

JOURNAL OF MARINE SCIENCE AND TECHNOLOGY

PUBLISHER: Ching-Fong Chang

Publication Office: National Taiwan Ocean University

Editorial Board Address: National Taiwan Ocean University, No. 2, Pei-Ning Rd., Keelung 202, Taiwan, Republic of China

E-mail: jmst@mail.ntou.edu.tw **Tel:** +886-2-2462-2192 Ext. 2911 **Fax:** +886-2-2463-6964

Editor-in-Chief: Tin-Yam Chan, Institute of Marine Biology, **E-mail:** tychan@mail.ntou.edu.tw

Executive Editor: Chang-Tai Shih, Center of Excellence for the Oceans, **E-mail:** ctshih@mail.ntou.edu.tw

Board of Editors:

Section A: Marine Engineering, Maritime, and Marine Affair (Management, Tourism)

Satya N. Atluri (U.S.A.)	Computational Mechanics	E-mail: satluri@uci.edu
Stephen Cahoon (Australia)	Maritime and Logistics Management	E-mail: S.Cahoon@amc.edu.au
Jeng-Tzong Chen (Taiwan, R.O.C.)	Boundary Element Method, Vibration and Acoustics	E-mail: jtchen@mail.ntou.edu.tw
Jiahn-Hong Chen (Taiwan, R.O.C.)	Ship Hydrodynamics, Computational Fluid Mechanics	E-mail: B0105@mail.ntou.edu.tw
Shyi-Chy Cheng (Taiwan, R.O.C.)	Image Processing, Computer vision, Pattern recognition and Artificial intelligence	E-mail: csc@ntou.edu.tw
Cheng-Chi Chung (Taiwan, R.O.C.)	Ocean Tourism Management	E-mail: jackie@mail.ntou.edu.tw
Georgi Marko Dimirovski (Turkey)	Electrical Engineering	E-mail: gdimirovski@dogus.edu.tr
Ji-Feng Ding (Taiwan, R.O.C.)	Shipping Logistics and Maritime Studies	E-mail: jfding@mail.cjcu.edu.tw
Ladislav Fryba (Czech)	Structure Mechanics	E-mail: fryba@itam.cas.cz
Boris Gartsman (Russian)	Land Hydrology and Stochastic Modeling of Hydro-Meteorological Processes	E-mail: gartsman@tig.dvo.ru
Sung-Shan Hsiao (Taiwan, R.O.C.)	Ocean Engineering, Harbor and River Engineering	E-mail: sshsiao@mail.ntou.edu.tw
Wen-Cheng Huang (Taiwan, R.O.C.)	Water Resources Management	E-mail: b0137@mail.ntou.edu.tw
Dah-Jing Jwo (Taiwan, R.O.C.)	Navigation Systems, Estimation Theory and Applications	E-mail: djjwo@mail.ntou.edu.tw
Masashi Kashiwagi (Japan)	Hydrodynamic of Floating Body	E-mail: kashi@naoe.eng.osaka-u.ac.jp
Cheng-Yu Ku (Taiwan, R.O.C.)	Geotechnical Engineering	E-mail: CHKST26@mail.ntou.edu.tw
Shyh-Rong Kuo (Taiwan, R.O.C.)	Nonlinear Dynamics, Finite Element Method	E-mail: srkuo@mail.ntou.edu.tw
Duu-Hwa Lee (Taiwan, R.O.C.)	Economics	Email: dhlee@email.ntou.edu.tw
Cheng Lin (Taiwan, R.O.C.)	Experimental Fluid Mechanics, Coastal Engineering, Nonlinear Wave Mechanics and Laser Measurement Technology	E-mail: chenglin@nchu.edu.tw
Tai-Yuan Lin (Taiwan, R.O.C.)	Optoelectronics and Nanotechnology	E-mail: tylin@mail.ntou.edu.tw
Chein-Shan Liu (Taiwan, R.O.C.)	Computational Mechanics	E-mail: liucs@ntu.edu.tw
Stephen Liu (U.S.A.)	Underwater welding, Marine structural welding	E-mail: sliu@mines.edu
Pi-Cheng Tung (Taiwan, R.O.C.)	Vibration and Noise Analysis, Automatic Control, Mechatronics	E-mail: t331166@ncu.edu.tw
Shuen-Tai Ung (Taiwan, R.O.C.)	Maritime Risk Assessment	E-mail: shuentai@mail.ntou.edu.tw
Jung-Chang Wang (Taiwan, R.O.C.)	Two-Phase Flow, Thermal Module, Thermo-Electric NanoFluids	E-mail: jcwang@mail.ntou.edu.tw
Shing-Hoa Wang (Taiwan, R.O.C.)	Mechanical Behavior of Materials, Welding and Joining	E-mail: shwang@mail.ntou.edu.tw
Jenq-Lang Wu (Taiwan, R.O.C.)	Control Engineering	E-mail: wujl@mail.ntou.edu.tw
Shun-Chang Yen (Taiwan, R.O.C.)	Fluid Mechanics, Combustion, Aerodynamics	E-mail: scyen@ntou.edu.tw

Section B: Oceanography, Marine Biology, Marine Biotechnology, Fisheries Science, and Marine Ecology

Jyoti Chattopadhyaya (Sweden)	Molecular Design and Synthesis	E-mail: jyoti@boc.uu.se
Yi-Jay Chang (Taiwan, R.O.C.)	EcoInformatics, Biological Oceanography, Fisheries Oceanography, Zooplankton Ecology	E-mail: yijay.chang@gmail.com
Chih-Shin Chen (Taiwan, R.O.C.)	Fisheries Management, Fish Population Dynamics	E-mail: cschen@mail.ntou.edu.tw
Laure Corbari (France)	Marine Invertebrates	E-mail: corbari@mnhn.fr
Chung-Ru Ho (Taiwan, R.O.C.)	Remote Sensing, Physical Oceanography, Global Climate Change	E-mail: b0211@mail.ntou.edu.tw
Hsiang-Wen Huang (Taiwan, R.O.C.)	Marine Ecosystem Conservation, Fisheries Science	E-mail: Julia@ntou.edu.tw
Akira Ishikawa (Japan)	Harmful Algae	E-mail: ishikawa@bio.mie-u.ac.jp
Kee Lin Ng (Singapore)	Marine Biology	E-mail: dbsngkl@nus.edu.sg
Bonnie Sun Pan (Taiwan, R.O.C.)	Food Chemistry, Fish Processing	E-mail: bonnie@mail.ntou.edu.tw
Akash Sastri (Canada)	Biological Oceanography	E-mail: sastriakash@gmail.com
Kwang-Taso Shao (Taiwan, R.O.C.)	Marine Biology and Biodiversity	E-mail: zoskt@gate.sinica.edu.tw
Shyn Shin Sheen (Taiwan, R.O.C.)	Aquaculture, Fish Diseases	E-mail: shin@mail.ntou.edu.tw
Jen Chieh Shiao (Taiwan, R.O.C.)	Fish Ecophysiology, Marine Biology	E-mail: jcshiao@ntu.edu.tw
Shi-Yen Shiao (Taiwan, R.O.C.)	Aquaculture Nutrition	E-mail: syshiao@mail.ntou.edu.tw
Chang-Jer Wu (Taiwan, R.O.C.)	Molecular Biology and Virology	E-mail: cjwu@mail.ntou.edu.tw
Atsushi Yamaguchi (Japan)	Marine Biology	E-mail: a-yama@fish.hokudai.ac.jp

Editorial Assistant:

Wei-Chen Huang, E-mail: jmst@mail.ntou.edu.tw

Ya-Pei Lin, E-mail: jmst@mail.ntou.edu.tw

Website: <http://jmst.ntou.edu.tw/>

Abstracted/indexed: Engineering Index (EI Compendex) and Science Citation Index Expanded (SCI Expanded, also known as SciSearch[®])

The **Journal of Marine Science and Technology** is published six issues per year. The price for individual copies is NT\$600 or US\$20 per copy. The subscription rate is NT\$3,000 or US\$100 per year (six issues).

PRINTER: Enjoy Enterprise Co., Ltd., 10-1/F, 293-3, Sec. 2, Fuhsing S. Road, Taipei, Taiwan. Tel: +886-2-2732-1234