



# ICUA2022

International Conference on  
Underwater Acoustics

## Conference Programme

### Sunday 19<sup>th</sup> - Thursday 23<sup>rd</sup> June 2022

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#### Sunday 19<sup>th</sup> June

15:00 – 17:00

**Conference Registration**

Mayflower Foyer

**Welcome Reception**

Mayflower Lounge

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#### Monday 20<sup>th</sup> June

08:00 – 08:45

**Conference Registration & Speaker Preview**

Mayflower Foyer

08:45 – 09:45

#### **Opening Plenary**

**Mapping marine habitats – Exploring and monitoring,  
from human impacts to climate change**

*Dr Philippe Blondel, Senior Lecturer, University of Bath*

Mayflower 1 & 2

09:45 – 10:15

Refreshments

Mayflower Lounge

10:15 – 12:15

#### **PARALLEL SESSION 1**

##### **Polar Acoustics**

Mayflower 1

10:15 – 10:35

O-001: OPUS - The Open Portal to Underwater Soundscapes to  
explore sound in the global ocean

*Dr Karolin Thomisch, Alfred Wegener Institute Helmholtz Centre  
for Polar and Marine Research*

10:35 – 10:55

O-002: Data assimilation of ocean sound speed in Fram Strait  
*Florian Geyer, Nansen Environmental and Remote Sensing  
Center*

- 10:55 – 11:15 O-003: Acoustic properties of Arctic sea ice, from year-long underwater measurements in Cambridge Bay, Canada  
*Dr Philippe Blondel, University of Bath*
- 11:15 – 11:35 O-004: Acoustic measurements in an environment of high frequency hydrological dynamics: NARVAL2021 in the Iceland Faroe Ridge  
*Dr G Bazile Kinda, Shom*
- 11:35 – 11:55 O-005: Travel-time variability during the 2016–2017 deep-water Canada Basin Acoustic Propagation Experiment (CANAPE)  
*Dr Peter Worcester, University of California San Diego*

### **Ambient noise and ambient sound measurement and modelling**

Mayflower 2

- 10:15 – 10:35 O-006: Coherent processing of broad band dynamic ambient marine noise through remote optoelectronic interrogation of legacy seafloor cabled infrastructure  
*Dr Mohammad Belal, National Oceanography Centre Southampton*
- 10:35 – 10:55 O-007: Ambient noise measurements during REP(MUS) NATO exercise  
*Erica Cruz, Blueoasis*
- 10:55 – 11:15 O-008: The Global Ocean Sound Atlas  
*Dr Michael Porter, Heat, Light, And Sound Research, Inc.*
- 11:15 – 11:35 O-009: Soundscapes in the German Baltic Sea before and during the Covid-19 pandemic  
*Fritjof Basan, Federal Maritime and Hydrographic Agency of Germany (BSH)*
- 11:35 – 11:55 O-010: Development of an international standard to measure underwater ambient sound  
*Dr Michael Ainslie, JASCO Applied Sciences (Germany)*

### **Seabed and sediment acoustics**

Mayflower 3

- 10:15 – 10:35 O-011: Force chains, creep, grain shearing and variability in the seabed  
*Dr Nicholas Chotiros, The University of Texas at Austin*
- 10:35 – 10:55 O-012: A Comparison Between the Bayes Acoustic Sediment Classification Technique and Angular Response Analysis Method  
*Dr Tannaz Haji Mohammadloo, Delft University of Technology*

10:55 – 11:15	O-013: Correlations between sound speed and density in sediment cores collected in Norwegian waters <i>Ellen Johanne, Eidem Norwegian Defence Research (FFI) Establishment</i>	
11:15 – 11:35	O-014: Using marine seismic reflection data to study sound-seabed interaction <i>Dr Alexander Douglass, University of Washington</i>	
11:35 – 11:55	O-015: Determining optimal total time and frequency band of ship spectrograms for seabed classification <i>Stephen M Amos, Brigham Young University</i>	
11:55 – 12:15	O-016: Approaches for determining acoustically distinct seabed classes for deep learning classification <i>Dr Tracianne Neilsen, Brigham Young University</i>	
12:15 – 13:15	Lunch	Mayflower Lounge
13:15 – 15:15	<b>PARALLEL SESSION 2</b>	
	<b>Polar acoustics</b>	Mayflower 1
13:15 – 13:35	O-017: Acoustic reflection and backscatter from arctic ice <i>Dr Nicholas Chotiros, The University of Texas at Austin</i>	
13:35 – 13:55	O-018: Measurements and Models of Ocean Sound Speed and Acoustic Propagation in the Beaufort Duct <i>Prof Lora Van Uffelen, University of Rhode Island</i>	
13:55 – 14:15	O-019: Modelling of sound propagation across the Arctic Ocean using oceanographic fields from an ice-ocean reanalysis <i>Dr Espen Storheim, Nansen Environmental and Remote Sensing Center</i>	
14:15 – 14:35	O-020: Acoustic modelling of safety zones for marine mammals at industrial activity on the Arctic shelf <i>Dr Alexander Vedenev, Moscow State University</i>	
14:35 – 14:55	O-021: Travel times and transmission loss in the 2019-2020 Coordinated Arctic Acoustic Thermometry Experiment (CAATEX) <i>Dr Matthew Dzieciuch, IGPP-0225</i>	
	<b>Ambient noise and ambient sound measurement and modelling</b>	Mayflower 2
13:15 – 13:35	O-022: A fast computation approach for shallow water propagation: Its application to ambient sound calculations before and during the covid-19 pandemic <i>Dr Özkan Sertlek, Delft University of Technology</i>	

- 13:35 – 13:55 O-023: Low-cost Ocean Acoustic Ambient Noise Recording System  
*James Theriault, Ocean Environmental Consulting*
- 13:55 – 14:15 O-024: Modelling of ship’s contribution to underwater noise in the North Sea and assessment of masking potential for fish and marine mammals  
*Dr Jakob Tougaard, Aarhus University*
- 14:15 – 14:35 O-025: Underwater noise levels in the Northern Adriatic Sea  
*Marta Picciulin, CNR-National Research Council - ISMAR*
- 14:35 – 14:55 O-026: The Silence of Global Oceans: Acoustic Impact of Covid-19 Lockdown  
*Artash Nath, Monitor My Ocean*
- 14:55 – 15:15 O-027: Investigation of trends in deep ocean noise including during the 2020 COVID lockdown period  
*Steve Robinson, NPL*

### **Seabed and sediment acoustics**

Mayflower 3

- 13:15 – 13:35 O-028: Impacts of sediment properties on 3D sound propagation in submarine canyons  
*Dr Tzu-ting Chen, Woods Hole Oceanographic Institution*
- 13:35 – 13:55 O-029: Parameterization of Continental Shelf and Upper Slope Sediments in Support of Ocean Acoustics Experiments Offshore Southern New England, USA  
*Dr Jason Chaytor, U.S. Geological Survey*
- 13:55 – 14:15 O-030: Monogenic signal study for seabed classification  
*Coraline Delblond, ECA Robotics and LabStiCC*
- 14:15 – 14:35 O-031: Observations of compressional, shear and interface waves in the New England Mudpatch  
*Prof James Miller, University of Rhode Island*
- 14:35 – 14:55 O-032: Acoustical effects due to the spatial variability of sediment geoacoustic properties from coarse to fine-grained sediments at mid-frequencies  
*Dr Jie Yang, Applied Physics Lab, University of Washington*
- 14:55 – 15:15 O-033: Acoustic Attenuation of Cohesive Sediments (mud) at High Ultrasound Frequencies  
*Bart Brouwers, Flanders Hydraulics Research*
- 15:15 – 15:45 Refreshments

Mayflower Lounge

15:45 – 17:45

### PARALLEL SESSION 3

#### Polar acoustics

Mayflower 1

15:45 – 16:05

O-034: Analysis of acoustic data collected under sea ice during the Useful Arctic Knowledge 2021 arctic cruise  
*William Jenkins, Scripps Institution of Oceanography*

16:05 – 16:25

O-035: Eavesdropping on the northward range expansion of subarctic marine mammals into the Arctic with underwater gliders  
*Dr Kate Stafford, Oregon State University*

16:25 – 16:45

O-036: Ocean Acoustic Tomography in the Beaufort gyre  
*Dr Heriberto Vazquez, University of California San Diego*

16:45 – 17:05

O-037: The 2019–2020 Coordinated Arctic Acoustic Thermometry Experiment (CAATEX): An overview  
*Dr Hanne Sagen, Nansen Environmental and Remote Sensing Center*

#### Ambient noise and ambient sound measurement and modelling

Mayflower 2

15:45 – 16:05

O-038: Defining optimal recording cycle to monitor shipping contribution to ambient noise  
*Dr Benjamin Ollivier, Shom*

16:05 – 16:25

O-039: Measurements of shipping, fin whales, earthquakes and other soundscape components at the Lofoten-Vesterålen Observatory, Norway (2018-2019)  
*Shaula Garibbo, University of Bath*

16:25 – 16:45

O-040: Acoustic long-range monitoring of tropical cyclones at low frequencies  
Gianluca Audone, University of Bath

#### Seabed and sediment acoustics

Mayflower 3

15:45 – 16:05

O-041: A unified semantic segmentation and object detection framework for synthetic aperture sonar imagery  
*Shannon-Morgan Steele, Kraken Robotics*

16:05 – 16:25

O-042: Application of seafloor backscattering strength estimators to echosounder measurements at sea  
*Irène Mopin, Ensta Bretagne*

16:25 – 16:45

O-043: Temporal variability of high-frequency acoustic scattering from the seafloor  
*Dr Anthony Lyons, University of New Hampshire*

16:45 – 17:05

O-044: Underwater pipeline detection and localisation using multibeam echo sounder in a resolution limited case  
*Gábor Geréb, University of Oslo*

17:05 – 17:25	O-045: Adaptive Beamforming and Autocalibration for Swath Sonars <i>Tor Inge Lønmo, Kongsberg Maritime</i>	
17:25 – 17:45	O-046: Using bistatic Doppler sonar to measure sediment transport in the bottom boundary layer: a direct measurement of bedload transport <i>Prof Len Zedel, Memorial University</i>	
18:00-20:00	<b>Early Career Event</b>	Winslow & Standish

## Tuesday 21<sup>st</sup> June

08:00 – 08:45	<b>Conference Registration &amp; Speaker Preview</b>	Mayflower Foyer
08:45 – 09:45	<b>Plenary Session</b> <b>3D Shelf Break Acoustics</b> <i>Dr Ying-Tsong Ling, Associate Scientist with Tenure, Woods Hole Oceanographic Institution</i>	Mayflower 1 & 2
09:45 – 10:15	Refreshments	Mayflower Lounge
10:15 – 12:15	<b>PARALLEL SESSION 4</b>	
	<b>Signal processing</b>	Mayflower 1
10:15 – 10:35	O-047: Analysis of Hydroacoustic Time Series by Predictive Modelling <i>Dr Andreas Galka, Wehrtechnische Dienststelle Für Schiffe Und Marinewaffen, Maritime Technologie Und Forschung</i>	
10:35 – 10:55	O-048: Sonar array beampattern bounds: tolerance analysis using interval arithmetic <i>Håvard Kjellmo Arnestad, University of Oslo</i>	
10:55 – 11:15	O-049: Positioning Error Correction in Underwater Acoustic Sensor Network with Embedded Sound Speed Inversion <i>Dr Wen Xu, Zhejiang University</i>	
11:15 – 11:35	O-050: Single snapshot signal-to-noise ratio improvement using the cubic autoprodut <i>Nicholas Joslyn, University of Michigan</i>	
11:35 – 11:55	O-051: Remote Detection of Ocean Sound Speed Profile Using Acoustic Profiling Techniques <i>Seyed Mohammad Reza Mousavi, Memorial University of Newfoundland</i>	

**Marine renewables**

- 10:15 – 10:35 O-052: Characterisation of underwater acoustic fields generated by disposal of unexploded ordnance during construction of offshore windfarms  
*Sei-Him Cheong, NPL*
- 10:35 – 10:55 O-053: Underwater sound generated by the wind park construction, the ten years Belgian North Sea experience  
*Dr Alain Norro, Rbins*
- 10:55 – 11:15 O-054: Reducing conservatism in underwater noise assessments  
*Dr Michael Bellmann, Itap GmbH*
- 11:15 – 11:35 O-055: Autonomous Subsea Cable Survey using Wideband Sonar  
*Dr Chris Capus, Hydrason Solutions Limited*
- 11:35 – 11:55 O-056: A three-dimensional model to predict noise emissions in offshore pile installation using vibratory devices  
*Timo Molenkamp, Delft University of Technology*
- 11:55 – 12:15 O-057: Scaling offshore pile driving noise: A case study for scenarios with and without noise mitigation  
*Jonas Von Pein, Hamburg University of Technology*

**Target Echo Strength - Measurements and Modelling**

- 10:15 – 10:35 O-058: Elastic Phenomena in Thin-Walled Acoustic Scatterers: Measurements and Simulations  
*Prof Amir Boag, Tel Aviv University*
- 10:35 – 10:55 O-059: Photogrammetry as a FE Modelling Geometry Builder  
*Jake Kent, Atlas Elektronik UK*
- 10:55 – 11:15 O-060: Wideband target echo strength measurements at Wraysbury Reservoir, UK  
*Dr Zuhayr Rymansaib, University of Bath*
- 11:15 – 11:35 O-061: Understanding acoustic-structure interaction using efficient finite-element modelling with Pogo: application to underwater acoustics  
*Dr Oliver Sanford, Dstl*
- 11:35 – 11:55 O-062: On target excitation by modulated radiation pressure  
*Dr Ahmad Abawi, Hls Research*
- 11:55 – 12:15 O-063: Acoustic scattering by smooth and rough cylinders insonified by directional sonars: application to aquaculture farms  
*Miad AlMursaline, Woods Hole Oceanographic Institution*
- 12:15 – 13:15 Lunch

13:15 – 14:55

## PARALLEL SESSION 5

### Sonar performance measurement and modelling

Mayflower 1

13:15 – 13:35

O-064: Two methods to include a beam pattern in parabolic equation models

*Jan Ehrlich, Bundeswehr Technical Centre for Ships, Naval Weapons, Maritime Technology and Research*

13:35 – 13:55

O-065: Distributed multistatic sonar performance prediction demonstrator tool

*Jan Ehrlich, Bundeswehr Technical Centre for Ships, Naval Weapons, Maritime Technology and Research*

13:55 – 14:15

O-066: Standard Scenarios For Verification of Passive-Sonar-Performance Models

*Dr Mark Prior, TNO*

14:15 – 14:35

O-067: Modelling Split-Beam Sonar

*Axel Belgarde, Memorial University of Newfoundland*

14:35 – 14:55

O-068: Modelled sonar and target depth distributions for active sonar operations in realistic environments

*Kristoffer Engedal Andreassen, Norwegian Defence Research Establishment (FFI)*

### Measurement and modelling of acoustic particle Motion

Mayflower 2

13:15 – 13:35

O-069: Benchmark scenarios for underwater acoustic particle motion verification

*Victor Oppeneer, TNO*

13:35 – 13:55

O-070: Salient features of vector acoustic field components associated with underwater ship noise

*Dr Peter Dahl, University of Washington Applied Physics Laborator*

13:55 – 14:15

O-071: A best practice guide for measurement of underwater particle motion for biological applications

*Dr Sophie Nedelec, University of Exeter*

14:15 – 14:35

O-072: A Comparison of methods for modelling acoustic particle Velocity

*Dr Alec Duncan, Curtin University*

### Sonars and transducers

Mayflower 3

13:15 – 13:35

O-073: Near field self-reciprocity at 500 kHz using water to air interface

*Jay Abel, Sensor Technology Ltd*



13:35 – 13:55	O-074: Primary pressure calibration of hydrophones using a laser pistonphone <i>Ben Ford, National Physical Laboratory</i>	
13:55 – 14:15	O-075: Performance Modelling of Acoustic Wedges for Underwater Test Facilities <i>Prof Victor Humphrey, University of Southampton</i>	
14:15 – 14:35	O-076: Experimental investigation of a virtual planar array for MIMO sonar systems <i>Sven Schröder, German Aerospace Center (DLR)</i>	
14:55 – 15:30	Refreshments	Mayflower Lounge
15:30 – 17:30	<b>Tours – NOC and ISVR</b>	

## Wednesday 22<sup>nd</sup> June

08:00 – 08:40	<b>Conference Registration &amp; Speaker Preview</b>	Mayflower Foyer
08:40 – 10:20	<b>PARALLEL SESSION 6</b>	
	<b>Underwater propagation</b>	Mayflower 1
08:40 – 09:00	O-077: Interaction of acoustic and gravity waves as a source of abyssal T-waves <i>Dr Oleg A Godin, Naval Postgraduate School</i>	
09:00 – 09:20	O-078: High order isogeometric analysis for ocean acoustics <i>Dr Ganesh Diwan, Prescient Computing</i>	
09:20 – 09:40	O-079: Acoustic source localization in underwater environment using interval analysis <i>Quentin Bateau, Ensta Bretagne</i>	
09:40 – 10:00	O-080: Using neural networks to estimate acoustic transmission loss uncertainty due to seabed uncertainty in shallow water environments <i>Brandon Lee, University of Michigan</i>	
10:00 – 10:20	O-081: Sound Propagation Experiments in a Fjord Environment <i>Dr Jan Abshagen, Bundeswehr Technical Center For Ships And Naval Weapons, Maritime Technology And Research – WTD 71</i>	
	<b>General underwater acoustics</b>	Mayflower 2
08:40 – 09:00	O-082: Exploring the use of AI in marine acoustic sensor Management <i>Edward Clark, University of Bath</i>	

- 09:00 – 09:20 O-08335: Developing a fluid-structure interaction finite element formulation for GPU calculations with Pogo: Application to underwater acoustics  
*Yiannis Simillides, Imperial College London*
- 09:20 – 09:40 O-084: Acoustic Bearing Estimation from an AutoNaut USV using Spline Array Shape Estimation  
*Alfie Anthony Treloar, University of Bath*
- 09:40 – 10:00 O-085: Exploring Soundscapes as a Tool for Automated Vessel Identification  
*Ellen White, BAE Systems*
- 10:00 – 10:20 O-086: Wideband Acoustic Detector for Insulated Subsea Pipelines  
*Dr Chris Capus, Hydrason Solutions Limited*

### **Underwater acoustic detection and classification and clearance of unexploded ordnance**

Mayflower 3

- 08:40 – 09:00 O-087: Reducing the false alarm rate of a simple sidescan sonar change detection system using deep learning  
*Yannik Steiniger, German Aerospace Center (DLR)*
- 09:00 – 09:20 O-088: Utilizing imaging geometry meta-data in classification of synthetic aperture sonar images with deep learning  
*Dr Narada Warakagoda, Norwegian Defence Research Establishment (FFI)*
- 09:20 – 09:40 O-89: Improving the realistic rendering of artificial sonar images using Cycle Generative Adversarial Networks  
*Zamirddine Mari, Dga Techniques Navales*
- 09:40 – 10:00 O-090: Utilising multiple sonar views for object classification in historic chemical munitions dumpsites  
*Oscar Bryan, University of Bath*
- 10:20 – 10:50 Refreshments

### **PARALLEL SESSION 7**

#### **Underwater propagation**

Mayflower 1

- 10:50 – 11:10 O-091: Mode coupling and Landau-Zener transitions in slowly changing underwater waveguide  
*Prof Boris Katsnelson, University of Haifa*
- 11:10 – 11:30 O-092: Acoustic propagation based algorithm to perform rendezvous between AUVs  
*Nathan Fourniol, ENSTA Bretagne*
- 11:30 – 11:50 O-093: Pseudo-differential mode parabolic equations with mode coupling and their applications in shallow-water acoustics  
*Prof Pavel Petrov, Il'ichev Pacific Oceanological Institute*

11:50 – 12:10	O-094: Nonadiabatic mode tomography of inhomogeneous moving ocean <i>Dr Andrei Shurup, Moscow State University</i>	
	<b>General underwater acoustics</b>	Mayflower 2
10:50 – 11:10	O-095: Acoustic Cloning <i>Dr Dirk-Jan van Manen, ETH Zurich</i>	
11:10 – 11:30	O-096: Sonarbell Autodetection <i>Dr Chris Capus, Hydrason Solutions Limited</i>	
11:30 – 11:50	O-097: A Proposed Definition of “Clutter” in the Context of Active Sonar <i>Adrian Brown, Atlas Elektronik UK</i>	
11:50 – 12:10	O-098: Experimental characterisation of a panel with periodic macro-voided inclusions in a water tank <i>Dr Laetitia Roux, Naval Group France</i>	
12:10 – 12:30	O-099: Coherence recovery in acoustic scattering from the sea Surface <i>Prof David Dowling, University of Michigan</i>	
	<b>Underwater acoustic detection and classification and clearance of unexploded ordnance</b>	Mayflower 3
10:50 – 11:10	O-100: SERDP/ESTCP Munitions Response Program: An update on underwater remediation of unexploded ordnance (UXO) <i>Michael Richardson, Institute for Defense Analyses IDA</i>	
11:10 – 11:30	O-101: Applying Mask R-CNN to detect and classify sea-mines from SSS and SAS data <i>Dr Olga Lopera Tellez, Royal Military Academy</i>	
11:30 – 11:50	O-102: SERDP/ESTCP Munitions Response DCL Demonstration Sites and Some Recent Test Results <i>Dr David Bradley, US Department of Defence</i>	
12:30 – 13:30	Lunch	
13:30 – 15:30	<b>AB Wood Medal Presentation</b>	Mayflower 1 & 2
15:30 – 16:30	<b>PARALLEL SESSION 8</b>	
	<b>Underwater communications</b>	Mayflower 1
15:30 – 15:50	O-103: Introducing Phorcys: Secure, Adaptable and Interoperable Acoustics for Generation-After-Next Underwater Networks <i>Amy-Mae Hobbs, Defence Science &amp; Technology Laboratory</i>	

- 15:50 – 16:10 O-104: Extremely High Data Rate (EHDR) Underwater Acoustic Communication  
*George Masters, Newcastle University*
- 16:10 – 16:30 O-105: Venilia: Enabling Command and Control Using JANUS in Networked Underwater Environments  
*Amy-Mae Hobbs, Defence Science & Technology Laboratory*

### Fluctuations and scattering

Mayflower 3

- 15:30 – 15:50 O-106: Sound field fluctuations in the presence of internal Kelvin waves  
*Ernst Uzhansky, University of Haifa*
- 15:50 – 16:10 O-107: Stability analysis of Beaufort duct mode propagation using observed thermohaline fluctuations and numerical ocean models  
*Prof John Colosi, Naval Postgraduate School*

## Thursday 23<sup>rd</sup> June

08:00 – 08:40 **Conference Registration & Speaker Preview** Mayflower Foyer

### 08:40 – 10:40 **PARALLEL SESSION 9**

#### Synthetic aperture sonar

Mayflower 1

- 08:40 – 09:00 O-108: Quantifying and modeling the effects of internal waves on synthetic aperture sonar  
*Nicholas La Manna, University of New Hampshire, Center for Coastal and Ocean Mapping*
- 09:00 – 09:20 O-109: Geometrical corrections for improved trajectory estimation based on DPCA results  
*Dr Holger Schmaljohann, WTD 71*
- 09:20 – 09:40 O-110: Circular synthetic aperture acoustic imaging of spherical target in cylindrical rod clutter  
*Tiara Bixler, United States Naval Academy*
- 09:40 – 10:00 O-111: Calibration mission for improved synthetic aperture sonar imagery  
*Dr Blair Bonnett, Helmut-Schmidt-Universität*
- 10:00 – 10:20 O-112: Investigation of layover in interferometry  
*Dr Stig A V Synnes, Ffi*
- 10:20 – 10:40 O-113: Hypothesis Testing of 3D Object Shapes for Synthetic Aperture Sonar Interferometry  
*Ole Lorentzen, University of Oslo*

### Bioacoustics and biosonar

Mayflower 2

- 08:40 – 09:00 O-114: Optimization of the Underwater Acoustic detection of Marine Mammals and Ships using CNNs  
*Bénédicte Dommergues, Blueoasis*
- 09:00 – 09:20 O-115: Key Techniques for Continuous Development of Mammal Mitigation in SONAR Applications  
*Chloe Chilver, Ultra Sonar Systems*
- 09:20 – 09:40 O-116: More than a whistle: automated classification of marine sound sources with convolutional neural networks  
*Ellen White, University of Southampton*
- 09:40 – 10:00 O-117: Acoustic detection of orcas (*Orcinus orca*) using snapshot and sequence artificial neural networks  
*Fabio Frazao, Dalhousie University*

### Radiated noise from ships

Mayflower 3

- 08:40 – 09:00 O-118: Accuracy of numerically predicted underwater sound of a ship-like structure  
*Tjakko Keizer, Damen Shipyards*
- 09:00 – 09:20 O-119: On empirical formulae to assess the source level of ships in shallow water with different hydrophone configurations  
*Dr Valentin Meyer, Naval Group*
- 09:20 – 09:40 O-120: Emergence of broadband, coherent modal arrivals on two vertical line arrays from ship noise  
*Marina Yarina, University of Haifa*
- 09:40 – 10:00 O-121: Full-field underwater vibration measurement using digital image correlation  
*Dr Geir Olafsson, University of Southampton*
- 10:00 – 10:20 O-122: The SOUNDS project: towards effective mitigation of underwater noise from shipping in Europe  
*Erica Cruz, Blueoasis*

10:40 – 11:00 Refreshments

### PARALLEL SESSION 10

#### Synthetic aperture sonar

Mayflower 1

- 11:00 – 11:20 O-123: Bias reduction in synthetic aperture sonar along-track micronavigation  
*Dr Benjamin Thomas, University of Bath*

- 11:20 – 11:40 O-124: Interpretation of scattering from small aluminium cylinders on the seabed from dual-frequency SAS images  
*Dr Richard Brothers, Atlas Elektronik UK*
- 11:40 – 12:00 O-125: Spatial Aperture Coherence with Synthetic Transmit Focusing in SAS  
*Prof Andreas Austeng, University of Oslo*
- 12:00 – 12:20 O-126: Image Enhancement Using Capon Minimum Variance Adaptive Beamforming in Synthetic Aperture Sonar  
*Ole Marius Hoel Rindal, University of Oslo*
- 12:20 – 12:40 O-127: Compensating Dynamic Range Alterations from Adaptive Beamforming using Histogram Matching  
*Dr Ole Marius Hoel Rindal, University of Oslo*
- 12:40 – 13:00 O-128: Benefits and Limitations in MIMO Synthetic Aperture Sonar  
*Dr Roy Edgar Hansen, Norwegian Defence Research Establishment (FFI)*
- Bubble acoustics**
- 11:00 – 11:20 O-129: Determining the sound of gas percolating through marine sediments  
*Dr Ben Roche, University of Southampton*
- 11:20 – 11:40 O-130: The invention of a flat-surface cleaner, with application for hull biofouling and hospital decontamination  
*Prof Timothy Leighton, University of Southampton*
- Radiated noise from ships**
- 11:00 – 11:20 O-131 SATURN: Developing Solutions to Underwater Noise  
*Dr Michael Ainslie, JASCO Applied Sciences (Germany)*
- 11:20 – 11:40 O-132: Image method to determine vessel source level from a measurement of sound pressure level in shallow water  
*Dr Michael Ainslie, JASCO Applied Sciences (Germany)*
- 11:40 – 12:00 O-133: Experimental assessment of uncertainties in underwater sound measurements of ships  
*Tjakko Keizer, Damen Shipyards*
- 12:00 – 12:20 O-134: Adapted Image Source Modelling of the Acoustics of Ship Towing Tanks  
*Prof Victor Humphrey, University of Southampton*
- 12:20 – 12:40 O-135: A methodology to define underwater acoustic radiated noise norms for small commercial vessel classes using neural networks  
*Dr Amy Deeb, Dalhousie University*

Mayflower 2

Mayflower 3

12:40 – 13:00

O-136: Development of techniques for observing propeller cavitation  
on ships and measuring URN

*Prof Patrick Fitzsimmons, Strathclyde*

13:00 – 13:15

**Student Prizes and Closing Remarks**