited]*

Presenter: Siyu Xing

17:10-17:30

Jinqiu Wu, Lu Ma, Gang Qiao, Xuefei Ma, Xiaofei Qi

GFDM-A POTENTIAL TECHNIQUE FOR THE NEXT GENERATION UNDERWATER COMMUNICATION SYSTEMS WITH LOW PAPR *[invited]*

Presenter: Jinqiu Wu

17:30-17:50

Alaa Ahmed, Charalampos Tsimenidis, Jeffrey Neasham

PLNC USING A MULTICHANNEL DFE RECEIVER AT THE RELAY FOR SHALLOW-WATER ACOUSTIC COMMUNICATIONS

Presenter: Charalampos Tsimenidis

17:50-18:10

Jacob Rudander, Thor Husøy, Pål Orten, Paul Van Walree

ARRAY PROCESSING TO MITIGATE CHANNEL FLUCTUATIONS IN HIGH-SPEED SHALLOW WATER COMMUNICATION

Presenter: Jacob Rudander

18:10-18:30

Yukihiro Kida, Mitsuyasu Deguchi, Takuya Shimura

RELATIONSHIP BETWEEN MULTIPATH INTERFERENCE AND PERFORMANCE OF PASSIVE TIME REVERSAL COMMUNICATION IN SHALLOW WATER

Presenter: Yukihiro Kida

18:30-18:50

Takuya Shimura, Yukihiro Kida, Mitsuyasu Deguchi

MIMO COMMUNICATION WITH ADAPTIVE TIME REVERSAL

Presenter: Takuya Shimura

24c: Underwater Noise - Modelling and Measurements

Organizers: Emmanuel Skarsoulis, Michael Taroudakis

Chairpersons: Emmanuel Skarsoulis, Michael Taroudakis

Location / Date: Lecture room D / Monday, September 4th.

16:30-16:50

Karl-Heinz Elmer

EFFECTIVE PILING NOISE MITIGATION IN DEEP WATERS

Presenter: Karl-Heinz Elmer

16:50-17:10

Colby W. Cushing, Kevin M. Lee, Andrew R. McNeese, Michael R. Haberman, Preston S. Wilson

SUBWAVELENGTH ACOUSTIC PANELS WITH AIR INCLUSIONS FOR ABATEMENT OF UNDERWATER MACHINERY AND REMOTELY OPERATED VEHICLE NOISE

Presenter: Colby W. Cushing

17:10-17:30

Afolarin Egbewande, Jean-Francois Bousquet

OPTIMUM SPACE-TIME FILTER PERFORMANCE USING A REALISTIC NOISE MODEL OF THE AMBIENT ENVIRONMENT.

Presenter: Afolarin Egbewande

17:30-17:50

Jiangqiao Li, Yue Pan, Huangfu Li, Xiaoliang Zhang

UNDERWATER ACOUSTIC TRANSIENT NOISE MEASUREMENT BASED ON CCWEEMDAN AND POWER-LAW DETECTOR

Presenter: Jiangqiao Li

Tuesday, September 5th

Tutorial lecture

08:30-09:25

Mike Porter

SOUND MODELS – AN INTRODUCTION TO THEIR THEORY AND USE; A GLIMPSE AT THEIR FUTURE

Location / Date: Lecture room A / Tuesday, September 5th

11: Distributed Networked Systems for Surveillance

Organizers: Frank Ehlers, Arne Schulz

Chairperson: Wolfgang Jans

Location / Date: Lecture room A / Tuesday, September 5th.

09:30-09:50

Kevin LePage, Alessandra Tesei, Joao Alves, Christopher Strode

DEVELOPMENTS AND CHALLENGES IN NETWORKED ROBOTIC ASW: A CMRE PERSPECTIVE *[invited]*

Presenter: Kevin LePage

09:50-10:10

Roald Otnes, Helge Buen, Joachim Eastwood, Vidar Forsmo

UTILIZING CHIP-SCALE ATOMIC CLOCKS FOR COHERENT PROCESSING BETWEEN INDEPENDENT NON-WIRED UNDERWATER ACOUSTIC SENSORS *[invited]*

Presenter: Roald Otnes

10:10-10:30

Vladimir Djapic, Evan Gravelle, Michael Ouimet, Sonia Martinez, Jorge Cortes

COOPERATIVE NAVIGATION OF LOW COST AUTONOMOUS UNDERWATER VEHICLES *[invited]*

Presenter: Vladimir Djapic

1a: Ocean Acoustic Tomography-various application and data

Organizers: Arata Kaneko, Bruce M. Howe, Hiroyuki Hachiya, Xiaohua Zhu, Jean-Pierre Hermand

Chairpersons: Bruce Howe, Hiroyuki Hachiya, Xiaohua Zhu, Arata Kaneko

Location / Date: Lecture room B / Tuesday, September 5th.

09:30-09:50

Brian Dushaw, Fabienne Gaillard, Thierry Terre

ACOUSTIC TOMOGRAPHY IN THE CANARY BASIN: MEDDIES AND TIDES *[invited]*

Presenter: Brian Dushaw

09:50-10:10

Xiao-Hua Zhu, Ze-Nan Zhu, Xiaopeng Fan, Chuanzheng Zhang

ASSIMILATION OF COASTAL ACOUSTIC TOMOGRAPHY DATA USING AN UNSTRUCTURED TRIANGULAR GRID OCEAN MODEL *[invited]*

Presenter: Xiao-Hua Zhu

10:10-10:30

Minmo Chen, Arata Kaneko, Ju Lin, Chuanzheng Zhang

A NEW METHOD OF DATA ASSIMILATION BASED ON ENSEMBLE KALMAN FILTER WITH APPLICATION TO COASTAL ACOUSTIC TOMOGRAPHY DATA *[invited]*

Presenter: Minmo Chen

21a: Acoustics of marine renewable energy developments

Organizers: Stephen Robinson, Paul Lepper, Philippe Blondel

Chairpersons: Stephen Robinson, Paul Lepper, Philippe Blondel

Location / Date: Lecture room C / Tuesday, September 5th.

09:30-09:50

Benjamin Williamson, Shaun Fraser, Philippe Blondel, Paul Bell, James Waggitt, Beth Scott

INTEGRATING A MULTIBEAM AND A MULTIFREQUENCY ECHOSOUNDER ON THE FLOWBEC SEABED PLATFORM TO TRACK FISH AND SEABIRD BEHAVIOUR AROUND TIDAL TURBINE STRUCTURES *[invited]*

Presenter: Philippe Blondel

09:50-10:10

Peter Dobbins

SONAR AND UXO *[invited]*

Presenter: Peter Dobbins

10:10-10:30

Jodi Walsh, Philippe Blondel, Joanne Garrett, Phillip Thies, Lars Johanning, Brendan Godley, Matthew Witt

ACOUSTIC LIFE CYCLE ASSESSMENT OF OFFSHORE RENEWABLES – IMPLICATIONS FROM A WAVE-ENERGY CONVERTER DEPLOYMENT IN FALMOUTH BAY, UK *[invited]*

Presenter: Jodi Walsh

10:30-10:45 *COFFEE BREAK*

14a: Three-dimensional sound propagation models and effects

Organizer: Mike Porter

Chairperson: Mike Porter

Location / Date: Lecture room A / Tuesday, September 5th.

10:45-11:05

Ralph Stephen

BOTTOM-DIFFRACTED SURFACE-REFLECTED ARRIVALS IN THE NORTH PACIFIC *[invited]*

Presenter: Ralph Stephen

11:05-11:25

Chi-Fang Chen, Ching-Sang Chiu, Linus Y.S. Chiu, Andrea Y.Y. Chang, Yao-Sung Hsu

THREE-DIMENSIONAL SOUND PROPAGATION OF THE CONTINENTAL SLOPE AND SAND DUNES IN THE NORTHEASTERN SOUTH CHINA SEA *[invited]*

Presenter: Chi-Fang Chen

11:25-11:45

Kevin D Heaney

THREE DIMENSIONAL PROPAGATION IN OCEAN ACOUSTICS *[invited]*

Presenter: Kevin D Heaney

11:45-12:05

Henrik Schmidt

SPECTRAL METHODS FOR 3D PROPAGATION IN 2D ENVIRONMENTS *[invited]*

Presenter: Henrik Schmidt

12:05-12:25

Jean Lecoulant, Jean-Yves Royer, Claude Guennou, Laurent Guillon

3-D MODELING OF THE GENERATION AND PROPAGATION OF ACOUSTIC T-WAVES AT SEAFLOOR SPREADING RIDGES

Presenter: Jean Lecoulant

12:25-12:45

Keunhwa Lee, Woojae Seong, Young-Nam Na

THREE-DIMENSIONAL MODELING FOR LOW FREQUENCY PROPAGATION USING THE SIMPLIFIED CHISHOLM APPROXIMATION *[invited]*

Presenter: Young-Nam Na

1b: Ocean Acoustic Tomography-various application and data

Organizers: Arata Kaneko, Bruce M. Howe, Hiroyuki Hachiya, Xiaohua Zhu, Jean-Pierre Hermand

Chairpersons: Bruce Howe, Hiroyuki Hachiya, Xiaohua Zhu, Arata Kaneko

Location / Date: Lecture room B / Tuesday, September 5th.

10:45-11:05

Chuanzheng Zhang, Xiao-Hua Zhu, Ze-Nan Zhu, Wenhu Liu, Xiaopeng Fan, Ruixiang Zhao, Menghong Dong, Min Wang, ,

TOMOGRAPHIC MAPPING THE TIDAL CURRENT STRUCTURES IN DALIAN BAY

Presenter: Chuanzheng Zhang

11:05-11:25

Hangfang Zhao, Xingyu Ji, Yan Qiu, Ying Huang

LEAST SQUARE INNOVATION METHOD FOR OCEAN ACOUSTIC TOMOGRAPHY *[invited]*

Presenter: Hangfang Zhao

11:25-11:45

Florian Geyer, Bruce Cornuelle, Hanne Sagen

STABILITY AND PREDICTABILITY OF ACOUSTIC TIME FRONTS IN FRAM STRAIT – MOVING TOWARDS ASSIMILATION OF ACOUSTIC TOMOGRAPHY RESULTS FROM THE ACOBAR AND UNDER-ICE PROJECTS *[invited]*

Presenter: Florian Geyer

11:45-12:05

Ju Lin, Huan Wang, Xinmin Ren

ASSIMILATION OF THE MULTIVATIATE OBSERVATION DATA COMBINED WITH COASTAL ACOUSTIC TOMOGRAPHY DATA IN THE YELLOW SEA *[invited]*

Presenter: Ju Lin

12:05-12:25

Lixin Liu, Hongyu Bian, Wen Xu

AN ACOUSTIC-ALIASING-RESISTANT TRACKING METHOD FOR FORWARD-LOOKING SONAR

Presenter: Lixin Liu

12:25-12:45

G.Bazile Kinda, Yann Stéphan, Florent Le Courtois

THE UNDERWATER NOISE ISSUE: A NEW OPPORTUNITY FOR ACOUSTIC TOMOGRAPHY? *[invited]*

Presenter: G. Bazile Kinda

21b: Acoustics of marine renewable energy developments

Organizers: Stephen Robinson, Paul Lepper, Philippe Blondel

Chairpersons: Stephen Robinson, Paul Lepper, Philippe Blondel

Location / Date: Lecture room C / Tuesday, September 5th.

10:45-11:05

Joanne Garrett, Matthew Witt, Blondel Philippe, Johanning Lars

STATISTICAL ASSESSMENT OF THE EFFECT OF A WAVE ENERGY CONVERTER IN FALMOUTH BAY, UK *[invited]*

Presenter: Jo Garrett

11:05-11:25

Adrian Farcas, Rebecca Faulkner, Gordon Hastie, Paul Thompson, Nathan Merchant

TIME-DOMAIN MODELLING OF UNDERWATER IMPULSIVE NOISE FOR ENVIRONMENTAL RISK ASSESSMENT *[invited]*

Presenter: Adrian Farcas

11:25-11:45

Tristan Lippert, Stephan Lippert, Otto von Estorff, Michael Ainslie, Marten Nijhof

COMPILE II: A REAL-LIFE BENCHMARK SCENARIO FOR PILE DRIVING NOISE ESTIMATIONS *[invited]*

Presenter: Tristan Lippert

11:45-12:05

Matthew Auvinen, David Barclay

EVALUATING THE PERFORMANCE OF A COHERENT ARRAY IN A HIGH-FLOW TIDAL CHANNEL *[invited]*

Presenter: David Barclay

12:05-12:25

Yaxi Peng, Apostolos Tsouvalas, Edward Belderbos

MODELLING AND DEVELOPMENT OF A RESONATOR BASED NOISE MITIGATION SYSTEM FOR OFFSHORE PILING

Presenter: Yaxi Peng

12: Underwater vehicles and acoustic sensing

Organizers: Jean-Pierre Hermand, Sergio Jesus, Peter Nielsen, Martin Siderius

Chairpersons: Jean-Pierre Hermand, Sergio Jesus, Peter Nielsen, Martin Siderius

Location / Date: Lecture room D / Tuesday, September 5th.

10:45-11:05

Georgios Salavasidis, Athanasios Kapoutsis, Elias Kosmatopoulos

AUTONOMOUS TRAJECTORY DESIGN SYSTEM FOR MAPPING OF UNKNOWN SEA-FLOORS USING A TEAM OF AUVS *[invited]*

Presenter: Athanasios Kapoutsis

11:05-11:25

Paulo Santos, Paulo Felisberto, Frederich Zabel, Sérgio Jesus, Luís Sebastião

TESTING OF THE DUAL ACCELEROMETER VECTOR SENSOR MOUNTED ON AN AUTONOMOUS UNDERWATER VEHICLE *[invited]*

Presenter: Paulo Santos

11:25-11:45

Kalliopi C. Gkikopoulou, Natacha Aguilar de Soto, Douglas M. Gillespie, Mark Johnson, Sophie Smout, Peter L. Tyack

AUTONOMOUS UNDERWATER VEHICLES AS ACOUSTIC PLATFORMS FOR DENSITY ESTIMATION OF DEEP-DIVING ANIMALS *[invited]*

Presenter: Kalliopi C. Gkikopoulou

11:45-12:05

Alan Sassler

USE OF A SMALL, DIRECTIONAL, HIGH FREQUENCY BROADBAND SENSOR TO IMPROVE SITUATIONAL AWARENESS OF AUVS IN HIGH TRAFFIC LITTORAL ENVIRONMENTS. *[invited]*

Presenter: Alan Sassler

12:05-12:25

Alessandra Tesei, Robert Been, Florian Meyer

CONTINUOUS REAL-TIME ACOUSTIC SURVEILLANCE OF FAST BOATS USING A WAVE GLIDER *[invited]*

Presenter: Alessandra Tesei

12:25-12:45

Francisco Javier Rodrigo-Saura, Antonio Sanchez-Garcia, Esther Moya-Rivas

LONG-TERM VARIATION OF THE FREQUENCY DOMAIN BACKGROUND NOISE IN A SHALLOW WATER AREA IN THE MEDITERRANEAN SEA

Presenter: Esther Moya de Rivas

12:45-14:15 *LUNCH*

14b: Three-dimensional sound propagation models and effects

Organizer: Mike Porter

Chairperson: Mike Porter

Location / Date: Lecture room A / Tuesday, September 5th.

14:15-14:35

Min Xu, Yongxian Wang

PERFORMANCE OPTIMIZATION AND PARALLELIZATION OF A PARABOLIC-EQUATION SOLVER IN COMPUTATIONAL OCEAN ACOUSTICS ON MODERN MANY-CORE COMPUTER

Presenter: Min Xu

14:35-14:55

Michael Collins, David Calvo, Michael Nicholas

NUMERICAL AND EXPERIMENTAL MODELING OF 3-D OCEAN ACOUSTICS PROBLEMS *[invited]*

Presenter: Michael Collins

14:55-15:15

Boris Katsnelson, Pavel Petrov

WHISPERING GALLERY WAVES IN HORIZONTAL PLANE NEAR THE CURVED ISOBATHS IN SHALLOW WATER *[invited]*

Presenter: Boris Katsnelson

15:15-15:35

Sven Ivansson

SIMPLE TEST CASES WITH ACCURATE NUMERICAL SOLUTIONS FOR 3-D SOUND PROPAGATION MODELLING *[invited]*

Presenter: Sven Ivansson

15:35-15:55

Sergey Sergeev, Anton Tolchennikov, Pavel Petrov

APPLICATION OF THE MASLOV CANONICAL OPERATOR TECHNIQUE TO THE DEVELOPMENT OF A RAY-BASED TIME-DOMAIN SOUND PROPAGATION MODEL FOR THE DEEP-WATER ACOUSTICS *[invited]*

Presenter: Pavel Petrov

15:55-16:15

Jonas von Pein, Stephan Lippert, Otto von Estorff

A 3D FAR-FIELD MODEL FOR UNDERWATER PILE DRIVING NOISE

Presenter: Jonas von Pein

POSTER

Piotr Borejko

A THEORETICAL MODEL OF 3-D ACOUSTICAL PROPAGATION ON THE FLORIDA SHELF

Presenter: Piotr Borejko

1c: Ocean Acoustic Tomography-various application and data

Organizers: Arata Kaneko, Bruce M. Howe, Hiroyuki Hachiya, Xiaohua Zhu, Jean-Pierre Hermand

Chairpersons: Bruce Howe, Hiroyuki Hachiya, Xiaohua Zhu, Arata Kaneko

Location / Date: Lecture room B / Tuesday, September 5th.

14:15-14:35

Brian Dushaw, Hanne Sagen

THE ROLE OF SIMULATED SMALL-SCALE OCEAN VARIABILITY IN INVERSE COMPUTATIONS FOR OCEAN ACOUSTIC TOMOGRAPHY

Presenter: Brian Dushaw

14:35-14:55

Wen Xu, Ming Zhang, Yuanxin Xu

INVERSION OF OCEAN ENVIRONMENTAL PARAMETERS WITH RADIATED NOISES OF AN AUTONOMOUS UNDERWATER VEHICLE: AT-SEA EXPERIMENTAL RESULTS

Presenter: Wen Xu

14:55-15:15

Vincent Varamo, Bruce Howe

RELIABLE ACOUSTIC PATH TOMOGRAPHY AT THE ALOHA CABLED OBSERVATORY

Presenter: Vincent Varamo

15:15-15:35

Guangming Li, David Ingram, Arata Kaneko, Minmo Chen, Noriaki Gohda, Nick Polydorides

ACOUSTIC TOMOGRAPHY EXPERIMENTS IN EXPERIMENTAL WAVE/CURRENT TANK *[invited]*

Presenter: Guangming Li

15:35-15:55

Xiaowei Ying, Tiejian Xia, Guojun Jiang

POSITION ESTIMATING TECHNOLOGY OF SUBMERGED ACOUSTIC ARRAY BASED ON ERROR ANALYSIS FOR OAT IN DEEP SEA

Presenter: Xiaowei Ying

15:55-16:15

Ze-Nan Zhu, Chuanzheng Zhang, Xiao-Hua Zhu

ACOUSTIC MEASUREMENT OF TIDAL CURRENT AND VOLUME TRANSPORT THROUGH THE QIONGZHOU STRAIT

Presenter: Ze-Nan Zhu

10a: Target Echo Strength-Measurements and Modelling

Duncan Williams, David Nunn, Marten Nijhof

Chairpersons: David Nunn, Marten Nijhof

Location / Date: Lecture room C / Tuesday, September 5th.

14:15-14:35

Marten Nijhof, Laurent Fillinger, Layton Gilroy, Jan Ehrlich, Ingo Schäfer

BETSSI II : SUBMARINE TARGET STRENGTH MODELING WORKSHOP *[invited]*

Presenter: Marten Nijhof

14:35-14:55

W. A. Kuperman, Sandrine T. Rakotonarivo, Philippe Roux, Jit Sarkar, Jeffery D. Tippmann, Zachary J. Waters, Earl G. Williams

DETERMINING THE ACOUSTICAL PROPERTIES OF AN OBJECT BY PLACING IT IN A RANDOM NOISE FIELD *[invited]*

Presenter: William A Kuperman

14:55-15:15

Natalie Grigorieva, Mikhail Kupriyanov, Sergey Kadyrov

MODELLING OF AN ECHO-SIGNAL FROM A TARGET IN A WAVEGUIDE WITH POSITIVE SOUND SPEED GRADIENT *[invited]*

Presenter: Natalie Grigorieva

15:15-15:35

Ahmad Abawi, Petr Krysl, Aubrey Espana, Steve Kargl, Kevin Williams, Daniel Plotnick

MODELING THE ACOUSTIC RESPONSE OF ELASTIC TARGETS IN A LAYERED MEDIUM USING THE COUPLED FINITE ELEMENT/BOUNDARY ELEMENT METHOD *[invited]*

Presenter: Ahmad Abawi

15:35-15:55

Boris Dilba, Marian Markiewicz, Otto von Estorff

SIMULATION OF THE TARGET ECHO STRENGTH WITH HIERARCHICAL MATRICES AND THE BOUNDARY ELEMENT METHOD *[invited]*

Presenter: Boris Dilba

15:55-16:15

Lennart Bossér, Jörgen Pihl

A FAST TARGET STRENGTH MODEL AND ITS APPLICATION WITH A MULTIPATH PROPAGATION MODEL *[invited]*

Presenter: Lennart Bossér

23a: Underwater acoustic calibration, testing, facilities and standards

Organizers: Stephen Robinson, Victor Evora, Bo Lovgren

Chairpersons: Stephen Robinson, Victor Evora, Bo Lovgren

Location / Date: Lecture room D / Tuesday, September 5th.

14:15-14:35

Victor Évora, Steven Crocker

THE UNDERWATER SOUND REFERENCE DIVISION: AN OVERVIEW OF HISTORY, FACILITIES, AND CALIBRATION CAPABILITIES *[invited]*

Presenter: Victor Évora

14:35-14:55

Victor Humphrey, Dylan Morgan

CONVERSION FACTOR FOR STANDARD MULTIPLE HYDROPHONE MEASUREMENTS OF VESSEL RADIATED NOISE LEVEL. *[invited]*

Presenter: Victor Humphrey

14:55-15:15

Ronald Kessel, Craig Hamm, Vincent Myers

THE SAFETY OF DIVER EXPOSURE TO ULTRASONIC IMAGING SONARS

Presenter: Ronald Kessel

15:15-15:35

Lian Wang, Gary Hayman, Stephen Robinson, Graham Beamiss

NEAR FIELD CHARACTERISATIONS OF TEST OBJECTS WITH PERIODIC STRUCTURE *[invited]*

Presenter: Lian Wang

15:35-15:55

Alasdair R J Murray, M J Martin, G Beamiss

PERFORMANCE TESTING OF PANELS AT OBLIQUE INCIDENCE AND UNDER SIMULATED OCEAN CONDITIONS USING A SPARSE RECEIVE ARRAY *[invited]*

Presenter: Alasdair Murray

16:15-16:30 *COFFEE BREAK*

3: Vector Hydrophone Research

Organizers: Tuncay Akal, Jean-Pierre Hermand, Desen Yang

Location / Date: Lecture room A / Tuesday, September 5th.

16:30-16:50

Robert Barton, Georges Dossot

EXPLORING FEATURES OF THE SCATTERED ACOUSTIC VECTOR FIELD *[invited]*

Presenter: Robert Barton

16:50-17:10

Yong Wang, Yixin Yang, Yuanliang Ma, Bing Li, Bo Lei, Xionghou Liu

ANALYTICAL SOLUTIONS OF SUPERDIRECTIVITY FOR CIRCULAR ARRAYS WITH ACOUSTIC VECTOR SENSORS

Presenter: Yong Wang

17:10-17:30

Vladimir Korenbaum, Alexandr Tagiltcev, Sergei Gorovoy, Anatoly Kostiv, Anton Shiryaev, Jury Fershalov

LOW-FREQUENCY UNDERWATER PRESSURE GRADIENT RECEIVER OF FORCE TYPE

Presenter: Vladimir Korenbaum

16: Underwater Unexploded Ordnance (UXO) Detection and Remediation

Organizers: Daniel Sternlicht, Wolfgang Jans

Chairpersons: Daniel Sternlicht, Wolfgang Jans

Location / Date: Lecture room B / Tuesday, September 5th.

16:30-16:50

Wolfgang Jans, Daniel D. Sternlicht, Kevin L. Williams, Michael D. Richardson

EMERGING TECHNOLOGIES IN UNDERWATER MUNITIONS MAPPING *[invited]*

Presenter: Wolfgang Jans

16:50-17:10

Jesse Angle, Neil Claussen, Leon Vaizer, James Prater, Ursula Hölscher-Höbing, Holger Schmaljohann, Bernnd Hilgenfeld, Mike Wynn, Andreas Chwala, Ronny Scholz

RESULTS FROM THE JOINT BALTIC SURVEY, PERFORMED AS PART OF THE ALLIED MUNITIONS DETECTION UNDERWATER (ALMOND-U) PROJECT BETWEEN THE UNITED STATES AND GERMANY *[invited]*

Presenter: Jesse Angle

17:10-17:30

Roy Edgar Hansen, Torstein Olsmo Sæbø, Ole Jacob Lorentzen, Stig Asle Vaksvik Synnes

MAPPING UNEXPLODED ORDNANCE (UXO) USING INTERFEROMETRIC SYNTHETIC APERTURE SONAR *[invited]*

Presenter: Roy Edgar Hansen

17:30-17:50

Hauke Voss

DEFICIENCIES IN AUV MISSION PLANNING EXAMPLIFIED BY AN UXO SURVEY *[invited]*

Presenter: Hauke Voss

17:50-18:10

Jan Kölbel, Paulo Tadeu de Oliveira, David Benjamin Rose

COMPARISON OF A SUBMERGED TRANSIENT ELECTROMAGNETIC DETECTION SYSTEM (SUBTEM) AND THE TELEDYNE SURVEY SYSTEM (TSS) FOR UXO IDENTIFICATION AT PORTSMOUTH INTERNATIONAL PORT. *[invited]*

Presenter: Paulo Tadeu de Oliveira

18:10-18:30

Mohannad Shehadeh, Raviraj Adve, Vincent Myers

UXO IDENTIFICATION USING A MATRIX PENCIL APPROACH *[invited]*

Presenter: Raviraj Adve

10b: Target Echo Strength-Measurements and Modelling

Organizers: Duncan Williams, David Nunn, Marten Nijhof

Chairpersons: David Nunn, Marten Nijhof

Location / Date: Lecture room C / Tuesday, September 5th.

16:30-16:50

David Bruce, Charles Taylor

APPROACHES TO UNDERSTANDING AND IMPROVING THE ACCURACY OF TES MEASUREMENTS MADE IN OPEN WATER *[invited]*

Presenter: David Bruce

16:50-17:10

Evgeny Chernokozhin, Amir Boag

MULTILEVEL NONUNIFORM-GRID ALGORITHM FOR ANALYSIS OF ACOUSTIC SCATTERING BY THIN ELASTIC SHELLS *[invited]*

Presenter: Amir Boag

17:10-17:30

Alan Curtis, Robert Harter, Martin Stirland

COMPARISON OF TARGET ECHO STRENGTH MODELS FOR A GENERIC SUBMARINE *[invited]*

Presenter: Alan Curtis

17:30-17:50

Anatoli Tsinovoy, Adva Bar-Am, Matan Kahanov

EXPERIMENTAL VALIDATION OF CIRCULAR NEAR-FIELD TO FAR-FIELD TRANSFORMATION IN ACOUSTIC TANK EXPERIMENT *[invited]*

Presenter: Anatoli Tsinovoy

17:50-18:10

Tom Avsic

A TARGET ECHO STRENGTH REDUCTION TECHNIQUE *[invited]*

Presenter: Tom Avsic

18:10-18:30

James Starrett

INVESTIGATION OF THE APPLICATION OF 3D PRINTING TECHNIQUES FOR PHYSICAL TARGET ECHO STRENGTH MODELS *[invited]*

Presenter: James Starrett

18:30-19:00 *DISCUSSION*

23b: Underwater acoustic calibration, testing, facilities and standards

Organizers: Stephen Robinson, Victor Evora, Bo Lovgren

Chairpersons: Stephen Robinson, Victor Evora, Bo Lovgren

Location / Date: Lecture room D / Tuesday, September 5th.

16:30-16:50

Jay Abel

DISCRETE TIME TECHNIQUES FOR DIGITAL HYDROPHONE CALIBRATION *[invited]*

Presenter: Jay Abel

16:50-17:10

G Hayman, S P Robinson, L. Wang, T Pangerc, J Ablitt, P D Theobald

CHALLENGES IN THE CALIBRATION OF MARINE AUTONOMOUS ACOUSTIC RECORDERS *[invited]*

Presenter: Stephen Robinson

17:10-17:30

Jun Zhang, Yi Chen

ACCURACIES FOR DIFFERENT MEASURING METHODS OF SOUND SPEED IN WATER *[invited]*

Presenter: Jun Zhang

Thursday, September 7th

13a: Towards Automatic Target Recognition. Detection, Classification and Modelling

Organizers: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Chairpersons: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Location / Date: Lecture room A / Thursday, September 7th.

08:30-08:50

Andrei Mashoshin

UNDERWATER ACOUSTICS PROBLEMS SOLVING WITH USING MATCHED FIELD PROCESSING *[invited]*

Presenter: Andrei Mashoshin

08:50-09:10

Mariia Dmitrieva, Keith Brown, Gary Heald, David Lane

CLASSIFICATION OF SPHERICAL OBJECTS BASED ON THE FORM FUNCTION OF ACOUSTIC ECHOES *[invited]*

Presenter: Mariia Dmitrieva

09:10-09:30

Kazuyoshi Mori, Hiroyuki Kawahara, Hanako Ogasawara, Takenobu Tsuchiya

PRELIMINARY DATA ANALYSIS OF THE 3RD SEA TRIAL FOR AMBIENT NOISE IMAGING WITH ACOUSTIC LENS *[invited]*

Presenter: Kazuyoshi Mori

09:30-09:50

Wen Zhang, Yanqun Wu, Dezhi Wang

RESEARCH ON MODULATION LINE-SPECTRUM FEATURE EXTRACTION BASED ON GAMMATONE FILTER BANK

Presenter: Wen Zhang

09:50-10:10

Yue Pan, Huangfu Li, Xiaoliang Zhang, Zhang Li

AN UNDERWATER ACOUSTIC TARGET FEATURE SELECTION BASED ON SPARSE SPECTRAL REGRESSION

Presenter: Yue Pan

26: Acoustic Imaging

Chairperson: Chifang Chen

Location / Date: Lecture room B / Thursday, September 7th.

08:30-08:50

Hiroyuki Kawahara, Hanako Ogasawara, Kazuyoshi Mori

PRELIMINARY ANALYSIS OF SOUND FIELD CONVERGED BY CONVEX ACOUSTIC LENS FOR INSTALLING IN SMALL AUV'S BOW

Presenter: Hiroyuki Kawahara

08:50-09:10

Peng Wang, Bin Xu, Lei Chen, Qihu Li

FAST BEAMFORMING FOR ARBITRARY ARRAY UNDERWATER 3-D ACOUSTICAL IMAGING USING NONUNIFORM FAST FOURIER TRANSFORM

Presenter: Peng Wang

09:10-09:30

Jinbo Wang, Jinsong Tang, Zhen Tian, Pan Huang, Zhang Sen

AN IMPROVED SQUINT WIDEBAND SYNTHETIC APERTURE SONAR IMAGING ΩK ALGORITHM

Presenter: Jinbo Wang

09:30-09:50

Haoran Wu, Jinsong Tang, Heping Zhong

A NEW METHOD OF IMPROVING THE AZIMUTH RESOLUTION IN THE FORWARD-LOOKING SONAR BY DOPPLER BEAM SHARPENING TECHNIQUE

Presenter: Haoran Wu

09:50-10:10

Pengfei Zhang, Haining Huang, Linzhe Wei, Di Meng, Bo Dong

SPECKLE REDUCING FOR SAS IMAGES USING FORWARD AND BACKWARD ANISOTROPIC DIFFUSION

Presenter: Pengfei Zhang

10:10-10:30

Kui Xu, Zhen Tian, Jinsong Tang

AN INS DATA-BASED MICRONAVIGATION METHOD FOR THE IMAGING OF MULTIPLE RECEIVER SYNTHETIC APERTURE SONAR

Presenter: Kui Xu

5a: Comprehensive nuclear test-ban treaty monitoring

Organizers: Georgios Haralabus and Mario Zampolli

Chairpersons: Georgios Haralabus and Mario Zampolli

Location / Date: Lecture room C / Thursday, September 7th.

08:30-08:50

Brian Dushaw

WIGWAM REVERBERATION REVISITED *[invited]*

Presenter: Brian Dushaw

08:50-09:10

Kevin Heaney

MINIMUM DETECTIBLE LEVEL TEST FOR CTBTO SYSTEM *[invited]*

Presenter: Kevin D Heaney

09:10-09:30

Alexis Bottero, Paul Cristini, Dimitri Komatitsch

SOME NUMERICAL SIMULATIONS OF T-WAVE GENERATION AND PROPAGATION OVER SLOPING BOTTOM WITH EMPHASIS ON SOURCE TYPE INFLUENCE. *[invited]*

Presenter: Paul Cristini

09:30-09:50

Kostas Sotirakopoulos, Peter Harris, Stephen Robinson, Lian Wang, Valerie Livina

IDENTIFICATION OF CHANGES IN THE ACOUSTIC ENVIRONMENT OF THE INDIAN OCEAN USING LONG TERM TREND ANALYSIS ON CTBTO DATA COLLECTED AT CAPE LEEUWIN *[invited]*

Presenter: Kostas Sotirakopoulos

09:50-10:10

Karlien Sambell, Läslo Evers, Mirjam Snellen

TOWARDS DEEP-OCEAN TEMPERATURE MONITORING USING THE ACOUSTIC AMBIENT NOISE FIELD *[invited]*

Presenter: Karlien Sambell

17a: Inversion methods for estimating geoacoustic profiles of the ocean bottom

Organizers: Julien Bonnel, Ross Chapman

Chairpersons: Julien Bonnel, Ross Chapman

Location / Date: Lecture room D / Thursday, September 7th.

08:30-08:50

Julien Bonnel, Stan Dosso, Ross Chapman

FROM 4 TO 7 MODES: ON THE IMPORTANCE OF WARPING TIME ORIGIN FOR GEOACOUSTIC INVERSION *[invited]*

Presenter: Ross Chapman

08:50-09:10

Viktoria Taroudaki, Costas Smaragdakis, Michael Taroudakis

A STUDY OF THE DEBLURRING EFFICIENCY OF ACOUSTIC SIGNALS FOR APPLICATIONS OF OCEAN ACOUSTIC TOMOGRAPHY. *[invited]*

Presenter: Michael Taroudakis

09:10-09:30

Pavel Petrov, Oleg Zaikin

HIGH-PERFORMANCE COMPUTING IN THE STUDY ON THE ACCURACY OF THE BOTTOM PARAMETERS RECONSTRUCTION USING TWO DIFFERENT FITNESS FUNCTIONS *[invited]*

Presenter: Pavel Petrov

09:30-09:50

Hefeng Dong, Mohsen Badiey, Ross Chapman

INFLUENCE OF MODAL BEHAVIOUR ON GEOACOUSTIC INVERSION UNDER INTERNAL WAVE PRESENCE *[invited]*

Presenter: Hefeng Dong

09:50-10:10

Costas Smaragdakis, Michael Taroudakis

A PROBABILISTIC APPROACH BASED ON HIDDEN MARKOV MODELS FOR THE ESTIMATION OF THE GEOACOUSTIC PARAMETERS OF THE SEA BOTTOM. *[invited]*

Presenter: Costas Smaragdakis

10:10-10:30

Kunde Yang, Xiaole Guo, Rui Duan, Yuanliang Ma

GEOACOUSTIC PARAMETERS INVERSION IN THE SOUTH CHINA SEA USING MODAL DISPERSION CURVES *[invited]*

Presenter: Kunde Yang

10:30-10:45 *COFFEE BREAK*

13b: Towards Automatic Target Recognition. Detection, Classification and Modelling

Organizers: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Chairpersons: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Location / Date: Lecture room A / Thursday, September 7th.

10:45-11:05

Yan Pailhas, Nicolas Valeyrie, Chris Capus, Samantha Dugelay

ONMEX'16 AND MANEX'16 MCM TRIALS USING UWBMBS (ULTRA WIDEBAND MULTIBEAM SONAR) *[invited]*

Presenter: Nicolas Valeyrie

11:05-11:25

Nicolas Valeyrie, Yan Pailhas, Chris Capus

WIDEBAND DATA ANALYSIS USING ANALYTIC WAVELETS *[invited]*

Presenter: Nicolas Valeyrie

11:25-11:45

David Williams

DEMYSTIFYING DEEP CONVOLUTIONAL NEURAL NETWORKS FOR SONAR IMAGE CLASSIFICATION *[invited]*

Presenter: David Williams

11:45-12:05

Narada Warakagoda, Øivind Midtgaard

FINE-TUNING VS FULL TRAINING OF DEEP NEURAL NETWORKS FOR SEAFLOOR MINE RECOGNITION IN SONAR IMAGES *[invited]*

Presenter: Narada Warakagoda

12:05-12:25

Phil Chapple, Timothy Dell, Daniel Bongiorno

ENHANCED DETECTION AND CLASSIFICATION OF MINE-LIKE OBJECTS USING SITUATIONAL AWARENESS AND DEEP LEARNING *[invited]*

Presenter: Philip Chapple

12:25-12:45

Hao Yue, Dezhi Wang, Lilun Zhang, Yanqun Wu, Changchun Bao

CLASSIFICATION OF WHALE CALLS BASED ON TRANSFER LEARNING AND CONVOLUTIONAL NEURAL NETWORK

Presenter: Dezhi Wang

19a: Acoustic methods and technologies for ocean observatories

Organizers: Hanne Sagen, Brian Dushaw

Chairpersons: Hanne Sagen, Brian Dushaw

Location / Date: Lecture room B / Thursday, September 7th.

10:55-11:05

Introduction by the Session Chairs

11:05-11:25

Stein Sandven, Hanne Sagen, Kuvvet Atakan, Arthur B. Baggeroer, Agniesszka Beszczynska-Møller, Bruce Cornuelle, Matthew Dziecicuch, Lee Freitag, Clair Gourcuff, Torill Hamre, Marie-Noelle Houssais, Truls Johannessen, Jennifer Miksis-Olds, Peter Mikhalevsky, Andrey Morozov, Frank Nilsen, Rolf Birger Pedersen, John Orcutt, Benoit Pirenne, Andrey Proshutinsky , Peter Pulsifer, Benjamin Rabe, Søren Rysgård, Angelika Renner, Ingo Schewe, Mikael K. Sejr, Lars Henrik Smedsrud, Thomas Soltwedel, Mathilde B. Sørensen, Kathleen J. Vigness Raposa, Waldemar Walczowski, Peter F. Worcester
INTAROS: ACOUSTICS IN THE INTEGRATED ARCTIC OBSERVATION SYSTEM. *[invited]*
Presenter: Stein Sandven

11:25-11:45

Kuvvet Atakan

NATURAL HAZARDS IN THE ARCTIC *[invited]*

Presenter: Kuvvet Atakan

11:45-12:05

Eric Rehm, Kevin D. Heaney, Brian Dushaw

ACOUSTICS AND THE BAFFIN BAY OBSERVING SYSTEM *[invited]*

Presenter: Eric Rehm

12:05-12:25

Richard Dewey, Steve Mihaly, Akash Sastri

ACTIVE ACOUSTICS ON CABLED OCEAN OBSERVATORIES: HIGH BANDWIDTH AND CONTINUOUS POWER *[invited]*

Presenter: Richard Dewey

12:25-12:45

Tom Dakin, David Hannay

DEPLOYMENT OF A VESSEL RADIATED NOISE MEASUREMENT SYSTEM ON AN OCEAN OBSERVATORY, LESSONS AFTER ONE YEAR OF OPERATION

Presenter: Tom Dakin

5b: Comprehensive nuclear test-ban treaty monitoring

Organizers: Georgios Haralabus and Mario Zampolli

Chairpersons: Georgios Haralabus and Mario Zampolli

Location / Date: Lecture room C / Thursday, September 7th.

10:45-11:05

Jennifer Miksis-Olds, Sharon Nieukirk, Jasmin Buteau, Kerri Seger

GAINING INSIGHT OF BLUE WHALE BEHAVIORAL ECOLOGY THROUGH ANALYSIS OF SONG *[invited]*

Presenter: Jennifer Miksis-Olds

11:05-11:25

Georgios Haralabus, Jerry Stanley, Mario Zampolli, Patrick Grenard, James Mattila, Nurcan Meral Özel

RE-ESTABLISHMENT OF THE INTERNATIONAL MONITORING SYSTEM (IMS) CABLED HYDROACOUSTIC STATION HA04 CROZET ISLANDS, FRANCE. *[invited]*

Presenter: Georgios Haralabus

11:25-11:45

Mario Zampolli, Georgios Haralabus, Jerry Stanley, James Mattila

MODULAR DESIGN OPTIONS FOR THE NEXT GENERATION OF CTBTO-IMS HYDROPHONE HYDROACOUSTIC STATIONS *[invited]*

Presenter: Mario Zampolli

17b: Inversion methods for estimating geoacoustic profiles of the ocean bottom

Organizers: Julien Bonnel, Ross Chapman

Chairpersons: Julien Bonnel, Ross Chapman

Location / Date: Lecture room D / Thursday, September 7th.

10:45-11:05

Xianpeng Guo, Dezhi Wang, Lilun Zhang, Yanqun Wu, Yongxian Wang

INVERSION OF GEOACOUSTIC PARAMETERS BASED ON THE KRIGING SURROGATE MODEL *[invited]*

Presenter: Xianpeng Guo

11:05-11:25

Xiaole Guo, Kunde Yang, Rui Duan, Yuanliang Ma

BOTTOM PARAMETERS INVERSION VIA BAYESIAN THEORY IN THE DEEP OCEAN *[invited]*

Presenter: Xiaole Guo

11:25-11:45

Hyuckjong Kwon, Jee Woong Choi, Sungho Cho, Byoung-Nam Kim

GEO-ACOUSTIC INVERSION BY ANALYSIS OF LOW-FREQUENCY SOUND PROPAGATION CHARACTERISTICS IN SAVEX 15 *[invited]*

Presenter: Hyckjong Kwon

11:45-12:05

Zheng Zheng, Xiang Pan, Wen Xu

THE SEA EXPERIMENT FOR GEOACOUSTIC PARAMETER INVERSION WITH COMPRESSIVE *[invited]*

Presenter: Xiang Pan

12:45-14:15 *LUNCH*

13c: Towards Automatic Target Recognition. Detection, Classification and Modelling

Organizers: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Chairpersons: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Location / Date: Lecture room A / Thursday, September 7th.

14:15-14:35

Marc Geilhufe, Hauke Voss, Roy Edgar Hansen, Øivind Midtgaard, Stig Asle Vaksvik Synnes, Torstein Olsmo Sæbø

TOWARDS AUTOMATED HF SIDESCAN SONAR PERFORMANCE ESTIMATION *[invited]*

Presenter: Marc Geilhufe

14:35-14:55

Xionghou Liu, Chao Sun, Longfeng Xiang, Bo Lei, Yong Wang

TRANSMITTING WAVEFORM DESIGN FOR UWB SIGNAL SYNTHESIS USING FREQUENCY DIVERSE MIMO SONAR *[invited]*

Presenter: Xionghou Liu

14:55-15:15

Ulrich Herter, Holger Schmaljohann, Thomas Fickenscher

SOUND SPEED CORRECTION USING AUTOFOCUS ON SAS IMAGES *[invited]*

Presenter: Ulrich Herter

15:15-15:35

Yan Pailhas, Yvan Petillot, Bernard Mulgrew

ON THE PROBLEM OF RESOLUTION FOR FULLY COHERENT CSAS SYSTEM *[invited]*

Presenter: Yan Pailhas

15:35-15:55

Yan Pailhas, Samantha Dugelay, Chris Capus

SAS AND THE LORENTZ TRANSFORM *[invited]*

Presenter: Yan Pailhas

15:55-16:15

Anthony Lyons, Daniel Brown

SUB-BAND COHERENCE IN BROADBAND, WIDE-ANGLE SYNTHETIC APERTURE SONAR *[invited]*

Presenter: Anthony Lyons

19b: Acoustic methods and technologies for ocean observatories

Organizers: Hanne Sagen, Brian Dushaw

Chairpersons: Hanne Sagen, Brian Dushaw

Location / Date: Lecture room B / Thursday, September 7th.

14:15-14:35

Philippe Blondel, Arief Ahmad Zailani Hatta

ACOUSTIC SOUNDSCAPES AND BIODIVERSITY – COMPARING METRICS, SEASONS AND DEPTHS WITH DATA FROM THE NEPTUNE OCEAN OBSERVATORY OFFSHORE BRITISH COLUMBIA

Presenter: Philippe Blondel

14:35-14:55

Geir Pedersen, Olav Rune Godø, Rune Øyerhamn, Lars Alf Ødegaard

CONNECTING PHYSICS AND BIOLOGY WITH MULTI-SENSOR ACOUSTIC OBSERVATORIES

Presenter: Geir Pedersen

14:55-15:15

Bruce Howe

SMART SUBMARINE TELECOMMUNICATION CABLES TO MONITOR GLOBAL CHANGE AND TSUNAMIS IN THE GLOBAL OCEAN *[invited]*

Presenter: Bruce Howe

15:15-15:35

Sergio Jesus, Daniel Mihai, Joaquin Del Rio

ACOUSTIC OBSERVATIONS WITH THE EMSO GENERIC INSTRUMENT MODULE

Presenter: Sergio Jesus

15:35-15:55

Roee Diamant, Filippo Campagnaro, Shlomi Dahan, Roberto Francescon, Michele Zorzi

DEVELOPMENT OF A SUBMERGED HUB FOR MONITORING THE DEEP SEA

Presenter: Roee Diamant

15:55-16:15

Arata Kaneko, Noriaki Gohda, Fadli Syamsudin, Hong Zheng, Xiaohua Zhu, Ju Lin, Chen-Fen Huang, Minmo Chen, Chuanzheng Zhang, Bruce Howe

SHOREWARD TRANSFER OF COASTAL ACOUSTIC TOMOGRAPHY DATA BY MIRROR REFLECTION

Presenter: Arata Kaneko

7a: Acoustics in polar environments

Organizers: Jaroslaw Tegowski and Alexander Gavrilov

Chairpersons: Jaroslaw Tegowski and Philippe Blondel

Location / Date: Lecture room C / Thursday, September 7th.

14:15-14:35

Kevin Heaney, Lee Frietag

MEASUREMENTS AND MODELING OF UNDER ICE PROPAGATION *[invited]*

Presenter: Kevin D Heaney

14:35-14:55

Jaroslaw Tegowski, Grant Deane, Oskar Glowacki, Mateusz Moskalik, Michal Cieply, Malgorzata Blaszczyk, Jacek Jania, Philippe Blondel, ,

ACOUSTIC MEASUREMENT OF HANS GLACIER CALVING, HORNSUND FJORD, SPITSBERGEN

Presenter: Jaroslaw Tegowski

14:55-15:15

Grant Deane, Jaroslaw Tegowski, Philippe Blondel

A MODEL FOR THE SOUND GENERATED BY THE EXPLOSIVE RELEASE OF GAS FROM MELTING GLACIER ICE *[invited]*

Presenter: Grant Deane

15:15-15:35

Dag Tollefsen, Paul van Walree, Helge Buen, Elin M. Dombestein

UNDER-ICE ACOUSTIC MEASUREMENTS IN THE FRAM STRAIT MARGINAL ICE ZONE *[invited]*

Presenter: Paul van Walree

15:35-15:55

Espen Storheim, Hanne Sagen, Peter F. Worcester, Matthew A. Dzieciuch

THE UNDER-ICE EXPERIMENT – OVERVIEW AND PRELIMINARY RESULTS *[invited]*

Presenter: Espen Storheim

15:55-16:15

Kathleen Vigness-Raposa, Adam Frankel, William Ellison, Andrew White, Jennifer Giard

VISUALIZING THE CONTEXT OF ACOUSTIC EXPOSURE TO MARINE MAMMALS IN THE ALASKAN BEAUFORT SEA *[invited]*

Presenter: Kathleen Vigness-Raposa

6a: Sonar performance modeling and verification. Applications to active and passive sonar

Organizers: Mathieu Colin, Charles Holland, Cristina Tollefsen, Kevin Heaney, Dale Ellis

Chaipersons: Dale Ellis and Mathieu Colin

Location / Date: Lecture room D / Thursday, September 7th.

14:15-14:35

Young-Nam Na, Changbong Cho, Young-Gyu Kim

PASSIVE SONAR PERFORMANCE ANALYSIS EMPLOYING THE CONCEPT 'ROBUSTNESS OF DETECTION' IN THE EAST SEA OF KOREA

Presenter: Young-Nam NA

14:35-14:55

Mathieu Colin, Michael Ainslie, Henry Dol, Roald Otnes, Mark Prior, Paul van Walree

FROM SONAR PERFORMANCE MODELLING TO UNDERWATER ACOUSTIC COMMUNICATION PERFORMANCE MODELLING

Presenter: Mathieu Colin

14:55-15:15

Mark Prior, Mathieu Colin

QUANTIFYING THE IMPACT OF UNCERTAINTY ON SONAR PERFORMANCE PREDICTIONS.

Presenter: Mathieu Colin

15:15-15:35

Diana McCammon, Dale Ellis

BEAM DISPLACEMENT AND REFLECTION IMAGES IN THE BELLHOP GAUSSIAN BEAM MODEL

Presenter: Dale Ellis

15:35-15:55

Dale Ellis

MODELLING BOTTOM SCATTERING AND TARGET ECHOES FROM DATA COLLECTED DURING THE 2013 TARGET AND REVERBERATION EXPERIMENT

Presenter: Dale Ellis

15:55-16:15

Jörgen Pihl, Lennart Bossér

TIME DOMAIN ACTIVE SONAR PERFORMANCE PREDICTION IN SHALLOW WATERS

Presenter: Jörgen Pihl

16:15-16:30 *COFFEE BREAK*

13d: Towards Automatic Target Recognition. Detection, Classification and Modelling

Organizers: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Chairpersons: Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers

Location / Date: Lecture room A / Thursday, September 7th.

16:30-16:50

Matthias Buss, Stephan Benen, Dietmar Stiller, Dieter Kraus, Anton Kummert

FEATURE SELECTION AND CLASSIFICATION FOR FALSE ALARM REDUCTION ON ACTIVE DIVER DETECTION SONAR DATA *[invited]*

Presenter: Matthias Buss

16:50-17:10

Vincent Myers, Johannes Groen, Holger Schmaljohann, Isabelle Quidu, Benoit Zerr

MULTI-LOOK PROCESSING FOR COHERENT CHANGE DETECTION WITH SYNTHETIC APERTURE SONAR *[invited]*

Presenter: Vincent Myers

17:10-17:30

Linzhe Wei, Pengfei Zhang, Bo Dong, Di Meng, Haining Huang

SAS IMAGE REGISTRATION USING SALIENCY MAP BASED STRUCTURAL FEATURE MATCHING *[invited]*

Presenter: Linzhe Wei

17:30-17:50

Salvatore Caporale, Yvan Petillot

A VECTOR SPACE INTERSECTION APPROACH TO THE EVALUATION OF COHERENCE IN SAS *[invited]*

Presenter: Salvatore Caporale

19c: Acoustic methods and technologies for ocean observatories/

Organizers: Hanne Sagen, Brian Dushaw

Chairpersons: Hanne Sagen, Brian Dushaw

Location / Date: Lecture room B / Thursday, September 7th.

16:30-16:50

Pamela Kanu

STATISTICAL ANALYSIS FOR AUTOMATED SEEP EXTRACTION IN GIS

Presenter: Pamela Kanu

16:50-17:10

Brian Dushaw, John Colosi, Timothy Duda, Arata Kaneko, Hanne Sagen, Emmanuel Skarsoulis, , Matthew Dzieciuch, Xiaohua Zhu,

OCEAN ACOUSTIC TOMOGRAPHY: A MISSING ELEMENT OF THE OCEAN OBSERVING SYSTEM

Presenter: Brian Dushaw

17:10-17:30

Jennifer Miksis-Olds, Peter Tyack, George Frisk

INTERNATIONAL QUIET OCEAN EXPERIMENT: APPROACH TO OBSERVATIONS OF SOUND IN THE OCEAN *[invited]*

Presenter: Jennifer Miksis-Olds

17:30-17:50

Kathleen Vigness-Raposa, William Ellison, Brandon Southall

CONSIDERATIONS OF ACOUSTICS AND ENVIRONMENTAL PROTECTION *[invited]*

Presenter: Kathleen Vigness-Raposa

17:50-18:10

Patrick Gorringe, Antonio Novellino, Joaquín del Rio Fernández

EUROGOOS, TASK TEAMS & UNDERWATER ACOUSTIC *[invited]*

Presenter: Patrick Gorringe

18:10-18:40

DISCUSSION

7b: Acoustics in polar environments

Organizers: Jaroslaw Tegowski and Alexander Gavrilov

Chairpersons: Jaroslaw Tegowski and Philippe Blondel

Location / Date: Lecture room C / Thursday, September 7th.

16:30-16:50

Wenjian Chen, Siwei Hu, Jingwei Yin, Shuang Yin, Shengyu Tang

STUDY ON UNDERWATER ACOUSTIC CHANNEL CHARACTERISTICS OF ICE COVER

Presenter: Siwei Hu

16:50-17:10

Asuka Yamakawa, Jenny Ullgren, Rune Øyerhamn

ECHOSOUNDER OBSERVATIONS FROM AN UNMANNED SURFACE VESSEL IN THE ARCTIC

Presenter: Asuka Yamakawa

17:10-17:30

Asuka Yamakawa, Hanne Sagen, Mohamed Babiker, Peter F. Worcester, Birgitte Furevik

IMPACTS OF ANTHROPOGENIC AND ENVIRONMENTAL FACTORS ON THE UNDERWATER SOUNDSCAPE IN FRAM STRAIT

Presenter: Asuka Yamakawa

6b: Sonar performance modeling and verification. Applications to active and passive sonar

Organizers: Mathieu Colin, Charles Holland, Cristina Tollefsen, Kevin Heaney, Dale Ellis

Chairpersons: Mathieu Colin and Dale Ellis

Location / Date: Lecture room D / Thursday, September 7th.

16:30-16:50

Shokichi Tanaka, Hideyuki Nomura, Tomoo Kamakura

MEASUREMENT ERRORS IN ULTRASONIC DOPPLER DEVICES CAUSED BY VARIATION IN THE SPEED OF SOUND ALONG THE PROPAGATION PATH

Presenter: Shokichi Tanaka

16:50-17:10

Kevin LePage, Christopher Strode, Manlio Oddone, Gabriele Ferri, Ryan Goldhahn, Paolo Braca, Nicholas Jourden

REAL-TIME ON-BOARD PERFORMANCE ASSESSMENT FOR ROBOTIC ASW

Presenter: Kevin LePage

17:10-17:30

Jie Yang, Stephen C. Riser, William E. Asher

REGIONAL RAINFALL MEASUREMENT USING AMBIENT NOISE RECORDED ON ARGO FLOATS

Presenter: Jie Yang

17:30-17:50

Antoine Blachet, Tor Inge Birkenes Lønmo, Andreas Austeng, Fabrice Prieur, Alan Hunter, Roy Edgar Hansen

SONAR DATA SIMULATION WITH APPLICATION TO MULTI-BEAM ECHO SOUNDERS

Presenter: Antoine Blachet

Friday, September 8th

18a: Ocean and river sediment characterization using acoustics

Organizers: Marcia Isakson, Mirjam Snellen

Chairpersons: Marcia Isakson and Tannaz Haji Mohammadloo

Location / Date: Lecture room A / Friday, September 8th.

08:30-08:50

Preston S. Wilson, David P. Knobles

OVERVIEW OF SEABED CHARACTERIZATION EXPERIMENT 2017 *[invited]*

Presenter: Preston S. Wilson

08:50-09:10

Boris Katsnelson, Andrei Lunkov, Ilia Ostrovsky, Ernest Uzhansky

ACOUSTIC PROPERTIES OF GAS-SATURATED SEDIMENT IN A LAKE: IMPLEMENTATION OF MULTICHANNEL VERTICAL HYDROPHONE LINE ARRAY *[invited]*

Presenter: Boris Katsnelson

09:10-09:30

Adrien Vergne, Berni Céline, Le Coz Jérôme

ACOUSTIC MEASUREMENT OF SUSPENDED SEDIMENT IN RIVERS: POTENTIAL IMPACT OF AIR MICRO-BUBBLES? *[invited]*

Presenter: Vergne Adrien

09:30-09:50

Tannaz Haji Mohammadloo, Tengku Afrizal Tengku Ali, Mirjam Snellen, Leo Koop, Timo C. Gaida, Dick G. Simons

ASSESSING THE REPEATABILITY OF SEDIMENT CLASSIFICATION METHOD AND THE LIMITATIONS OF USING DEPTH RESIDUALS *[invited]*

Presenter: Tannaz Haji Mohammadloo

09:50-10:10

Laurent Guillon, Xavier Demoulin

GEOACOUSTIC PARAMETERS OF COASTAL SEDIMENTS: ANALYSIS, MODELING, AND INVERSION *[invited]*

Presenter: Laurent Guillon

25a: Acoustic modelling and Inversion methods

Chairperson: Nick Chotiros

Location / Date: Lecture room B / Friday, September 8th.

08:30-08:50

Lukasz Markiewicz, Krzysztof Drypczewski, Andrzej Stepnowski

MARINE SATELLITE DATA PROCESSING APPLICATION USING SOLAP GEOGRAPHICAL INFORMATION SYSTEM

Presenter: Andrzej Stepnowski

08:50-09:10

Henry Dol, Koen Blom, Mathieu Colin, Mark Prior

CHARACTERIZING THE UNDERWATER ACOUSTIC COMMUNICATIONS CHANNEL IN SHALLOW ESTUARIES AND ITS APPLICATION TO THE DEVELOPMENT OF A FLEXIBLE WIDEBAND MODULATION

Presenter: Henry Dol

09:10-09:30

Dieter Bevans, Michael Buckingham

ESTIMATING THE GEO-ACOUSTIC PROPERTIES OF A SHALLOW-WATER MARINE SEDIMENT FROM THE HEAD WAVE EXCITED BY A LOW-FLYING HELICOPTER

Presenter: Dieter Bevans

09:30-09:50

Rogério Calazan, Orlando Rodríguez

THREE-DIMENSIONAL EIGENRAY SEARCH FOR A VERTICAL LINE ARRAY

Presenter: Rogério Calazan

09:50-10:10

Kevin M. Lee, Megan S. Ballard, Andrew R. McNeese, Preston S. Wilson

DIRECT MEASUREMENTS OF THE GEOACOUSTIC PROPERTIES OF SEAGRASS BEARING SEDIMENTS

Presenter: Kevin Lee

10:10-10:30

Igor Esipov

RANGE DEPENDENT TRANSVERSAL FLOW RETRIEVAL BY A MULTI-FREQUENCY ACOUSTICAL APPROACH

Presenter: Igor Esipov

27: Signal and image processing

Chairperson: Anthony Lyons
Location / Date: Lecture room C / Friday, September 8th.

08:30-08:50

Philipp Woock, Jürgen Beyerer

PHYSICALLY BASED SONAR SIMULATION AND IMAGE GENERATION FOR SIDE-SCAN SONAR

Presenter: Philipp Woock

08:50-09:10

Ole Jacob Lorentzen, Stig Asle Vaksvik Synnes, Roy Edgar Hansen, Torstein Olsmo Sæbø, Marc Geilhufe

LOCAL PROBABILITY-BASED PHASE UNWRAPPING FOR SYNTHETIC APERTURE SONAR INTERFEROMETRY

Presenter: Ole Jacob Lorentzen

09:10-09:30

Xueli Sheng, Xiaoyu Wang, Hanjun Yu, Longxiang Guo, Jingwei Yin

A TARGET TRACKING TECHNOLOGY FOR REDUCING FALSE ALARM

Presenter: Xiaoyu Wang

09:30-09:50

Benjamin Henson, Yuriy Zakharov

ESTIMATING ATTITUDE AND TRAJECTORY OF FORWARD LOOKING IMAGING SONAR USING INTERFRAME REGISTRATION

Presenter: Yuriy Zakharov

09:50-10:10

Alexander Douglass, HeeChun Song, David Dowling

FREQUENCY-DIFFERENCE BEAMFORMING IN SHALLOW WATER ENVIRONMENTS

Presenter: Alexander Douglass

10:10-10:30

Francisco Javier Rodrigo Saura, Jaime Ramis-Soriano, Joaquín Fernández-Perles, Jesús Carbajo-San Martín, Pedro Poveda-Martínez

ESTIMATION OF THE ACOUSTIC NOISE RADIATED BY VESSELS FROM THE MEASUREMENT OF THE VIBRATION OF THE HULL

Presenter: Francisco Javier Rodrigo Saura

28: Sonar Systems

Chairperson: Peter Dobbins

Location / Date: Lecture room D / Friday, September 8th.

08:30-08:50

Peter Dobbins

TWINKLING IN SONAR SYSTEMS

Presenter: Peter Dobbins

08:50-09:10

Tannaz Haji Mohammadloo, Mirjam Snellen, Dick G. Simons

AN UNCERTAINTY ASSESSMENT OF THE EFFECT OF USING FM PULSES ON MBES DEPTH MEASUREMENTS

Presenter: Tannaz Haji Mohammadloo

09:10-09:30

Haoran Wu, Jinsong Tang Tang, Mengbo Ma

RANGE DOPPLER ALGORITHM OF THE MULTI-RECEIVER SAS IN THE SQUINT MODE

Presenter: Haoran Wu

09:30-09:50

Pan Huang, Jinsong Tang, Heping Zhong

A NEW REGISTRATION METHOD BASED ON PIECEWISE SURFACE FITTING FOR INTERFEROMETRIC SYNTHETIC APERTURE SONAR

Presenter: Pan Huang

10:30-10:45 *COFFEE BREAK*

18b: Ocean and river sediment characterization using acoustics

Organizers: Marcia Isakson, Mirjam Snellen

Chairpersons: Marcia Isakson and Tannaz Haji Mohammadloo

Location / Date: Lecture room A / Friday, September 8th

10:45-11:05

Glen Gawarkiewicz and Frank Bahr

CLIMATE CHANGE AND OCEANOGRAPHIC PROCESSES CONTRIBUTING TO SOUNDSPEED VARIABILITY AND UNCERTAINTY: A CASE STUDY FROM NEW ENGLAND *[invited]*

Presenter: Glen Gawarkiewicz

11:05-11:25

Marcia Isakson

FINITE ELEMENT MODELING FOR NORMAL-INCIDENCE ECHO-SOUNDING SEDIMENT CHARACTERIZATION *[invited]*

Presenter: Marcia Isakson

25b: Acoustic modelling and Inversion methods

Chairperson: Andrzej Stepnowski

Location / Date: Lecture room B / Friday, September 8th.

10:45-11:05

Eftychia Karasmani, John S. Papadakis

WATER COLUMN SOUND SPEED PROFILE RECOVERY VIA ADJOINT MODELLING

Presenter: Eftychia Karasmani

11:05-11:25

Brian M. Worthmann, David R. Dowling

OUT-OF-BAND ACOUSTIC FIELDS NEAR ACOUSTIC SHADOW ZONES AND CAUSTICS

Presenter: Brian Worthmann

11:25-11:45

Salvatore Caporale, Yvan Petillot

SVD-BASED NON-UNIFORM FAST FOURIER TRANSFORM FOR SAS INVERSE IMAGING

Presenter: Salvatore Caporale

11:45-12:05

Bo Lei, Yixin Yang, Yong Wang, Hongliang Tian

ACOUSTIC SCATTERING FROM A SLENDER OBJECT BY BOTTOM-BOUNCED BEAM IN DEEP WATER

Presenter: Bo Lei

12:05-12:25

Raegeun Oh, Sunhyo Kim, Jee Woong Choi, Su-Uk Son

BISTATIC REVERBERATION MODELLING USING RAY EXPANSION METHOD FOR TWO-LAYERED SEDIMENT

Presenter: Raegeun Oh

Leif Bjørnø Award

Location / Date: *Lecture room A / Friday, September 8th*

12:50-13:05

Awards on the best paper presented by graduate students to UACE2017

Closing

Location / Date: *Lecture room A / Friday, September 8th*

13:05-13:20

Poster Sessions

Location / Date: *Poster area / Tuesday, September 5th*

09:40-12:00

Yoav Vered, Izhak Bucher

DETERMINING THE UNDERWATER ACOUSTIC PROPERTIES OF MATERIALS, WITH A FLUID-FILLED IMPEDANCE TUBE AND TWO SPATIAL-MODES REDUCED-ORDER MODEL

Social Program

The ice breaker party, Sunday 3rd (included in the registration fee)

Location: *Conference Venue, Skiathos Palace Hotel,*
Time: *19:00 to 22:00*

The conference banquet, Tuesday 5th (included in the registration fee)

Location: *Conference Venue, Skiathos Palace Hotel,*
Time: *20:00 to 24:00*

Excursion including lunch, Wednesday 6th (included in the registration fee)

Excursion by boat to Skopelos island. Visit to Skopelos town – lunch and swimming in Agnondas beach.
Time: 09*:30 to 19:00,*

Prices for extra tickets

Icebreaker party: 30€ per ticket
Conference banquet: 90€ per ticket
Excursion: 80€ per ticket
Lunch: 30€ per ticket

Accompanying persons can purchase tickets at the registration desk.

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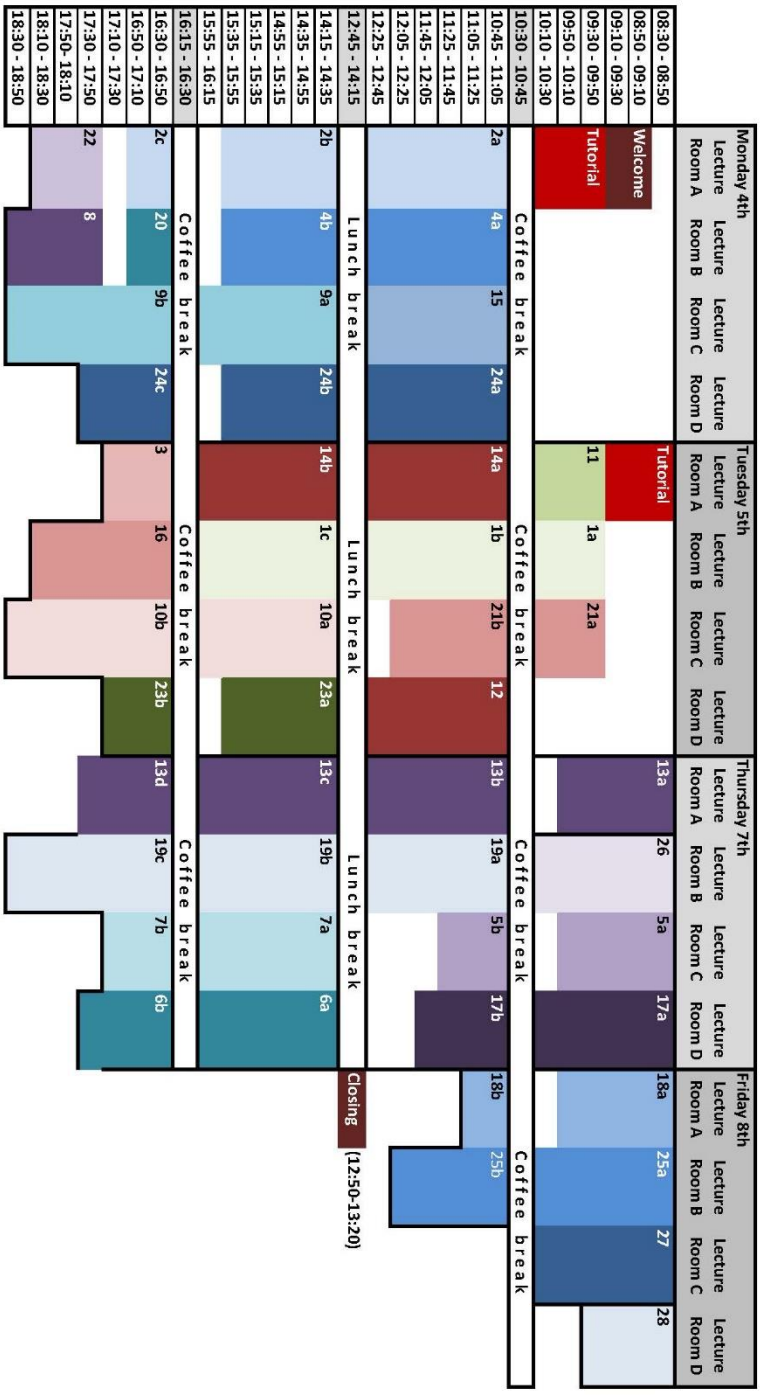
2	Acoustic Monitoring of Marine Ecosystem	Purnima Ratilal	Monday	A
3	Vector Hydrophone Research	Tuncay Akal, Jean-Pierre Hermand, Desen Yang	Tuesday	A
4	Large Time-Bandwidth acoustic signals for target detection and tracking	Alessandra Tesei	Monday	B
5	Comprehensive nuclear test-ban treaty monitoring	Georgios Haralabus and Mario Zampolli	Thursday	C
6	Sonar performance modeling and verification. Applications to active and passive sonar.	Mathieu Colin, Charles Holland, Cristina Tollefsen, Kevin Heaney, Dale Ellis	Thursday	D
7	Acoustics in polar environments	Jaroslaw Tegowski and Alexander Gavrilov	Thursday	C
8	Advances in acoustic measurement systems: Technologies and applications	Alessandra Tesei	Monday	B
9	Underwater Communications and Networking	Charalampos Tsimenidis, Paul Mitchell	Monday	C
10	Target Echo Strength-Measurements and Modelling	Duncan Williams, David Nunn, Marten Nijhof	Tuesday	C
11	Distributed Networked Systems for Surveillance	Frank Ehlers, Arne Schulz	Tuesday	A
12	Underwater vehicles and acoustic sensing	Jean-Pierre Hermand, Sergio Jesus, Peter Nielsen, Martin Siderius	Tuesday	D
13	Towards Automatic Target Recognition. Detection, Classification and Modelling	Johannes Groen, Wolfgang Jans, Yan Pailhas, Vincent Myers	Thursday	A

14	*Three-dimensional sound propagation models and effects*	*Michael Porter*	*Tuesday*	*A*
15	*Design of new experimental facilities to address future problems in underwater acoustics*	*Jean-Pierre Sessarego and Dominique Fattaccioli*	*Monday*	*C*
16	*Underwater Unexploded Ordnance (UXO) Detection and Remediation*	*Daniel Sternlicht, Wolfgang Jans*	*Tuesday*	*B*
17	*Inversion methods for estimating geoacoustic profiles of the ocean bottom*	*Julien Bonnel, Ross Chapman*	*Thursday*	*D*
18	*Ocean and river sediment characterization using acoustics*	*Marcia Isakson, Mirjam Snellen*	*Friday*	*A*
19	*Acoustic methods and technologies for ocean observatories*	*Hanne Sagen, Brian Dushaw*	*Thursday*	*B*
20	*Habitat Mapping: Procedures and Results*	*Philippe Blondel and Andrea Caiti*	*Monday*	*B*
21	*Acoustics of marine renewable energy developments*	*Stephen Robinson, Paul Lepper, Philippe Blondel*	*Tuesday*	*C*
22	*Seagrass and macroalgae acoustics*	*Jean Pierre Hermand, Preston S. Wilson*	*Monday*	*A*
23	*Underwater acoustic calibration, testing, facilities and standards*	*Stephen Robinson, Victor Evora, Bo Lovgren*	*Tuesday*	*D*
24	*Underwater Noise - Modelling and Measurements*	*Emmanuel Skarsoulis, Michael Taroudakis*	*Monday*	*D*
25	*Acoustic modelling and inversion methods*		*Friday*	*B*
26	*Acoustic Imaging*		*Thursday*	*B*
27	*Signal and Image Processing*		*Friday*	*C*
28	*Sonar Systems*		*Friday*	*D*

Sessions Timetable



Exhibition

EvoLogics GmbH

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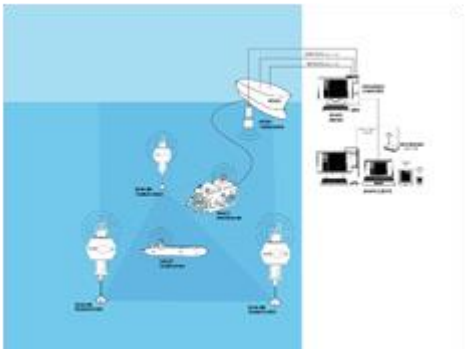
EvoLogics is an R&D company researching in the field of hydro-acoustics, as well as developing and producing advanced spread-spectrum underwater communication, ultra-short baseline (USBL) and long baseline systems. Hydro-acoustic modems are built upon sweep-spread carrier (S2C) technology, with multi-channel data management and networking capability, as well as expanded networking functions using time effective Dual-MAC architecture. Hydro-acoustic modems optionally include built-in tracking and positioning functions with USBL as well as data loggers, acoustic wake-up module and releasers. Deployments in offshore platforms (FPSO, ABS), environmental monitoring, defence systems, mine deactivation, intrusion detection, ROV and AUV operations. EvoLogics GmbH is a technology company based in Berlin, Germany. Since 2000, EvoLogics has been developing innovative concepts into commercial products, focusing on underwater acoustic communication systems, acoustic positioning systems and other solutions for the maritime industry. EvoLogics GmbH cooperates with academic and industrial research partners from both Germany and around the globe, including, amongst others, the Technical University Berlin, the Leibniz Institute for Baltic Sea Research, the Fraunhofer Institute of Ceramic Technologies and Systems, the Fraunhofer Institute of Non-Destructive Testing and the National University of Singapore. EvoLogics is a member of the German Association for Marine Technology (GMT), the Go-3D network, the MAR-IT initiative and the Baikal Neutrino Telescope collaboration. The company's experts are active in the scientific community, taking part in academic conferences and publishing papers.

Commercial Products

Diverse Models of Underwater Acoustic Modems

EvoLogics underwater acoustic modems provide fast and reliable full-duplex digital communication using the patented S2C (Sweep-Spread Carrier) Technology. The performance is resistant to the challenges of the dynamic subsea environment as self-adaptive algorithms maintain the highest bit rate possible in current conditions. EvoLogics offers a selection of short- mid- and long-range devices for shallow or deep water applications - with operating depths up to 6000 m and ranges reaching 8000 m. Each product is available in a variety of configurations to offer the best-fit solution for a particular scenario. Multiple options for system integration include OEM versions and streamlined transducer units, R&D efforts are supported by a framework for developers and advanced underwater networking solutions.

Diverse Models of Underwater Acoustic Positioning Systems

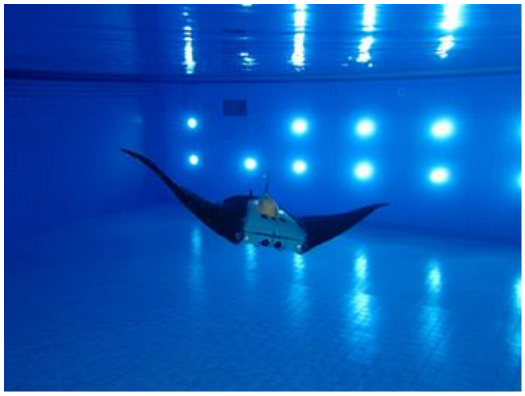


EvoLogics offers USBL (Ultra-Short Baseline) and LBL (Long Baseline) positioning systems that provide accurate target tracking with simultaneous bidirectional digital communication. Switching between positioning and communication modes is not necessary: positioning data is calculated simultaneously with acoustic transmissions. Both features complement each other in a fully integrated multifunctional system. EvoLogics SiNAPS is the company's positioning software that offers a complete easy-to-use display features for real-time tracking of multiple targets, supports interfacing with external instruments and offers advanced data management tools.

Unmanned Surface Vehicle SONOBOT

EvoLogics' communication technology is implemented in the company's unmanned surface vehicle, the Sonobot. Available as a commercial product since 2011, the Sonobot was developed as an easy-to-deploy bathymetric survey vehicle for inland and harbour waters. Equipped with EvoLogics S2C-technology echosounder, the vehicle has since been tested for LBL baseline calibration and mini-ROV deployment.

Autonomous Underwater Vehicle MANTA



The EvoLogics BOSS Manta Ray is a novel bionic vehicle the company has been developing since 2013 as part of the Bionic Observation and Survey System project. BOSS is a joint research effort, supported by the German Federal Ministry for Economic Affairs and Energy (BMWi). The project's goal is to create a powerful and flexible underwater exploration and monitoring system, particularly suitable to access hard-to-reach or yet unexplored areas with its unique functional properties.

Deployed in the target area for observation and survey, the BOSS system is a self-coordinating swarm of autonomous underwater vehicles (AUVs), all linked into a multimedia sensor network with latest communication and navigation technologies. The AUV is the project's core innovation - engineered and built at EvoLogics, the experimental bionic vehicle is modeled after a Manta ray and can move through the water by wing-like movements of its "pectoral fins".

Ocean Sonics Ltd.

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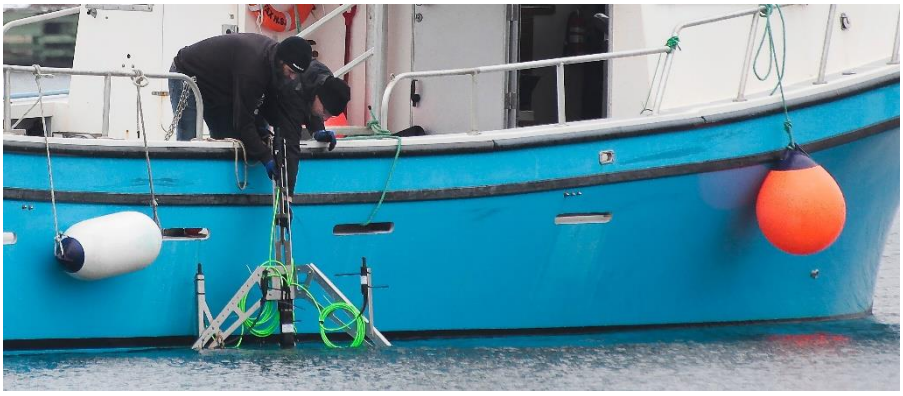
The Smart Hydrophone Company

Ocean Sonics designs and manufactures the icListen Smart Hydrophone, an innovative passive acoustic monitoring system. Combining the highest signal performance with built-in processing and memory creates the most powerful acoustic measurement tool available. The hydrophones are calibrated with a wide dynamic range (24 bit, 120dB) and very low noise floor.

You can find Ocean Sonics products all around the world from the Arctic to the Antarctic, in shallow waters or up to 6000m Used for the following measurements:

- **Oceans Observation**
- **Noise Mitigation**
- **Marine Mammal Monitoring**
- **Pile driving, Construction, Dredging**
- **Security**
- **Energy**

Creating **Acoustic Arrays** is now simple. Connect two or more icListen hydrophones together and they **self-synchronize**, operating as one. Ocean Sonics offers a wide range of geometries, including vertical, horizontal, autonomous, very small geometrical arrays, or spread out over many kilometers.



Whether you need to be tethered, cabled, drifting, short or long term deployments, Ocean Sonics has an array of products to make your sound measurements accurate, synchronized and reliable!

Product Summary:

icListen Smart Hydrophones

icTalk Smart Projectors

Acoustic Recorder – NEW

Processing Software

Battery packs

Drifters

Cables

Buoys

GPS

For more information please visit Ocean Sonics at Booth 4 at the UACE or contact info@oceanconis.com

RS Aqua Ltd.

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RS Aqua specialise in the provision of high specification marine sensors and subsea equipment for scientists and engineers.

Last year RS Aqua released RS-ORCA, a suite of underwater acoustic recorders that support multiple input channels and extremely high sampling rates. RS-ORCA can capture, record and process, in real time, some of the richest underwater data sets possible, supporting 5 synchronously sampled hydrophone inputs. Whilst deployed the RS-ORCA can statistically analyse acoustic data to standards required by the **EU Marine Strategy Framework Directive**, removing the need for post-processing. Raw audio and processed noise can be stored internally or streamed via Ethernet or over 7 km long range Wi-Fi.

Typical Applications:

- Noise localisation and classification
- Passive acoustic monitoring (PAM)
- Marine mammal studies
- Regulatory monitoring of renewable energy sites
- Marine mechanical performance monitoring

RS-ORCA

RS AQUA

Technical Specifications

POWER	Internal Power: Alkaline D Cells or Lithium Ion rechargeable
	External Power: 10-30 V DC
ANALOGUE INPUT CHANNELS	Number of Channels: 5 – Standard (more available on request)
	ADC Number of Bits: 16
	Sampling Rates Supported: 24 kHz, 48 kHz, 96 kHz, 192 kHz, 384 kHz (768 kHz on request)
HYDROPHONE OPTIONS	Hydrophones mounted on end cap, or connected with custom cable lengths
	Customised sensitivities and bandwidths available on request
MEMORY	2x 512 GB SD Card and up to 4 TB SSD
	Configurable recording, schedule and duty cycling
DATA PROCESSING	Real time noise processing to IEC and ANSI specifications
	Live streaming of noise statistics via Ethernet and "raw" audio
COMMUNICATIONS	Ethernet - Programming & Live Streaming, optional RS 422
	High Speed USB for Download @ 40 MB per second
ENVIRONMENTAL	200m to 3500m depth rated
	Operating Temperature: -10°C to +-50°C

*Specifications subject to change without notice.

Come see RS-ORCA in the Exhibition Area

RTsys

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INNOVATION IN UNDERWATER ACOUSTICS AND DRONES

As a French company on the cutting edge of technology, RTsys is a specialist in underwater acoustics and drones. RTsys stands out from the crowd thanks to its innovations developed in partnership with research laboratories. Thanks to its core technology Powered by SDA the RTsys product range has grown rapidly.

A range of active and passive underwater acoustic technology and equipment

With acoustic monitoring of the seabed in mind, RTsys has developed a range of recording devices, buoys and a software package to process signals, making the use of this technology easier for sound engineers and non-specialists alike.

The quality and reliability of these measuring instruments is widely recognised, especially when used to monitor renewable marine energies; buoys and recorders are now used on many offshore wind farms in Europe.

In the domain of scientific marine research, the quality of the RTsys recorders' high-frequency recordings (marine mammals) and robustness (function effectively even in polar waters) is held in high esteem.

Compact and rapid underwater drones (AUVs)

RTsys' underwater drone is a unique product given its speed, compact size and long battery life (see attached sheet).

"Innovation influences our day-to-day decisions, in order to meet our clients' technology and modularity needs."

Vidal Teixeira,
RTsys Chief Executive

A portable sonar system for divers

In 2016, RTsys launched the SonaDive®: a non-magnetic sonar system for divers, equipped with innovative navigation and communication systems. It helps divers in their search for immersed objects.

Cutting edge R&D in partnership with the scientific research community

Established in 2010, RTsys' projects bring talented engineers and important research institutes together. In order to remain at the cutting edge of technology, RTsys invests heavily in R&D and continually works to develop its partnership with the scientific community.

These partnerships have resulted in major innovation:

- The MIMO technology, a modem that increases the throughput of underwater acoustic communication threefold
- The COMET pack drones, autonomous underwater robots operating in packs.
- SonaDive®, a new generation portable sonar system for divers.

Active Involvement in the CHORUS Industrial Chair

RTsys' links with the scientific research community are demonstrated by its involvement in the CHORUS Chair. The aim of the Chair is to develop innovative observation methods, based on acoustics, to study oceans, and changes that affect them, by bringing several different French laboratories and companies, together. Within the project RTsys works closely with research teams to develop and build acoustic equipment.

Powered by SDA

The "Powered by SDA" core technology is used in all RTsys products.

The SDA card is full of cutting edge reliable technology for active and passive acoustic applications. It offers substantial calculation capacity, in a compact and portable format, whilst remaining highly energy efficient. Used in conjunction with a Linux operating system, it really is a unique prod- uct given its calculation capacity, its compact size and its low energy use.

- *Wide range operating power (500mW - 3W)*
- *Raw power 7 GFlops / 266 GMACS*
- *Linux operating system*
- *Synchronous multichannel transceiver (16 RX / 4 TX)*

Monitoring of marine renewable energies

The acoustic monitoring activities for scientists and marine energies are developing quickly and require recording equipment for wildlife observation and seabed exploration, but also to acoustically monitor construction sites. RTsys has developed acoustic recorders and buoys that make monitoring easier; they guide user and help them to comply with environmental regulations.

RTsys strives to remain one of the forerunners in this booming market, given that public authorities now limit the noise levels of human activity at sea, notably on wind and tidal farm construction sites.

RTsys' know-how in active and passive acoustics and underwater drones is recognised by key defence and civil clients who now require this type of expertise. RTsys continues to develop, and new innovations are set to be released very shortly.

Hydroacoustic IMS Station

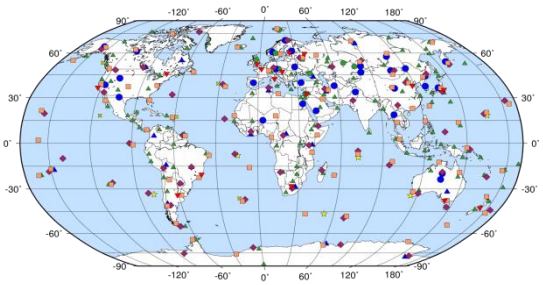
Exhibition of the Installation of Hydroacoustic IMS Station HA04

Crozet Islands, France

by the Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO)*

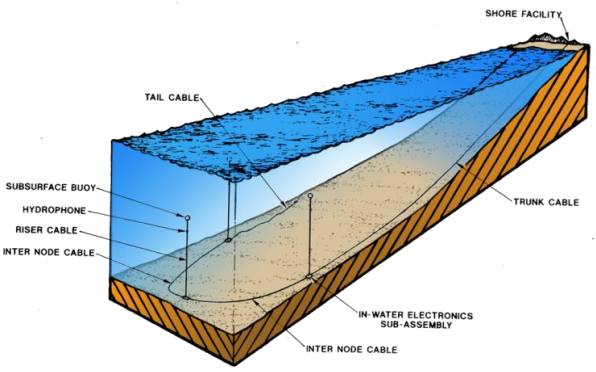
**Contribution to the UACE2017 from structured session "Comprehensive nuclear test-ban treaty monitoring" - Organizers: Georgios Haralabus and Mario Zampolli*

The hydroacoustic network is part of the International Monitoring System (IMS) at CTBTO. When complete, the IMS will comprise 321 stations and 16 radionuclide laboratories to monitor the globe for evidence of a nuclear explosion. In order to provide uniform coverage, many stations are located in remote areas; this has posed engineering challenges unprecedented in the history of arms control. The IMS uses four complementary verification methods – seismic, hydroacoustic, infrasound and radionuclide.



The complete IMS network of CTBTO counts 337 stations and facilities that include four technologies: seismic, infrasound, radionuclide and hydroacoustics. To date, the IMS network is 85% complete (installed and certified stations and facilities).

As sound propagates very efficiently through water, relatively few hydroacoustic stations are required to cover the detection of nuclear explosions in the world's oceans. Of the IMS Network's 11 hydroacoustic stations, five are T-phase stations which use seismometers to pick up waterborne signals from acoustic events coupled in the earth's crust in coastal areas. The other six are cabled stations that utilize hydrophones deployed in the SOFAR channel. Most cabled hydrophone stations have two triplets of underwater hydrophones, with each triplet configured in a horizontal triangular configuration with a separation of 2 kilometres (km), except for the HA01 Station at Cape Leeuwin, Australia, which has only one triplet.



Cabled hydroacoustic IMS station - hydrophone triplet design (courtesy of MariPro).

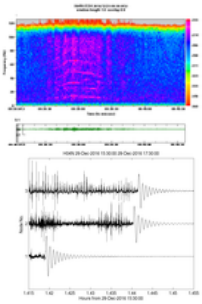
All but one of the 11 IMS hydroacoustic stations had been installed and certified prior to 2016. After years of planning, commitment and persistence, the reestablishment of hydroacoustic station HA04 at Crozet was successfully completed in December 2016.

The installation of Hydroacoustic Station HA04 at one of the most remote places on earth was a challenging ocean engineering project and required complex logistical support operations.

The installation and certification of HA04 marks an important milestone for CTBTO as it is the final hydroacoustic station to be added to the IMS, completing this portion of the global monitoring network.

To monitor underwater sounds deep in the ocean, HA04 uses six hydrophones configured in two sets of "triplets", one to the North and one to the South of Possesion Island (one of the Crozet Islands). Each of the station's six hydrophones transmits their data via underwater cables, which are about 50 kilometres in length, to a receiving facility — the Central Recording Facility– located on the island. From there, the HA04 data is forwarded via satellite links to the CTBTO in Vienna where it is received and processed by the International Data Centre.

Just hours after the first set of HA04 hydroacoustic sensors were deployed signals from an underwater seismic activity and whale calls (figure) were recorded.



Data from the north "triplet" during deployment.

Three geographically separated teams (the underwater system installation team on the cable ship, the shore team on Possession Island, and the management & data quality support team in Vienna) worked collaboratively throughout the installation and testing of the new system.

Although the operation was planned to take place during the austral summer, the weather conditions were much stormier than expected. Indeed, those familiar with the Crozet area confirmed that December 2016 was one of the worst Decembers for storms seen in many years. However, in spite of all the engineering, environmental and logistical challenges, HA04 was finally installed.

The CTBTO exhibition during UACE2017 wishes to share with the underwater acoustics community more information about this ocean engineering feat.

The Crozet Islands are within a marine natural reserve and are home to thousands of king penguins and other rare birds and marine species.

Conference Venue Map