MORPHOLOGICAL AND ENVIRONMENTAL OF THE NILE RIVER
(CASE STUDY REACH FOUR)

Submitted By

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B.Sc. of (Civil), Faculty of Engineering , Cairo University, 1997

A thesis submitted in Partial Fulfillment
Of
The Requirement for the Master Degree
In
Environmental Science
Department of Environmental Engineering Science

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التغيرات المورفولوجية والبيئية لنهر النيل
(حالة الدراسة الحبس الرابع)

رسالة مقدمة من الطالبة

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لاستكمال متطلبات الحصول علي درجة الماجستير
في العلوم البيئية

قسم العلوم الهندسية البيئية
معهد الدراسات والبحوث البيئية
جامعة عين شمس

٢٠١٤

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ABSTRACT

In terms of the importance of the Nile River to Egypt, this research was initiated in order to investigate the flow and sediment of the river, numerically. The fourth reach was chosen to be investigated. 90 cross sections of 1982 were compared to 2004 along the fourth reach. The deposition and scour during this period was calculated, based on the water level of maximum discharge 181 $M.m^3$/day. The comparison indicated that deposition occurred more frequent than erosion. The numerical model GSTARS 2 was calibrated and verificated for two modes (i.e. water flow and sediment). The model was calibrated using the surveyed cross-sections at 1982 and the inflow discharge at downstream Assiut Barrage and along the reach (i.e. 37.7, 70, 140 and 181 $M.m^3$/day). The results of the model were good agreements with the field measurements. The model was verificated using the surveyed cross-sections at 1997 with the average monthly records discharge at different times (every ten days) which were measured at the downstream of Assiut barrage of the period 1997 to 2004. The model was used to predict the locations of bank overflow and the inundated regions in case of future inflow (i.e. 350 $M.m^3$/day). Confident with the calibration and verification results, the model was applied to calculate the expected cross sections.

List of Contents

Abstract -- I

List of Contents-- II

List of Tables -- V

List of Figures -- VI

Chapter (I) Introduction

I.1. Importance of rivers --1

I.2. General Overview to Nile river -------------------------------------2

I.3. Human interventions to rivers ---------------------------------------4

I.4. Impacts of the Aswan High Dam -----------------------------------4

I.5. Problem definition --5

I.6. Study objectives ---6

I.7. Planned methodology---6

I.8. Thesis layout --7

Chapter (II) Literature Review

II.1. Fluvial systems --- 10

II.2. River classifications--- 12

II.3. Bed forms -- 17

II.4. Factors affecting bed forms -------------------------------------- 19

II.5. Bars in alluvial rivers --- 19

II.6. Riverbed degradation --- 22

II.7. Erosional processes --- 28

II.8. Riverbed aggradation --- 30

II.9. Nile navigation --- 36

II.10. Expected low and high discharges --------------------------- 38

II.11. Morphological changes in rivers ------------------------------- 38

II.12. Comments -- 41

Chapter (III) Description of the Study Area and Future Requirements

3.1. Site description-- 42
3.2. Assembled data -- 44
3.2.a. Hydrological data -- 44
3.2.b. Emergency discharge -- 48
3.2.c. Geometric data--- 48
3.2.d. Equations of bed-material sediment load ------------------- 49
3.2.e. Roughness coefficients -- 56
3.3. Analyzing the assembled data ------------------------------------ 56
3.4. Morphological changes occurred during
the past decades (1982-1997-2004)------------------------------ 56
3.5. Set future navigation requirements------------------------------- 61
3.6. Comments-- 62

Chapter (IV) Model Calibration and Verification

4.1. Model description--- 63
4.2. Capabilities of gstars 2.0-- 63
4.3. The model limitations--- 64
4.4. Water surface profile computation ------------------------------- 64
4.5. Gstars calibration --- 65
4.5.1. Flow model calibration-- 65
4.5.2. Morphology mode calibration-------------------------------- 66
4.5.3. Sediment routing equation ------------------------------------ 66
4.6. Gstars verification -- 68
4.6.1. Flow model verification--------------------------------------- 69
4.6.2. Morphology model verification ------------------------------ 79

4.7. Gstars verification -- 84
4.7.1. Flow model verification -------------------------------------- 84
4.7.2. Morphology model verification ------------------------------ 84
Chapter (V) Results Analysis and Discussion
5.1. Cross sections comparison (1982- 2004)------------------------ 87
5.2. Deposition and scour values during the period
from 1982 to 2004-- 98
5.3. Comparison overview--106
Chapter (VI) Model Application and Bank Overtopping
6.1. Gstars application at 350 mm3/day ----------------------------107
6.2. Gstars application to future discharge --------------------------108
6.3. Discussion ---123
6.4. Model operation for prediction ---------------------------------127
Chapter (VII) Conclusions and Recommendations
7.1. Conclusions---134
7.2. Recommendations ---135
Summary --136
References --138

List of Tables

Tables name **Page No.**

Table (3.1) Estimated water levels at the different stations------------46
Table (3.2) Estimated water levels during the emergency discharge-48
Table (4.1) The error percentage for water levels at each station for the discharge 37.7 M.m3/day -----------------70
Table (4.2) The error percentage for water levels at each station for the discharge 70 M.m3/day --------------------71
Table (4.3) The error percentage for water levels at each station for the discharge 140 M.m3/day-------------------72
Table (4.4) The error percentage for water levels at each station for the discharge 181 M.m3/day-------------------73
Table (4.5) Manning values (Q = 37.7 M.m3/day)----------------------77
Table (4.6) Manning values for natural streams and excavated channels---79
Table (5.1) Erosion and sedimentation quantity for cross sections-- 101
Table (6.1) Inundated areas on left and right banks------------------- 124
Table (6.2) Areas of submerged islands -------------------------------- 125
Table (6.3) Location of affected buildings along the risk regions -- 126
Table (6.4) Manning values used in the mathematical model For Q = 350 $M.m^3/day$------------------------------------ 128

List of Figures

Figure Name **Page No.**

Figure (I-1) Layout of Nile River--3
Figure (I- 2) Layout of Nile River through Egypt------------------------3
Figure (II-1) Erosion, transport, and sedimentatio in a fluvial System 11
Figure (II-2) Adjustment in river width, depth and flow
velocity --12
Figure (II-3) Examples of sinuous and meandering rivers ------------- 15
Figure (II-4) River classification-- 17
Figure (II-5) Different types of bed forms------------------------------- 18
Figure (II-6) Bars Formation in Rivers ---------------------------------- 21
Figure (II-7) Riverbed degradation -------------------------------------- 22
Figure (II-8) Effects of dams downstream of alluvial
reaches ---25
Figure (II-9) Schematic of headcut migration -------------------------- 26
Figure (II-10) Schematic features of riverbed aggradation ------------ 32
Figure (II-11) Braiding and Meandering -------------------------------- 34
Figure (II-12) Bed Characteristics of the Tanana River in
Alaska (After Buska et al., 1984)--------------------------------35
Figure (3.1) Location of the Fourth Reach ---------------------------- 43
Figure (3.2) Schematic Diagram Showing the Water Gauges Locations
along the Fourth Reach--45
Figure (3.3) Cross-Section at km (555.00 from A.D) for
Years 1982, 1997, 2004--57
Figure (3. 4) Cross-Section at km (592.00 from A.D) for
Years 1982, 1997, 2004--57
Figure (3. 5) Cros --------------------- s-Section at km (604.00 from A.D)
for Years 1982, 1997, 2004--------------------------------------58

Figure (3. 6) Cross-Section at km (612.00 from A.D) for
Years 1982, 1997, 2004 --58
Figure (3. 7) Cross-Section at km (634.00 from A.D) for
Years 1982, 1997, 2004 --59
Figure (3. 8) Cross-Section at km (726.00 from A.D) for
Years 1982, 1997, 2004 -- 59
Figure (3. 9) Cross-Section at km (742.00 from A.D) for
Years 1982, 1997, 2004 --60
Figure (3. 10) Cross-Section at km (796.00 from A.D) for
Years 1982, 1997, 2004 --60
Figure (3. 11) Cross-Section at km (952.00 from A.D) for
Years 1982, 1997, 2004 --61
Figure (4.1) Model output results Corresponding to the Discharge 37.7
M.m3/day at 1982 ---74
Figure (4.2) Model output results Corresponding to the Discharge 70
M.m3/day at 1982 ---74
Figure (4.3) Model output results Corresponding to the Discharge 140
M.m3/day at 1982 ---75
Figure (4.4) Model output results Corresponding to the
Discharge 181 M.m3/day at 1982 --------------------------------75
Figure (4.5) Cross-Section at km (556.00) from A.D--------------------80
Figure (4.6) Cross-Section at km (634.00) from A.D--------------------80
Figure (4.7) Cross-Section at km (726.00) from A.D--------------------81
Figure (4.8) Cross-Section at km (796.00) from A.D--------------------81
Figure (4.9) Cross-Section at km (808.00) from A.D--------------------82
Figure (4.10) Cross-Section at km (852.00) from A.D ------------------82
Figure (4.11) Cross-Section at km (889.00) from A.D ------------------83

Figure (4.12) Cross-Section at km (910.00) from A.D ------------------83
Figure (4.13) Cross-Section at km (558.00) from A.D -----------------85
Figure (4.14) Cross-Section at km (800.00) from A.D ------------------85
Figure (4.15) Cross-Section at km (863.00) from A.D ------------------86
Figure (4.16) Cross-Section at km (910.00) from A.D ------------------86
Figure (5. 1) Cross-Section at km (546.00) -------------------------------88
Figure (5. 2) Cross-Section at km (550.00) -------------------------------88
Figure (5.3) Cross-Section at km (556.00) --------------------------------89
Figure (5. 4) Cross-Section at km (564.00) -------------------------------89
Figure (5. 5) Cross-Section at km (584.00) -------------------------------90
Figure (5. 6) Cross-Section at km (592.00) -------------------------------90
Figure (5. 7) Cross-Section at km (616.00) -------------------------------91
Figure (5. 8) Cross-Section at km (628.00) -------------------------------91
Figure (5.9) Cross-Section at km (646.00) --------------------------------92
Figure (5.10) Cross-Section at km (688.00)-------------------------------92
Figure (5.11) Cross-Section at km (716.00)-------------------------------93
Figure (5.12) Cross-Section at km (744.00)-------------------------------93
Figure (5.13) Cross-Section at km (779.00)-------------------------------94
Figure (5.14) Cross-Section at km (824.00)-------------------------------94
Figure (5.15) Cross-Section at km (852.00)-------------------------------95
Figure (5.16) Cross-Section at km (872.00)-------------------------------95
Figure (5.17) Cross-Section at km (944.00)-------------------------------96
Figure (5.18) Cross-Section at km (952.00)-------------------------------96
Figure (5.19) the deposition and scour at km (944.00)
from A.D --99
Figure (5.20) the deposition and scour at km (722.00)
from A.D --99

Figure (5.21) the deposition and scour at km (546.00)
from A.D -- 100
Figure (5.22) the deposition and scour at km (594.00)
from A.D -- 100
Figure (6.1) Inundated regions from km 547 To 552
from A.D -- 108
Figure (6.2) Inundated regions from km 553 To 556
from A.D -- 109
Figure (6.3) Inundated regions from km 560 To 562
from A.D -- 109
Figure (6.4) Inundated regions from km 563 To 567
from A.D -- 110
Figure (6.5) Inundated regions from km 575 To 578
from A.D -- 110
Figure (6.6) Inundated regions from km 579 To 582
from A.D -- 111
Figure (6.7) Inundated regions from km 583 To 586
from A.D -- 111
Figure (6.8) Inundated regions from km 587 To 589
from A.D -- 112
Figure (6.9) Inundated regions from km 590 To 594
from A.D -- 112
Figure (6.10) Inundated regions from km 595 To 598
from A.D -- 113
Figure (6.11) Inundated regions from km 599 To 601
from A.D -- 113