# A STUDY OF CORAL REEF MAPPING BY USING REMOTE SENSING TECHNOLOGY AROUND LANG TENGAH ISLAND, TERENGGANU

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# A STUDY OF CORAL REEF MAPPING BY USING REMOTE SENSING TECHNOLOGY AROUND LANG TENGAH ISLAND, TERENGGANU.

**By**

**Pek Yen Lee**

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

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**DEPARTMENT OF MARINE SCIENCE**
**FACULTY OF MARITIME STUDIES AND MARINE SCIENCE**
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## DECLARATION AND VERIFICATION REPORT

## FINAL YEAR RESEARCH PROJECT

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

**A Study of Coral Reef Mapping by Using Remote Sensing Technology Around Lang Tengah Island, Terengganu** by **Pek Yen Lee**, Matric No. **UK20341** have 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 **Bachelor of Science (Marine Science)**, Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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## TABLE OF CONTENTS


| | PAGE |
|---|---|
| **THESIS QUALIFICATION AND VERIFICATION FORM** | ii |
| **ACKNOWLEDGEMENTS** | iii |
| **TABLE OF CONTENTS** | iv |
| **LIST OF TABLES** | vii |
| **LIST OF FIGURES** | viii |
| **LIST OF APPENDICES** | x |
| **ABBRAVIATIONS** | xi |
| **ABSTRACT** | xii |
| **ABSTRAK** | xiii |
| **CHAPTER 1 INTRODUCTION** | 1 |
| 1.1 Justification | 3 |
| 1.2 Objectives | 4 |
| **CHAPTER 2 LITERATURE REVIEW** | 5 |
| 2.1 Description of Study Area | 5 |
| 2.1.1 South China Sea | 5 |
| 2.1.2 Lang Tengah Island, Terengganu | 6 |
| 2.2 Coral Reef | 6 |
| 2.2.1 Important of Coral Reef | 7 |
| 2.2.2 Threat to Coral Reefs | 8 |

Universiti Malaysia Terengganu


| | | |
|---|---|---|
| 2.3 | Previous Study | 9 |
| 2.4 | Remote Sensing | 9 |
| 2.5 | Important of Coral Reef Mapping | 13 |
| **CHAPTER 3** | **METHODOLOGY** | 14 |
| 3.1 | Materials | 14 |
| 3.2 | Sampling Site | 14 |
| 3.3 | In Situ Data Collection | 15 |
| 3.4 | Image Pre-Processing | 15 |
| 3.4.1 | Geometric Image Correction | 16 |
| 3.4.2 | Atmospheric Correction | 16 |
| 3.4.3 | Masking | 17 |
| 3.4.4 | Water Column Correction | 17 |
| 3.5 | Image Processing | 18 |
| 3.5.1 | Unsupervised Classification | 18 |
| 3.5.2 | Supervised Classification | 19 |
| 3.6 | Accuracy Assessment | 23 |
| **CHAPTER 4** | **RESULTS** | 24 |
| 4.1 | Geometric Correction | 24 |
| 4.2 | Atmospheric Correction | 25 |
| 4.3 | Masking | 26 |
| 4.4 | Water Column Correction | 30 |
| 4.5 | Unsupervised Classification | 31 |
| 4.6 | Supervised Classification | 32 |

4.7 Accuracy Assessment 41

**CHAPTER 5 DISCUSSION** 42

5.1 Geometric Correction 42

5.2 Atmospheric Correction 42

5.3 Water Column Correction 43

5.4 Unsupervised Classification 43

5.5 Supervised Classification 44

5.5.1 Determine the optimum band for coral reef mapping 44

5.5.2 Evaluate the 3 difference classification techniques and determine their accuracy 45

**CHAPTER 6 CONCLUSION AND SUGGESTIONS** 48

**REFERENCES** 49

**APPENDIX** 53

**CURRICULUM VITAE** 55

## LIST OF TABLES


| Table | | Page |
|---|---|---|
| 2.1 | QuickBird Feature and Benefits. | 6 |
| 4.1 | Kappa Coefficient for 3 difference classifier techniques for Band 1, Band 2 and Band 3. | 41 |

## LIST OF FIGURES


| Figure | | Page |
|---|---|---|
| 2.1 | Satellite Image of Lang Tengah Island | 6 |
| 2.2 | Wavelength of visible spectrum | 10 |
| 2.3 | Diagram of Elements of a Remote Sensing System | 11 |
| 3.1 | Location of Study area, Lang Tengah Island | 15 |
| 3.2 | Simplified schematic of atmospheric interference and the passage of electromagnetic radiation from the Sun to the satellite sensor | 18 |
| 3.3 | Maximum Likelihood Classification Strategy | 20 |
| 3.4 | Parallelepiped Classification strategy | 21 |
| 3.5 | Minimum Distance to Means Classification strategy | 21 |
| 3.6 | Flowchart of the steps for methodology | 22 |
| 3.7 | Flowchart of the steps for classification process | 22 |
| 4.1 | Geometric Corrected Image | 24 |
| 4.2 | Image before and after atmospheric correction process. | 25 |
| 4.3 | Steps to do masking steps. | 26 |
| 4.4 | Before and After Masking image of Band 1. | 27 |
| 4.5 | Before and After Masking image of Band 2 | 28 |

| | | |
|---|---|---|
| 4.6 | Images Before and After Masking for Band 3. | 29 |
| 4.7 | Image After Water Column Correction. | 30 |
| 4.8 | Unsupervised classification of image Band 1,Band 2 and Band 3 respectively. | 31 |
| 4.9 | Images with maximum likelihood classification. | 32 |
| 4.10 | Images with parallelepiped classification. | 33 |
| 4.11 | Images with minimum distance to means classification. | 34 |
| 4.12 | Zoom in images with maximum likelihood classification algorithm. | 35 |
| 4.13 | Zoom in images with parallelepiped classification algorithm. | 36 |
| 4.14 | Zoom in images with minimum distance to means classification algorithm. | 37 |
| 4.15 | Comparison between 3 difference classifiers techniques for Band 1. | 38 |
| 4.16 | Comparison between 3 difference classifiers techniques for Band 2. | 39 |
| 4.17 | Comparison between 3 difference classifiers techniques for Band 3. | 40 |
| 5.1 | Coral reef distribution map with maximum likelihood classification Band 2. | 47 |

## LIST OF APPENDICES


| Appendix | Page |
|---|---|
| A. Metadata of Image | 53 |
| B. Graph of ln(B1) against ln(B2) for the ratio attenuation coefficient. | 53 |
| C. Training Site | 54 |

## ABBREVIATIONS

| | |
|---|---|
| SCS | South China Sea |
| GCP | Ground Control Point |
| DN | Digital Number |
| ISODATA | Iterative Self-Organizing Data Analysis Technique |
| % | Percentage |

## ABSTRACTS

Coral reefs are unique ecosystem that brings a lot of benefits to the environment and even thought to human beings. However, most of the coral reefs ecosystem had been threatened, exploitation and destroyed. Hence, monitoring and management is very important to understand and know the distribution of coral reefs. This study was conducted at Lang Tengah Island, Terengganu to monitor the coral reefs distribution around the island. QuickBird Image was used as it has fined spatial resolution which suitable for benthic habitats mapping. The mapping processes were done by using unsupervised and supervised classification. Maximum Likelihood classification, Parallelepiped classification and Minimum Distance to Means classification had been used for the supervised classification. Besides, comparison these 3 classifications within 3 bands (Red, Green and Blue Bands) had done. The Band 2 is the optimum band for benthic habitats study with the accuracy of 92% by Kappa Coefficient accuracy assessment. Among three classification algorithm, Maximum Likelihood Classification is the most accurate than others. Further studies of coral reefs mapping are essential to carry on time to time for future knowledge about the coral reef distribution at Lang Tengah Island.

**Kajian Terhadap Pemetaan Terumbu Karang Dengan Menggunakan Teknik Penderiaan Jauh di Sekitar Pulau Lang Tengah, Terengganu**

## ABSTRAK

Terumbu Karang adalah ekosistem yang sangat unik dan ianya telah membawa pelbagai faedah kepada alam sekitar dan begitu juga terhadap manusia sendiri. Namun begitu, kebanyakkan terumbu karang telah kian diancam, diterokai dan dimusnahkan. Justeru itu, pemantauan dan pengurusan terumbu karang adalah sangat penting untuk mengetahui pertaburan terumbu karang. Kajian telah dijalankan di Pulau Lang Tengah, Terengganu untuk pemetaan taburan terumbu karang disekitarnya. Gambar satelit QuickBird telah digunakan dalam kajian ini disebabkan ia mempunyai spasial resolusi yang tinggi dan sesuai untuk pengelasan atau pemantauan dengan habitat bentos. Pemetaan taburan terumbu karang dijalankan dengan pengelasan tanpa pengawalan dan pengelasan secara pengawalan. Pengelasan secara pengawalan terbahagi kepada teknik kemungkinan maksimum, pengelasan parallelepiped dan juga pengelasan minimum jarak kepada min telah digunakan untuk pemetaan taburan terumbu karang. Selain itu, 3 band (merah, hijau dan biru) telah digunakan untuk mengkaji perbezaan ketepatan yang paling sesuai untuk kajian ini. Band 2 adalah band yang paling jitu untuk kajian ini iaitu mencapai 92% daripada pengiraan pekali Kappa. Daripada 3 cara pengelasan, teknik kemungkinan maksimum adalah teknik pengelasan yang paling tetap berbanding dengan yang teknik yang lain. Kajian selanjutnya haruslah dijalankan untuk memastikan taburan terumbu karang adalah terlindung.