GEOSPATIAL PROXIMITY FOR SEDIMENT ASSIMILATION OF TERENGGANU COASTAL WATER

MD NYZAM BIN ISMAIL

FACULTY OF SCIENCE AND TECHNOLOGY
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

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Lihat sebelah

Especially to my dad, mom & all of my family

It's doesn't matter where you start but where do you stop

GEOCHEMICAL PROXY AND SEDIMENT ACCRETION OF TERENGGANU COASTAL WATER

By
Md Nizam bin Ismail

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Thanks everybody. Keep in touch

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LIST OF ABBREVIATIONS

%	Percentage
^{230}Th	230-Thorium
^{232}Th	232-Thorium
^{234}U	234-Uranium
^{235}U	235-Uranium
^{o}C	Degree of Calcius
µm	Mikron
µg/g	microgram per gram
λ_{230}	Constant decay ^{230}Th
Ag	Argentum
Al	Aluminium
b	Best fit slope from 230-Th_{excess} graph
Ba	Barium
Ca	Calcium
$CaCO_3$	Calcium carbonate
Cd	Cadmium
cm	Centimeter
cm/y	Centimeter per year
Cr	Chromium
Cu	Copper
Co	Cobalt
DOM	'Dissolve Organic Matter'
DOC	'Dissolve Organic Carbon'

E	East
EDTA	'Ethylenediamenetetra Acidic'
Fe	Iron
g	Gram
HCl	Hydrochloric Acid
$HClO_4$	Perchloric Acid
HF	Hydrofluoric Acid
HNO_3	Nitric Acid
ICP- AES	'Inductively Coupled Plasma – Atomic Emission Spectrometer'
ICP – MS	'Inductively Coupled Plasma – Mass Spectrometer'
L	Liter
m	meter
M	Molarities
Mg	Magnesium
mL	milliliter
mg/L	milligram per liter
Mn	Manganese
Mo	Molybdenum
N	North
Na	Natrium
Ni	Nickel
nmol/kg	nanomol per kilogram
Pa	Protactinium
pmol/kg	pikomol per kilogram
POC	'Particulate Organic Carbon'

Pb	Lead
^{234}Ra	234-Radium
S	Sedimentation rate
SiF_4	Silicaforrous
SRM	Standard References Material
TOC	'Total Organic Carbon'
V	Vanadium
yr	year
Zn	Zink
ZnS	Zink sulfate

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ABSTRACT

Total of two sediment cores were sampled at the Terengganu coastal water within TR 1 (longitude 5°40.4'N and latitude 103°13.0'E) and TR 2 (longitude 5°37.6'N and latitude 103°26.3'E) and concentration of heavy metals (Co, Cu, Pb and U), organic carbon, sedimentation rates and sediment's age were examined in order to determine the geochemical characteristic of these sediments.. The metal data were normalized to Li as a conservative element to compensate for the natural textural and mineralogical variability. Total organic carbon (TOC) was determined by titration with ferrous sulfite, while sedimentation rate and sediment's age were determine with $^{230}Th_{excess}$ and $^{230}Th_{excess}/^{232}Th_{excess}$ ratio method and ICP-MS was used to analyzed geochemical elements. Mean concentration for geochemimal elements are 11.240 ± 1.032 μg/g for Co, for Cu 11.301 ± 0.882 μg/g, for Pb 30.484 ± 6.916μg/g and for U 5.323 ± 0.818 μg/g in TR 1, while for TR 2 are 8.380 ± 2.080 μg/g for Co, 8.066 ± 2.141 μg/g for Cu, 18.856 ± 5.577 μg/g for Pb and 4.407 ± 0.852 μg/g for U. Mean values of organic carbon are 1.818 ± 0.643 % in TR 1, and 1.084 ± 0.108 % of TR 2. By using $^{230}Th_{excess}$ method, the sedimentation rate for study area is 2.59 mm/y and 2.03 mm/y for TR 1 and TR 2, respectively. Hence, sediment's age at depth of 30 cm in TR 1 is 115.955 years old and 147.580 years old for TR 2. Enrichment factor and normalization were used to point out the level of pollution and the origin of sediments in study area and its indicate that all the geochemical elements are from natural sources. Correlation coefficient was used to observe the association between metal and organic carbon, since these two elements showed moderately good and poorly positive in this study.

ABSTRAK

Aktiviti penyampelan telah dijalankan di pesisir pantai Terengganu di TR 1 (longitud 5^{o} 40.4' U dan latitud 103^{o} 13.0' T) dan TR 2 (longitud 5^{o} 37.6' U dan latitud 103^{o} 26.3' T) dengan 2 sampel teras diambil untuk diuji kepekatan logam berat (Co, Cu, Pb dan U) organik karbon, kadar sedimentasi dan usia sedimen untuk menentukan ciri-ciri geokimia sedimen. Data logam berat dinormalisasikan kepada Li yang bertindak sebagai elemen konservatif untuk perbandingan kepada tekstur semulajadi dan perubahan mineralogi sedimen. Penentuan jumlah karbon organik (TOC) adalah melalui kaedah titratan dengan ferum sulfat sementara kadar pemendapan dan usia sedimen ditentukan melalui kaedah $^{230}Th_{excess}$ dan penisbahan $^{230}Th_{excess}/^{232}Th_{excess}$ dan ICP-MS digunakan untuk penentuan analisa elemen geokimia. Purata kepekatan elemen geokimia untuk TR 1 adalah; 11.240 ± 1.032 μg/g untuk Co, 11.301 ± 0.882 μg/g untuk Cu, 30.484 ± 6.916 μg/g untuk Pb dan 5.323 ± 0.818 μg/g untuk U, dan di TR 2 adalah 8.380 ± 2.080 μg/g untuk Co, 8.066 ± 2.141 μg/g untuk Cu, 18.856 ± 5.577 μg/g untuk Pb dan 4.407 ± 0.852 μg/g untuk U. Purata kepekatan organik karbon adalah 1.818 ± 0.643 % untuk TR 1, dan 1.084 ± 0.108 % untuk TR 2. Melaui kaedah $^{230}Th_{excess}$, kadar sedimentasi yang diperolehi untuk kawasan kajian TR 1 adalah 2.59 mm/y dan 2.03 mm/y untuk TR 2. Usia sedimen pada kedalaman 30 sm untuk TR 1 adalah 115.955 tahun dan 147.580s tahun untuk TR 2. Faktor pengkayaan dan normalisasi digunakan untuk mengetahui tahap pencemaran dan asal usul sedimen di kawasan kajian dan ia menunjukkan bahawa semua elemen geokimia yang dikaji adalah dari sumber semulajadi. Pekali hubung-kait digunakan untuk melihat hubungan di antara logam dan organik karbon. Di dalam kajian ini, hubungan logam dan karbon organik adalah sederhana baik dan kurang baik.