

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

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**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
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Faculty of Maritime Studies and Marine Science
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**DEPARTMENT OF MARINE SCIENCE
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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.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENT	i
LIST OF TABLES	v
LIST OF FIGURES	vi
ABBREVIATION	vii
APPENDICES	viii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1: INTRODUCTION	1
1.1 Justification	3
1.2 Objectives	3
CHAPTER 2: LITERATURE REVIEW	4
2.1 Geography of island	4
2.2 Bidong Island	4
2.1 Geography of island	4
2.2 Bidong Island	4
2.3 Current circulation in South China Sea	6
2.4 Physical Properties of Seawater	7
2.4.1 Ocean Temperature	7
2.4.2 Salinity Distribution	7
2.5 Wind influences on current and physical parameters	8
2.6 Upwelling and Downwelling	10
CHAPTER 3: METHODOLOG	12

3.1 Study Site Description	13
3.2 Material and Method	14
3.2.1 Collection of Temperature and Salinity	14
3.2.2 Collection of Flow Data	14
3.3 Data Analysis	16
CHAPTER 4: RESULTS	17
4.1 Physical Properties	17
4.1.1 Temperature Distribution	17
4.1.2 Salinity Distribution	20
4.1.3 T-S Diagram	22
4.2 Current Circulation	23
4.2.1 Current Circulation	24
4.2.2 Current Circulation on March and 2010	25
CHAPTER 5: DISCUSSION	28
5.1 Relationship between Physical Parameter and Physical Process	28
5.1.1 Temperature	28
5.1.2 Salinity	31
5.2 Current Circulation	32
CHAPTER 6: CONCLUSION	36

REFERENCES	37
APPENDICES	41
CURRICULUM VITAE	45

LIST OF TABLE

Table	Page
4.1 Current Speed at Depth of 6m for March and July, 2010	24

LIST OF FIGURE

Figure	Page
2.1 Map of Bidong Island	5
2.2 Monthly mean wind stress over the South China Sea	9
3.1 Brief sequence of research approach	12
3.2 Sampling location for study site	13
3.3 Area of the region A, B and C.	15
4.1 Temperature profiles for region A, B and C on March 2010 and July 2010	18
4.2 Surface Water Temperature Recorded at Each Station	19
4.3 Salinity Profiles for Region A, B and C on March 2010 and July 2010	21
4.4 T-S Diagram on March 2010 and July 2010	23
4.5 Current Pattern at Bidong Island on March and July 2010	26
5.1 Rainfall data for one month on March and July 2010	31
5.2 Illustration of current circulation during March 2010	34
5.3 Illustration of current circulation during July 2010	35

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

Appendix		Page
Appendix 1	Sampling sites coordinates for each station	41
Appendix 2	List of equipment	42
Appendix 3	Secondary data from Meteorological Department	43

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 °C to 30.0 °C and the salinity were 32.3 ppt to 32.9 ppt. For temperature value on July were between 30.0 °C to 30.5 °C 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 perisian MATLAB versi 2008 serta Microsoft excel. Suhu air laut pada bulan Mac adalah antara 29.0 °C hingga 30.0 °C dan saliniti air adalah 32.3 ppt hingga 32.9 ppt. Bagi nilai suhu air laut pada bulan Julai pula adalah antara 30.0 °C hingga 30.5 °C 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 stratifikasi manakala keadaan lapisan bercampur secara rata pada bulan Julai. Pemanasan permukaan yang tinggi dan tekanan angin yang rendah menghasilkan keadaan stratifikasi 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.