



# The Collapse *of the* Eastern Mediterranean

CLIMATE CHANGE AND THE DECLINE  
OF THE EAST, 950–1072

RONNIE ELLENBLUM



CAMBRIDGE

THE COLLAPSE OF  
THE EASTERN  
MEDITERRANEAN

*Climate Change and the Decline of the East,  
950–1072*

RONNIE ELLENBLUM

*The Hebrew University of Jerusalem*



CAMBRIDGE  
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS  
Cambridge, New York, Melbourne, Madrid, Cape Town,  
Singapore, São Paulo, Delhi, Mexico City

Cambridge University Press  
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org  
Information on this title: www.cambridge.org/9781107023352

© Ronnie Ellenblum 2012

This publication is in copyright. Subject to statutory exception  
and to the provisions of relevant collective licensing agreements,  
no reproduction of any part may take place without the written  
permission of Cambridge University Press.

First published 2012  
Reprinted 2013

Printed and Bound in the United Kingdom by the MPG Books Group

*A catalogue record for this publication is available from the British Library*

*Library of Congress Cataloguing in Publication data*

Ellenblum, Ronnie

The collapse of the eastern Mediterranean : climate change and the decline of the East,  
950–1072 / Ronnie Ellenblum.

pages cm

Includes bibliographical references.

ISBN 978-1-107-02335-2

1. Islamic Empire. 2. Social change – Mediterranean Region – History – To 1500.
3. Climate and civilization – Middle East – History – To 1500.
4. Climatic changes – Social aspects – Middle East – History – To 1500 5. Mediterranean climate. 6. Middle East – Climate – History – To 1500. I. Title.

DS38.3.E45 2012

909/.09822401–dc23

2012004204

ISBN 978-1-107-02335-2 Hardback

Cambridge University Press has no responsibility for the persistence or  
accuracy of URLs for external or third-party internet websites referred to  
in this publication, and does not guarantee that any content on such  
websites is, or will remain, accurate or appropriate.

## THE COLLAPSE OF THE EASTERN MEDITERRANEAN

As a 'Medieval Warm Period' prevailed in western Europe during the tenth and eleventh centuries, the eastern Mediterranean region, from the Nile to the Oxus, was suffering from a series of climatic disasters which led to the decline of some of the most important civilizations and cultural centres of the time. This provocative study argues that many well-documented but apparently disparate events – such as recurrent drought and famine in Egypt, mass migrations in the steppes of central Asia, and the decline in population in urban centres such as Baghdad and Constantinople – are connected and should be understood within the broad context of climate change. Drawing on a wealth of textual and archaeological evidence, Ronnie Ellenblum explores the impact of climatic and ecological change across the eastern Mediterranean in this period and offers a new perspective on why this was a turning point in the history of the Islamic world.

RONNIE ELLENBLUM is professor at the Hebrew University of Jerusalem and a life member of Clare Hall, University of Cambridge. He is the author of the prize-winning *Crusader Castles and Modern Histories* (Cambridge, 2007). His first book, *Frankish Rural Settlement in the Latin Kingdom of Jerusalem* (Cambridge, 1998), has become a standard work for the study of Crusader geographies.

# Maps and figures

## MAPS

1.1	Nomadizations and dislocations in the eastern Mediterranean in the eleventh century. Cartographer: Tamar Soffer, Hebrew University of Jerusalem.	page 8
2.1	Zones of effective influence of climatic disasters. Cartographer: Tamar Soffer.	38
4.1	The advance of the Seljuks 1029–32. Cartographer: Tamar Soffer.	66
4.2	The circular migration of the Seljuks in 1033–6. Cartographer: Tamar Soffer.	70
4.3	Cities plundered by the Seljuks in 1037–40. Cartographer: Tamar Soffer.	74
4.4	Oghuz raids in Iran and the Jazira 1040–4. Cartographer: Tamar Soffer.	80
4.5	Ibrāhīm Yīnāl invading Armenia and Asia Minor for the first time, 1046–7. Cartographer: Tamar Soffer.	85

## FIGURES

2.1	A Nilometer in a fifth-century mosaic from the Nile House, Zippori. Courtesy Professor Zeev Weiss, Sepphoris Expedition, Hebrew University of Jerusalem. Photo: G. Laron.	26
2.2	David Roberts (1796–1864), <i>The Nilometer on the Isle of Rhoda</i> , Cairo, 1838.	30
2.3	Years of droughts in the Nile Valley, between 200 and 1072 ( <i>above</i> ) and between 900 and 1072 ( <i>below</i> ).	31

6.1	Debasement of the Byzantine gold coins between 1025 and 1067. After Costas Kaplanis, 'The debasement of the "dollar of the Middle Ages"', <i>Journal of Economic History</i> 63 (2003), 768–801.	130
8.1	The western wall of the Temple Mount, the deserted Tyropoeon Valley. After Dan Bahat, <i>Touching the stones of our heritage: the Western Wall tunnels</i> (Jerusalem: Western Wall Heritage Foundation, 2002).	185
8.2	Current height of the walls of the Temple Mount.	186
9.1	Aqueducts and storage pools in Jerusalem.	198
9.2	Water reservoir on the Temple Mount. After Shimon Gibson and David M. Jacobson, <i>Below the Temple Mount in Jerusalem: a sourcebook on the cisterns, subterranean chambers and conduits of the Ḥaram al-Sharīf</i> , BAR Archaeological Reports 637, International Series (Oxford: Tempus Reparatum, 1996).	201
9.3	Water reservoirs in the vicinity of the Church of the Holy Sepulchre. After Schlick.	206
9.4	Comparison between the annual amount of rainfall and the discharge of a perch spring. After Nadav Peleg, Efrat Morin, Haim Gvirtzman and Yehouda Enzel, 'Changes in spring discharge as potential amplifiers of societal response to rainfall series in the Eastern Mediterranean', <i>Climatic Change</i> 2011 (www.springerlink.com).	210
9.5	The drying up of a mountain spring.	212
9.6	Plan of eleventh-century Tiberias.	217
9.7	A hoard from eleventh-century Tiberias.	218
9.8	A metal hoard from Caesarea Maritima (mid eleventh century).	218

## Tables

2.1	Droughts in the Nile Valley.	<i>page</i> 31
9.1	Rainfall in Jerusalem, 2004–11.	212

## Acknowledgments

I wish to express my gratitude to the institutions, colleagues and friends who have helped me throughout the years to complete this book. I began working on it while I was a fellow in the Jerusalem Institute for Advanced Studies and completed it while I was a fellow in another abode of Jerusalemite knowledge – the Scholion Interdisciplinary Research Center in Jewish Studies. I would like to thank the fellows of both groups who shared ideas and knowledge with me and especially Gideon Avni, Israel Finkelstein, Gideon Shelach, Sharon Zuckerman, Nily Wazana and Irad Malkin. Generous grants from the Israel Scientific Foundation and the German–Israeli Research Foundation enabled the completion of the work.

Numerous scholars made suggestions, passed on references, pointed out my mistakes and induced me to revise my interpretations. Benjamin Z. Kedar, Ora Limor, Iris Shagrir, Robert Bartlett, Reuven Amitai, Norman Yoffee, Uri Bitan, Miriam Frenkel and Daniela Heller Talmon read the manuscript and commented on it. Other friends and scholars were patient enough to attend conferences and follow the development of the ideas. I would like to thank Peter N. Miller, Miri Rubin, Thomas Madden, Oron Shagrir, Amikam Elad, Alex Yakobson and many others. Yohay Goelle improved my English, Tamar Soffer produced the best possible maps and illustrations from my data, Adi Binnun helped me with the GIS, and Dr Uri Bitan and Dr Leigh Chipman helped me with the Arabic and Shay Eshel helped with the Greek. I owe them thanks.

I believe the thesis presented in this book should apply to the general public and not only to professional Orientalists, and



therefore I made several concessions such as not using diacritics in placenames and words that can be Romanized or westernized to make it more accessible. I did use diacritics and Hijri calendars, however, for names of people and in direct transliterations from the Arabic.

The book was written while events similar to the ones therein described were shaking the entire world. Food prices were soaring, hunger prevailed in east Africa, and the Danube and the Black Sea were covered with ice. Kingdoms and realms of the eastern Mediterranean, from Tunisia through Libya to Egypt, and the bureaucracies of the same region, from Syria to Greece, undergo radical changes and are on the verge of collapse. Political and economical transformations are translated into cultural ones: religious fanaticism is leading to radical changes in the school curriculum and is impacting upon the education of future generations. The present volume suggests a common reason that led, a millennium ago, to the economic, cultural and political decline of the eastern Mediterranean. Is it possible to assume that a common reason, possibly a period of similar climatic change, is responsible for the present decline of extensive parts of the eastern Mediterranean? I leave it to readers to decide and find out.

This book is dedicated with love to my wife Lenore and to my children Gali, Yuval and Maya.

# Contents

<i>List of maps and figures</i>	page viii
<i>List of tables</i>	x
<i>Acknowledgments</i>	xi
 PART I THE COLLAPSE OF THE EASTERN MEDITERRANEAN	 I
1 Presenting the events	3
A wave of nomadization and dislocation	4
Collapse of bureaucracies	4
The creation of nomadic statehoods	5
The decline of urban culture	5
Desertion of marginal agricultural provinces	6
Decline of cultures	6
Minorities and the Islamization of the Levant	7
2 Deconstructing a 'collapse'	12
'Overshoot and collapse' theory versus 'resilience' theory	12
Historical analysis of a climatic disaster	19
Spatial analysis of a climatic disaster: droughts in the Nile Valley	23
Earlier cold spells in Iran and Mesopotamia	32
Domino effects	36
3 950–1027: an impending disaster	41
Egypt: seven bad years (963–9)	41
Consecutive failures of the Nile, 1004–9	46
Cold spells in Baghdad, 398/1007, and in southern Italy, 398/1007–402/1012 and 1017	49
Egypt in the mid 1020s	51
 PART II REGIONAL DOMINO EFFECTS IN THE EASTERN MEDITERRANEAN: 1027–60 AD	 59
4 The collapse of Iran	61
The climatic crisis of 1024–71	61
	v

	The collapse of Iran	64
	Nomads acquire political power	76
5	The fall of Baghdad	88
	Political events and climatic disasters	90
	The civil war (1055–60)	96
	Nomadic statehood	106
	Cultural implications of the crisis	108
	Destruction of libraries and academies	111
	The 1060s: the recovery of Baghdad	114
	The introduction of the madrasa (law college)	120
6	A crumbling empire: the Pechenegs and the decimation of Byzantium	123
	The end of Byzantine dominion in southern Italy	134
	The great schism of 1054	137
	Renewed attacks by nomads	141
7	Egypt and its provinces, 1050s–1070s	147
	The ‘great calamity’	151
	The invasion of North Africa by the Banū Hilāl and Banū Sulaym	155
	Nomadization in Palestine and North Africa	158
	PART III CITIES AND MINORITIES	161
8	Jerusalem and the decline of Classical cities	163
	The decline of Classical urbanism in the eastern Mediterranean:	
	The Pirenne Thesis	164
	‘From Polis to Madina’ and beyond	168
	Jerusalem during the eleventh century	172
	Periods of dearth	173
	Delineating new walls	176
	The Tyropoeon Valley and the gates of the Temple Mount	182
	Droughts and hunger during the second half of the eleventh century	186
9	Water supply, declining cities and deserted villages	196
	Aqueducts and cities	196
	Springs, provincial cities and hinterlands: the case of Jerusalem	208
	Cities in the western and eastern Mediterranean: an attempt at a summary	224

10	Food crises and accelerated Islamization	228
	Outbound emigrations	235
	Inbound immigration	238
	Forced conversion and desecration of sacred places	240
11	Reflections	249
	Climatic crises and the <i>longue durée</i>	249
	The regional and the global	251
	The fate of Classical heritage	256
	East and West	258
	<i>Index</i>	261

PART ONE

*The collapse of the eastern Mediterranean*



## Presenting the events

This study relates the story of a series of well-documented climatic disasters that altered the face of the eastern Mediterranean in the mid eleventh century, leading to the physical decline of some of the most important civilizations and cultural centres of the time. The change was manifested in an exceedingly long series of droughts in the Nile Valley – no less than twenty-seven years of insufficient summer rises of the Nile in 125 years – that spread famine and pestilence throughout both Egypt and its neighbouring countries, in widespread droughts that affected the Levant and the eastern Mediterranean coast, and in extremely severe and long periods of freeze that affected the steppes of central Asia, Khurasan, Iran, the Jazira and Armenia. The climatic disasters began in AD 950, were very effective from the late 1020s onwards, attained their most disastrous effects during the mid 1050s, and were abated during the early 1060s (in Iran and Iraq) and the early 1070s (in Egypt and in Asia Minor).

The climatic disasters of 950–1072, however, were limited to the eastern Mediterranean and are not recorded in the western European or Iberian chronicles of the time. On the contrary, if climate is mentioned at all in contemporaneous western or Iberian chronicles, it is in the context of a period of comparative opulence and continuous calm. An imaginary line can be drawn, from Qayrawan in the southwest, through Rome and to the northern

Balkans, to divide the regions that were affected by the climatic disasters from those which were spared and enjoyed the benefits of the mild climate of the 'Medieval Warm Period' or the 'Medieval Optimum', which prevailed in the west.

#### A WAVE OF NOMADIZATION AND DISLOCATION

The famines and pestilences that followed in the wake of the droughts and the cold spells led to the decimation of cities and agricultural provinces throughout the region. The cold spells, however, had additional widespread domino effects: they were followed by enormous waves of dislocation and outbound emigration of pastoralists, who left their freeze-stricken summer pastures and winter abodes, conveying violence to the neighbouring, equally drought-stricken provinces in their search for warm places, pastures, fodder and food. The lingering colds left the pastoralists with no other choice but to migrate to warmer regions and to have recourse to plunder for their own food. The domino effect was felt by countries that lay outside the region of the cold spell no less – very often much more – than it was by the countries in which the cold spells and droughts were the most severe.

#### COLLAPSE OF BUREAUCRACIES

The climatic disasters were also accompanied by a collapse of bureaucratic and political institutions, which were unable to withstand the sharp decline in the state income, followed by a parallel increase in the expenditure of the state for defence against the nomads and for the supply of food for the starved populations. The economic crises led to the devaluation of currencies that reached, in the case of Byzantium, 27 per cent of the value of the



nomisma during the 1050s, or to the failure of states to finance their own armies and administrations. Unpaid soldiers and bureaucrats rebelled against and toppled numerous dynasties, including the ruling dynasties in Baghdad, Constantinople (both of them collapsed in the same year, 1055–6), Cairo and elsewhere. All of these collapses followed years of severe dearth that consumed the reserves and left central government without adequate means even for the needs of the ruling elites themselves.

#### THE CREATION OF NOMADIC STATEHOODS

The collapse of the well-established dynasties led, in several cases, to the creation of ‘nomadic statehoods’ – administrations which were created ad hoc by the victorious nomads, who found themselves in ruling positions. Such an entity is known to have existed in the past, but rarely, if ever before, do we have a detailed description of its creation and characteristics, as we have in the case of the takeover by the nomads of Baghdad, one of the most important cultural centres of the world at the time. The detailed accounts of the ‘conquest’ of Baghdad by the nomads contain unrivalled amounts of data concerning the development of such an entity.

#### THE DECLINE OF URBAN CULTURE

Some of the major cities and urban centres of the region, from Nishapur to Fustat, from Baghdad to Qayrawan and from Ramla to Ani were pillaged and conquered, partially destroyed and virtually deserted. Even cities as big as Constantinople or Rome underwent decline at the same time.

Smaller cities that had flourished uninterrupted since the Roman period now experienced decline or abandonment. Extensive recent