GEOCHEMISTRY DISTRIBUTION OF METALS IN SEDIMENT CORES FROM SULU-SULAWESI SEA OFF SABAH

LIN WAI HWA

TY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
2010

Geochemistry distribution of metals in sediment cores from Sulu-Sulawesi Sea of Sabah / Lin Wai Hwa.

Lihat Sebelah

GEOCHEMISTRY DISTRIBUTION OF METALS IN SEDIMENT CORES FROM SULU-SULAWESI SEA OFF SABAH

By

LIN WAI HWA

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

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2010

This project should be cited as:

Lin, W.H. 2010. Geochemistry Distribution of Metals in Sediment Cores from Sulu-Sulawesi Sea off Sabah. P69.

ACKNOWLEDGEMENT

Lastly, I have finished my final year project on heavy metals in sediment cores. The experience of doing final year project was great and I have learned a lot from the Final Year Project.

Most importantly, I want to express my deepest appreciation for my family who always support me for doing this final year project. I would like to express my gratitude to my supervisor Prof Noor Azhar for his guidance and advise to conduct this research. Thank you to my second supervisor Dr. Noor Antonina for her encouragement and guidance as well. And also thank you to Mr. Joseph who teach me and guide me to the usage of the equipment such as ICPMS and Teflon Bomb.

ABSTRACT

A study was carried out on the distribution of Al, Fe, Mg, Ca, Pb, Zn, Cd and Cu in sediment cores at two station in the Sulu-Sulawesi Sea off Sabah. Justification of the study is to monitor metal concentration in marine environment of Sulu-Sulawesi Sea because Sulu-Sulawesi is situated in the Coral Triangle Initiative area which has rich and unique biodiversity. Information regarding heavy metals from sediment cores in Sulu-Sulawesi Sea off Sabah is very scarce.

Al, Fe, Mg, Ca, Pb, Zn, Cd & Cu are measured by ICPMS (Perkins – Elmer Elan 9000). The concentration range, mean value from each sediment layer and length of sediment were determined. Same pattern of depth core distribution of Al, Mg and Ca at Station 9 were observed. This is due to Al, Mg and Ca are all abundant in the earth crust and this showed that these three metals have the same depth core distribution pattern. There is a significant decrease in the depth of 70-80cm for Al, Mg and Ca at Station 9. Al is chosen as the reference element due to the abundance in fine sediment. The normalization will be done by plotting the concentration of selected heavy metals against Al concentration. For station 9, normalization graph Al versus Fe, Mg, Ca, Pb and Cu showed that most of it are within 95% confidence curve. This showed that Fe, Mg, Ca, Pb and Cu should be originated from the environment. In conclusion, Sulu-Sulawesi off Sabah site is unpolluted based this research and more research need to be done for baseline study.

ABSTRACK

Kajian telah dijalankan tentang Al, Fe, Mg, Ca, Pb, Zn dan Cd distribusi dalam teras enapan di dua stesen di Laut Sulu-Sulawesi luar Sabah. Justifikasi kajian ini adalah untuk meninjau kepekatan logam dalam persekitaran lautan Sulu-Sulawesi kerana Sulu-Sulawesi adalah bertempat di Initiatif Segi Tiga Terembu Karang yang kaya and unik dengan biodiversiti. Informasi berkenaan logam berat dalam teras enapan di Laut Sulu-Sulawesi luar Sabah adalah kurang.

Al, Fe, Mg, Ca, Pb, Zn Cd and Cu adalah diukur dengan ICPMS (Perkins – Elmer Elan 9000). Jarak kepekatan, nilai min dari setiap enapan lapisan dan panjang enapan akan ditentukan. Distribusi Al, Mg, dan Ca kedalaman teras yang sama corak di Station 9 akan dipantau. Ini adalah disebabkan oleh Al, Mg dan Ca adalah kaya dalam keras bumi and ini menunjukkan bahawa tiga logam mempunyai corak kedalaman teras yang sama. Terdapat penurunan yang signifikasi dalam kedalaman 70-80cm untuk Al, Mg dan Ca di Station 9. Al adalah dipilih sebagai element reference disebabkan oleh kekayaan dalam enapan halus. Normalasi akan diplotkan dengan kepekatan logam berat yang dipilih melawan kepekatan Al. Untuk station 9, graph normalasi Al melawan Fe, Mg, Ca, Pb dan Cu menunjukkan bahawa kebanyakan itu adalah dalam lingkungan 95%. Ini menunjukkan bahawa Fe, Mg, Ca, Pb dan Cu sepatutnya berasal dari persekitaran. Kesimpulannya, Sulu-Sulawesi di luar Sabah adalah tidak dicemari berdasarkan kepada kajian ini and lebih kajian diperlukan.