



Faculty of Education
Dept. of Biological and
Geological Sciences

**SEDIMENOLOGICAL AND GEOHAZARDS STUDIES
OF THE COASTAL PLAIN, MARSA MATRUH AREA,
EGYPT.**

A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR
THE MASTER DEGREE IN TEACHER PREPARATION IN SCIENCE
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BY

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ABSTRACT

Eight sections were measured and described in the Marsa Matruh shoreline (coast). These sections are Agiba, Romel, Alam El Rum1, 2 and 3, Cleopatra road area, beach boulder and coastal rock boulder. Agiba lithostratigraphic section belongs to Miocene- Pleistocene, Romel and Alam El Rum belong to Middle Pleistocene, whereas Cleopatra area belongs to Holocene. Alam El Rum and Romel of middle Pleistocene are characterized by medium moderately sorted sand indicating high current energy due to transgression and transportation by saltation. Cleopatra Holocene fore dune is characterized by medium moderately well sorted sand proving low current velocity and transportation by suspension. X-ray diffraction analyses of the Alam El Rum boulder samples show decrease in the percent of aragonite and relatively increase in the magnesium calcite content. While the X-ray diffraction data of the Romel boulder samples consist of less aragonite than the Romel ridge, but don't contain magnesium calcite, indicating recent environment in addition, to halite due to weathering. C14 age dating isotope for two samples are Little ice age (LIA) storms and a well –recorded 1303 AD paleo-tsunami for coastal boulders and 71.800 ± 5.700 for coquina .

Large Coastal rock boulders are found at a great distances inland or supratidal zone and upslope from the subtidal zone on Romel and Alam El Rum coastal shorelands of Marsa Matruh. It proves that large waves like tsunamis and high energy storms have detached, dislocated and triggering them from the submerged platform of Pleistocene ridge shoreward. Most of coastal rock boulders of Romel and Alam El Rum are bladed to disc shape indicating that these coastal rock boulders are transported and deposited by sea waves. Coastal rock boulders are mainly transported through rolling or saltation rather than sliding. Petrographical characters of boulders reveal that the dominant cements precipitated are low Mg – calcite and aragonite. There are two main types of cements which are meniscus indicating fresh water vadose zone and isopachous indicates active marine phreatic zone. These cements are formed on marine beaches by fibrous aragonite. Two main types of porosity which are intergranular and vuggy porosity indicate shallow and marginal marine environments. The neomorphism , which has recognized is of aggrading type, leading to the enlargement of crystal sizes.

The most hazardous areas in Marsa Matruh coasts are Alam El Rum and Romel, so the study recommended:

- To avoid the housing and the problems resulting for constructing tourist villages along the shoreline in these areas.
- These sites (Alam El Rum and Romel) are best sites to generate electricity from strong sea waves and storms.

CONTENTS

	Title	Page
	Acknowledgement	
	Abstract	
	Contents	i
	List of Figures	iv
	List of Tables	ix
	<u>CHAPTER (1)</u> <u>INTRODUCTION</u>	
1.1	Location of The Study Area	1
1.2	Geologic Setting	3
1.2.1	Quaternary	5
1.2.2	Pleistocene sediments	5
1.2.3	Holocene deposits	5
1.3	Geomorphology Settings	6
1.3.1	The Northern coastal plain	6
1.3.2	The Beaches	8
1.3.3	Coastal dunes	8
1.3.4	Coastal ridges	8
1.3.5	Coastal depressions	10
1.3.6	Cliffs, wave-cut platforms and notches	11
1.3.7	Coastal notches	14
1.3.8	Estuary	17
1.4	Previous literatures	19
1.5	Objectives	23
1.6	Methodology	23
	<u>CHAPTER (2)</u> <u>Lithostratigraphy</u>	
2.1	Agiba area	25
2.2	Romel	32
2.3	Alam El Rum	33

	Title	Page
2.3.1	Alam El Rum 1	33
2.3.2	Alam El Rum 2	36
2.3.3	Alam El Rum 3	36
2.4	Cleopatra road	40
	CHAPTER (3) <u>Granulometric and Gravelmetric analysis</u>	
3.1	Graphical presentation of grain size data	42
3.2	Grain size parameters	42
3.2.1	The Graphic Mean Diameter "Mz"	49
3.2.2	The Inclusive Graphic Standard Deviation " Σi "	49
3.2.3	The Inclusive Graphic Skewness "Ski"	50
3.2.4	Kurtosis "KG"	51
3.3	Interpretation of the grain size parameters	51
3.3.1	Graphic Mean Size "Mz"	51
3.3.2	The Inclusive Graphic Standard Deviation " Σi "	53
3.3.3	The Inclusive Graphic Skewness "Ski"	55
3.3.4	Kurtosis "KG"	55
3.4	Depositional Environment	58
3.5	Mineralogy	60
3.6	Insoluble Residue	64
3.7	Geochemical Analysis	66
3.7.1	Mg and calcite mineral ratio	66
3.8	Coastal Boulder Measurements	67
3.9	Rock boulder Description	67
3.9.1	Size	67
3.9.2	Sphericity and shape	75
3.10	Conclusion	76
	CHAPTER (4) Petrography	
4.1	Lithofacies and petrography	81
4.1.1	Agiba	81

	Title	Page
4.1.2	Romel Ridge	86
4.1.3	Alam El Rum1	91
4.1.4	Alam El Rum 2	93
4.1.5	Alam El Rum 3	98
4.1.6	Beach Rock	103
4.1.7	Beach boulder	107
4.2	Diagenesis	107
4.3	Porosity	112
4.3.1	Marginal marine environments	112
4.3.2	Shallow marine environments	112
4.4	Neomorphism	113
4.5	Dolomitization	114
4.6	AGE DATING	116
	Chapter 5 Geohazards	
5.1	Natural Hazards	117
5.1.1	The coastal erosion	118
5.1.2	Tsunamis	118
5.1.3	Earthquakes	118
5.1.4	Sea level rise	123
5.2	Coastal Rock Boulders	124
5.3	Displacements of Boulders	128
	SUMMARY AND COCLUSION	
	REFERENCES	
	ARABIC SUMMARY	

LIST OF FIGURES

No.	Title	Page
1.1	Location map of the study area showing the main geological units of North West coastal zone and the samples locations.	2
1.2	Lithological map of the study area.	4
1.3	The main geological units of north west coastal zone.	4
1.4	The main landforms along the Mediterranean Coastal Zone.	7
1.5	The coastal dunes in Cleopatra area.	9
1.6	Coastal ridges of the studied area.	10
1.7	A and B show Spit in Romel.	11
1.8	A and B show cliff and wave cut platform in Alam El Rum and Romel, respectively.	12
1.9	A and B show cave formation in Romel.	13
1.10	A and B show stump in Alam El Rum.	15
1.11	The coastal notches in Agiba.	16
1.12	A, B and C show estuary in Alam El Rum.	18
2.1	Sketch diagram showing the lithostratigraphic units of the studied area.	26
2.2	Measured stratigraphic section of Agiba.	27
2.3	Field photograph in Agiba area showing samples location(SampleA1,A2,A3,A4, A5).	28
2.4	A shows tidal notches filled with coquina sediments (Sample A8). B and C show coquina.	29
2.5	A -shows tidal notches filled with coquina sediments (SampleA8). B and C- show coquina.	31
2.6	Measured Pleistocene lithostratigraphic Romel section	33
2.7	A-Pleistocene lithostratigraphic ridge section of Romel area show samples location (R1-R22).	34

List of Figures

No.	Title	Page
	B-General view of Romel area. C-Shows the cross bedding in the Romel section.	
2.8	Measured Pleistocene lithostratigraphic Alam El Rum 1 section.	35
2.9	Pleistocene geologic section of Alam El Rum1 area showing samples location (Samples O1, O2 and O3)	35
2.10	Measured Pleistocene lithostratigraphic Alam El Rum 2 section.	36
2.11	A Pleistocene geologic section of Alam El Rum 2 area showing samples location (Samples O4,O5,O6&O7). B The photo shows the lamination in the layers of the section	37
2.12	Measured Pleistocene lithostratigraphic Alam El Rum3 section	38
2.13	A- General view of the geologic section. B- The marine platform of Alam El Rum section. C- Pleistocene lithostratigraphic section of Alam El Rum3 area showing erosional features and their lamination (Samples O8, O9, O10,O11, O12& O13).	39
2.14	Measured Holocene lithostratigraphic Cleopatra road section.	40
2.15	Shows Holocene lithostratigraphic fore dune section at Cleopatra area (base(1)to 8).	41
3.1	Histograms of the Pleistocene sediments of Alam El Rum 1 samples.	43
3.2	Histograms of Pleistocene Alam El Rum 2 samples.	43
3.3	Histograms of Pleistocene Alam El Rum3 samples.	44
3.4	Histograms of the Holocene of the fore dune sands ,Cleopatra area.	45
3.5	Cumulative curves of the Pleistocene sediments ,(Romel Section).	46
3.6	Cumulative curves of the Pleistocene sediments (Alam	47

List of Figures

No.	Title	Page
	El Rum 1).	
3.7	Cumulative curves of Pleistocene sediments (Alam El Rum 2).	47
3.8	Cumulative curves of Pleistocene sediments (Alam El Rum 3).	48
3.9	Cumulative curves of Holocene foredune sands (Cleopatra road area).	48
3.10	Depositional environments of the studied sediments .	59
3.11	X-Ray diffractograms showing mineralogical composition of Romel boulder samples; Aragonite(A) , Magnesium calcite (M), Halite(H) .	61
3.12	X-Ray diffractograms showing mineralogical composition of Romel ridge samples; Aragonite(A) , Magnesium calcite (M), Halite(H) .	61
3.13	X-Ray diffractograms showing mineralogical composition of Alam El Rum boulder samples; Aragonite(A) , Magnesium calcite (M), Halite(H) .	62
3.14	X-Ray diffractograms showing mineralogical composition of Alam El Rum ridge samples; Aragonite(A) , Magnesium calcite (M), Halite(H) .	62
3.15	Beach boulder in Romel	68
3.16	A and B show beach boulders in Alam El Rum.	68
3.17	Zingg diagram (1935) of Romel boulder.	77
3.18	Zingg diagram (1935) of Alam El Rum3 I boulders.	77
3.19	Zingg diagram (1935) of Alam El Rum 3 II boulders	78
3.20	Zingg diagram (1935) of Alam El Rum 3III boulders.	78
3.21	Histograms showing the shape of different rock types of A- Romel boulders. B- Alam El Rum I boulders. C- Alam El Rum II boulders. D- Alam El Rum III boulders.	79
3.22	Histograms showing the Disc + Bladed and Spheroidal + Rod shape of A- Romel boulders. B- Alam El Rum I boulders. C- Alam El Rum II boulders.	

List of Figures

No.	Title	Page
	D- Alam El Rum III boulders.	
4.1	Fossiliferous limestone consists of calcisponges filaments (green arrow) and miliolid (violet arrow) (Sample A2, PP).	81
4.2	A and B are calcareous sandstone consist of quartz (white arrow), echinoderm (yellow arrow) and calcisponges filaments (green arrow) (Sample A5, PP).	82
4.3	Calcarenite consists of coralline algae (green arrow), echinoderm (yellow arrow) and intraclast (orange arrow) (Sample A6, PP).	83
4.4	SEM photomicrograph of calcareous sandstone showing dolomite rhombs (A6).	83
4.5	Calcarenite consists of ooids (blue arrow), echinoderm (yellow arrow) and gastropod (red arrow) (Sample A7, PP).	84
4.6	Coquina consists of coralline algae (green arrow), dolomite (black arrow) and intraclast (orange arrow) (Sample A8, PP).	84
4.7	Oolitic limestone consists of ooids (blue arrow), coralline algae (green arrow) and brachiopod (black arrow) (Sample R3, PP).	87
4.8	Oolitic limestone consists of ooids (blue arrow), coralline algae (green arrow), echinoderm (yellow arrow) and gastropod (red arrow) (Sample R8, PP).	87
4.9	SEM photomicrograph of oolitic limestone showing enlargement calcite cement (Sample R8).	88
4.10	Oolitic limestone consists of ooids (blue arrow), coralline algae (green arrow), echinoderm (yellow arrow) and gastropod (red arrow) (Sample R12, PP).	88
4.11	Oolitic limestone consists of ooids (blue arrow), coralline algae (green arrow), brachiopod (black arrow), echinoderm (yellow arrow) and intraclast (orange arrow) (Sample R17, PP).	89
4.12	Oolitic limestone consists of ooids (blue arrow),	89

List of Figures

No.	Title	Page
	coralline algae (green arrow), echinoderm (yellow arrow) and intraclast (orange arrow) (Sample R 21, PP).	
4.13	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), gastropod (red arrow), brachiopod (black arrow) and intraclast (orange arrow) (Sample O2, PP).	92
4.14	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), gastropod (red arrow) and intraclast (orange arrow) (Sample O3, PP).	92
4.15	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), echinoderm (yellow arrow) and intraclast (orange arrow) (Sample O4, PP).	94
4.16	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), gastropod (red arrow), echinoderm (yellow arrow) and brachiopod (black arrow) (Sample O5, PP).	94
4.17	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), echinoderm (yellow arrow) and brachiopod (black arrow) (Sample O6, PP).	95
4.18	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), echinoderm (yellow arrow) and gastropod (red arrow) (Sample O7, PP).	95
4.19	Calcarenite consists of ooids (blue arrow), coralline algae (green arrow), gastropod (red arrow), miliolid (violet arrow), brachiopod (black arrow) and intraclast (orange arrow) (Sample O7, PP)..	96
4.20	A and B SEM photomicrograph of oolitic limestone of Alam El Rum showing meniscus cement (O7).	97
4.21	Oolitic limestone consists of intraclast (orange arrow), coralline algae (green arrow), echinoderm (yellow arrow), gastropod (red arrow) and ooids (blue arrow) (Sample O8, PP).	99
4.22	Oolitic limestone consists of intraclast (orange arrow), echinoderm (yellow arrow), gastropod (red arrow), ooids (blue arrow), miliolid (violet arrow) and	99

List of Figures

No.	Title	Page
	brachiopod (black arrow) (Sample O9, PP).	
4.23	A and B oolitic limestone consist of intraclast (orange arrow), coralline algae (green arrow), echinoderm (yellow arrow), gastropod (red arrow), ooids (blue arrow) and miliolid (violet arrow) (Sample O10, PP).	100
4.24	A and B oolitic limestone consist of intraclast (orange arrow), coralline algae (green arrow), echinoderm (yellow arrow), gastropod (red arrow), ooids (blue arrow) and miliolid (violet arrow) (Sample O13, PP).	100
4.25	A, B and C SEM photomicrograph of oolitic limestone of Alam El Rum ridge showing a network of gypsum and calcite crystals(O13).	102
4.26	A- Beach rock consists of intraclast (orange arrow), gastropod (red arrow) and ooids (blue arrow). B- Shows the radial –fibrous cement..	106
4.27	Coastal rock boulders consist of intraclast (orange arrow), echinoderm (yellow arrow), gastropod (red arrow) and ooids (blue arrow) (PP).	108
4.28	Coastal rock boulders consist of echinoderm (yellow arrow) and ooids (blue arrow) (PP).	108
4.29	Fibrous cement (white arrow) and neomorphism (yellow arrow) (PP).	109
4.30	Schematic illustration of the coast and its zones of cement fabrics, preferred carbonate geochemistry and sediment bedding structures; A — 2D illustration; B — 3D illustration. Beachrock forms in the mixing zone which includes the marine-vadose and the marine-phreatic environment (Mauz et al., 2015).	110
5.1	A-The wind erosion rate. B-The water erosion rate. C- The change between(1991 – 2007).	119
5.2	Shore line detection map (1991). Shore line detection map (2007).	120
5.3	A,B and C show hazardeous site at Romel	121

List of Figures

No.	Title	Page
5.4	Seismicity of Egypt.	122
5.5	Vermetids in Romel and Alam El Rum beach indicating elevated shoreline.	125
5.6	Vermites at Romel.	126
5.7	Hazardeous site at Romel collapsing by strong NW wind prevailing during the winter.	127
5.8	shows the dissection of the marine platform of Romel by NE_SW and NW_SE joints .	130
5.9	The coastal rock boulders and tsunamic strong storm deposits at Alam El Rum marine platform.	131
5.10	Boulder beaches and megaclasts: A conceptual diagram showing the balance of forces due to the asymmetry in the flow field of a shoaling wave. (A) The formation of a boulder beach and wave-cut terrace. (B) A free standing boulder beach and wave-formed shelf as in Alam El Rum 3. (C) The deposition of megaclasts quarried by waves from a reef shelf.	134

LIST OF TABLES

No.	Title	Page
3.1	The scale suggested by Folk and Ward (1957) for describing Mz parameter.	49
3.2	The scale suggested by Folk and Ward (1957) for σI parameter.	50
3.3	The scale suggested by Folk and Ward (1957) for describing SkI parameter.	50
3.4	The scale suggested by Folk and Ward (1957) for describing KG parameter.	51
3.5	The calculated Mz values of the studied sections.	52
3.6	The calculated σI values of the studied sections.	54
3.7	The calculated "SkI" values of the studied sections.	56
3.8	The calculated "KG" values of the all sections.	57
3.9	Summarized the interpretation of the studied geologic sections .	60
3.10	X-Ray diffraction data of Alam El Rum and Romel samples.	63
3.11	The characteristic identified lines of the main non-clay minerals in the examined samples.	63
3.12	XR diffraction of the samples of Alam El Rum and Romel (Semi-quantitative percentages of the identified non-clay minerals in the examined samples.)	64
3.13	Carbonate and residue contents of the studied samples.	65
3.14	shows the geochemical analysis of Alam El Rum ridge and boulder and Romel ridge and boulder	66
3.15	Measured axes of Romel boulders.	69-70
3.16	Measured axes of Alam El Rum3 I boulders	71
3.17	Measured axes of the Alam el Room3 II boulders.	72-73
3.18	Measured axes of Alam El Rum3 III boulders.	74-75
4.1	Petrographical characters of Agipa section	86
4.2	Petrographical characters of the Romel ridge	90
4.3	Petrographical characters of the Alam El Rum 1 ridge	91
4.4	Petrographical characters of the Alam El Rum 2 ridge	96
4.5	Petrographical characters of the Alam El Rum 3 ridge	103



CHAPTER 1

INTRODUCTION

