



2015 Philadelphia, USA

MARELEC Conference Program

DAY 1: TUESDAY, JUNE 16

0830	Registration
0900	Introduction and welcome from the Conference Chairman John Holmes, Senior Scientist, Naval Surface Warfare Center, USA
	Plenary Session
	SESSION CHAIR: John Holmes, Senior Scientist, Naval Surface Warfare Center, USA
0915	KEYNOTE: TBC
0945	KEYNOTE: Tada-Nori Goto, Associate Professor, Graduate School of Engineering, Kyoto University, Japan
1015	KEYNOTE: Jessica McElman, Electrical Engineer, Naval Surface Warfare Center, USA
1045	Poster Highlights – 2 minute overviews by the poster presenters
1100	Coffee break for visiting Exhibitors and Posters
	SESSION 1: EM Sensors and Instrumentation
	SESSION CHAIR: Katrin Schwalenberg, Research Associate, Federal Institute of Geosciences and Natural Resources (BGR), Germany
1145	GOLDEN EYE – A new electromagnetic deep sea profiler for seafloor massive sulfide exploration Hendrik Müller, Research Associate, University of Bremen, Germany
1210	Surface towed CSEM systems for shallow water mapping Steven Constable, Professor, Scripps Institution of Oceanography, USA
1235	Littoral EM seafloor investigations from Remotely and Autonomously Operated Vehicles Joe Keranen, Research Engineer, White River Technologies, USA
1300	Lunch Break
	SESSION 2: Modeling of EM Fields and their Propagation
	SESSION CHAIR: Peter Krysltedt, Director of Research, FOI, Sweden
1415	High resolution holographic imaging using sparse dipole expansions Hatim Alqadah, NRC Postdoctoral Associate, Naval Research Laboratory, USA
1440	Holographic imaging of ship sources from silencing ranges signatures Nicolas Valdivia, Research Mathematician, Naval Research Laboratory, USA
1505	Stand out characteristics of electric and magnetic fields emitted by cruise ships in the Mediterranean Sea Francisco Javier Rodrigo Saura, DSP Group Head & Antonio Sánchez García, R&D&i Manager, SAES, Spain
1530	Coffee break for visiting Exhibitors and Posters
	SESSION 3: Signature Measurement Systems, Ranges and Self Monitoring
	SESSION CHAIR: Alastair Ballentine, Product Manager – Submarine Systems, Atlas Elektronik, UK
1615	Monitoring the ship's permanent magnetization at sea using onboard sensors Marius Birsan, Defence Scientist, Defence R&D Canada, Canada
1640	The effect of electromagnetic measurement system configuration on measured signature accuracies Samantha Davidson, Technical Authority, Ranges and Sensors, Ultra Electronics Sonar Systems, UK
1705	A robust calibration and alignment procedure for collocated magnetometer and accelerometer sensors Troy Richards, Defence Scientist, Defence R&D Canada, Canada
1730	End of day 1
1730	DRINKS RECEPTION

DAY 2: WEDNESDAY, JUNE 17

0830 Morning Refreshments

SESSION 4: EM Survey Results and Case Studies

SESSION CHAIR: Hendrik Müller, Assistant Professor, University of Bremen – Marine Geophysics, Germany

0900 **Marine CSEM site survey on gas hydrate targets in the western Black Sea**

Katrin Schwalenberg, Research Associate, Federal Institute of Geosciences and Natural Resources (BGR), Germany

0925 **A marine MT experiment in the Bohai sea**

Song Huang, Associate Professor, Institute of Geology and Geophysics, Chinese Academy of Sciences, China

0950 **Potential of using inverted CSEM data to improve decisions in hydrocarbon exploration in The Barents Sea**

Svein Ellingsrud, Technical Director, EMGS, Norway

1015 **Poster Highlights – 2 minute overviews by the poster presenters**

1030 Coffee break for visiting Exhibitors and Posters

SESSION 5: EM Sensors and Instrumentation

SESSION CHAIR: Bradley Nelson, Defence Scientist, Defence R&D Canada, Canada

1115 **Magnetic sensing from unmanned aerial surveillance platforms**

Gregory Schultz, Chief Scientist, White River Technologies, USA

1140 **Compact atomic magnetometer for magnetic anomaly detection and navigation**

Michael Larsen, Experimental Atomic Physicist, Northrop Grumman, USA

1205 **Low-power miniature total-field optical magnetometer**

Mark Prouty, President, Geometrics, USA

1230 Lunch Break

SESSION 6: Signature Measurement Systems, Ranges and Self-Monitoring

SESSION CHAIR: Gregory Schultz, Chief Scientist, White River Technologies, USA

1345 **Generalization of target-based magnetic anomaly detection by means of a multipole expansion**

Pascal Pepe, PhD Student, DCNS Lorient, France

1410 **Detection of an alternative magnetic signature based on the generalisation of the Anderson basis**

Hugues HENOCQ, Underwater Electromagnetics Expert, French MoD/DGA, France

1435 **Advanced EMI models for Underwater UXO targets detection and classification**

Fridon Shubitidze, Associate Professor/ Geophysist, Dartmouth College/White River Technologies, USA

1500 Coffee break for visiting Exhibitors and Posters

SESSION 7: Mathematical and Physical Scale Modeling

SESSION CHAIR: Peter Krysltedt, Director of Research, FOI, Sweden

1545 **Analysis of an electric signature recording from a ship with onboard measurements**

Arnaud Guibert, Research Engineer, DGA Techniques Navale, France

1610 **Simulation of the de-perming process using a finite element based hysteresis model**

Christopher Riley, Engineering Manager, Cobham Technical Services, UK

1635 **Submarine design choices and their effects on the static magnetic signature**

Alwin Brettschneider, Researcher, TNO, Netherlands

1700 End of day 2

1900 **CONFERENCE DINNER Hotel Monaco Philadelphia**



2015 Philadelphia, USA

MARELEC Conference Program

DAY 3: THURSDAY, JUNE 18

0830 Morning refreshments

SESSION 8: Passive and Active EM Signature Reduction Methods

SESSION CHAIR: Alastair Ballentine, Product Manager – Submarine Systems, Atlas Elektronik, UK

0900 **Signature design considerations when employing active anodes in free-flood spaces**
Andrew Davis, Technology Manager - Electromagnetic Signatures, Ultra Electronics - PMES, UK

0925 **Effect of confined spaces on the corrosion protection and the electric signature of naval platforms**
Simon Topping, Head of CS Signatures Department, Atlas Elektronik, UK

0950 **Effect of sacrificial anodes inside hull openings on underwater electric signatures**
Yueping Wang, Defence Scientist, Defence R&D Canada - Atlantic Research Centre, Canada

1015 **Poster Highlights – 2 minute overviews by the poster presenters**

1030 Coffee break for visiting Exhibitors and Posters

SESSION 9: Electromagnetic Surveillance and Communication Systems

SESSION CHAIR: Gregory Schultz, Chief Scientist, White River Technologies, USA

1115 **UAV to AUV an air-underwater magnetic communication link**
Boris Ginzburg, Senior Researcher, SOREQ NRC, Israel

1140 **Detection of electrically anomalous body by seabed e-field sensor array with active high-current**
Sung-Ho Cho, PhD Student, Korea University of Science and Technology (KIGAM campus), South Korea

1205 **Attenuation of lateral electromagnetic waves from vertical discontinuities**
Tom Braute, Scientist, Norwegian Defence Research Establishment (FFI), Norway

1230 Lunch break

SESSION 10: EM Sensors and Instrumentation

SESSION CHAIR: Steven Constable, Professor, Scripps Institution of Oceanography, USA

1345 **A new broadband ocean-bottom electromagnetic receiver system**
Jianxin Pei, Lecturer, Ocean University of China, China

1410 **Performance improvement of a current based marine electrometer**
Mathieu Baicry, PhD Student, CEA, France

1435 **A new receiver for vertical-vertical time domain CSEM**
Stefan Helwig, Chief Technical Officer, PetroMarker, USA

1500 Coffee break for visiting Exhibitors and Posters

SESSION 11: Signature Measurement Systems, Ranges and Self-Monitoring

SESSION CHAIR: Owen Griffiths, Principal Engineer, Maritime Integrated Survivability, Dstl, UK

1545 **A novel technique for modeling ship magnetic signatures**
Carmen Lucas, Defence Scientist, Defence R&D Canada, Canada

1610 **Submerged buoy system for underwater electromagnetic signature measurements**
Donald Pugsley, Senior Engineer, Naval Surface Warfare Center, USA

1635 **Magnetic field uniformity, United States Navy Magnetics Laboratories**
Stephanie Ferrone, Physicist, Naval Surface Warfare Center, USA

1700 End of day 3

DAY 4: FRIDAY, JUNE 19

0830 Morning refreshments

SESSION 12: Forward and Inverse EM Modeling

SESSION CHAIR:

0900 Efficient 3D frequency-domain modeling of CSEM data using an exponential finite-difference method
 Piyoosh Jaysaval, PhD Research Fellow, University of Oslo, Norway

0925 Improved resolution of resistivity sections as result of inversion of Towed Streamer EM data
 Johan Mattsson, EM R&D Manager, PGS, Sweden

0950 Joint analysis of sub-seafloor structures using marine DC resistivity and magnetic data
 Tada-nori Goto Associate Professor, Graduate School of Engineering, Kyoto University, Japan

1015 Poster Highlights – 2 minute overviews by the poster presenters

1030 Coffee break for visiting Exhibitors and Posters

SESSION 13: Passive and Active EM Signature Reduction Methods

SESSION CHAIR: Bradley Nelson, Defence Scientist, Defence R&D Canada, Canada

1115 Development of magnetic signature management in the COSIMAR project
 Reinier Tan, Scientist, TNO, Netherlands

1140 The static E&M source modeller
 Eugene Lepelaars, Senior Research Scientist, TNO, Netherlands

1205 Corrosion related magnetic field caused by current flow in the hull
 John Baynham, Director of Engineering R&D, CM Beasy, UK

1230 Lunch break

SESSION 14: Underwater Based Surveillance

SESSION CHAIR: Neil Stapleton, Principal Scientific Officer, Dstl, UK

1345 Integration of a total-field magnetometer with an AUV for detection of ferrometallic targets
 Doug Hrvoic, PhD Student, McMaster University, Canada

1410 Automated target recognition to classify ferrous cylindrical shapes
 Leon Vaizer, Electronics Engineer, Naval Surface Warfare Center, USA

1435 Application of a multi-channel magnetic scalar gradiometer on an Autonomous Underwater Vehicle
 Ted Clem, Research Physicist, Naval Surface Warfare Center, USA

1500 Coffee break for visiting Exhibitors and Posters

SESSION 15: Modeling of Hydrographic and Hydrodynamic Systems

SESSION CHAIR: John Holmes, Conference Chairman, Senior Scientist, Naval Surface Warfare Center, USA

1545 Magnetic signatures of fine-scale processes in the upper ocean turbulent boundary layer
 Alexander Soloviev, Professor, Nova Southeastern University, USA

1610 Electromagnetic fields induced by internal waves in stratified conducting fluids: model validation
 Timothy Bole, Physicist, Naval Surface Warfare Center, USA

1635 Synthetic Aperture Radar imaging of sea surface: Determination of marine environmental information
 Simon Topping, Head of CS Signatures Department, Atlas Elektronik, UK

1700 End of conference