

EFFECT OF MONSOONS ON DISTRIBUTION OF ORGANIC MATTER  
IN SEDIMENT OF SETIU LAGOON, TERENGGANU,  
SOUTH CHINA SEA

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2008



**EFFECT OF MONSOONS ON DISTRIBUTION OF ORGANIC MATTER IN  
SEDIMENT OF SETIU LAGOON, TERENGGANU, SOUTH CHINA SEA**

**By**

**Nurbazilah Sulaiman**

**Research Thesis submitted in partial fulfillment of  
The requirements for the degree of  
Bachelor of Science (Marine Biology)**

**Department of Marine Science  
Faculty of Maritime Studies and Marine Science  
UNIVERSITY MALAYSIA TERENGGANU  
2008**

This project should be cited as:

Nurbazilah, S. 2008. Effect of Monsoons on Distribution of Organic Matter in Sediment of Setiu Lagoon, Terengganu, South China Sea. Undergraduate thesis, Bachelor of Science in Marine Biology, Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu, Terengganu.

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1100061858



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**Effect of Monsoons on Distribution of Organic Matter in Sediment of Setiu Lagoon,  
Terengganu, South China Sea** oleh **Nurbazilah binti Sulaiman**, No.Matrik **UK12780**

telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Biologi Marin), Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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## ACKNOWLEDGEMENTS

Firstly, I would like to express my sincere gratification and appreciation to my supervisor, Associated Professor Dr. Kamil and Mr Yong Jaw Chuen for their guidance and advices during the completion of this thesis.

Secondly, I really appreciate and grateful to Prof. Dr. Law Ah Theem (ex- supervisor) for giving a lot of supporting and encouraging words for me since beginning of this project. Also not forget, Mr Chuah Lai Fatt, and all Professor Law's postgraduate students who had provided me advices and opinion on my thesis, especially on lab analysis.

I would like to thank all my project team especially Miss Yip Li Voon, Miss Liew Siew Hua and Miss Nurul Syazana for always providing supports and helps. I'm very grateful and proud on our team work. Our team had worked hand in hand towards the goal of our project.

I also would like to thank all lab assistants of Jabatan Sains Marin for their helps and guidance in the lab. Besides that, I would like to thank the Faculty of Marine Science and Maritime Studies (UMT) for their technical and equipment support in this study.

Last but not least, I would like to thank my parents and siblings for their moral support. They were my strength and I could not finish this project without their supports.

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## LIST OF ABBREATIONS

$\mu\text{m}$	-	Micrometer
$\text{‰}$	-	Part per thousand
ALPHA	-	American Publish Health Association
BOD	-	Biological Oxygen Demand
$\text{C}_6\text{H}_{12}\text{O}_6$	-	Carbohydrate
$\text{CH}_4$	-	Methane
Cl	-	Chlorine
$\text{CO}_2$	-	Carbon Dioxide
COD	-	Chemical Oxygen Demand
DO	-	Dissolved Oxygen
DOC	-	Dissolved organic carbon
DOE	-	Department of Environment
FW	-	Formula Weight
GFC	-	Glass Microfibre Filters
HCl	-	hydrochloride acid
M	-	Molar
Max	-	Maximum
mg C/g	-	Milligram carbon per gram
mg/L	-	Milligram per liter
Min	-	Minimum
ml	-	Milliliter
MW	-	Molecular weight
N	-	Normality
$\text{NO}_2^-$	-	Nitrite
$\text{NO}_3^-$	-	Nitrate
NPOC	-	Non-purgeable organic carbon
$\text{O}_2$	-	Oxygen
$^\circ\text{C}$	-	Degree Celsius
OM	-	Organic matter
p	-	Probability
POC	-	Purgeable organic carbon
ppm	-	part per million
S	-	Sulphur
SS	-	Suspended Solid
St	-	Station
Std. Dev.	-	Standard Deviation
TC	-	Total carbon
TIC	-	Total inorganic carbon
TOC	-	Total Organic Carbon
WQS	-	Water Quality Standard
$\mu\text{M}$	-	Micromole

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## ABSTRACT

The distribution of Total Organic Carbon (TOC) and Biological Oxygen Demand (BOD) in sediment of Setiu Lagoon was studied. Four sampling field trips were conducted at 14 stations. The mean and standard deviation values of TOC (total organic carbon) in sediment during the first, second, third and fourth sampling periods for the lagoon stations were  $6.715 \pm 5.789$  mg C/g,  $7.149 \pm 5.589$  mg C/g,  $8.333 \pm 5.718$  mg C/g and  $8.269 \pm 0.049$  respectively. The mean and standard deviation values of biological oxygen demand (BOD) in sediment samples during first, second, third and fourth sampling periods were  $0.104 \pm 0.092$  mg C/g,  $0.500 \pm 0.118$  mg C/g,  $0.512 \pm 0.139$  mg C/g and  $0.466 \pm 0.121$  respectively. While the mean and standard deviation values for biodegradable organic carbon in sediment samples were  $0.041 \pm 0.037$  mg C/g (first sampling),  $0.200 \pm 0.047$  mg C/g (second sampling),  $0.205 \pm 0.056$  mg C/g (third sampling) and  $0.187 \pm 0.049$  mg C/g (fourth sampling). The mean and standard deviation values for non biodegradable organic carbon in sediment samples was  $6.674 \pm 5.753$  mg C/g (first sampling),  $6.949 \pm 5.547$  mg C/g (second sampling),  $8.128 \pm 5.665$  mg C/g (third sampling) and  $8.082 \pm 5.815$  mg C/g (fourth sampling). TOC and BOD<sub>5</sub> reading was increasing significantly during Inter monsoon and early northeast monsoon. But, there was slightly decreasing of TOC and BOD concentration during fourth sampling (late Northeast monsoon). This might be due to agricultural terrestrial run-off brought by inland rainfall during monsoon season Nevertheless, Setiu Lagoon is still considering as an unpolluted aquatic system with the organic matter.

## Kesan Monsun Ke Atas Taburan Bahan Organik Di Dalam Sediment Di Laguna Setiu, Terengganu, Laut Cina Selatan

### ABSTRAK

Taburan jumlah karbon organik (TOC) and Biological Oxygen Demand (BOD) dalam sample tanah di Setiu Lagoon telah dikaji. Empat kali persampelan telah dilakukan di 14 stesen mengikut musim monsun yang tertentu. Purata nilai and sisihan piawai bagi taburan TOC dalam sample tanah semasa sampling pertama, kedua, ketiga dan ialah  $6.715 \pm 5.789$  mg C/g,  $7.149 \pm 5.589$  mg C/g,  $8.333 \pm 5.718$  mg C/g and  $8.269 \pm 0.049$  masing-masing. Purata nilai and sisihan piawai bagi taburan biological oxygen demand (BOD) dalam sample sediment semasa sampling pertama, kedua, ketiga dan keempat ialah  $0.104 \pm 0.092$  mg C/g,  $0.500 \pm 0.118$  mg C/g,  $0.512 \pm 0.139$  mg C/g and  $0.466 \pm 0.121$ . Purata nilai and sisihan piawai bagi taburan biodegradasi organik carbon dalam sample sediment semasa sampling pertama, kedua, ketiga dan keempat ialah  $0.041 \pm 0.037$  mg C/g,  $0.200 \pm 0.047$  mg C/g,  $0.205 \pm 0.056$  mg C/g and  $0.187 \pm 0.049$  mg C/g. Purata nilai and sisihan piawai bagi taburan tak-biodegradasi organik carbon dalam sample sediment semasa sampling pertama, kedua, ketiga dan keempat ialah  $6.674 \pm 5.753$  mg C/g,  $6.949 \pm 5.547$  mg C/g,  $8.128 \pm 5.665$  mg C/g and  $8.082 \pm 5.815$  mg C/g. Musim monsoon telah mengakibatkan peningkatan bacaan TOC dan BOD<sub>5</sub> kerana jumlah hujan yang lebat akan membantu pengaliran bahan atau sisa-sisa akitviti pertanian dari daratan.. Akhirnya, Setiu Lagoon masih berada dalam keadaan yang tidak tercemar oleh bahan organik.