

THE 3RD TROPICAL OCEAN AND MARINE SCIENCES INTERNATIONAL SYMPOSIUM

Theme OCEAN RESEARCH FOR A SUSTAINABLE FUTURE 6 & 7 NOVEMBER 2022 UMT Convention Centre

https://tomsy.umt.edu.my

Scope

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Coastal and Shelf Seas Dynamics -Coastal Geomorphology - Biological Oceanography - Marine Engineering and Technology - Ocean Biogeochemistry -Marine Data Management - Fisheries Oceanography - Marine Endangered Species - Marine Geology and Seabed Mapping - Marine Biology - Marine Pollution - Coral Reef Ecology - Satellite Oceanography, Remote Sensing and GIS -Ocean Governance - Ocean Literacy -Blue Economy - Marine Repository -Marine Coastal and Delta Sustainability for Southeast Asia (MARE)

UNIVERSITY

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Dates

Abstract deadline: 20/09/2022 Abstract notification of acceptance: 27/09/2022 Payment deadline: 01/10/2022 Symposium dates: 06-07/11/2022

Fees

Local Participant: RM700 Local Student: RM400 International Participant: USD350 International Student: USD200 Additional paper (local participant/student): RM200 Additional paper (international participant/student): **USD100** Local non presenting participant (listener): RM400

International non presenting participant (listener): **USD250**

Organizer

Secretariat TOMSY2022 Institute of Oceanography and Environment Universiti Malaysia Terengganu (UMT) 21030 Kuala Nerus Terengganu, MALAYSIA Tel: +609-6683178 | Fax: +609-6692166 Email: inos.tomsy@gmail.com

International participant allowed to present virtually



Terokaan Selunn Lautan, Demi Kelestarian Sejagat 1 *Ocean of Discoveries for Diobal Sustainability*



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Higher Institution Centre of Excellence (HICoE) in Marine Science

Our Ref.:UMT/INOS/TOMSY2022/Secretariat/100-54/1 (43) *Date* : 2 *October* 2022

Dear Prof./Assoc. Prof./Dr./Sir./Mr./Mrs./Miss,

SITI AYISHAH THAMINAH INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

CONFIRMATION OF PARTICIPATION IN THE TROPICAL OCEAN AND MARINE SCIENCES **INTERNATIONAL SYMPOSIUM (TOMSY2022) ON 6-7 NOVEMBER 2022**

Thank you very much for your support and interest in joining TOMSY2022. We are pleased to inform that your registration and participation in TOMSY2022 has been confirmed. The abstract below has been accepted to be presented during the Symposium.

Title

NUMERICAL MODELLING ON THE PERFORMANCE OF SUBMERGED BREAKWATER USING THE SPH-BASED **DUALSPHYSICS MODEL**

Type of presentation ORAL

ISMS CREE

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Please submit your proof of payment via email to inos.tomsy@gmail.com. Please be advised that the Symposium's fee should be paid before **20 October 2022** to ensure your abstract being published in the abstract book.

Further information regarding tentative program and presentation schedule will be announced later through email and in the Symposium website. Please be free to visit our website for latest announcement (http://tomsy.umt.edu.my).

Terokaan Seluas Lautan, Demi Kelestarian Sejagat I Ocean of Discoveries for Global Sustainability

Thank you again for your support.

Yours sincerely,

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PROF GS. TS. DR. AIDY @ MOHAMED SHAWAL BIN M MUSLIM Chairman for TOMSY2022 Universiti Malaysia Terengganu (UMT)

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Programme Summary

DAY 1 (Sunday, 6th Nov. 2022)

Time	Details						
0840 - 0900	Registration						
0900 - 0940	Plenary I ^{##} - Mr. Mirza Hamza, Technical Director at Hidrokinetik Group						
	"Industry and University Collaboration: How Partnership Drives Innovation"						
0940 - 1030	MARE Round Table Discussion ^{##}						
1030 - 1050	Refreshment						
1045 - 1100	Arrival of VVIPs						
1100 - 1300	Opening Ceremony [#]						
1100 - 1110	National anthem, Prayer recitation						
1110 - 1120	Welcoming Speech by Prof. Gs. Ts. Dr. Aidy @ Mohamed Shawal bin M. Muslim, Chairman of TOMSY2020						
1120 – 1130	Welcoming Speech by Prof. Ts. Dr. Mohd Fadzil bin Mohd Akhir,						
	Director of Institute of Oceanography and Environment						
1130 - 1145	Officiating Speech by Prof. Dato` Dr. Mazlan Bin Abd Ghaffar, Vice Chancellor of Universiti Malaysia Terengganu						
1145 - 1150	TOMSY Montage Presentation by INOS						
1150 - 1155	Introducing Keynote Speaker by Prof Aidy Muslim						
1155 – 1230	Keynote Address[#] by Prof. Dr. Biswajeet Pradhan, University of Technology Sydney, Australia <i>" Machine Learning and Spatial Intelligence in Urban and Coastal Applications"</i>						
1245 - 1300	MOA Document Exchange Event between UMT and Hidrokinetik Technologies Sdn. Bhd. Photo Session						
1300 - 1400	Lunch Break						
1400 - 1550	Session 1A ^{###} Ecological Resilience MB_ECO1-8	Session 1B [#] Biology of Fishes MB_FISH1-8	Session 1C ^{####} Marine Engineering and Technology MET1-7				
1600 - 1640	Plenary II* - Dr. Salvatore Aricò, (Senior Programme Specialist for Biodiversity Assessments and Inter-Agency Coordination, UNESCO's Natural Sciences Sector) "Not just ocean research, but also ocean policy - for a sustainable future" Webex Link: https://umt.webex.com/umt/j.php?MTID=m6e1850ccf11065a48f527297b082b27 5						
1640 - 1700	Welcoming Hi-Tea						

Venue: *Dewan Persidangan 2; *** Dewan Persidangan 3; **** Bilik Seminar 1; ***** Dewan Seminar 1

DAY 2 (Monday, 7th Nov. 2022)

Time	Details						
0900 - 0940	Plenary III [#] - Prof. Shing Yip (Joe) Lee (The Chinese University of Hong Kong) <i>"Mangrove microphytobenthos - a neglected driver of estuarine trophodynamics"</i> Webex Link: https://umt.webex.com/umt/j.php?MTID=m5a53c92c996217eba7a7eeed6d87983a						
0945 - 1120 Session 2A ^{###} Satellite Oceanography SAT1-7		Session 2B [#] Marine Pollution I MP1-7	Session 2C ^{####} Ocean Governance OG1-7				
1120 - 1140	Refreshment						
1140 - 1300	Session 3A ^{###} Marine Coastal and Delta Sustainability for Southeast Asia MARE1-7	Session 3B [#] Marine Pollution II POL1-6	Session 3C ^{####} Coastal Geomorphology COAST1-7				
1300 - 1400	Lunch Break						
1400 – 1440	Plenary IV[#] - Prof. Dr. Wan Izatul Asma binti Wan Talaat, Head of Centre for Ocean Governance, INOS. "The Role of Ocean Governance in Translating Science into Policies ~ Accelerating the National Delivery to the Ocean Decade"						
1445 – 1600	Session 4A ^{###} MARE extended discussion room	Session 4B [#] Coastal and Shelf Seas Dynamics COD1-7	Session 4C ^{####} Ocean Literacy OL1-7				
1600 - 1630	Refreshment						
1630 - 1700	Closing Ceremony [#]						

Venue: [#]Dewan Persidangan 2; ^{##} Dewan Persidangan 3; ^{###} Bilik Seminar 1; ^{####} Dewan Seminar 1

SESSION 1B (Biology of Fishes)							
1	ZAIDNUDDIN ILIAS	MR	ESTIMATION OF PULAU PAYAR MARINE PARK CORAL REEF FISHES BIOMASS USING VISUAL OBSERVATION	FISHERIES RESEARCH INSTITUTE DEPARTMENT OF FISHERIES MALAYSIA	zainuddin01@dof.gov.my	MB_FISH1	
2	MUHAMMAD AFIQ FIRDAUS AMINUDIN	MR	BASELINE STUDY ON CORAL REEF FISH IN PULAU KAPAS, <u>TERENGGANU,</u> <u>SOUTH CHINA SEA</u>	INOS, UMT	fiqdaus99@gmail.com	MB_FISH2	
3	NOR HAZIRAH MOHD ZUKI	MRS.	ONTOGENY OF MALE PARROTFISH (SCARUS GENUS) MATURATION AT PULAU BIDONG, SOUTH CHINA SEA	INOS, UMT	norhazirahzuki@gmail.com	MB_FISH3	
4	NURAIN NAZIRATUL AKMA BINTI MOHAMAD DAUD	MS	A PRELIMINARY STUDY ON FEEDING FREQUENCY OF CLOWNFISH (AMPHIPRION OCELLARIS) USING ARTIFICIAL FOOD	NATIONAL UNIVERSITY OF MALAYSIA	p105355@siswa.ukm.edu.my	MB_FISH4	
5	MOHAMMAD FAIZ AHMAD	MR.	FISH COMMUNITY STRUCTURE AT RIG-TO-REEF (R2R) ARTIFICIAL REEF OFF PULAU KAPAS, SOUTH CHINA SEA.	UMT	mfaizahmad27566@gmail. com	MB_FISH5	
6	SITI TAFZILMERIAM BINTI SHEIKH ABDUL KADIR	DR.	LENGTH-WEIGHT RELATIONSHIP OF 30 MOST ABUNDANT FISH SPECIES IN THE SETIU WETLANDS, TERENGGANU, MALAYSIA	INOS, UMT	sititafzil@umt.edu.my	MB_FISH6	
7	MUHAMMAD AIMAN BIN MAS'UD	MR.	DO DEPTH OF DEPLOYING ARTISANAL FISH TRAPS AFFECT BYCATCH DISTRIBUTION IN BIDONG ARCHIPELAGO?	UNIVERSITI MALAYSIA TERENGGANU	aiman. masud6395@gmail.com	MB_FISH7	
8	SAIFULLAH ARIFIN JAAMAN	ASSOCIATE PROF. DR.	CETACEANS OF THE LUCONIA SHOALS NATIONAL PARK (LSNP). OFFSHORE SARAWAK, MALAYSIA	INOS, UMT	saifullahaj@umt.edu.my	MB_FISH8	
			SESSION 1C (Marine Engineering	and Technolog)			
1	SITI AYISHAH THAMINAH	MS	NUMERICAL MODELLING ON THE PERFORMANCE OF SUBMERGED BREAKWATER USING THE SPH-BASED DUALSPHYSICS MODEL	INSTITUTE OF OCEANOGRAPHY AND MARITIME STUDIES (INOCEM), INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA, KAMPUNG CHEROK PALOH, , KUANTAN, PAHANG, 26610	thaminah1997@gmail.com	MET1	
2	NOOR ASIAH MOHAMAD	MRS	THE EFFECT OF ROCK ARMOUR THICKNESS ON WAVE OVERTOPPING PERFORMANCE AT COASTAL REVETMENTS	UNIVERSITI PUTRA MALAYSIA	gs59282@student.upm.edu. my	MET2	
3	MD NIZAM BIN ISMAIL	MR.	SEABED MAPPING OF PULAU SONGSONG AND TUKUN TERENDAK, YAN, KEDAH	FISHERIES RESEARCH INSTITUTE (FRI) BATU MAUNG, BATU MAUNG, PULAU PINANG, 11960	nizam7402@gmail.com	MET3	
4	WAN NUR KHAIRUNNISA WAN MAT NOR	MS	MARINE LANDSCAPE MAPPING USING 3D PHOTOGRAMMETRY AT KARANG TENGAH	INOS, UMT	p4503@pps.umt.edu.my	MET4	
5	MUHAMMAD MAZMIRUL ABD RAHMAN	MR.	SENSITIVITY ANALYSIS AND APPLICATION OF XBEACH AT CHEROK PALOH BEACH, PAHANG, MALAYSIA	KULLIYAH OF SCIENCE, INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA, KUANTAN, PAHANG, 25300	mazmirul.94@gmail.com	MET5	
6	MUHAMMAD ABDUL HAKIM MUHAMAD	MR.	MPLEMENTATION OF TILTED MULTIBEAM ECHOSOUNDER DATA AND RANDOM FOREST FOR SHALLOW WATER MARINE HABITAT MAPPING	UNIVERSITI TEKNOLOGI MALAYSIA	hakim1991@graduate.utm.my	MET6	
7	BRYAN YONG	MR.	LARGE-SCALE CORAL REEF HABITAT SUITABILITY MODEL USING MARINE LANDSCAPE MAPPING TO SUPPORT EFFECTIVE ECOSYSTEM-BASED MARINE MANAGEMENT	UMT	bryanyong@live.com.my	MET7	

Numerical Modelling on the performance of submerged breakwater using the SPH-based DualSPHysics model

S.A.T. Hikmatullah Sahib¹, M.Z. Ramli^{2*}, M.S. Ab Razak³, M.F. Miskon¹, K. Yunus¹, E.H. Ariffin⁴, and M.H. Jeofry⁴

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Abstract: Implementation of coastal structures are known to mitigate issues of coastal erosion and impacts of sea waves during storm events on coastal areas. Among the various coastal structures implemented in Malaysia, the submerged breakwater called as WABCORE is being studied. This structure was originally designed by the National Hydraulic Research Institute of Malaysia and has been implemented at the shores of Pulau Tinggi, Johor, Malaysia. The objective of this study is to identify the wave transmission coefficient of the improved WABCORE structure under a variety of wave conditions. The effect of wave steepness (Hi/L) parameter on the wave transmission coefficient would also be highlighted. The study also considers the arrangement of the WABCORE structures, whereby the structures are stacked in a 4:3:2 (broad) and 3:2:1 (narrow) manner. This study implements the use of an open-source code known as DualSPHysics to simulate the various conditions. The results signify that the WABCORE structure is capable of dissipating waves despite its various condition.

Keywords: Coastal Structure; Submerged Breakwater; Wave Transmission Coefficient; DualSPHysics; Numerical Modelling



NUMERICAL MODELLING ON THE PERFORMANCE OF SUBMERGED BREAKWATER USING THE SPH-BASED DUALSPHYSICS MODEL

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SITI AYISHAH THAMINAH

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INC



KEY PEOPLE

Ø



Dr. Mohd Shahrizal Ab Razak

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Prof. Kamaruzzaman Yunus

Ø

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Jeofry

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Assoc. Prof. Dr. Effi Helmy Ariffin

Institute of Oceanography and Environment (INOS)



- Issues faced by the coasts
- Functions of Coastal Structure
- Coastal Structures available in Malaysia
- WABCORE Structure
- Numerical Setup and Wave Parameters
- Results and Discussion
- Conclusion

Pantai Puteri, Melaka

cr. Siti Aisyah, Ummi Naqiyah, Iman Nur Athiah, Haziq Subri

ISSUES **OCCURING ON** COASTS

Erosion



fenomena air laut pasang besar ketika tinjauan BERNAMA di sekitar Kampung Kolam, Mengabang Telipot hari ini.

Jabatan Meteorologi Malaysia (MetMalaysia) mengeluarkan amaran angin kencang timur laut berkelajuan 50 hingga 60 kmsj dengan ombak mencapai ketinggian sehingga 4.5 meter dijangka di kawasan perairan Johor Timur, Pahang, Terengganu dan Kelantan sehingga esok (4 Jan 2022).

Mohd Syafiq Ambak/BERNAMA View all 7 comments

Wave Overtopping

Rough seas batter coastal areas of Dungun, Kemaman [NSTTV]

y Rosli Zakaria - January 1, 2021 @ 12:43pm

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High tide, strong waves lash Kuala Terengganu, Kuala Nerus, Dungun



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Inundation

Wet, windy and flood-filled New Year for east coast states

By Rosli Zakaria - December 31, 2020 @ 7:18pm



High tide: 3 states affected by floods

By Bernama - November 6, 2021 @ 3:17pm

three states to rise, - NSTP/ZULIATY ZULKIFFLI



IMES

w Year for people in the

ill usher in the Joho

alert on strong

KUALA LUMPUR: The high tide phenomenon which occurred in Kedah, Perak and Johor inundated several areas causing flood victims in the three states to rise.

The high tide phenomenon which occurred in Kedah, Perak and Johor inundated several areas causing flood victims in the

IN KEDAH, the number of flood victims this morning increased to 885 people from 240 families compared to 853 from 234 families yesterday (Friday).

Civil Defence Force (APM) Disaster Management Committee Secretariat head Major (PA) Mohd Muaz Mohd Yusof said the district of Kota Setar showed the highest number of victims with 584 victims from Prevents coastal inundation and saltwater intrusion



Reduces impact of storm-driven waves on shore

COASTAL STRUCTURE



Protects low lying coastal areas



Allows ease for vessel pathways

Prevents occurence of wave overtopping

Aims to reduce loss of sediment from an area

COASTAL STRUCTURES IN MALAYSIA

Breakwater



Rubble Mound and Concrete



Revetment



Rubble Mound and Concrete

Groyne



Rubble Mound



Gabion

wired cage



Seawall



Concrete

WABCORE STRUCTURE

- An acronym for: WAve Breaker and **CO**astal **RE**storation
- Originally designed by the National Hydraulics Research Institute Malaysia
- First implemented at Pulau Tioman, Pahang and Pulau Tinggi, Johor
- Modified version: Concrete interlocking system on the crest instead of steel bars









Simplified depiction of the numerical setup





Wave Period (s)

Depth (m)









RESULTS











0 0 0 0 **RESULT**²



VISUALIZATION





Depth 0.405 m



Depth 0.605 m

I ANK MANK

This project is funded by LRGS21-001-0005. A special thanks to Dr. Mohd Shahrizal of UPM for assisting tremendously in this project.

