

A STUDY ON SEASONAL OF NET PRIMARY PRODUCTIVITY (NPP) ALONG
KUALA TERENGGANU COASTAL WATER BY USING SATELLITE IMAGERY

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**A STUDY ON SEASONAL OF NET PRIMARY PRODUCTIVITY (NPP) ALONG
KUALA TERENGGANU COASTAL WATER BY USING SATELLITE IMAGERY**

**By:
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**Research Report submitted in partial fulfillment of
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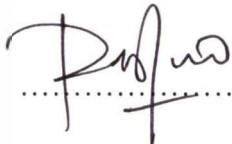
DEPARTMENT OF MARINE SCIENCE
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DECLARATION AND VERIFICATION REPORT
FINAL YEAR RESEARCH PROJECT

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

A study on seasonal of Net Primary Productivity (NPP) along Kuala Terengganu coastal water by using satellite imagery by Salawati Binti Mamat
 Matric No. **UK17718** have been examined and all errors identified have been corrected. This report submitted to the Department of Marine Science and as a partial fulfillment toward obtaining the Degree of Marine Biology, Faculty of Maritime Study and Marine Science, University Malaysia Terengganu, Terengganu, Malaysia.

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LIST OF ABBREVIATIONS

NPP	-	Net Primary Productivity
CO ₂	-	Carbon dioxide
mgC/m ³ /day	-	Miligram carbon per metre cube per day
NE	-	Northeast Monsoon
SW	-	South West Monsoon
MODIS	-	Moderate Resolution Imaging Spectroradiometre
SeaWiFS	-	Sea-viewing Wide Field of View Sensor
PAR	-	Photosynthetically Active Radiation
μmol ⁻¹ m ⁻²	-	Micrometer per meter cube
°C	-	Degree centigrade
mg/m ³	-	Miligram per cube
ppt	-	Parts per thousand
pH	-	Potential of Hydrogen
mg/L	-	Miligram per liter
DO	-	Dissolved oxygen

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ABSTRAK

Kepekatan jaringan produktiviti sepanjang Perairan Kuala Terengganu bergantung kepada parameter fizikal, musim dan imej satelit. Taburan produktiviti juga memainkan peranan yang penting dalam perubahan jumlah karbon organik yang mana ekosistem dapat memanfaatkannya untuk proses metabolisme yang lain. Tujuan utama bagi projek ini adalah untuk mendapatkan nilai kepekatan produktiviti di tempat kajian, menentukan nilai produktiviti setiap bulan dengan menggunakan imej satelit, menentukan hubungan antara nilai di tempat kajian dan nilai imej satelit dan mengkaji perbezaan nilai produktiviti pada musim yang berbeza. Kajian telah dijalankan pada 12 hingga 15 Mei, 2010 dan 30 hingga 2 Oktober, 2010. Keputusan yang diperolehi bagi eksperimen pertama untuk kepekatan di tempat kejadian dengan menggunakan kesan cahaya ialah di antara 283.19 hingga 521.29 mgC/m³/day manakala untuk imej MODIS pula di antara 261.26 hingga 670.12 mgC/m³/day. Untuk eksperimen kedua, nilai kepekatan di tempat kajian ialah di antara 34.77 hingga 457.83 mgC/m³/day manakala untuk imej MODIS pula ialah di antara 272.07 hingga 535.11 mgC/m³/day. Untuk nilai produktiviti mengikut bulan dengan menggunakan imej satelit, bulan Disember memberikan nilai yang tertinggi untuk tahun 2005 and 2008 manakala bagi tahun 2006, 2007, 2009 dan 2010, bulan Januari mempunyai nilai yang tertinggi di antara bulan-bulan yang lain. Analisis hubungan yang telah dilakukan bagi imej MODIS dan nilai di tempat kajian antara eksperimen pertama dan kedua dan kajian lepas menunjukkan lemah dan tidak tepat yang mana nilai R² ialah 0.1402. Taburan produktiviti semasa eksperimen pertama (musim panas) lebih tinggi berbanding eksperimen kedua (musim peralihan) yang ditunjukkan melalui warna di dalam peta. Perbezaan musim juga telah memberikan kesan kepada kepekatan nilai produktiviti di Perairan Kuala Terengganu.

ABSTRACT

The concentration of net primary productivity (NPP) along Kuala Terengganu coastal water depends on physical parameters, season and satellite images. The concentration of NPP also plays an important role in represents the total flux of organic carbon that an ecosystem can utilize for all other metabolic processes. This study aims is to get the in-situ concentration of NPP, to determine the NPP monthly using satellite imagery, to determine the correlation between in-situ and satellite imagery value and to determine the difference of NPP during different season (South West monsoon and Inter monsoon). The sampling was conducted on 12 to 15 May, 2010 and 30 to 2 October, 2010. The result shows that the in-situ concentration of net primary productivity by using light intensity for first sampling was around 283.19 to 521.29 mgC/m³/day while for MODIS image value was around 261.26 to 670.12 mgC/m³/day. For second sampling, the in-situ concentration of NPP was range around 34.77 to 457.83 mgC/m³/day while for MODIS image value was around 272.07 to 535.11 mgC/m³/day. Then, for NPP concentration monthly by using satellite imagery shows that year 2005 and 2008, month of December shows the highest value of NPP, while for 2006, 2007, 2009 and 2010 showed that January had the highest value of NPP among the others month. Regression analysis was done between MODIS and in-situ value of NPP with combination between first and second sampling and previous study that recorded shows weak and not accurate correlation which the value of coefficient of determination R^2 is 0.1402. The concentration of NPP during first sampling (South West monsoon) is higher than second sampling (Inter monsoon) time which shows according to color of map. The different monsoon gives the difference concentration of NPP along Kuala Terengganu coastal water.