VOLUME 2

LOW-COST COASTAL MAPPING USING KINECT V2 TIME-OF-FLIGHT CAMERAS ................................. 689
Thomas Butkiewicz

EFFICIENT MULTI-AUV COOPERATION USING SEMANTIC KNOWLEDGE REPRESENTATION FOR UNDERWATER ARCHAEOLOGY MISSIONS ................................................................. 698
Nikolaos Tsiodras, Georgios Papadimitriou, Zeyn Saigol, David Lane

STATISTICAL BACKSCATTER SUPPRESSION TECHNIQUE FOR A WIDEBAND HYBRID LIDAR-RADAR RANGING SYSTEM .......................................................................................... 704
David Illig, Luke Rumbaugh, William Jemison, Linda Mullen, Alan Lane

EFFICIENT REACQUIRE & IDENTIFY PATH PLANNING OVER LARGE AREAS .............................................. 711
Abhishek Sriraman, Matthew Bays

EVALUATION OF Q-LEARNING FOR SEARCH AND INSPECT MISSIONS USING UNDERWATER VEHICLES .................................................................................................................. 718
Gordon Frost, David Lane

LOW-COST AUV ALBA13 AS MULTI-SENSOR PLATFORM WITH WATER SAMPLER CAPABILITIES, FOR APPLICATION IN MULTI-AGENT OCEAN RESEARCH APPLICATIONS .......................................................... 724
Javier Busquets, Mr Francisco-Javier Martin, Mr Davide Proserpio, Jose Busquets

DEVELOPMENT OF A ROBOTIC FIN FOR HYDRODYNAMIC PROPULSION AND AERODYNAMIC CONTROL .................................................................................................................. 732
Jason Geder, Dan Edwards, Ravi Ramamurti, Marius Pruessner, Trent Young

THE PROJECT "V-FIDES": A NEW GENERATION AUV FOR DEEP UNDERWATER EXPLORATION, OPERATION AND MONITORING .............................................................. 739
Andrea Caiti, Francesco Di Corato, Davide Femucci, Simone Grechi, Manuel Novi, Francesco Pacini, Giacomo Paoli

TOWARD UNDERWATER ACOUSTIC-BASED SIMULTANEOUS LOCALIZATION AND MAPPING: EXPERIMENTAL RESULTS WITH THE TYPHOON AUV AT COMMSEN13 SEA TRIAL ........................................................................... 746
Francesco Di Corato, Davide Femucci, Riccardo Costanzo, Niccolò Monni, Luca Poggi, Alessandro Ridolfi, Benedetto Allotta, Andrea Caiti

ANALYSIS OF THE ACCURACY OF A LBL-BASED UNDERWATER LOCALIZATION PROCEDURE ................................................................................................................................. 753
Alessio Torella, Giuseppe Casalino, Enrico Simetti, Alessandro Sperinde, Sandra Torelli

A NEW SEGMENTATION APPROACH FOR UNIMODAL IMAGE HISTOGRAMS: APPLICATION TO THE DETECTION OF REGIONS OF INTEREST IN SONAR IMAGES ....................................................... 760
Imen Mandhouj, Frederic Maussang, Basel Solaiman, Hamid Amiri

TOWARD DYNAMIC MARINE SPATIAL PLANNING TOOLS: CAN WE INFORM FISHERIES STOCK ASSESSMENTS BY USING DYNAMIC HABITAT MODELS INFORMED BY THE INTEGRATED OCEAN OBSERVING SYSTEM (IOOS)? .................................................................................. 766
Josh Kohut, John Manderson, Enrique Curchisier, Laura Pulamara, Greg DiDomenico, Matthew Oliver, Matthew Breece, Dewayne Fox

REAL TIME VISUAL SLAM FOR UNDERWATER ROBOTIC INSPECTION .................................................. 773
Magda Meireles, Renato Lourenco, André Dias, José Almeida, Hugo Silva, Alfredo Martini

ASSESSMENT AND QUANTIFICATION OF HF RADAR UNCERTAINTY ......................................................... 778
Fearghal O’Donncha, Sean Mc-Kenna, Teresa Updyke, Hugh Roarty, Emanuele Ragnoli

TOWARD INFORMATIVE PLANNING FOR COOPERATIVE UNDERWATER LOCALIZATION ................................................................................................................................. 788
Jeffrey Walls, Ryan Ensitke

INTER-PROGRAM COMMUNICATION PROTOCOL FOR OPERATION OF SIX-LEGGED SUBSEA WALKING ROBOT CR200 ........................................................................................................ 795
Banghyun Kim, Hyongwon Shim, Bong-Hwan Jun, Pan-Mook Lee

IMPROVEMENTS TO A GEOGRAPHICAL TECHNIQUE FOR SEAFLOOR IMAGE MOSAICKING ................................................................................................................................. 799
Max Woolsey, Allison Woolsey

MULTI-ALTITUDE MULTI-SENSOR FUSION FRAMEWORK FOR AUV EXPLORATION AND SURVEY ................................................................................................................................. 807
Jie Li, Matthew Johnson-Roberson

FEEDING OF LARGE-SCALE FISH FARMS: MOTION CHARACTERIZATION OF A PNEUMATIC ROTOR FEED SPREADER .............................................................................................................. 815
Kristoffer Skulien, Jo Alfredsen
ON AUV ACTIONS TO CORRECTLY LABEL WORLD INFORMATION .......................................................... 822
Francesco Mavrelli, Zeyn Saigol, David Lane, Michael Cashmore, Bram Ridder, Daniele Magazzini

TESTING NETWORK PROTOCOLS VIA THE DESERT UNDERWATER FRAMEWORK: THE
COMMSNET'13 EXPERIENCE .............................................................................................................. 828
Giovanni Tozo, Ivano Calabrese, Federico Favaro, Loris Brolo, Paolo Casari, Michele Zorzi

MATCHED-FIELD SOURCE LOCALIZATION UNDER MULTI-COHERENT MODAL GROUP
MODEL VIA COVARIANCE MATRIX MATCHING ....................................................................... 836
Yue Zhou, Wen Xu, Hangfong Zhao

DEVELOPMENT OF OPERATIONAL STANDARDS FOR ARCTIC OIL AND GAS
OPERATIONS.................................................................................................................................. 842
Green Stephen, Paul Steenhof, Brian Walsh

USING SYNTHETIC APERTURE SONAR AS AN EFFECTIVE HYDROGRAPHIC SURVEY
TOOL ............................................................................................................................................... 853
Andrew Hoggarth, Karl Kenny, Matthew Holland

TEC4SEA - A MODULAR PLATFORM FOR RESEARCH, TEST AND VALIDATION OF
TECHNOLOGIES SUPPORTING A SUSTAINABLE BLUE ECONOMY ......................................... 865
Paulo Oliveira, Alfredo Martins, Augustin Olivier, Anibal Matos, José Almeida, Nuno Cruz, José Alves, Luís
Pessoa, Pedro Jorge, Rui Campos, Manuel Ricardo, Carlos Pinho, António Silva, Sergio Jesus, Eduardo Silva

ENERGY EFFICIENT INTERFERENCE-AWARE ROUTING AND SCHEDULING IN
UNDERWATER SENSOR NETWORKS ............................................................................................... 871
Yuzhi Zhang, Yi Huang, Lei Wan, Hao Zhou, Shengli Zhou, Xiaohong Shen, Haiyan Wang

THE ENTERPRISE OF OCEAN OBSERVING: AN EXTENSION OF THE FRAMEWORK FOR
OCEAN OBSERVING.................................................................................................................... 879
Andrea McCurdy

DEVELOPMENT OF ICE PROFILER SONAR (IPS) TARGET SONAR WITH A LOGARITHMIC
DETECTOR .................................................................................................................................... 888
Rene Chme, David Fissel, David Lemon, Murray Clarke, Paul Johnston

HARBOR SOUND LEVEL ESTIMATION FOR ASSESSMENT OF UNDERWATER SHIPPING
NOISE .............................................................................................................................................. 894
Ignacio Sánchez, Linilson Padovese

QUANTITATIVE CHEMICAL ANALYSIS OF SUBMERGED SOLIDS USING CALIBRATION-
FREE LASER-INDUCED BREAKDOWN SPECTROSCOPY ................................................................ 899
Tomoko Takahashi, Blair Thornton, Takumi Sato, Kohichi Ohki, Tetsuo Sakka

A NUMERICAL MODELLING APPROACH FOR STUDY OF MUDBANK IMPACT ON
COASTLINE ...................................................................................................................................... 904
Parvathy K. G., Nousaj V., Thomas K. V., Ramesh H.

HIGH-RESOLUTION NWP WITH DATA ASSIMILATION OVER PLACENTIA BAY,
NEWFOUNDLAND .......................................................................................................................... 909
Shawn Allan, David Bryan, Benoit Pouliot

AUTOMATIC DETECTION OF SAND RIPPLE FEATURES IN SIDESCAN SONAR IMAGERY .......... 917
Anna Crawford, Adam Skarke

AUTOMATIC FISH COUNTING SYSTEM FOR NOISY DEEP-SEA VIDEOS .................................... 922
Ryan Fier, Alexandra Branzan Albu, Maia Hoeberechts

PUGET SOUND UNDERWATER NETWORKING TESTBED .............................................................. 928
Shee Hurst, Xinyu Xie, Shwan Ashrafi, Sumit Roy, Payman Arabshahi

ADAPTIVE OFDM FOR DOWNLINK UNDERWATER ACOUSTIC COMMUNICATIONS ............ 933
Yuchi Zhang, Yi Huang, Lei Wen, Hao Zhou, Shengli Zhou, Xiaohong Shen, Haiyan Wang

THE REVERBERATION SUPPRESSION IN WIDEBAND DIVER DETECTION SONAR ............... 938
Jian Yang, Feng Xu, Jia Liu, Xiadong An, Yongqiang Ji

DEPLOYABLE OIL DISPERSANT SYSTEM FOR FIXED WING AIRCRAFT ..................................... 942
Nathan Brazil, Sam Nakha, Shawn Kenny

RARE EVENTS DETECTION ALGORITHM: APPLICATION TO SONAR IMAGE ......................... 951
Imen Mandhouch, Frederic Maussang, Basel Solaiman, Hamid Amiri

GLIDERPALOOZA 2013 TO MODEL PALOOZA 2014: JOINT U.S. AND CANADIAN OCEAN
GLIDER OPERATIONS SUPPORTING MULTIDISCIPLINARY SCIENTIFIC RESEARCH AND
EDUCATION ..................................................................................................................................... 956
Michael Crowley, Oscar Schofield, Scott Glenn, Fred Whoriskey

DESIGN OF NEREID-UI: A REMOTELY OPERATED UNDERWATER VEHICLE FOR
OCEANOGRAPHIC ACCESS UNDER ICE ...................................................................................... 961
Louis Whitcomb, Andrew Bowen, Dana Yeeger, Christopher Germain, James Kinsey, Michael Jakuba,
Christopher Taylor, Casey Machado, Jonathan Howland, Carl Kaiser, Mathew Heintz, Clifford Ponhirland,
Stefano Simon, Daniel Gomez-Ibanez, Loral O'Hara, Christopher McFarland, Larry Mayer, John Bailey,
Christopher Judge, Glenn McDonald
DESIGN PRINCIPLE OF A BIOMIMETIC UNDERWATER ROBOT U-CAT ............................................................. 967
Maarja Kruusmaa, Taavi Salumäe, Raamun Koogi, Gert Tomik, Jaan Rebane, Andres Ernits

REGIONAL AIR-SEA INTERACTIONS (RASI) CLIMATOLOGY FOR CENTRAL AMERICA COASTAL GAP WIND AND UPWELLING EVENTS ................................................................. 972
Deborah Smith, Xiang Li, Shannon Flynn, Shannon Flynn

ICEBERG SEVERITY OFF THE EAST COAST OF NORTH AMERICA IN RELATION TO UPSTREAM SEA ICE VARIABILITY: AN UPDATE ................................................................. 980
John Marko, David Tissel, Mar Martinez de Saavedra Alvarez, Ed Ross, Randy Kerr

BIDIRECTIONAL SOFT-DECISION FEEDBACK EQUALIZATION FOR ROBUST MIMO UNDERWATER ACOUSTIC COMMUNICATIONS ................................................................. 986
Weimin Duan, Yahong Zheng

NOISE IN COHERENT DOPPLER SONAR VELOCITY MEASUREMENTS: WHERE DOES IT COME FROM AND WHAT CAN YOU DO ABOUT IT ................................................................. 992
Len Zedel

THE TEXAS COASTAL OCEAN OBSERVATION NETWORK ................................................................. 997
James Rizzo, Philippe Tissel, Scott Duff

MULTISPECTRAL IMAGING USED FOR AUTOMATED DETECTION OF MARINE ANIMALS.................. 1007
Jasmine Lopez, Jon Schoonmaker, Steve Saggese

3D SONAR SYSTEM BASED ON MILLS CROSS ANTENNA CONFIGURATION .................................. 1013

OCEAN PREDICTIVE SKILL ASSESSMENTS IN THE SOUTH ATLANTIC: CROWD-SOURCING OF STUDENT-BASED DISCOVERY ................................................................. 1019
Rachel Sacatelli, Tobias Schofield, Katherine Todaroff, Angela Carandang, AlysonEng, Ian Lawry, Harrison Mather, Scott Glenn, Marcello Dotteri, Antonio Ramos, Sebastiaan Sward, Nilsen Strandkou, Josh Kohut, Oscar Schofield

COMMUNICATION CHALLENGES FOR DUAL CONFIGURATION OF ASV AND AUV IN TWINNED COORDINATED NAVIGATION ................................................................. 1025
Javier Busquets, Jose Busquets, Angel Perlas, Ricardo Mercado, Raúl Sanchez, Juan Serrano, Francisco Albertens, Javier Gilabert

LONG RANGE WIDEBAND DATA LINKS FOR UAS AND OTHER OCEAN SENSING PLATFORMS BASED ON AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST .......................................... 1035
Vincent Contarino, Sui O'Young, Robert MacIsaac

TABS RESPONDER - A QUICK RESPONSE BUOY TO SUPPLEMENT THE TABS NETWORK .................. 1038
John Walpert, Norman Guinasso, Linwood Lee, Steven Buschang, Duan Liu

TURTLE - SYSTEMS AND TECHNOLOGIES FOR DEEP OCEAN LONG TERM PRESENCE .................. 1044
Hugo Ferreira, Alfredo Martins, Jose Almeida, Antonio Valente, Antonio Figueiredo, Batista da Cruz, Mauricio Camilo, Victor Lobo, Carlos Pinho, Augustin Olivier, Eduado Silva

POWER SOURCE MANAGEMENT AND ELECTRICAL FAULT MITIGATION IN SEAFLOOR NETWORKS .............................................................................................................................. 1054
Erin Martin-Serrano, Bob Brant, Richard Pomerleau

TRAJECTORY PLANNING FOR MOTION-CONSTRAINED AUVS IN UNCERTAIN ENVIRONMENTS .............................................................................................................................. 1058
Sarah Houts, Stephen Rock

ACOUSTIC UNDERWATER POSITIONING ON FPGA .................................................................................. 1063
Wenjie Ren, Gholamreza Shomalnasab, Li Hong Zhang

MOASICS FOR NEOFPS DETECTION IN UNDERWATER SURVEY VIDEO ......................................... 1068
Ken Sooknuan, David Corrigan, Anil Kokaram, James Wilson, Colin Lordan, Colin Lordan

FIELD DEPLOYMENTS OF A SELF-CONTAINED SUBSEA PLATFORM FOR ACOUSTIC MONITORING OF THE ENVIRONMENT AROUND MARINE RENEWABLE ENERGY STRUCTURES .............................................................................................................................. 1074
Philippe Blondel, Benjamin Williamson, Beth Scott, Eric Armstrong, Paul Bell, Chris Hall, James Waggitt

REQUIREMENTS AND APPROACHES FOR A MORE COST-EFFICIENT ASSESSMENT OF OCEAN WATERS AND ECOSYSTEMS, AND FISHERIES MANAGEMENT .............................................................................................................................. 1080
Christoph Waldmann, Jay Pearlman, Joaquin Del Rio Fernandez, Eric Delovery, Oliver Zielinski, Jean-Francois Rollin, Rene Garelo, Ayoze Castro, Daniel Tomita

ENABLING AUV MAPPING OF FREE-DRIFTING ICEBERGS WITHOUT EXTERNAL NAVIGATION AIDS .............................................................................................................................. 1088
Marcus Hammond, Stephen Rock

VARIABILITY OF AMBIENT NOISE IN A SEAGRASS BED ........................................................................ 1095
Paulo Felisberto, Rodrigues Orlando, Paulo Santos, Friedrich Zabel, Sergio Jesus
EXTENDING POSSIBILITIES BY LEVERAGING OpendAP FOR REMOTELY EXCHANGING COMPLEX OCEANOGRAPHIC DATA
Reyna Jenkyns, Susan Perkins, Ben Biffard, Marlene Jeffries, Martin Heesemann, Cassandra Rosa

A RESEARCH COORDINATION NETWORK FOR OCEAN OBSERVATIONS
Jay Pearlman, Albert Williams 3rd, James Yoder, James Gallagher

CHANNEL REPLAY-BASED PERFORMANCE EVALUATION OF PROTOCOLS FOR UNDERWATER ROUTING
Stefano Basagni, Chiara Petrilll, Roberto Petroccia, Daniele Spaccini

MODELLING AND IDENTIFICATION OF A ROBUST AUTONOMOUS SURFACE CRAFT FOR DEPLOYMENT IN HARSH OCEAN ENVIRONMENT
Zhi Li, Ralf Bachmayer

THE FIRST-ORDER FMCW HF RADAR CROSS SECTION MODEL FOR IONOSPHERE-OCEAN PROPAGATION
Shiyuan Chen, Weimin Huang, Eric Gill

CAPACITIVE CYCLONIC SENSOR FOR OIL SPILL REMEDIATION
Vlastimil Masek, Javier Ortiz

CONCEPTUAL DESIGN OF OPTIMAL THRUST SYSTEM FOR EFFICIENT CABLE BURYING OF ROV TRENCHER
Ji-Hong Li, Jung-Tae Kim, Mun-Jik Lee, Won-Seok Lee, Hyung-Joo Kang, Sang-Cheol Han, Jung-Woo Lee, Han-Won Kwak

STITCHING ALGORITHM APPLIED TO CAMERA ARRAY IMAGES FOR THE VISUALIZATION OF TUBBATAHA REEF GROUNDING SCARS
Laurice Janette Dagum, Maricor Soriano, Francis James Corpuz, Jaylord Jawad, Eusebio Capili, Roel John Juddilla

IMPROVEMENT OF A HUMAN-PORTABLE UNDERWATER ROBOT FOR SOIL CORE SAMPLING
Kenshiro Yokoi, Miehiko Kawabata, Sonoko Sakai, Sadao Kawamura, Norimitsu Sakagami, Shinji Matsuda, Atsushi Mitsui, Ko Sano

KALMAN TRACKING OF OCEAN CURRENT FIELD BASED ON DISTRIBUTED SENSOR NETWORK
Ying Zhang, Jiamin Huang, Hangfang Zhao, Wen Xu

SIGNIFICANCE OF DYNAMIC VARIATION IN RENEWABLE ENERGY DEVICE NOISE TO BACKGROUND NOISE LEVELS UNDER VARYING CONDITIONS
Paul Lepper, Pete Theobald, Stephen Robinson, Tanja Pangerc

PERFORMANCE OF THE POLAR FOURIER TRANSFORM FOR OCEAN WAVE SPECTRUM ESTIMATION FROM MARINE RADAR
Al-Abbas Al-Habashneh, Cecilia Moloney, Eric Gill

A HYBRID REGISTRATION APPROACH COMBINING SLAM AND ELASTIC MATCHING FOR AUTOMATIC SIDE-SCAN SONAR MOSAIC
Loic Bernicola, Didier Guériot, Jean-Marc LeCailliec

ANALYSIS OF THE EFFECTS OF RAIN ON SURFACE WIND RETRIEVAL FROM X-BAND MARINE RADAR IMAGES
Ying Liu, Weimin Huang, Eric Gill

MEASUREMENT MODEL DEVELOPMENT FOR THE CORRELATION OF IMAGING SONAR ACOUSTIC SHADOWS AND BATHMETRY FOR ROV TERRAIN-RELATIVE LOCALIZATION
Jose Padial, Sandor Dobtor, Stephen Rock

ON CIRCULARITY/NONCIRCULARITY IN SINGLE-CHANNEL SYNTHETIC APERTURE RADAR IMAGERY
Khalid El-Darymli, Cecilia Moloney, Eric Gill, Peter McGuire, Desmond Power

REPRODUCTION OF VELOCITY TIME SERIES FOR DESIGNING THE OCEAN CURRENT TURBINE
Kosuke Makino, Ken Takaji, Takaji Waseda, Keiji Kiyomatsu

IMAGING OF TONAL SOURCES ON A MOVING PLATFORM USING INSTANTANEOUS FREQUENCY ESTIMATION AND PASSIVE INVERSE SYNTHETIC APERTURE TECHNIQUE
Hari Om, Rajenderar Bahl, Arun Kumar

DEVELOPMENT OF SURFACE TREATMENT FOR ALUMINUM ALLOY
Tadahiro Hyakudome, Shoji Kuroyama, Takashi Yanagisawa, Koichi Kimura

SIMULATION BASED TROPICAL CYCLONE SENSING USING SPACE-BASED GNSS-R
Chen Li, Weimin Huang, Wei Wang
SOME MARINE TRIAL RESULTS OF A NEW METHOD FOR AUV TRAJECTORY MOTION CONTROL
Alexander Scherbatyuk, Igor Tuphanov, Vladimir Filaretov, Dmitry Yukhimets, Eduard Mursalimov

UNDERSTANDING INTERFERENCE BY COGNITIVE NODES: THE UNDERWATER CASE
Mauro Biagi, Stefano Rinauro, Stefania Colonnese, Roberto Cusani, Gaetano Scarano

TRACE-ORTHOGONAL PULSE POSITION MODULATION SPACE TIME BLOCK CODING FOR UNDERWATER LINKS
Mauro Biagi, Stefano Rinauro, Stefania Colonnese, Stefano Pergoloni, Gaetano Scarano, Roberto Cusani