

# **OCEANS 2006 - Asia Pacific**

**Singapore**  
**16-19 May 2006**

**Volume 1 of 2**



**IEEE Catalog Number:**  
**ISBN 10:**  
**ISBN 13:**

**CFP06OCF-PRT**  
**1-4244-0137-2**  
**978-1-4244-0137-6**

# Table of Contents

<b>Underwater Acoustic Networks Discovery Protocol and Localization .....</b>	<b>1</b>
<i>Al-Khalid Othman, A.E. Adams, C.C. Tsimenidis, B. Sharif</i>	
<b>Adapted Distributed Localization of Sensors in Underwater Acoustic Networks .....</b>	<b>7</b>
<i>Jose Garcia</i>	
<b>Low Cost Distributed Control For Autonomous Vehicles .....</b>	<b>11</b>
<i>Geoffrey Beidler, R. W. Wall</i>	
<b>Synthesis and Coordination of the Motion of Multiple Flapping Foils for Control of a Biorobotic AUV .....</b>	<b>18</b>
<i>Alberico Menozzi, Henry Leinhos</i>	
<b>Automatic Detection of Outliers in Multibeam Echo Sounding Data .....</b>	<b>26</b>
<i>Fanlin Yang, Jiabiao Li, Fengyou Chu, Xianglong Jin, Ziyang Wu</i>	
<b>Source Localization Based on Ray Theory and Artificial Neural Network.....</b>	<b>30</b>
<i>Gee-Pinn James Too, E-Shine Lin, Yu-Haw Hsieh</i>	
<b>Combining Web Services to Manage Real-Time Navigation Data Distribution .....</b>	<b>38</b>
<i>Michael Ferguson</i>	
<b>Acoustic Monitoring of Echolocating Porpoises.....</b>	<b>43</b>
<i>Tomonari Akamatsu, Ding Wang, Kexiong Wang, Songhai, Li</i>	
<b>Nitrous Oxide Emissions from Marine Diesel Engine Sources .....</b>	<b>47</b>
<i>Agung Sudrajad, Osami Nishida, Hirotsugu Fujita, Wataru Harano</i>	
<b>Ballast Water Treatment Technologies and Shipboard Demonstrations .....</b>	<b>50</b>
<i>S. Y. Liang, S. L. Oon, L. H. Tan, B. H. Hor, D. T. Liang, J. H. Tay</i>	
<b>A Numerical Model for Wave Diffraction in a Fully Nonlinear Wave Tank .....</b>	<b>57</b>
<i>X. T. Zhang, B. C. Khoo, J. Lou</i>	
<b>Identification and Analysis of Dolphin Signatures from Ocean Ambient Noise Measurements .....</b>	<b>62</b>
<i>G. Latha, S. Ramji</i>	
<b>Ambient Noise Data Buoy for Time Series Measurements and Characterization of Noise Field.....</b>	<b>65</b>
<i>S. Ramji, G. Latha, V. Rajendran, K. Premkumar</i>	
<b>Turbulent Flow Field Over Repeated Two-Dimensional Rectangular Roughness Elements with Various Spacings .....</b>	<b>70</b>
<i>B.-S. Hyun, E. J. Suh, T.Y. Kim</i>	
<b>The Improvement of the Precision of an Inertial Navigation System for AUV based on the Neural Network .....</b>	<b>76</b>
<i>Shojiro Ishibashi</i>	
<b>Particle Filtering Detection in Turbo Coded OFDM System Over Underwater Acoustic Communication Channels .....</b>	<b>82</b>
<i>Liang Zhao, Weiqing Zhu</i>	
<b>Source Tracking with Multiple-Forgetting-Factor RLS Using a Vector-Hydrophone Away From or Near a Reflecting Boundary .....</b>	<b>88</b>
<i>Kainam Thomas Wong, Mohamad Khattar AWAD</i>	
<b>Numerical Analysis of an Underwater Acoustic Lens System for Ambient Noise Imaging using Finite Difference Time Domain Method .....</b>	<b>92</b>
<i>Kazuyoshi Mori, Ayano Miyazaki, Hanako Ogasawara, Tomoki Yokoyama, Toshiaki Nakamura</i>	
<b>Slotted FAMA: a MAC Protocol for Underwater Acoustic Networks.....</b>	<b>100</b>
<i>Marçal Molins-Alonso, Milica Stojanovic</i>	
<b>Bottom Boundary Layer Wave Measurements for Particle Studies .....</b>	<b>107</b>
<i>Albert Williams</i>	

# Table of Contents

<b>A Marine Science Opportunity - the Wealth from Oceans Research Flagship</b> .....	113
<i>Craig Roy, Sylvia Bell</i>	
<b>Segmentation and Classification of Coral for Oceanographic Surveys: A Semi-Supervised Machine Learning Approach</b> .....	116
<i>Matthew Johnson-Roberson, Suresh Kumar, Stefan Williams</i>	
<b>Development of Automated Dual Elevator System Enabling Deeper Drilling</b> .....	122
<i>Tomoya Inoue</i>	
<b>Health Assessment and Environmental Impacts of Modal Shift in Transportation</b> .....	127
<i>Pingjian Liu, Eiichi Kobayashi</i>	
<b>The Implementation of PC-based Instrumentation for Underwater Acoustic Communication System</b> .....	133
<i>Ru-Min Chao, Shi-Zheng Lin, Yu-Xiang Huang</i>	
<b>Symmetric Wing Sections for the Switchback Motion of the Very Large Mobile Offshore Structure</b> .....	138
<i>Ken Takagi, Yuichiro Yoshitake</i>	
<b>A Novel Design of Piezo-Resistive Type Underwater Acoustic Sensor using SOI Wafer</b> .....	145
<i>Sie-Yu Li, Chih-Chao Hsu, Shi-Zheng Lin, Ru-Min Chao</i>	
<b>Development of the Waste Mud Treatment System for Drilling Vessel CHIKYU</b> .....	149
<i>Kazuyasu Wada, Masakatsu Saito, Hiroyoshi Yamaguchi</i>	
<b>Zero-G Class Underwater Robots and Unrestricted Attitude Control using Control Moment Gyros</b> .....	157
<i>Blair Thornton, Tamaki Ura, Yoshiaki Nose, Stephen Turnock</i>	
<b>Monitoring of Crustal Deformation on the Seafloor Around Japan</b> .....	162
<i>Masashi Mochizuki, Masayuki Fujita, Tadashi Ishikawa, Zengo Yoshida</i>	
<b>Mutual-Impedance Calculation for Arrays of Sonar Transducers by Integration of Neural Networks</b> .....	167
<i>Kun-Chou Lee, Jhen-Yan Jhang</i>	
<b>Validation of Multi-Frequency Measurement of Zooplankton by using Dummy Scatterers</b> .....	172
<i>Bo-Kyu Hwang, Masahiko Furusawa, Masaki Ogata</i>	
<b>Miniaturized Underwater Sensors for the Realization of Conformal Arrays, Miniaturized Underwater Sensors for the Realization of Conformal Arrays</b> .....	180
<i>Dhilsha Rajapan, P.M. Rajeshwari, M. Sankar, K. Trinath, N.S. Prasad</i>	
<b>Broadband FIR Beamformer for Underwater Acoustic Communications</b> .....	187
<i>Youngchol Choi, Yong-kon Lim</i>	
<b>Restoration Technology of Contaminated Sediments in Coastal Environment using Steel-Making Slag in Korea</b> .....	191
<i>Kwang-Seok Park, Hyung-Suek Kim, Ki-Young Park</i>	
<b>A Propagation-Delay-Tolerant Collision Avoidance Protocol for Underwater Acoustic Sensor Networks</b> .....	195
<i>Xiaoxing Guo, Michael R. Frater, Michael J. Ryan</i>	
<b>ReefGrid - A Communication Network on the Great Barrier Reef</b> .....	201
<i>Graham Woods, C. M. Palazzi, A. Kulesa, D.L. Maskell</i>	
<b>Consideration on the Environmental Acceptability and Biological Effectiveness of the Electrochemical Disinfection System for Ballast Water Management</b> .....	207
<i>Eun-Chan Kim, Kyoungsoo Shin, Jung-Hoon Kang, Daewon Pak, Kang-Pyung Lee, In-Seon Lee, Kitae Rhie</i>	
<b>Vector Hydrophone Array Development and its Associated DOA Estimation Algorithms</b> .....	215
<i>Nan Zou, Chia Chin Swee, Bertha A. L. Chew</i>	
<b>SAS Image De-noising by the Curvelet Stochastic Matched Filter Transform</b> .....	220
<i>Philippe Courmontagne, Fabien Chaillan, Olivier Lerda</i>	

# Table of Contents

<b>Region Based and Incidence Angle Dependent Segmentation of Seabed Sonar Images using a Level Set Approach Combined to Local Texture Statistics .....</b>	<b>227</b>
<i>Karoui Imen, Ronan Fablet, Jean-Marc Boucher, Jean-Marie Augustin</i>	
<b>Coupling the Stochastic Matched Filter and the à Trous Algorithm for SAS Image De-noising .....</b>	<b>234</b>
<i>Fabien Chaillan, Philippe Courmontagne</i>	
<b>A Wideband and a Wide - Beamwidth Acoustic Transducer Design for Underwater Acoustic Communications .....</b>	<b>242</b>
<i>I. Ceren Elmasli, Hayrettin Köymen</i>	
<b>Full Scale Mine Burial Experiments and Comparison with Models .....</b>	<b>247</b>
<i>Stéphane GUYONIC, Mathieu MORY, Thomas WEVER, Fabrice ARDHUIN, Thierry GARLAN, Patrick GUYOMARD</i>	
<b>Shadows, a new synthetic aperture sonar system, by IXSEA SAS.....</b>	<b>255</b>
<i>Frédéric Jean</i>	
<b>Detection of Short Signals in a Noisy Underwater Environment .....</b>	<b>260</b>
<i>Fabien Chaillan, Philippe Courmontagne</i>	
<b>A New Gap-Filler System using Front-Scan Sonar Technology Coupled with SHADOWS.....</b>	<b>267</b>
<i>Frédéric Mosca</i>	
<b>A Neural Network Approach for Remote Detection of Marine Eddies .....</b>	<b>272</b>
<i>Marco Castellani</i>	
<b>Modeling and Simulation of the VideoRay Pro III Underwater Vehicle.....</b>	<b>278</b>
<i>Wei Wang, Christopher M. Clark</i>	
<b>An AUV Based Experimental System for Underwater Technology Education .....</b>	<b>285</b>
<i>Keisuke Watanabe</i>	
<b>Software Acoustic Modems for Short Range Mote-based Underwater Sensor Networks .....</b>	<b>292</b>
<i>Raja Jurdak, Cristina Videira Lopes, Pierre Baldi</i>	
<b>Results From A High-Resolution Acoustic Device For Monitoring Finless Porpoises In Coastal Precincts Off Japan .....</b>	<b>299</b>
<i>Tamaki Ura, Rajendar Bahl, Masato Yano, Tomoki Inoue, Takashi Sakamaki, Tetsuo Fukuchi</i>	
<b>Hybrid Detector for Ship Radiated Signal in Statistically Varying Underwater Noise.....</b>	<b>304</b>
<i>Abhishek Singh, Arun Kuma, Monika Agrawal, Rajendar Bahl</i>	
<b>Study on New Low Cost Ocean Bottom Cabled Seismometers .....</b>	<b>312</b>
<i>Toshihiko Kanazawa, Hisashi Utada, Shinichi Sakai, Osamu Sano Hajime Shiobara, Masanao Shinohara, Yuichi Morita, Tomoaki Yamada</i>	
<b>A Robust Navigation System for UUV using a Receding Horizon H-infinity Filter .....</b>	<b>317</b>
<i>GyungNam Jo, Hang S. Choi, T. Ura</i>	
<b>Numerical Evaluation on the Effect of Density Current Generator to Oxygen-deficient water in Ariake Sea .....</b>	<b>324</b>
<i>Kentaro Mizumukai, Toru Sato, Shigeru Tabeta</i>	
<b>Evaluation of Proposed River Regulatory Measures in Hughly Estuary using Tidal Asymmetry Characteristics .....</b>	<b>329</b>
<i>Kuppam Sivakholundu, S. Kathirolu, J. S. Mani, V. G. Idichandy</i>	
<b>Analyses of Target Strength Distribution of Mixed Species .....</b>	<b>334</b>
<i>Masaki Ogata, Akira Hamano, Yuttana Theparoonrat</i>	

# Table of Contents

<b>Acoustic Survey of Irrawaddy Dolphin Populations in Chilika Lagoon: First Test of a Compact High-Resolution Device.....</b>	<b>340</b>
<i>R. Bahl, T. Ura, H. Sugimatsu, T. Inoue, T. Sakamaki, J. Kojima, T. Akamatsu, H. Takahashi, S.K. Behera, A.K. Pattnaik, Muntaz Khan, S.K. Kar</i>	
<b>Optimal Acoustic Search Path Planning Based on Genetic Algorithm in Continuous Path System.....</b>	<b>346</b>
<i>Jung-Hong Cho, Jea Soo Kim, Jun-Seok Lim, Seongil Kim, Young-Sun Kim</i>	
<b>Wakeup Scheme for Ocean Monitoring Underwater Sensor Networks (UWSN).....</b>	<b>351</b>
<i>Y. F. Wong, L. H. Ngoh, W. C. Wong, Winston K. G. Seah</i>	
<b>Evaluation Test Result on Wave Direction Measurement Using GPS Buoy .....</b>	<b>359</b>
<i>Daijin Hou, Masaaki Hamada, Yun-Ja Yoo, Nobuyoshi Kouguchi</i>	
<b>Application of Parametric Acoustics for Shallow-Water Near-Surface Geophysical Investigations .....</b>	<b>364</b>
<i>Manoj Vasudevan, Sivakholundu K. M., Venkata Rao D., Kathirolu S.</i>	
<b>Development of Tuna Catch Information Management System using RFID Tags and a Communication Satellite .....</b>	<b>368</b>
<i>Yoshinori Miyamoto, Yuka Katoh, Keiichi Uchida, Daisuke Shiode, Tadashi Tokai, Toshiharu Kakihara</i>	
<b>Wave-Powered Small-Scale Generation Systems for Ocean Exploration.....</b>	<b>373</b>
<i>Phill Brown, Dave Hardisty, T.C.A Molteno</i>	
<b>Development of Underwater Security Sonar System.....</b>	<b>379</b>
<i>Akira Asada, Kazuoki Kuramoto, Takahiro Tanaka, Kensei Oimatsu, Yoshinobu Kawashima, Mitsuhiko Nanri, Toshio Oyagi, Kazuhiro Hantani</i>	
<b>An Adaptive Neural Network Control System using mnSOM .....</b>	<b>382</b>
<i>Shuhei Nishida, Kazuo Ishii, Tetsuo Furukawa</i>	
<b>Development of a High Speed Acoustic Network and Non-Contact Power Supply for Seafloor Geodetic Observing Robot System .....</b>	<b>388</b>
<i>HAN JUN, AKIRA ASADA, TAMAKI URA, YASUNOBU YAGITA, YUKINAGA YAMAUCHI</i>	
<b>An Energy Efficient Topology Management Scheme for Underwater Acoustic Sensor Networks Using Connected Dominating Sets .....</b>	<b>391</b>
<i>Trina Kok, Winston K.G. Seah, W.C. Wong</i>	
<b>Application of Neural Network and its Differential to the Mutual Coupling Effects of Sonar Arrays.....</b>	<b>398</b>
<i>Kun-Chou Lee, Jhen-Yan Jhang</i>	
<b>Development of An Underwater Actuator by Artificial Muscles.....</b>	<b>402</b>
<i>Kimikazu SUGIYAMA, Kazuhito KANAMORI, Kazuo ISHII, Keiichi KANETO</i>	
<b>Optimised Gait Generation for Anguilliform Motion .....</b>	<b>408</b>
<i>Olivier Parodi, Lionel Lapierre, Bruno Jouvencel</i>	
<b>Fundamental Study on the Behaviour of Submarine Groundwater Discharged into the Coastal Sea .....</b>	<b>416</b>
<i>Shigeru Tabeta, Nao Tanabe, Tsuguki Kinoshita</i>	
<b>Automatic Processing for AUV.....</b>	<b>421</b>
<i>Franck Fohanno, Nicolas Mandelert, Franck Florin</i>	
<b>Buoy and Radar Observation Network Around Taiwan .....</b>	<b>427</b>
<i>Chia-Chuen Kao, Kuo-Ching Jao, Dong-Jiing Doong, Hui-Lin Chen, Chwen-Ling Kuo</i>	
<b>FNET - Real-Time FishNet Evaluation Tool.....</b>	<b>434</b>
<i>Archie T. Morrison III, Russell W. Brown, Linda I. Despres, Victor A. Nordahl Jr., John K. Galbraith</i>	
<b>Support Platform and Communications to Manage Cooperative AUV Operations.....</b>	<b>440</b>
<i>Troy Cuff, R.W. Wall</i>	
<b>Identifying Error in AUV Communication .....</b>	<b>448</b>
<i>Joseph Coleman, Kaylani Merrill, Michael O' Rourke, Andrew G. Rajala, Dean B. Edwards</i>	

# Table of Contents

<b>Adjoint-based shallow water tomography with partially known bottom geoacoustic properties .....</b>	<b>456</b>
<i>Jean-Pierre Hermand, Matthias Meyer, Mark Asch, Mohamed Berrada</i>	
<b>The Two-Stage ROV for Sediment Sampling in Mariana Trench .....</b>	<b>462</b>
<i>Hiroshi Yoshida, Taro Aoki, Hiroyuki Osawa, Tsuyoshi Miyazaki, Junichiro Tahara, Shojiro Ishibashi, Hiroshi Ochi, Yoshitaka Watanabe, Masashi Mizuno</i>	
<b>Typhoon Surge Forecasting with Artificial Back-Propagation Neural Networks .....</b>	<b>466</b>
<i>Chyan-Deng Jan, C. M. Tseng, J. S. Wang, C. M. Wang</i>	
<b>Allocating AUVs for Mine Map Development in MCM.....</b>	<b>473</b>
<i>Andrew Rajala, Dean Edwards</i>	
<b>Tsunami Detection using Multi-Frequency Beam-Forming HF Radar .....</b>	<b>481</b>
<i>Dennis Trizna</i>	
<b>Monitoring Coastal Processes and Ocean Wave Directional Spectra Using a Marine Radar .....</b>	<b>486</b>
<i>Dennis Trizna</i>	
<b>Distributed TR-STBC Schemes for Cooperative Underwater Acoustic Communications .....</b>	<b>490</b>
<i>Madhavan Vajapeyam, James Preisig, Milica Stojanovic</i>	
<b>A New Approach for Fast and High-Resolution Interferometric Bathymetry.....</b>	<b>498</b>
<i>Gerard Llord-Pujol, Christophe Sintès, Xavier Lurton</i>	
<b>Analysis of Sperm Whale Click by MUSIC Algorithm .....</b>	<b>505</b>
<i>Ryo Hirotsu, Tamaki Ura, Rajendar Bahl, Masao Yanagisawa.</i>	
<b>Ocean Trials of the S2C Acoustic Link for a Tsunami Early-Warning System.....</b>	<b>511</b>
<i>Konstantin Kebkal, R. Bannasch, A.G. Kebkal, S.G. Yakovlev</i>	
<b>A Zero based Decision Feedback Equalizer for Underwater Acoustic Communications .....</b>	<b>516</b>
<i>Saman S. Abeysekera, Yun Ye</i>	
<b>Wideband Sonar Waveform Design using Linear FM Signals and Hermite-Rodriguez Functions.....</b>	<b>521</b>
<i>Saman Abeysekera, Zhuquan Zang</i>	
<b>Acoustic Shadowgraph Mapping of Convective Activity .....</b>	<b>524</b>
<i>Joao Rodrigues, Barry Uscinski, Arthur Kaletzky</i>	
<b>Seafloor Acoustic Backscattering Strength and Properties from Published Data .....</b>	<b>532</b>
<i>Nicholas Chotiros</i>	
<b>Non-linear Analysis of Wave Energy Dissipation and Energy Transfer of Directional Breaking Waves in Deep Water.....</b>	<b>538</b>
<i>Keyyong Hong, Shuxue Liu, Eustorgio Meza, Jun Zhang</i>	
<b>Beamforming for Circular Array Based on Mode Decomposition of Sound Field.....</b>	<b>545</b>
<i>Wei Jiang, Yixin Yang, Yuanliang Ma</i>	
<b>Prediction of Nutrient Fixation Effect of an Artificial Lagoon in Kobe Airport Island.....</b>	<b>551</b>
<i>Koji Otsuka, N. Nakatani, T. Sawada</i>	
<b>Experimental Results of AUV-based Acoustic Tracking System of Sperm Whales .....</b>	<b>558</b>
<i>Tamaki Ura, Junichi Kojima, Tsuyoshi Nakano, Harumi Sugimatus, Kyoichi Mori, Ryou Hirotsu, Masao Yanagishawa</i>	
<b>Fused Classification of Surface Ships Based on Hydroacoustic and Electromagnetic Signatures .....</b>	<b>563</b>
<i>Ron Lennartsson, E. Dalberg, M.J. Levenon, D. Lindgren, L. Persson</i>	
<b>Denosing Dolphin Click Series in the Presence of Tonals, using Singular Spectrum Analysis and Higher Order Statistics .....</b>	<b>568</b>
<i>Paul James Seekings, Jolyn Tan, John Potter, Matthias Hoffman-Kuhnt, Adam A. Pack, Louis M. Herman</i>	

# Table of Contents

<b>Acoustical Localization in Schools of Submersibles .....</b>	<b>574</b>
<i>Navinda Kottege, Uwe R. Zimmer</i>	
<b>Situation Awareness System in a Maritime Port .....</b>	<b>579</b>
<i>Tele Tan, Fee-Lee Lim, Yenicca Kang</i>	
<b>Effective Communication in Schools of Submersibles.....</b>	<b>584</b>
<i>Felix Schill, Uwe R. Zimmer</i>	
<b>A Comparative Study of DOA Estimation using Vector and Gradient Sensors .....</b>	<b>589</b>
<i>Chunru Wan, Anmin Kong, Chunming Liu</i>	
<b>Salinity Gradients in Coastal Waters by Airborne Microwave Radiometer Remote Sensing .....</b>	<b>593</b>
<i>Malcolm Heron, P.V. Ridd, A. Prytz, Yonghong Wang, J.M. Hacker</i>	
<b>VHF PortMap Sea Surface Radar Observations in a Shipping Channel .....</b>	<b>598</b>
<i>Malcolm Heron, A. Prytz, G. Page, A. Mazzoldi, S. Cosoli, M. Gacic, V. Kovacevic</i>	
<b>Performance Evaluation of a Single Crystal Hydrophone.....</b>	<b>602</b>
<i>Paul James Seekings, Teong Beng Koay, Mandar Chitre, Venugopalan Payallil, Parijat Deshpande</i>	
<b>Advanced PANDA for High Speed Autonomous Ambient Noise Data Collection and Boat Tracking - System and Results .....</b>	<b>609</b>
<i>Teong Beng Koay, Paul James Seeking, Mandar Chitre, Soo Pieng Tan, Matthias Hoffmann-Kuhnt</i>	
<b>Wavelet De-noising with Independent Component Analysis for Segmentation of Dolphin Whistles in a Noisy Underwater Environment.....</b>	<b>618</b>
<i>Sankar Seramani, Elizabeth A.Taylor, Paul J. Seekings, Yeo K. P.</i>	
<b>Estimation Method for Vertical Distribution of Phytoplankton using Monitoring Data at the Western Equatorial Pacific Ocean.....</b>	<b>625</b>
<i>Naoki Nakatani, M. Yabu, T. Okuno</i>	
<b>Study of Focusing Structure in Time-Reversal-Mirror Technique.....</b>	<b>633</b>
<i>Y. S. Linus Chiu, Chi-Fang Chen, Ming-Hung Lin</i>	
<b>Vertical Mixing Enhanced by Artificial Mountain in the Shallow Ocean .....</b>	<b>640</b>
<i>Shinichiro Hirabayashi, Toru Sato</i>	
<b>A Study on the Development of the Mixing Clean Heater .....</b>	<b>645</b>
<i>Kwon Seng, H.J. Jeong, N.D. Park</i>	
<b>Tidal Current Power Generation Making use of a Bridge Pier.....</b>	<b>649</b>
<i>Yusaku Kyojuka, Kyoichiro Ogawa</i>	
<b>An Ocean Model Using Cut-Cell Method.....</b>	<b>657</b>
<i>Masamichi Oikawa, Yusaku Kyojuka</i>	
<b>Measurements of 3-Dimensional Downslope Acoustic Propagation During the Basin Acoustic Seamount Scattering EXperiment (BASSEX-04) .....</b>	<b>665</b>
<i>Kevin Heaney, Arthur B. Baggeroer</i>	
<b>Non-linear Optimization of Multi-Vehicle Ocean Sampling Networks for Cost-Effective Ocean Prediction Systems .....</b>	<b>671</b>
<i>Kevin Heaney, Timothy F. Duda</i>	
<b>Bathymetric Results from a Multi-Frequency InSAS Sea-Trial.....</b>	<b>676</b>
<i>Philip Barclay, Michael Hayes, Peter Gough</i>	
<b>Nonlinear Adaptive Observer Design For Tracking Control of AUVs In Wave Disturbance Condition.....</b>	<b>682</b>
<i>Shuyong Liu, Danwei Wang, Engkee Poh</i>	
<b>Navigation of an Autonomous Underwater Vehicle for Photo Mosaicing of Shallow Vent Areas .....</b>	<b>690</b>
<i>Toshihiro Maki, Hayato Kondo, Tamaki Ura, Takashi Sakamaki</i>	

# Table of Contents

<b>Fast Fourier-Domain Modelling for an SAS Simulator with Application to Time-Variant Targets, Aspect-Dependent Occlusions, and Doppler Effects.....</b>	<b>697</b>
<i>Alan Hunter, Michael Hayes, Peter Gough</i>	
<b>Multipath Virtual Sink Architecture for Underwater Sensor Networks.....</b>	<b>705</b>
<i>Winston K.G. Seah, Hwee-Xian Tan</i>	
<b>Detection of Tsunami Induced Changes from High Resolution Satellite Imagery.....</b>	<b>711</b>
<i>Emre Sumer, Fatih V. Celebi</i>	
<b>Efficient Active Sonar Multitarget Tracking .....</b>	<b>718</b>
<i>Darko Musicki, Xuezhi Wang, Richard Ellem, Fiona Fletcher</i>	
<b>Stability of Call Sequence in Dugongs' Vocalization .....</b>	<b>726</b>
<i>Naoko Okumura, Kotaro Ichikawa, Tomonari Akamatsu, Nobuaki Arai, Tomio Shinke, Takeshi Hara, Kanjana Adulyanukosol</i>	
<b>Output Feedback Stabilization of Towed Marine Cable.....</b>	<b>730</b>
<i>Tu Duc Nguyen, Olav Egeland</i>	
<b>Range Gated Imaging System for Underwater Robotic Vehicle .....</b>	<b>736</b>
<i>Ching Seong Tan, A. Sluzek, G. Seet G. L., T.Y. Jiang</i>	
<b>Navigation and Control System of a Deep-Sea Unmanned Underwater Vehicle 'HEMIRE' .....</b>	<b>742</b>
<i>Pan-Mook Lee, Bong-Huan Jun, Ji-Hong Li, Hyun Taek Choi, Kihun Kim, Sea-Moon Kim, Chong-Moo Lee, Sang-Chul Han, Beob-Mo Gu, Sang-Ryul Lee, Hee-Sub Chung, Hang S. Choi</i>	
<b>Underwater Acoustic Spread Spectrum Communication Based on M Family N Group Parallel Transmission .....</b>	<b>750</b>
<i>Chengbing He, Jianguo Huang</i>	
<b>Navigation Aids, Object Marking and Acoustic Communications: An Integrated Solution .....</b>	<b>754</b>
<i>Dale Green</i>	
<b>Ambiguity Function and Cramer-Rao Lower Bounds for Passive Synthetic Aperture Sonar (SAS).....</b>	<b>761</b>
<i>Jean-Michel Passerieux</i>	
<b>Salt and Pepper Impulse Noise Removal using Adaptive Switching Median Filter .....</b>	<b>767</b>
<i>Krishnan Nallaperumal, Justin Varghese, S. Saudia, K. Arulmozhi, K. Velu, S. Annam</i>	
<b>Dive into Myojin-sho Underwater Caldera .....</b>	<b>775</b>
<i>Tamaki Ura, Kenji Nagahashi, Akira Asada, Kei Okamura, Kensaku Tamaki, Takashi Sakamaki, Kokichi Iizasa</i>	
<b>Spectral Analysis of Noise Characteristics Caused by Ship Propeller Cavitation .....</b>	<b>780</b>
<i>Lijie Zhang, Jianguo Huang, Qunfei Zhang</i>	
<b>Application of Fast Subspace ECM Algorithm in Cyclostationary Signal Estimation.....</b>	<b>785</b>
<i>Sheng-Yun Hou, Shun-Hsyung Chang, Hsien-Sen Hung, Jun-Xu Chen</i>	
<b>Multiple target tracking in Underwater Sonar Images using Particle-PHD filter.....</b>	<b>789</b>
<i>Bharath Kalyan, Arjuna Balasuriya, Sardha Wijesoma</i>	
<b>Ocean Hydrodynamics Model with Tidal Forcing Derived using an Artificial Neural Network .....</b>	<b>794</b>
<i>Dao My Ha, Doan Chi Dung, Pavel Tkalich, Liang Shie Yui</i>	
<b>Simulation of Typical Wind-Waves Characteristics in Singapore Strait .....</b>	<b>800</b>
<i>Xingzhao Zhu, Pavel Tkalich, Chan Eng Soon</i>	
<b>Numerical Modeling of a Time Reversal Experiment in Shallow Singapore Waters.....</b>	<b>805</b>
<i>H.C. Song, W.S. Hodgkiss, J.D. Skinner, Venugopalan Pallayil, Paul James Seekings, Iulian Topor, John Robert Potter</i>	
<b>Efficient Active Sonar Parameter Estimation Using Linear FM Signals via Hermite Decompositions.....</b>	<b>811</b>
<i>Md. Raihan Sharif, Saman S. Abeysekera</i>	



# Table of Contents

<b>Development of the 'ThaiXPole', Underwater Robot for the Antarctica Exploration .....</b>	<b>816</b>
<i>Jackrit Suthakorn, Ittichote Chuckpaiwong, Peerapat Owatchaiyapong</i>	
<b>An Architecture for Underwater Networks.....</b>	<b>822</b>
<i>Mandar Chitre, Lee Freitag, Ethem Sozer, Shiraz Shahabudeen, Milica Stojanovic, John Potter</i>	
<b>Time Trend of Persistent Organic Pollutants in the Atmosphere Over the Indian Ocean Over the Last 30 Years .....</b>	<b>827</b>
<i>Oliver Wurl, J. R. Potter, C. Durville, J. O. Obbard</i>	
<b>A Performance Comparison Between Conventional PNN and Multi-spread PNN in Ship Noise Classification .....</b>	<b>832</b>
<i>Mehdi Farrokhrooz, M. Karimi</i>	
<b>Extended Towed Array Measurement: Beam-domain Phase Estimation and Coherent Summation .....</b>	<b>836</b>
<i>TONG Poh Bee, LIM Hock Siong, CHIA Chin Swee, Jean-Michel PASSERIEUX</i>	
<b>Scenario Based Study of Etam and FFTSA in Realistic Simulated Environment .....</b>	<b>842</b>
<i>Hock Siong Lim, Poh Bee Tong, Chin Swee Chia</i>	
<b>Target Localization by Multiple Linear Arrays.....</b>	<b>849</b>
<i>Ning Ma, Chin Swee Chia, Rong Yang, Gee Wah Ng</i>	
<b>Characterization of Multipath Acoustic Channels in very Shallow Waters for Communications.....</b>	<b>855</b>
<i>Tan Bien Aik, Quek Swee Sen, Zou Nan</i>	
<b>GIS For Manmade Object Contacts from Sidescan Sonar Images .....</b>	<b>863</b>
<i>Ning Ma, Weng Tat Chan, Durairaju Kumaran Raju, Suresh Natesan, Keng Pong Yeo</i>	
<b>A Real-Time Coded OFDM Acoustic Modem in Very Shallow Underwater Communications .....</b>	<b>868</b>
<i>Zhong Kun, Quek Swee Sen, Koh Tiong Aik, Tan Bien Aik</i>	
<b>Magnetic Gradiometer Inversion for Underwater Magnetic Object Parameters.....</b>	<b>873</b>
<i>Yuan Hang Pei, H. G. Yeo</i>	
<b>Optimized Joint Management of Electric Fields and Corrosion on a Naval Platform .....</b>	<b>879</b>
<i>Yuan Hang Pei</i>	
<b>A Sonar Simulation used to Develop an Obstacle Avoidance System .....</b>	<b>885</b>
<i>Philip Bouxsein, Edgar An, Steven Schock, Pierre-Philippe Beaujean</i>	
<b>A Bearing and Heading Tracker from a Stationary Sonar Sensor .....</b>	<b>892</b>
<i>Rong Yang, Gee Wah Ng, Ning Ma, Chin Swee Chia</i>	
<b>A Method for Tracing Dolphin Whistles .....</b>	<b>898</b>
<i>Asitha Mallawaarachchi, S.H Ong, Mandar Chitre, Elizabeth Taylor</i>	
<b>Robust Tracking Control of Underwater Vehicles using Time-Delay Control in Discrete-Time Domain .....</b>	<b>903</b>
<i>R. Prasanth Kumar, A. Dasgupta, C. S. Kumar</i>	
<b>Test-bed for Navigation and Control of a Thruster Based AUV .....</b>	<b>908</b>
<i>R. Prasanth Kumar, S. Sarath Babu, Y. Srilekha, C. S. Kumar, D. Sen, A. Dasgupta</i>	
<b>An Area Localization Scheme for Underwater Sensor Networks .....</b>	<b>912</b>
<i>Vijay Chandrasekhar, Winston Seah</i>	
<b>Design and Implementation of II/4 Shift D-QPSK Baseband Modem using DSP Techniques .....</b>	<b>920</b>
<i>Rosalina Mohamad, Nuzli Mohamad Anas, Kaharudin Dimiyati</i>	
<b>A Deepwater Tsunami Surveillance System for Malaysia .....</b>	<b>925</b>
<i>Svein Erik Aasen, Z. Mustapha, P. Schjolberg, T. Elliot</i>	
<b>Energy Storage for Autonomous Underwater Vehicles.....</b>	<b>932</b>
<i>Satoshi Tsukioka, Tadahiro Hyakudome, Hiroshi Yoshida, Shojiro Ishibashi, Taro Aoki, Takao Sawa, Ikuo Yamamoto, Akihisa Ishikawa</i>	

# Table of Contents

<b>Research on the Discoloration of Nori (Porphyra) and Characteristics of Water Quality Using the Numerical Model .....</b>	<b>939</b>
<i>Yoshihiro Suenaga, Yasuo Tsunazawa, Satoru Matsuoka, Sadaaki Yoshimatsu, Kazuhiko Ichimi, Munehiro Fujiwara, Kenichi Yamaga, Kuninao Tada</i>	
<b>Techniques for Improvement of Marine Environment Including the Biological Production Using the Industry By-Product.....</b>	<b>945</b>
<i>Kaori Yasuoka, Tatsuya Hirotsako, Takashi Hoshino, Yoshihiro Suenaga, Hisao Kakegawa, Minoru Yamanaka</i>	
<b>Investigation of Competition for Space and Food Among Mussels on Artificial Structures .....</b>	<b>951</b>
<i>Daisuke Kitazawa</i>	
<b>Trajectory Optimization for Ship Collision Avoidance System using Genetic Algorithm .....</b>	<b>957</b>
<i>Xide Cheng, Z. Y. Liu, X. T. Zhang</i>	
<b>A Concept for Efficient Signal Excess Calculation for Multistatic Operations Analysis .....</b>	<b>962</b>
<i>Steven B. Dasinger, Bruce Imre Incze, Thomas A. Holz</i>	
<b>Effect of River Discharge on Bay of Bengal Circulation .....</b>	<b>968</b>
<i>Srinivas Chamarthi, A. D. Rao</i>	
<b>GPRS based Real-Time Reporting and Internet Accessible Sea Level Gauge for Monitoring Storm Surge and Tsunami.....</b>	<b>973</b>
<i>R.G. Prabhudesai, Antony Joseph, Yogesh Agarvadekar, Nitin Dabholkar, Prakash Mehra, Albert Gouveia, Suryakant Tengali, K. Vijaykumar, Abijith Parab</i>	
<b>Role of "Effective Density" in Improving the Accuracy of Bottom-Pressure based Sea Level Measurements - A Case Study from Gulf of Guinea .....</b>	<b>977</b>
<i>Antony Joseph, Prakash Mehra, R. G. Prabhudesai, Jean Dotse, Joseph T. Odametey, Emmanuel K. Nkebi, K. Vijaykumar, Shivanand Prabhudesai</i>	
<b>Seafloor Classification using Acoustic Backscatter Echo-Waveform - Artificial Neural Network Applications.....</b>	<b>982</b>
<i>Bishwajit Chakraborty, Vasudev Mahale, Gajanan Navelkar, R.G. Prabhu Desai</i>	