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Yeosu, South Korea
21 - 24 May 2012

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¹ Zhejiang University
² Zhejiang University of Technology

Local Organizing Committee for OCEANS’12 Conference would like to express our sincerest appreciation to Student Poster Patron:
Tuesday, May 22

**EAMEN2 - Marine energy 1**

Emerald 1 (#109, 1F, Hotel)
**Tuesday, 1:30 PM - 3:10 PM**

Co-Chairs:
*Motohiko Murai*, Yokohama National University
*Keyyong Hong*, KORDI

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**On Development of Practical Design Tools for Tidal Stream Turbines**

*Beom-Soo Hyun*¹, J.K Lee¹, D.H. Lee¹, S.H. Rhee², S.W. Park², M.C. Kim³, I.R. Do³, D.S. Cho³, H.M. Seong³

¹ Korea Maritime University
² Seoul National University
³ Pusan National University

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*Ho-Saeng Lee*¹, Young-Kwon Jung¹, Hyeon-Ju Kim¹, Dong-Ho Jung¹, Bum-seog Choi², Jeong-Min Seo²

¹ KORDI
² Korea Institute of Machinery & Materials

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*Ki-Chang Chang*¹, Young-Jin Baik¹, Byung-Chan Kang¹, Hyung-Kee Yoon¹, Hyeon-Ju Kim², Ho-Saeng Lee²

¹ Korea Institute of Energy Research
² KORDI

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*Huajun Li*, Guoxiang Wu, Bingchen Liang, Fei Fan
Ocean University of China

**Numerical Investigation on Combined Oscillating Body Wave Energy Convertor**

*Hongda Shi*
Ocean University of China
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Offshore CO₂ capture and storage (CCS) 1

Emerald 2 (#110, 1F, Hotel)
Tuesday, 1:30 PM - 3:10 PM

Co-Chairs:
Gwang Lee, Pukyong National University
Roberto Petroccia, University of Rome

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Bumsuk Lee¹, Gwang Lee¹, Bo-Yeon Yi¹, Keumsuk Lee², Myong-ho Park³, Han-Joon Kim³, Hai-Soo Yoo³
¹ Pukyong National University
² Korea National Oil Corporation
³ KORDI

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KORDI

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Keumsuk Lee¹, Yulee Kim¹, Myong-ho Park¹, Greg Browne², John Kaldi²
¹ Korea National Oil Corporation
² CO₂CRC

Simulation of long-term geochemical behavior and mineral trapping of CO₂ in saline aquifer

Jihoe Kwon, Jinan Jeong, Heechan Cho
Seoul National University
Tuesday, May 22

Sonar signal processing 1

Geomun-do A (#103, B2F, Condo)
Tuesday, 1:30 PM - 3:10 PM

Co-Chairs:
Christophe Sintes, TELECOM Bretagne

A Sub-Nyquist Sampling Signal Processing Sonar Receiver
Neil Scott1, Derek Richardson2, Miles Leonard-Taylor1, Sudhir Singh1
1 Industrial Research Limited
2 4RF limited

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Industrial Research Limited

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1 ISEN
2 IFREMER

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1 TELECOM Bretagne
2 IFREMER
Tuesday, May 22

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Geomun-do C (#104, B2F, Condo)

Tuesday, 1:30 PM - 3:10 PM

Co-Chairs:
Fu-Tai Wang, Hwa Hsia Institute of Technology
Kyeong Ok Kim, KORDI

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¹ Hwa Hsia Institute of Technology
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³ National Taiwan Ocean University

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¹ KORDI
² Konkuk University

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Jin-Hee Yuk¹, Kyeong Ok Kim², Byung Ho Choi³
¹ Korea Institute of Science and Technology Information
² KORDI
³ Sungkyunkwan University

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¹ National Institute of Meteorological Research
² Korea Meteorological Administration

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Tuesday, May 22

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1 KORDI
2 LIG Nex1
3 Hanyang University

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Peter Haugan, Hanne Sagen, Stein Sandven
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Chau-Chang Wang1, Po-Chi Chen2, Ban-Yuan Kuo3, Ching-Ren Lin3
1 Sun Yat-sen University
2 Taiwan Ocean Research Institute
3 Academia Sinica
Tuesday, May 22

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*Geumo-do B (#106, B2F, Condo)*

**Tuesday, 1:30 PM - 3:10 PM**

Co-Chairs:

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\(^1\) POSTECH  
\(^2\) Pusan National University

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**Ship Hull Inspection Using A Small Underwater Robot With A Mechanical Contact Mechanism**  
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\(^1\) Ritsumeikan University  
\(^2\) Tokai University  
\(^3\) Kinki University  
\(^4\) Dainippon Screen Mfg. Co.
Tuesday, May 22

Vehicle design 1

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Co-Chairs:
Norimitsu Sakagami, Tokai University
Han Jeong, Kunsan National University

A Study on the prediction of the Drag, Propulsion Performance and Motion Analysis of an Underwater Robot

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¹ Flinders University ² Korea Maritime University

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¹ National Taiwan University ² R.O.C. Naval Academy

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¹ KORDI ² Daeyang Electric Co. Ltd.
## TECHNICAL PROGRAM

**Tuesday, May 22**

### EAMEN2 - Marine energy 2

**Emerald 1 (#109, 1F, Hotel)**  
**Tuesday, 3:40 PM - 5:20 PM**

**Co-Chairs:**
**Hongda Shi**, Ocean University of China  
**Beom-Soo Hyun**, Korea Maritime University

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³ Seoul National University  
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| Bioalcohol Production with *M. aeruginosa* as a Novel Resource       | **Jong Deog Kim**, **Yang Ho Yoon**, **Tai Sun Shin**, **Min Yong Kim**, **Hyo Jin Seo** | Chonnam National University                                      |
| Experiments on floating wave-power generation using piezoelectric elements and pendulums in the water tank | **Naoki Okada**¹, **Motohiko Murai**¹, **Shoichiro Yabe**¹, **Hironori Fujimoto**² | ¹ Yokohama National University  
² Nippon Steel Engineering |
| Performance Prediction of an OWC Wave Power Plant                    | **Do Hong**¹, **Keyyong Hong**² | ¹ Chungnam National University  
² KORDI |

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Tuesday, May 22

**Offshore CO$_2$ capture and storage (CCS) 2**

Emerald 2 (#110, 1F, Hotel)
Tuesday, 3:40 PM - 5:20 PM
Co-Chairs:
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Co-Chairs:
Rockie Ricks, SPAWAR Systems Center Pacific
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Multi-Channel Differencing Adaptive Noise Cancellation Based on Kernel-based Normalized Least-Mean-Square Algorithm

Jianguo Huang¹, Wei Gao¹, Cédric Richard²
¹ Northwestern Polytechnical University
² Université de Nice Sophia-Antipolis

Analysis of Propeller Cavitation-Induced Acoustic Signal Using Neural Network and Wigner-Ville Distribution

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A linear phase estimation technique for interferometric signals

Augustin Saucan, Christophe Sintes, Thierry Chonavel
TELECOM Bretagne

The MIMO-Beamforming Technologies for Underwater Communication Systems

Hak-Lim Ko¹, Min-Sang Kim¹, Dae-Young Cho¹, Jong-Won Park², Yong-Kon Lim²
¹ Hoseo University
² KORDI
Underwater acoustics and acoustical oceanography 1

Geumun-do C (#104, B2F, Condo)
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1 Global Ocean Development Inc.
2 Kobe University
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Co-Chairs:
Katsuyoshi Kawaguchi, JAMSTEC
Donhyug Kang, KORDI

Real-Time Current and Wave measurements in Ports and Harbors using ADCP

H. H. Shih
NOAA

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Chi-Fang Chen¹, Hsiang-Chih Chan¹, Ray-I Chang¹, Tswen-Yung Tang¹, Sen Jan¹, Chau-Chang Wang², Ruey-Chang Wei², Yiing-Jang Yang³, Lien-Siang Chou¹, Tsay-Chyn Shin¹, Kai-Wen Kuo¹, Pei-Ling Lu¹, Nai-Chi Hsiao⁴, Tzu-Wei Lin⁴
¹ National Taiwn University
² National Sun Yat-sen University
³ Naval Academy
⁴ Central Weather Bureau

Real-time Current Observations System in Yeosu, Ulsan, and Incheon Coastal Areas, Korea

Sungjun Kim¹, Hong-Sun Kim¹, Yonhchul Park², Hojeong Lee³, Yoonsik Lee³
¹ GeoSystem Research Corp.
² Inha University
³ KHOA

PORTS-like system on Yeosu, Incheon and Ulsan port in Korea

Hak Yoeu You¹, Chae Ho Lim¹, Kwang Nam Han¹, H. H. Shih²
¹ KHOA
² NOAA

Mechanical Design of Scientific Instrument Interface Module in Cabled Seafloor Observatory

Yeqing Yue, Ruihong Lan, Fengzhong Qu, Yingjun Xie, Hong Song, Ying Chen
Zhejiang University
Tuesday, May 22

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Geumo-do B (#106, B2F, Condo)
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Jen-Hwa Guo, National Taiwan University
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Tae Kyeong Yeu, Sup Hong
KORDI

Hydrodynamic Analysis of a novel type of Towed Vehicle -- the Towed Vehicle Interface (TVI)
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Shanghai Jiao Tong University

CFD Simulation of a Sailing Boat Hull in Maneuvering Condition
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¹ Pusan National University
² KAIST
³ Kyungnam University

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Shibo Fan, Lian Lian, Ping Ren, Lei Ao
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Han-Jin Lee, B.J. Kang, J.H. Park, C.M. Lee, K.J. Kang, C.G. Kang
Wing Ship Technology Co.
Tuesday, May 22

Vehicle design 2

Odong-do (#101, B2F, Condo)
Tuesday, 3:40 PM - 5:20 PM
Co-Chairs:
Forng-Chen Chiu, National Taiwan University
Bong Huan Jun, KORDI

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Han Jeong¹, In Nho²
¹ Kunsan National University
² Chungnam National University

Development of a measurement and autonomous control system for wave-powered boats
Norimitsu Sakagami, Yutaka Terao
Tokai University

The integrated satellite-acoustic telemetry (iSAT) system for tracking marine megafauna
Pedro De La Torre, Khaled Salama, Michael Berumen, E Smith
King Abdullah University of Science and Technology

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Hyun-Ju Jung, Hun-Sang Jung
Hanwha Corporation
Wednesday, May 23

EAMEN2 - Marine energy 3

Emerald 1 (#101, 1F, Hotel)
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Co-Chairs:
Bingchen Liang, Ocean University of China
Museok Song, Hongik University

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1 Ocean University of China
2 Qingdao machinery Corp.

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2 Pusan National University
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1 Pusan National University
2 KAIST
3 University of Tokyo
Wednesday, May 23

**Coastal hazards and Tsunami**

**Emerald 2 (#110, 1F, Hotel)**

**Wednesday, 8:30 AM - 10:10 AM**

**Co-Chairs:**
- Martin Taylor, Ocean Networks Canada
- Chad Whelan, Codar Ocean Sensors, Ltd

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¹ National Electronics and Computer Technology Center
² National Institute of Informatics

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¹ SAIC
² NOAA PMEL
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¹ Codar Ocean Sensors, Ltd
² CODAR Ocean Sensors, Ltd.

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¹ Ocean Networks Canada
² Institute for Ocean Sciences
³ Geological Survey of Canada
Wednesday, May 23

**Acoustic telemetry and communication 1**

**Geomun-do A (#103, B2F, Condo)**

**Wednesday, 8:30 AM - 10:10 AM**

**Co-Chairs:**

Zheguang Zou, Xiamen University  
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**Sub-Gaussian Model Based LDPC Decoder for S\(\&\)S Noise Channels**  
Iulian Topor, Mandar Chitre, Mehul Motani  
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**Performance of a Combined Positioning and Communication System Using S\(2\)C Technology**  
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**Design and Application of Dynamic Coding in Shallow Water Acoustic Communications**  
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**Relay-Aided Cooperative Underwater Acoustic Communications: Selective Relaying**  
Xilin Cheng\(^1\), Rui Cao\(^2\), Fengzhong Qu\(^3\), Liuqing Yang\(^1\)  
\(^1\) Colorado State University  
\(^2\) LSI corporation  
\(^3\) Zhejiang University
Wednesday, May 23

**Underwater acoustics and acoustical oceanography 2**

**Geomun-do C (#104, B2F, Condo)**

**Wednesday, 8:30 AM - 10:10 AM**

Co-Chairs:

Jean-Francois D’Eu, IUEM
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  Byoung-Nam Kim, Bok Kyoung Choi, Bong-Chae Kim, Seom-Kyu Jung, Yosup Park, Yong-Kuk Lee
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- **Asian Dolphin Observatories Real-time Networking - ADORN -**
  Harumi Sugimatsu¹, Tamaki Ura¹, Junichi Kojima², Shizuko Hiryu³, Rajendar Bahl⁴, Sandeep Behera⁵, Ajit Pattnaik⁵, Idris Mandang⁶, Idris Mandang⁷, Sabro Tomuro⁷, Danielle Kreb⁸
  ¹ University of Tokyo ² KDDI R&D Labs. Inc. ³ Doshisha University ⁴ Indian Institute of Technology ⁵ WWF-India ⁶ Chilika Development Authority ⁷ Mulawarman University ⁸ Rare Aquatic Species of Indonesia

- **A new generation of ocean bottom seismometer for 3D-grid extensive seismic observation**
  Satoshi Shimizu¹, Tadakatsu Kimura¹, Ikumas Terada¹, Yoshitaka Watanabe², Narumi Takahashi², Makoto Ito², Kiyoshi Hatakeyama²
  ¹ Nippon Marine Enterprises, Ltd. ² JAMSTEC

- **New long-term autonomous hydrophones for large-scale hydroacoustic monitoring of the oceans**
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- **On the Spatial Correlation in Shallow Water and its Impact on Networking Protocols**
  Beatrice Tomasi¹, James Preisig², Michele Zorzi³
  ¹ University of Padova ² WHOI
Wednesday, May 23

Remote sensing and coastal radars 1

Geumo-do A (#105, B2F, Condo)

Wednesday, 8:30 AM - 10:10 AM

Co-Chairs:

Tiit Kutser, University of Tartu
Jian-Wu Lai, Taiwan Ocean Research Institute

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Jian-Wu Lai¹, Shao-Hua Chen¹, Ya-Jen Wang¹, Kun-I Lin¹, Wen-Chang Yang¹, Chia-Chuen Kao¹, Ching-Jer Huang², Shih Tang²
¹ Taiwan Ocean Research Institute
² National Cheng Kung University
Autonomous underwater vehicle 1


**Wednesday, 8:30 AM - 10:10 AM**

Co-Chairs:

**Hiroshi Yoshida**, JAMSTEC  
**Hyeungsik Choi**, Korea Maritime University

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**Mechanical Design of Six-Legged Walking Robot, Little Crabster**

*Jung-Yup Kim*¹, *Bong-Huan Jun*²  
¹ Seoul National University of Science and Technology  
² KORDI

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**Bio-inspired aquatic flight propulsion system for agile and manoeuvrable autonomous underwater vehicles**

*Sain-Gee Man*¹, *Alex Phillips*¹, *Steve Boyd*¹, *James Blake*¹, *Gwyn Griffiths*²  
¹ University of Southampton  
² National Oceanography Centre

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**Preliminary Design of the Multi-Legged Underwater Walking Robot CR200**

*Bong Huan Jun*, *Hyungwon Shim*, *Banghyun Kim*, *Jin-Yeong Park*, *Hyuk Baek*, *Pan-Mook Lee*, *Wu-Joan Kim*, *Yeon-Seok Park*  
KORDI

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**Analysis on a robotic fish propulsion by using flexible structure.**

*Dongwon Yun*¹, *Kyung-Soo Kim*¹, *Soohyun Kim*², *Jinho Kyung*¹  
¹ Korea Institute of Machinery & Materials  
² Korea Advanced Institute of Science and Technology

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**An Inviscid Model of Vortex Shedding Flow around an Oscillating Flat Plate**

*Sungyeop Lim*, *Wooyoung Choi*, *Jinwhan Kim*  
KAIST
Wednesday, May 23

**Autonomous underwater vehicle 1**

**Odong-do (#101, B2F, Condo)**

**Wednesday, 8:30 AM - 10:10 AM**

Co-Chairs:

**Hiroshi Yoshida**, JAMSTEC

**Hyeungsik Choi**, Korea Maritime University

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**Digital Communication Channel Model Analysis for AUV in Maritime Environment**

**699**

**Sun Song**¹, Sam Lee¹, Hyun Kim², cheong Kim²

¹ LIG Nex1

² SOLiD Technologies, Inc.

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**Path re-planning method for an AUV to image rough terrain by on-site quality evaluation**

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**Ayaka Kume**¹, **Toshihiro Makii**, Takashi Sakamaki², Tamaki Ura²

¹ The University of Tokyo

² University of Tokyo

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**Review of China’s Ocean Observation Nets R&D Prospects**

**712**

**Xin Li**¹, **Jiemin Lin**¹, **Song Hu**²

¹ Shanghai Ocean University

² Shanghai Jiao Tong University

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**Development of The Working-AUV “Otohime”**

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**Shojiro Ishibashi**¹, Hiroshi Yoshida¹, Tadahiro Hyakudome¹, Makoto Sugesawa¹, Takeshi Nakatani¹, Hiroshi Ochi¹, Yoshitaka Watanabe¹, Takao Sawa¹, Yoshiyuki Nakano¹, Yutaka Oota¹, Takeshi Kumaga², Susumu Sato², Hiromi Utsugi¹

¹ JAMSTEC

² SAS

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**Development of The Cruising-AUV ‘Jinbei’**

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**Hiroshi Yoshida**, Tadahiro Hyakudome, Shojiro Ishibashi, Hiroshi Ochi, Yoshitaka Watanabe, Takao Sawa, Yoshiyuki Nakano, Shinobu Omika, Makoto Sugesawa, Takeshi Nakatani

JAMSTEC
Numerical simulations of CO2-water two-phase flow and CO2-hydrate formation in laboratory-scale sand sediment  
Tomoki Takahashi, Toru Sato, Msayuki Inui  
University of Tokyo

Development a behavioral model of Conger myriaster in Ise Bay  
Yuki Motomiya, Shigeru Tabeta  
University of Tokyo

Marine Environmental Characteristics of the Ulsan Coastal Waters  
Moon Lee1, Byeong-kuk Kim1, Shinya Otake2  
1 Chonnam National University  
2 Fukui prefectural University

Study on Merging Processing of SSTs System Using Multi-satellite Data  
Yang Su1, Chan-su Yang1, In-Tai Kim1, Hyung-Wook Ahn1, Tae-ho Kim2  
1 KORDI  
2 University of science & technology

An numerical study for heat transfer and pressure drop characteristics of plate heat exchanger according to the channel space  
Jung Young Kwon1; Lee Ho Saeng1, Kim Hyeon Ju1, Yoon Jung In2  
1 KORDI  
2 PuKyong National University
Wednesday, May 23

Oil spill, and marine disasters

Emerald 2 (#110, 1F, Hotel)
Wednesday, 10:40 AM - 12:20 PM
Co-Chairs:
Kyoung-Ho Cho, KORDI

Numerical Prediction for Oil Amount Leaked from a Damaged Tank Using Two-Dimensional Moving Particle Simulation Method
Jong-Chun Park¹, Se-min Jeong¹, Jung-Woo Nam¹, Sung-Chul Hwang¹, Moo-Hyun Kim²
¹ Pusan National University
² Texas A&M University

Numerical Modeling of Solitary and Cnoidal Waves Propagating over a Submerged Bridge Deck
Betsy Seiffert, R. Cengiz Ertekin
University of Hawaii Manoa

Development of the Rapidly Deployable HF Radar for Oil Spill Response
Chad Whelan¹, Donald Barrick¹, Anton Kjelaas²
¹ Codar Ocean Sensors, Ltd
² CODARNor A/S

An operational search and rescue modeling system for the regional seas of Korea
Kyoung-Ho Cho¹, Jing-Yong Choi¹, In-ki Min¹, Sang-Ik Kim¹, Kwang-II Shin¹, Kwang-Soon Park¹, Jae-Il Kwon¹
¹ KORDI
² Korea Coast Guard

Verification Experiments of Sail Control Effects on Tracking Oil Spill
Hidetaka Senga¹, Naomi Kato¹, Lubin Yu¹, Muneo Yoshie², Toshinari Tanaka²
¹ Osaka University
² Port and Airport Research Institute
Wednesday, May 23

Acoustic telemetry and communication 2

Geomun-do A (#103, B2F, Condo)
Wednesday, 10:40 AM - 12:20 PM

Co-Chairs:
Konstantin Kebkal, EvoLogics GmbH
Yangze Dong, Shanghai Marine Electronic Equipment Research Institute

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Deqing Wang, Xiaoyi Hu, Fang Xu, Huabin Chen, Yingdong Wu
Xiamen University

The UNET-2 modem - An extensible tool for underwater networking research 789
Mandar Chitre, Iulian Topor, Teong-Beng Koay
National University of Singapore

Long-range Acoustic Communication in Deep Water Using a Towed Array: Beam Diversity 796
Hee-Chun Song
Scripps Institution of Oceanography

Data Upload from a Static Underwater Network to an AUV: Polling or Random Access? 800
Federico Favaro1, Paolo Casari1, Federico Guerra2, Michele Zorzi1
1 University of Padova
2 Consorzio Ferrara Ricerche

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Rony Rahman, Craig Benson, Michael Frater
The University of New South Wales
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Oceanographic instrumentation and sensors 1

Geomun-do C (#104, B2F, Condo)
Wednesday, 10:40 AM - 12:20 PM

Co-Chairs:
Pascal Tarits, UBO/IUEM
Jung-Yup Kim, Seoul National University of Science and Technology

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Gary McMurtry1, Irina Kolotyrkina1, Jae Lee2, Kee Kim3
1 SOEST, University of Hawaii
2 National Fisheries Research and Development Institute
3 Chungnam National University

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Zhejiang University

A modular imaging system for collection and analysis of live and preserved zooplankton samples 823

Hans Hirche1, Jan Schulz2, Thomas Hanken3
1 Alfred Wegener Institute for Polar and Marine research
2 Institute for Chemistry and Biology of the Marine Environment
3 Isitec

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Jonathan Friedman1, Henry Herman2, Newton Truong3, Young Cho1, Mani Srivastava2
1 USC ISI
2 UCLA

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Wan Kyun Chung1, Kyungmin Kwak2, Daegil Park1, Jinhyun Kim2
1 POSTECH
2 Seoultech
Remote sensing and coastal radars 2

Geumo-do A (#105, B2F, Condo)
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Co-Chairs:
Hugh Parker, Fugro LADS Corporation Pty Ltd
Malcolm Heron, James Cook University

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1 National Cheng Kung University
2 Taiwan Ocean Research Institute

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University of Tartu

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Paul Migliacio, Jerome Paros, Theo Schaad
Paroscientific

Adaptation of the TLM Method for Sea Radar Application and Simulation 848
Thibaut Lurton, Christophe Sintes, Michel Ney, René Garello
TELECOM Bretagne
Deepwater development technology

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Co-Chairs:
Kenichi Asakawa, JAMSTEC
Jaeyoung Lee, Genesis Oil & Gas

FEM Analysis of Pressure-tight Ceramic Housings with Metal Caps
Kenichi Asakawa, Tadahiro Hyakudome, Masao Yoshida, Naoyuki Ookubo
1 JAMSTEC
2 Kyocera Corp.

Modified and Improved Hoop Stress Formulas
Jaeyoung Lee

Numerical Simulation and Experiment on the Active Hydrocyclone Oil-Water Separation in Deepsea
Jiawang Chen, Jiayin Zhou, Gaosen Li, Meizhen Zhou, Xuanze Ju, Linyi Gu
1 Zhejiang University
2 Department of Underwater Engineering

New Fall Pipe Rock Dumping System for Protection of Submarine Cables
Junichi Kojima, Masaru Seki, Toshiki Shiraishi, Shoji Takahashi, Yoshitaka Tachibana
1 KDDI R&D Laboratories Inc.
2 SEKI KAIJI Industry CO.LTD.
TECHNICAL PROGRAM

Wednesday, May 23

Autonomous underwater vehicle 2

Odong-do (#101, B2F, Condo)

Wednesday, 10:40 AM - 12:20 PM

Co-Chairs:
Toshihiro Maki, University of Tokyo
Ji-Hong Li, Pohang Institute of Intelligent Robotics

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Bing Han, Shuo Pang, Haifeng Jiu, Jinlong Li
Harbin Engineering University

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Banghyun Kim, Bong-Huan Jun, Jin-Yeong Park, Pan-Mook Lee
KORDI

Design and control of an AUV with weight balance 894
Hyeungsik Choi, Yoon Jongsu, Mai Ba Loc, Kim Joonyoung
Korea Maritime University

Design and Control of a Convertible ROV 902
Hyeungsik Choi, Park Hanil, Seo Jeongmin, Jeong Sangki
Korea Maritime University

Real Time Visualisation of Sensor Data for an Autonomous Underwater Vehicle via a Wi-Fi Buoy 909
Jeremy Breen, John McCulloch
CSIRO
Wednesday, May 23

EAMEN2 - Marine environments 2

Emerald 1 (#109, 1F, Hotel)

Wednesday, 1:30 PM - 3:10 PM

Co-Chairs:
Toru Sato, University of Tokyo
Jeong-Hwan Oh, NOWPAP MERRAC - KORDI

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Yohei Tsukahara, Naoki Nakatani
Osaka Prefecture University

Effectiveness of iron supply in the coastal areas of Tsushima for restoring seaweed beds 917
Mitsuo Yamamoto¹, Dan Liu²
¹ University of Tokyo
² Ariake National College of Technology

The basic engineering design of large-scale factory for culture of seaweeds aimed at water purification in coastal sea area 922
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Osaka Prefecture University

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Yang-Ho Yoon, Dong-Yeob Han
Chonnam National University
Pollution monitoring and clean-up

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Wednesday, 1:30 PM - 3:10 PM

Co-Chairs:
Noor Azhar Shazili, Universiti Malaysia Terengganu

Algorithms for Underwater Local heterogeneity Survey Based on AUV Group Usage
Alexander Scherbatyuk, Igor Tuphanov
IMTP FEB RAS

Heavy metal speciation in sediment from the South China Sea off the Pahang coast, Malaysia during the pre- and post- Northeast Monsoon period
Noor Azhar Shazili\textsuperscript{1}, Kamaruzzaman Yunus\textsuperscript{2}, Choo Ming\textsuperscript{1}
\textsuperscript{1} Universiti Malaysia Terengganu
\textsuperscript{2} International Islamic University Malaysia

Exhaust Characteristics of Nitrous Oxide from Marine Engine
Dong-Hoon Yoo\textsuperscript{1}, Yoshifuru Nitta\textsuperscript{1}, Masaru Ikame\textsuperscript{1}, Mitsuru Hayashi\textsuperscript{2}, Hirotsugu Fujita\textsuperscript{3}, Jae-Keun LIM\textsuperscript{1}
\textsuperscript{1} National Maritime Research Institute
\textsuperscript{2} Kobe National University
\textsuperscript{3} Kunsan National University

Clean-up of Submerged Oil in Spilled Shoreline and Sediments of Polluted Lake using Compressed Air
Kyung Hee Kim\textsuperscript{1}, Jae-Soo Chang\textsuperscript{2}, Jae-Sik Lee\textsuperscript{1}, Sung-Cheol Koh\textsuperscript{2}, Hong Seok Kim\textsuperscript{3}
\textsuperscript{1} JH Green Co.
\textsuperscript{2} Korea Maritime University
\textsuperscript{3} Korea Testing & Research Institute
Wednesday, May 23

**Acoustic telemetry and communication 3**

**Geomun-do A (#103, B2F, Condo)**

**Wednesday, 1:30 PM - 3:10 PM**

Co-Chairs:

**Hee-Chun Song**, Scripps Institution of Oceanography

**Mandar Chitre**, National University of Singapore

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**Environmental Impact Analysis to design an Adaptive MAC Protocol for Underwater Vehicle Control System based on Underwater Acoustic Channel Estimation**

Soo-Hyun Park¹, **Nam-Yeol Yun¹**, Seung-Won Shin¹, Sardorbek Muminov¹, Jin-Young Lee¹, Chang-Hwa Kim², Soo-Young Shin¹

¹ Kookmin University

² Gangneung-Wonju National University

**Accurate Doppler estimation for underwater acoustic communications**

Joël Trubuil, Thierry Chonavel

TELECOM Bretagne

**An Improved Demodulation Scheme for FH-MFSK Underwater Acoustic Communications**

Zheguang Zou, Xiaomei Xu, Xiaomei Xu, Xingbin Tu

Xiamen University

**Acoustic Underwater Channel and Network Simulator**

Lars Wolff, Erik Szczepanski, Sabah Badri-Hoeher

University of Applied Sciences Kiel

**High Data Rate Acoustic Link for Micro-ROVs, Employing BICM-ID**

Bayan Sharif, Jeffrey Neasham, Geraint Goodfellow,

Charalampos Tsimenidis

Newcastle University
Wednesday, May 23

**Oceanographic instrumentation and sensors 2**

**Geomun-do C (#104, B2F, Condo)**

**Wednesday, 1:30 PM - 3:10 PM**

Co-Chairs:

- **Gary McMurtry**, SOEST, University of Hawaii
- **Yoshinori Ikemoto**, National Maritime Research Institute

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**Development of a gas-tight serial sampler for seawater and hydrothermal fluids**

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Shijun Wu¹, Hui Sun¹, Canjun Yang¹, Kang Ding²

¹ Zhejiang University
² University of Minnesota

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**Research on Centralized Remote Monitoring System for Offshore Cage Farm**

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Xiamen University

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**nano-resolution technology demonstrates promise for improved local tsunami warnings on the MARS project**

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Paul Migliacio¹, Jerome Paros¹, Christian Meinig²

¹ Paroscientific
² NOAA

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**High Resolution In-situ Nutrient Analysis: Development of a Nitrate Sensor**

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Jacques Malan¹, Andreas Marouchos¹, Karen Wild-Allen¹, Mark Rayner¹, Peter Ellis²

¹ CSIRO
² Monash University
Wednesday, May 23

Oceanography 1

Geumo-do A (#105, B2F, Condo)

Wednesday, 1:30 PM - 3:10 PM

Co-Chairs:
Peter Winsor, Institute of Marine Science
Kyeong Park, University of South Alabama

Changes in the Kuroshio and its extension under a warming climate in a climate model  
Woo Geun Cheon¹, Young-Gyu Park², Hyoung Rok Kim¹, Young-Nam Na¹, Young-Gyu Kim¹
¹ Agency for Defense Development
² KORDI

Effect of Axis Orientation on the Stability of a Coastal Promontory  
Moon-Jin Park
Chungnam National University

Modeling of Electromagnetic Refractive Index in the Persion Gulf  
Masoud Sadrinasab, Abolfazl Delbari
Khorramshahr University of Marine Sciences and Technology

Monitoring Harmful Algal Blooms in Singapore: Developing a HABs observing system  
Sandric Chee Yew Leong¹, Pavel Tkalich¹, Nicholas Patrikalakis²
¹ National University of Singapore
² Massachusetts Institute of Technology

Seasonal and diurnal variation of chlorophyll distribution off the east coast of Korea (East/Japan Sea), 2011  
Young-Tae Son¹, Kyung-Il Chang¹, Hee-Mang Park¹, Kyung-Jae Lee¹, Jae-Hyung Park¹, TaeKeun Rho²
¹ Seoul National University
² Marine Research Institute
Wednesday, May 23

**Offshore structures, dynamic positioning and mooring**

Geumo-do B (#106, B2F, Condo)

**Wednesday, 1:30 PM - 3:10 PM**

Co-Chairs: **Daehoon Kang**, Daewoo Shipbuilding & Marine Engineering

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**Application of Morphing Technique to Airfoil Design**  
**Ju Young Kang**, B S Lee
1 NTNU  
2 Safety at Sea Ltd

---

**The Preliminary Front-End Engineering Design of Manganese Nodules Mining Vessel**  
Hyo-Dong Kang, **Daehoon Kang**, Kwang-Min Lee, Min-Cheol Ryu, Sung-Geun Lee, Se-Hun Park  
Daewoo Shipbuilding & Marine Engineering

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**The development of mobile dynamic positioning system using the offshore structure wireless network for offshore platform**  
Sewon Kim, **Jin Woo Choi**, Geun-Bo Lee, Min-Cheol Ryu, Yong-Soo Kim, Jun-Hyung Jung  
Daewoo Shipbuilding & Marine Engineering

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**Creep and Stiffness of HMPE Fiber for Permanent Deepwater Offshore Mooring**  
**Martin Vlasblom**, Sergio Leite, Peter Davies, Jorn Boesten
1 DSM Dyneema  
2 LANKHORST EURONETE ROPES, S.A.  
3 IFREMER

---

**Analysis of a Mooring Line with a Power Cable for a Marine Current Turbine**  
**Katsutoshi Takeda**, Ken Takagi, Masayuki Shimizu  
University of Tokyo
Wednesday, May 23

**Autonomous underwater vehicle 3**

**Odong-do (#101, B2F, Condo)**

**Wednesday, 1:30 PM - 3:10 PM**

Co-Chairs:
**Shojiro Ishibashi**, JAMSTEC
**Banghyun Kim**, KORDI

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**Research on Simulation Modeling for Small Autonomous Underwater Vehicle** 1069

**Shuo Pang**, Fei Duan, Hai-feng Jiu, Jin-xin Zhao
Harbin Engineering University

**Development of a New Underwater Disk Robot** 1077

Hyeungsik Choi, Kim Joonyoung, **Tran Huy**, Woo Myungman
Korea Maritime University

**Coastal Patrol and Surveillance Networks using AUVs and Delay-Tolerant Networking** 1086

**Saiful Azad**, Paolo Casari, Michele Zorzi
University of Padova

**Neural Networks Control of Hybrid-Driven Underwater Glider** 1094

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Universiti Sains Malaysia
Wednesday, May 23

EAMEN2 - Marine environments 3

Emerald 1 (#109, 1F, Hotel)
Wednesday, 3:40 PM - 5:20 PM

Co-Chairs:
Mitsuo Yamamoto, University of Tokyo
Moon Lee, Chonnam National University

Measurement method for the concentration of hydrogen sulfide in pore water using ultraviolet spectrometry
Masae Utsumi, Naoki Nakatani, Natsumi Iwasa, Yohei Tsukahara, Koji Otsuka
Osaka Prefecture University

Application of reverse simulation to the pollution problem in a bay
Toru Yagi, Daisuke Kitazawa
University of Tokyo

Developing Advanced Practical Recycling methods of FRP Boats
Kooyoung Yoon, Seung Hee Lee
Hongik University

Regional Co-Operative Activities on HNS Preparedness and Response in the Northwest Pacific Region
Jeong-Hwan Oh, Seong-Gil Kang, Hye-Mi Lee, Jung-Hyun Lim, Sungkook Joh
NOWPAP MERRAC - KORDI
Wednesday, May 23

Ocean energy and marine renewable energy 1

Emerald 2 (#110, 1F, Hotel)
Wednesday, 3:40 PM - 5:20 PM

Co-Chairs:
Lucy Wyatt, James Cook University
Rho-Taek Jung, University of Ulsan

Tidal Current Energy Potential in Indonesia Waters  
Krisnaldi Idris, Ahmad Firdaus
Bandung Institute of Technology

A Prediction Method and Efficiency of Primary Conversion of OWC Type WEC with Projecting Walls  
Tomoki Ikoma1, Koichi Masuda1, Hikaru Omori1, Hisaaki Maeda1, Hiroyuki Osawa2
1 Nihon University
2 JAMSTEC

Use of HF radar for marine renewable applications  
Lucy Wyatt
James Cook University

Hydro-Wind Kinetics Integrated Module for the Renewable Energy Generation  
David Fabuel Ruiz, Emilio García Moreno, Francisco Morant Anglada, Antonio Correcher Salvador, Eduardo Quiles Cucarella, Ricardo Piza Fernandez
Polytechnic University of Valencia

Model Test of Multi-layer Vertical Axis Tidal Current Turbine  
Kwang-Oh Ko1, Chang-Beom Park1, Yonguk Ryu1, Chul Hee Jo2
1 Hyundai Engineering & Construction
2 Inha University
Acoustic telemetry and communication 4

Geomun-do A (#103, B2F, Condo)

Wednesday, 3:40 PM - 5:20 PM

Co-Chairs:
Bayan Sharif, Newcastle University
Angelika Kebkal, EvoLogics GmbH

DARP: A Depth Adaptive Routing Protocol for Large-scale Underwater Acoustic Sensor Networks 1146
Kuei-Ping Shih¹, Yen-Da Chen², Chan-Ying Lien¹, Ching-Hung Wang¹
¹ Tamkang University
² Lunghwa University of Science and Technology

Asynchronous Multiuser Reception for OFDM in Underwater Acoustic Communications 1152
Zhaohui Wang¹, Shengli Zhou¹, Josko Catipovic², Peter Willett¹
¹ University of Connecticut
² Naval Undersea Warfare Center

Broadband Synchronization of Underwater Acoustic Communication Signals using Superimposed Pilots 1159
Magnus Nordenvaad¹, Jaehak Chung², Seongil Kim³
¹ Uppsala University
² Inha University
³ Agency for Defence Development

DESERT Underwater: an NS-Miracle-based framework to DEsign, Simulate, Emulate and Realize Test-beds for Underwater network protocols 1164
Riccardo Masiero¹, Saiful Azad¹, Federico Favaro², Matteo Petranî¹, Giovanni Tosò¹, Federico Guerra¹, Paolo Casari¹, Michele Zorzi¹
¹ University of Padova
² Consorzio Ferrara Ricerche

Sparse-reconstruction-based High Resolution Beamforming and Its Application to Multi-beam Systems 1174
Wen Xu, Huihong Shi, Huiquan Zhang
Zhejiang University
Wednesday, May 23

**Oceanographic instrumentation and sensors 3**

*Geomun-do C (#104, B2F, Condo)*

**Wednesday, 3:40 PM - 5:20 PM**

**Co-Chairs:**

**Canjun Yang**, Zhejiang University  
**Hans Hirche**, Alfred Wegener Institute for Polar and Marine research

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**On locating a ship-towed electromagnetic streamer using a seafloor dipole transmitter**

Andrei Swidinsky¹, Sebastian Hölz¹, Marion Jegen¹, Nigel Edwards²  
¹ GEOMAR  
² University of Toronto

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**An electromagnetic-based streamer for near-shore investigations**

Pascal Tarits¹, D’Eu Jean François¹, Kevin Balem¹, Fabien Gaspari¹, Sophie Hautot²  
¹ UBO/IUEM  
² IMAGIR sarl

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**Development and Evaluation of a New Measurement System for Ship Hull-Side Wave Profiles using Electro-Conductive Paint**

Yoshinori Ikemoto¹, Kunihiro Hoshino¹, Masahiko Makino¹, Ryohei Fukasawa¹, Hidenobu Goto², Tatsuya Hamada¹  
¹ National Maritime Research Institute  
² National Maritime Research Institute

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**Development of a Camera System for Identifying Tagged Fish Species**

Andreas Marouchos, Matthew Sherlock, Dave Kube  
CSIRO
Importance of stratification on mixing and transport in a shallow, micro-tidal northern Gulf of Mexico estuary  
Kyeong Park  
University of South Alabama

Growth and physiological responses of the Singapore strain of Heterosigma to various nitrogen sources and light conditions  
Jerome Kok, Sandric Chee Yew Leong  
National University of Singapore

Detailed circulation and stratification features from an Arctic observing system  
Peter Winsor, Thomas Weingartner, Hank Statscewich, Rachel Potter  
Institute of Marine Science

Acoustic response for the Deep Thermal Front variability off Brazilian southeastern coast: a preliminary study  
Leandro Ponsoni, Jean-Pierre Hermand  
Université Libre de Bruxelles

Identifying Prototype States within Hydrodynamic Model Outputs using s Self-Organizing-Map  
Raymond Williams¹, Paulo de Souza², Emlyn Jones³, Claire D’Este³  
¹ Tasmanian ICT Centre, CSIRO  
² University of Tasmania  
³ CSIRO
Wednesday, May 23

**Automatic control**


**Wednesday, 3:40 PM - 5:20 PM**

Co-Chairs:

Pradya Prempraneerach, Rajamangala University of Technology Thanyaburi
Youngbok Kim, Pukyong National University

---

**Autonomous Waypoint Tracking of Kayak Boat using State-Variable Feedback Control** 1228

Pradya Prempraneerach1, Pasan Kulvanit2, Kitchalerm Thamchaitas1
1 Rajamangala University of Technology Thanyaburi
2 Ministry of Science and Technology

A new approach for ship motion control based on experiment research 1235

Youngbok Kim, Van Phuoc Bui
Pukyong National University

A null space control of an underactuated underwater vehicle-manipulator system under ocean currents 1239

Santhakumar Mohan, Jinwan Kim, Yonghyun Kim
KAIST

Dynamic Region Boundary-Based Control Scheme for Multiple Autonomous Underwater Vehicles 1244

Zool Ismail1, Norazwani Sarman1, Matthew Dunnigan2
1 Universiti Teknologi Malaysia
2 Heriot-Watt University

Tracking Control for an Autonomous Underwater Vehicle Based on Multiplicative Potential Energy Function 1250

Zool Ismail1, Bazli Mokhari1, Matthew Dunnigan2
1 Universiti Teknologi Malaysia
2 Heriot-Watt University
Wednesday, May 23

Vehicle navigation 1

Odong-do (#101, B2F, Condo)

Wednesday, 3:40 PM - 5:20 PM

Co-Chairs:
Hayato Kondo, WHOI
Nak Yong Ko, Chosun University

A Study of Inverse SSBL acoustic positioning with data transmission for multiple AUV navigation  1256

Yoshitaka Watanabe, Hiroshi Ochi, Takuya Shimura
JAMSTEC

Parallelization of Path Planning Algorithms for AUVs Concepts, Opportunities, and Program-Technical Implementation  1262

Mike Eichhorn¹, Ulrich Kremer², Hans Woithe²
¹ Ilmenau University of Technology
² Rutgers University

Guidance and control of P-SURO II hybrid AUV  1270

Ji-Hong Li¹, Mun-Jik Lee², Jong-Geol Kim², Sung-Kook Park², Sang-Hyun Park², Jin-Ho Suh²
¹ Pohang Institue of Intelligent Robotics
² KIRO

Precise Positioning using Stand-alone GPS for Maritime Applications  1277

Sulgee Park, DeukJae Cho, SangHyun Park
KORDI

Particle Filter Approach for Localization of an Underwater Robot Using Time Difference of Arrival  1283

Nak Yong Ko¹, Tae Gyun Kim¹, Yong Seon Moon²
¹ Chosun University
² Redone Technologies Co. Ltd.
Thursday, May 24

Marine law, safety, management and education

Emerald 1 (#109, 1F, Hotel)
Thursday, 8:30 AM - 10:10 AM

Co-Chairs:
Dr. Saharuddin Abdul Hamid, University Malaysia Terengganu
Jin Hyoung Park, Wing Ship Technology Co.

Study on the safety investigation of the free-fall lifeboat during the skid - launching test 1290

John Hwang¹, Fonseca Francis²
¹ Hyundai Samho Heavy Industries Co.
² LR

A proposal of international regulations for preventing collisions between offshore platforms and ships N/A

Pengfei Zhang¹, Jinsong Zhao¹, Jinsong Zhao²
¹ Shanghai Maritime University
² Shanghai Jiao Tong University

Safety Requirements for Wing-In-Ground (WIG) Craft 1295

Jin Hyoung Park, Deok-Ho Kim, Min-jee Kang
Wing Ship Technology Co.

Recent Development on the Management of Artificial Reefs in Malaysia 1303

Dr. Saharuddin Abdul Hamid¹, Ahmad Ali², Dr. Lokman Husin³,
Dr Wan Salihin Wong Abdullah⁴
¹ University Malaysia Terengganu
² SEAFDEC
³ UMT
⁴ Universiti Malaysia Terengganu
Thursday, May 24

Ocean energy and marine renewable energy 2

Emerald 2 (#110, 1F, Hotel)
Thursday, 8:30 AM - 10:10 AM

Co-Chairs:
Peter Haugan, Nansen Environmental and Remote Sensing Center
Seungho Shin, KORDI

Analysis of Performances of a Shrouded Horizontal Axis Tidal Turbine  1326
Huihui Sun, Yusaku Kyozuka
Kyushu University

A Novel Ocean Sentinel Instrumentation Buoy for Wave Energy Testing  1333
Annette von Jouanne¹, Ted Brekken¹, Ean Amon¹, Terry Lettenmaier¹,
Reo Phillips², Chad MacIsaac²
¹ Oregon State University
² AXYS Technologies Inc.

Simulation of storm surge with wave-current coupled model on unstructured grids system  1339
Jong-Joo Yoon, Ki-Chun Jun, Kwang-Soon Park, Jae-Seol Shim
KORDI

Norwegian Centre for Offshore Wind Energy  1343
Peter Haugan¹, Kristin Frøysa², Finn Nielsen³
¹ Geophysical Institute
² Christian Michelsen Research AS
³ Statoil ASA

Current Power Generator Using an Oscillating Hydroplane  1348
Jong Hun Lee, Hyun Joe Kim, Se Eun Kim, Jong Soo Seo
Samsung Heavy Industry
Thursday, May 24

**Acoustic telemetry and communication 5**

*Geomun-do A (#103, B2F, Condo)*

**Thursday, 8:30 AM - 10:10 AM**

Co-Chairs:

*Chan-Ying Lien*, Tamkang University

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**Long-Baseline Hydro-Acoustic Positioning Using D-MAC Communication Protocol**

*Oleksiy Kebkal, Konstantin Kebkal, Rudolf Bannasch*

EvoLogics GmbH

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**Random Linear Packet Coding For High Speed Acoustic Communication: An Experimental Analysis.**

*Rameez Ahmed Rasheed Ahmed, Milica Stojanovic*

Northeastern University

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**Channel-aware Routing for Underwater Wireless Networks**

*Roberto Petroccia, Stefano Basagnì, Chiara Petrioli, Daniele Spaccini*

1 University of Rome

2 Northeastern University

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**Time Reversal Acoustic Communication with Concatenated Reed-Solomon Code**

*Xingyang Nie, Wen Xu, Jiachun Zheng*

1 Zhejiang University

2 Jimei University

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**Smart Modems - Underwater Capabilities Beyond Communications**

*Dale Green, Steven McManus*

Teledyne Benthos
Thursday, May 24

Current measurement technology

Geomun-do C (#104, B2F, Condo)
Thursday, 8:30 AM - 10:10 AM

Co-Chairs:
Albert Williams, WHOI
Sung Yong Kim, Scripps Institution of Oceanography

Sensor Fouling Prevention in an Acoustic Current Meter, MAVS

Albert Williams
WHOI

Operational Ocean Monitoring Technologies around Taiwan

Li-Chung Wu1, Laurence Zsu-Hsin Chuang1, Beng-Chun Lee2,
Yen-Bin Lin1, Chia Chuen Kao1
1 National Cheng Kung University
2 Huafan University

Sustained observations of mesoscale and submesoscale surface circulation off the U.S. West Coast

Sung Yong Kim1, Eric Terrill1, Bruce Cornuelle1, Burt Jones2,
Libe Washburn1, Mark Moline3, Jeffrey Paduan4, Newell Garfield6,
John Largier3, Greg Crawford7, P. Michael Kosro8
1 Scripps Institution of Oceanography
2 University of Southern California
3 University of California
4 California Polytechnic State University
5 Naval Postgraduate School
6 San Francisco State University
7 Vancouver Island University
8 Oregon State University

Obtaining Absolute Water Velocity Profiles from Glider-mounted Acoustic Doppler Current Profilers

Christopher Ordonez, R. Shearman, John Barth, Patrick Welch,
Anatoli Erofeev, Zen Kurokawa
Oregon State University

A Low-Cost, Long-Life, Drifting Sensor for Environmental Monitoring of Rivers and Estuaries

Claire D’Este, Michael Barnes, Chris Sharman, John McCulloch
Tasmanian ICT Centre, CSIRO
Thursday, May 24

Marine GIS and information management

Geumo-do A (#105, B2F, Condo)
Thursday, 8:30 AM - 10:10 AM

Co-Chairs:
Zdenka Willis, U.S. IOOS
Vandecasteele Arnaud, Mines ParisTech

Using Spatial Ontologies for Detecting Abnormal Maritime Behaviour 1419

Vandecasteele Arnaud, Napoli Aldo
Mines ParisTech

Study on Visualization of FVCOM Model Data Based on the Integration of GIS and FVCOM 1426

Bolon Yuan¹, Rufu Qin¹, Zengdi Pan², Liangzhao Lin¹
¹ Tongji University
² East China Sea Branch of State Ocean Administration

Monitoring of Vessel Traffic Using AIS Data and ALOS Satellite Image 1431

Masanori Watagawa, Eiichi Kobayashi, Nobukazu Wakabayashi
Kobe University

Developing Business Intelligent Tools for Coral Database System in Thailand 1435

Premrudee Noonsang, Mullica Jaroeumsutasing, Uthai Kuhapong, Sirilak Chumkiew, Krisanae Jaroeumsutasing
Walalilak University

US Integrated Ocean Observing System (IOOS®): Delivering Benefits to Science and Society 1439

Zdenka Willis
U.S. IOOS
Thursday, May 24

Marine optics, imaging and vision 1

Geumo-do B (#106, B2F, Condo)
Thursday, 8:30 AM - 10:10 AM

Co-Chairs:
Hong Song, Zhejiang University
Hye-On Yoon, Korea Basic Science Institute

Image enhancement of underwater target detection by inhomogeneous illumination 1444
Haiyong Zheng1, Bing Zheng1, Guangrong Ji1, Zhongwen Guo1, Yuting Sun2
1 Ocean University of China
2 Shandong Academy of Sciences

Underwater image quality degradation by scattering 1448
Weilin Hou, Andrey Kanaev, Wesley Goode
U.S. Naval Research Laboratory

Phenomenological marine snow model for optical underwater image simulation: Applications to color restoration 1453
Matthieu Boffety, Frédéric Galland
Ecole Centrale Marseille

Application of CLSM and SEM Analyses for Biofouling Study 1459
Mihye Kong1, Hye-On Yoon1, Joo-Ae Kim1, Jo-Ri Bae1, Kang-Sup Chung2
1 Korea Basic Science Institute
2 Korea Institute Geoscience & Mineral Resources

Indexing and Selection of Well-Lit Details in Underwater Video Mosaics Using Vignetting Estimation 1472
Ken Sooknanan, David Corrigan, Anil Kokaram, Gary Baugh, Naomi Harte, James Wilson
Trinity College
Thursday, May 24

Vehicle navigation 2

Odong-do (#101, B2F, Condo)
Thursday, 8:30 AM - 10:10 AM

Co-Chairs:
Mike Eichhorn, Ilmenau University of Technology
Jinwhan Kim, KAIST

Alternating Landmark Positioning: Towards Wide Area Observation by Multiple AUVs
Takumi Matsuda, Toshihiro Maki, Takashi Sakamaki, Tamaki Ura
University of Tokyo

Survey on suitable 3D features for sonar-based underwater navigation
Philipp Woock
Fraunhofer Institute of Optronics

Robust and Efficient Singular-Value Decomposition based Algorithm for AUV Localization and Synchronization
Saman Abeysekera
Nanyang Technological University

Passive Acoustic and Optical Guidance for Underwater Vehicles
Hayato Kondo¹, Kenji Okayama², Jin-Kyu Choi³, Takeo Hotta⁴,
Masaki Kondo⁵, Tadatsugi Okazaki⁶, Hanumant Singh⁷, Zizhen Zhao⁸,
Kazuhiko Nitadori⁹, Masao Igarashi¹⁰, Tetsuo Fukuchi¹¹
¹ WHOI
² TOA CORPORATION
³ JAMSTEC
⁴ MHI Plant Engineering Co., Ltd
⁵ Tokyo University of Marine Science and Technology
⁶ SGK System Giken Co., Ltd
**Thursday, May 24**

### Acoustic telemetry and communication 6

**Geomun-do A (#103, B2F, Condo)**

**Thursday, 10:40 AM - 12:20 PM**

**Co-Chairs:**

**Dale Green,** Teledyne Benthos  
**Wen Xu,** Zhejiang University

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**Concept of a Tsunami Warning Buoy System and an Acoustic Telemetry System for High Current Area**  

**Hiroshi Ochi,** Yasuhisa Ishihara, Tomohiko Sugiyama  
JAMSTEC

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**Low Power Environmentally Friendly Underwater Acoustic Communication Using Pseudo-noise Spreading Codes**  

**Bayan Sharif,** Jeffrey Neasham, Charalampos Tsimenidis, Kalin Dimitrov, Geraint Goodfellow  
Newcastle University

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**Short-range Optical OFDM**  

**Bayan Sharif,** Charalampos Tsimenidis, Petar Minev  
Newcastle University

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**An Improved Direct Adaptive Multichannel Turbo Equalization Scheme for Underwater Communications**  

Qingwei Meng¹, **Jianguo Huang¹**, Jing Han¹, Chengbing He¹,  
Chuang Ma²  
¹ Northwestern Polytechnical University  
² Air Force Engineering University

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**Impact of Real Modem Characteristics on Practical Underwater MAC Design**  

Lina Pu¹, Yu Luo¹, Yibo Zhu¹, Zheng Peng¹, Shruti Khare¹,  
**Jun-Hong Cui**, Benyuan Liu¹, Lei Wang¹  
¹ University of Connecticut  
² University of Massachusetts Lowell
Thursday, May 24

Array and model-based signal processing techniques

Geomun-do C (#104, B2F, Condo)
Thursday, 10:40 AM - 12:20 PM

Co-Chairs:
James Zhang, Western Carolina University
Fengzhong Qu, Zhejiang University

Implementation of a high reliable chirp underwater acoustic modem 1531
Wangwei Lei, Deqing Wang, Yongjun Xie, Bingbing Chen, Xiaoyi Hu, Huabin Chen
Xiamen University

Pattern Extraction of Sonar Images Using an LPC Edge Detector with Entropy Thresholding 1536
James Zhang1, Andrew Punch2
1 Western Carolina University
2 Trident Micro Systems

Light-Sync: a Low Overhead Synchronization Algorithm for Underwater Acoustic Networks 1544
Davide Zennaro, Beatrice Tomasi, Lorenzo Vangelista, Michele Zorzi
University of Padova

Experimental Results on OFDM-IDMA Communications with Carrier Frequency Offsets 1551
Jian Dang1, Fengzhong Qu1, Zaichen Zhang1, Liuqing Yang3
1 Southeast University
2 Zhejiang University
3 Colorado State University
Thursday, May 24

**Marine optics, imaging and vision 2**

Geumo-do B (#106, B2F, Condo)
Thursday, 10:40 AM - 12:20 PM

Co-Chairs:
Weilin Hou, U.S. Naval Research Laboratory
Francis James Corpuz, University of the Philippines Diliman

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**Wavefront Aberration Correction for Laser Propagating Over Water with a Closed-loop Adaptive Optical System**  
1556

Hong Song1, Haocai Huang1, Ping Yang2, Lei Chen1, Ruihong Lan1,  
Jiawang Chen1, Fengzhong Qu1, Yingjun Xie1, Jianxing Leng1,  
Ying Chen1  
1 Zhejiang University  
2 Hangzhou Dianzi University

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**Underwater 3D target positioning by inhomogeneous illumination based on binocular stereo vision**  
1560

Bing Zheng1, Haiyong Zheng2, Lifeng Zhao3, Yongjian Gu4, Lijun Sun1,  
Yuting Sun5  
1 Ocean University of China  
2 Shandong Academy of Sciences

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**On Detecting and Predicting Harmful Algal Blooms in Coastal Information Systems**  
1564

Md Shahriar, Claire D’Este, Ashfaqur Rahman  
CSIRO

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**Coral Reef Mosaicking using Teardrop and Fast Image Labeling**  
1567

Francis James Corpuz1, Prospero Naval1, Eusebio Capili2,  
Jaylord Jauod2, Roel John Judilla2, Maricor Soriano1  
1 University of the Philippines Diliman  
2 Mapua Institute of Technology

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**Additional Paper**

**A New Generation Power-Data Hybrid Transmission System Based-on G.SHDSL and Power Filter**  
1573

Chunhu Liu, Bin Fu, Lian Lian