

A STUDY OF TEMPERATURE AND SALINITY OF FIELD DATA  
(OCTOBER 2004 & MARCH 2005) AND MODIS DATA OF  
JOHOR WATERS (2004 & 2005)

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**A STUDY OF TEMPERATURE AND SALINITY OF FIELD DATA  
(OCTOBER 2004 & MARCH 2005) AND MODIS DATA OF JOHOR  
WATERS (2004 & 2005)**

**By**

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**Research Report submitted in partial fulfillment of the requirement for the degree of  
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 FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled: **A Study Of Temperature And Salinity Of Field Data Of Johor (October 2004 & March 2005) And Modis Data Of Johor (2004 & 2005)**

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SST= Sea Surface Temperature, pg10

$\text{Kgm}^{-3}$ =kilogram per meter cube, pg12

m=meter, pg51

ppt=part per thousand, pg28

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## **ABSTRACT**

### **A STUDY OF TEMPERATURE AND SALINITY OF FIELD DATA (OCTOBER 2004 & MARCH 2005) AND MODIS DATA OF JOHOR WATERS (2004 & 2005)**

**Muhamad Fazrul bin Razali**

This study was done in order to determine and compare the temperature and salinity of Johor for the October 2004 and March 2005, and also to determine and compare the temperature of Johor through the observation of MODIS for the year 2004 and 2005. There were 30 stations being studied, and these stations were being divided into 5 transects. In a meantime, the images from MODIS for Johor for the year of 2004 and 2005 were also being collected. As a result, the temperature for each transects for October 2004 was found out to be increasing towards the ocean, and it was getting decrease down the transects. The salinity for all transects for October 2004 were increasing towards the ocean as well as to the deeper part of the transects. The halocline layer for the March data was found decreased through the transects. For the October data, the transect 4 was the only transect that did not show its termocline and halocline layer, but for March data, there were two transects that did not show its termocline and halocline layer. The MODIS data of 2004 showed that the range temperature of the data is between 24.9°C until 34.2°C. In a meantime, result of the MODIS data of 2005 showed that the range temperature of the data is between 26.2°C until 35.2°C. October was the transitional period. The increasing of temperature during October 2004 was also referred to two factors, which were the high surface heating and weak wind during this period in

which caused the water to have higher temperature especially on the surface. Mixing processes is dominating the water temperature during the northeast monsoon due to the winds. Those characteristics that help in controlling the ocean temperature are the high solar radiation throughout the year due to the earth's rotation around the sun, and also a high amount of cloud cover throughout the year as a result of the sea gaining heat from the sea surface. The problems arose when there were some images that had almost the same characteristics. As a conclusion, the temperature of the Johor water was increasing from the year 2004 to the year 2005, as a signal of the global warming.

## **ABSTRAK**

### **KAJIAN MENGENAI SUHU DAN KEMASINAN TERHADAP DATA LAPANGAN (OKTOBER 2004 & MAC 2005) DAN DATA MODIS BAGI JOHOR (2004 & 2005)**

**Muhamad Fazrul bin Razali**

Kajian ini dilakukan untuk menentukan dan membandingkan suhu dan kemasinan Johor untuk Oktober 2004 dan Mac 2005, dan juga untuk menentukan dan membandingkan suhu Johor melalui pemerhatian MODIS bagi tahun 2004 dan 2005. Terdapat 30 stesen yang dikaji, dan stesen-stesen ini telah dibahagikan kepada 5 transet. Sementara itu, imej dari MODIS untuk Johor bagi tahun 2004 dan 2005 juga dikumpulkan. Hasilnya, suhu bagi setiap transet untuk Oktober 2004 mendapati semakin meningkat ke arah lautan, dan suhu ini juga turut berkurang menuruni transet. Kemasinan untuk semua transet untuk Oktober 2004 telah meningkat ke arah lautan, juga untuk bahagian yang lebih dalam merujuk kepada transet. Lapisan halocline untuk data Mac didapati menurun mengikut transet. Bagi data Oktober, 4 transet sahaja yang tidak menunjukkan termocline dan lapisan halocline, tetapi untuk data Mac, terdapat dua transet tidak menunjukkan termocline dan lapisan halocline. Data MODIS tahun 2004 menunjukkan bahawa julat suhu semua data adalah antara 24.°C hingga 34.2°C. Pada masa yang sama, hasil daripada data MODIS tahun 2005 menunjukkan bahawa julat suhu semua data adalah antara 26.2°C hingga 35.2°C. Oktober adalah tempoh peralihan. Yang semakin meningkat suhu semasa Oktober 2004 juga dirujuk kepada dua faktor, iaitu pemanasan permukaan yang

tinggi dan angin yang lemah dalam tempoh ini yang menyebabkan air mempunyai suhu yang lebih tinggi terutamanya pada permukaan. Proses pencampuran itu mendominasi suhu air semasa monsun timur laut kerana angin. Ciri-ciri yang membantu dalam mengawal suhu laut adalah sinaran matahari sepanjang tahun tinggi kerana putaran bumi mengelilingi matahari, dan juga awan yang tinggi sepanjang tahun sebagai hasil mendapat haba dari permukaan laut. Masalah-masalah yang timbul adalah apabila terdapat beberapa imej yang mempunyai ciri-ciri yang hampir sama. Sebagai kesimpulan, suhu air Johor telah meningkat daripada tahun 2004 kepada tahun 2005, sebagai isyarat pemanasan global.