THE STUDY OF PHYSICAL CHARACTERISTIC OF TEMPERATURE AND SALINITY OF BIDONG ISLAND WATER AND THE CURRENT CIRCULATION

NURHAFIZAH BT WAHAB

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU

2011

The study of physical characteristic of temperature and salinity of Bidong Island water and the current circulation / Nurhafizah Wahab.

Lihat sebelah

THE STUDY OF PHYSICAL CHARACTERISTIC OF TEMPERATURE AND SALINITY OF BIDONG ISLAND WATER AND THE CURRENT CIRCULATION

By

Nurhafizah Bt Wahab

Research Report submitted in partial fulfillment
of the requirement for the Degree of
Bachelor of Science (Marine Science)

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2011

DEPARTMENT OF MARINE SCIENCE
FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU

DECLARATION AND VERIFICATION
FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled:

The Study Of Physical Characteristic Of Temperature And Salinity Of Bidong Island Water And The Current Circulation by **Nurhafizah Binti Wahab**, Matric No. **UK17100** has been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the **Degree of Science (Marine Science)**, Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu.

Verified by:

.....

Principal Supervisor

Name: Dr. Mohd Fadzil Mohd Akhir

Official stamp: DR. MOHD FADZIL MOHD AKHIR
Lecturer
Department of Marine Science
Faculty of Maritime Studies and Marine
Universiti Malaysia Terengganu (UMT)
21030 Kuala Nerus, Terengganu, Malaysia

Date: 25/4/11

.....

Head Department of Marine Science

Name: Dr. Razak bin Zakariya

Official stamp: DR. RAZAK ZAKARIYA
Ketua Jabatan Sains Marin
Fakulti Pengajian Maritim dan Sains Marin
Universiti Malaysia Terengganu
(UMT)

Date: 29/4/11

This project report should be cited as:

Hafizah, W. 2011. The Study Of Physical Characteristic Of Temperature And Salinity Of Bidong Island Water And The Current Circulation Undergraduate thesis, Bachelor of Science In Marine Science, Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu, Terengganu. 46p.

ACKNOWLEDGMENT

I am very grateful to finish in my final year project and my thesis writing. Thank you to my supervisor Dr. Mohd Fadzil B. Mohd Akhir that willing to guide and help me during this time. He is such patience and kind person for me. His guide and suggestion contribute to my continuously growing understanding of physical oceanography and the process related to that. Furthermore thanks to my parents Mr.Wahab B. Wateh and Madam. Zaharah Bt Abd Wahab for always giving me support and advice to finish my final year project. Their support and advice really give me the courage and confident to write this thesis. Mr. Idham B. Khalid my lecturer, Mr. Suliman, the lab assistant of MOSEA and Mohd Sohibul Hamdi my course mate deserve special recognition for helping me during the sampling period.

Also my long-suffering course mate Nora Diana Halim should be praised for putting up with me, helping me in understanding some part, bear to help me in any situation happen and contribute some idea in my thesis writing. Finally thanks also to my others friends Nurliyana, Nursyela, Nurul Rabitah, Nurul Nadheerah and Rafidah for always with me no matter in difficult time and always give positive support to me.

Thanks to all.

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURE

Abbreviations

Abbreviation	
m	metre
m/s	metre per second
m^3	cubic metre
km	kilometre
ppt	parts per thousand
°	degree
°C	degree celcius

LIST OF APPENDICES

ABSTRACT

This study was conducted at Bidong Island, Kuala Terengganu on March and July 2010. Physical parameter of Bidong Island water was studied by analyzing the temperature, salinity distribution and also current pattern of that Island. The in situ data was collected by using Hydrolab Data Sonde and Valeport current meter 106. Data was taken and analyzed using the MATLAB software version 2008 and Microsoft excel. The temperature value of the seawater during March was 29.0 ℃ to 30.0 ℃ and the salinity were 32.3 ppt to 32.9 ppt. For temperature value on July were between 30.0 ℃ to 30.5 ℃ while the salinity value were between 32.8 ppt to 32.9 ppt. Strong current was recorded on July with the range speed of 0.04 m/s to 0.4 m/s and current speed on March were between 0.04 m/s to 0.3 m/s. The current circulation on Bidong Island showed mostly towards sothward. There are difference pattern of the water column condition occurred on March and July 2010 which the temperature and salinity profile March showed well mixed profile and stratification profile was obtained on July. High surface heating and low wind stress developed the stratification water column on March. While on July strong wind and low surface heating result on the mixing layer of the water column condition. The winds influence the movement on current. During northeast monsoon, cooler coastal water pushed by wind force to circulate west and southwards coast of china and flow to the South China Sea. The circulations of cooler water during this period influence the low temperature of seawater. Overall the most factors that influence the salinity and current circulation is from the physical process and also effect from the monsoon season.

ABSTRAK

Kajian ini dijalankan di Pulau Bidong, Kuala Terengganu pada bulan Mac dan Julai 2010. Kajian parameter fizikal dilakukan dengan menganalisis data suhu, taburan saliniti dan juga corak pergerakan arus di pulau tersebut. Data in-situ diambil dengan menggunakan Hydrolab Data Sonde dan Valeport current meter 106. Data yang telah diambil dianalisis dengan menggunakan perisisan MATLAB versi 2008 serta Microsoft excel. Suhu air laut pada bulan Mac adalah antara 29.0 ºC hingga 30.0 ºC dan saliniti air adalah 32.3 ppt hingga 32.9 ppt. Bagi nilai suhu air laut pada bulan Julai pula adalah antara 30.0 ºC hingga 30.5 ºC dan nilai salinity air antara 32.8 ppt hingga 32.9 ppt. arus kuat direkod pada bulan Julai dengan kelajuan arus antara 0.04 m/s hingga 0.4 m/s dan kelajuan arus pada bulan Mac direkodkan antara 0.04 m/s hingga 0.3 m/s. Pergerakan arus secara keseluruhannya bergerak ke arah selatan. Terdapat perbezaan pada keadaan lapisan suhu air dan salinity dimana pada bulan Mac keadaan lapisan permukaan air membentuk lapisan strafikasi manakala keadaan lapisan bercampur secara rata pada bulan Julai. Pemanasan permukaan yang tinggi dan tekanan angin yang rendah menghasilkan keadaan strafikasi pada lapisan permukaan air. Manakala pada bulan Julai keadaan angin yang kuat serta pemanasan permukaan yang rendah menyebabkan lapisan permukaan air bercampur secara rata. Pengaruh angin mempengaruhi pergerakan arus air laut. Pada ketika monsun timur laut, air laut bergerak ke arah barat dan barat daya pinggir laut China dan mengalir ke arah Laut China Selatan. Secara keseluruhannya, faktor yang mempengaruhi suhu, salinity dan pergerakan arus adalah pengaruh process fizikal dan juga kesan daripada musim monsun.