



HAL
open science

Holocene palaeoenvironments and settlement patterns in Western Syria and Lebanon: the PaleoSyr/PaleoLib project

Bernard Geyer, Frank Braemer

► To cite this version:

Bernard Geyer, Frank Braemer. Holocene palaeoenvironments and settlement patterns in Western Syria and Lebanon: the PaleoSyr/PaleoLib project. J. Abdul Massih, S. Nishiyam, H. Charaf, A. Deb. Archaeological Explorations in Syria 2000-2011, Proceedings of ISCACh-Beirut 2015, Archaeopress Archeology, pp.214-219, 2018. <halshs-04871688>

HAL Id: halshs-04871688

<https://shs.hal.science/halshs-04871688v1>

Submitted on 7 Jan 2025

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons CC BY-NC-ND 4.0 - Attribution - Non-commercial use - No Derivative Works - International License

Archaeological Explorations in Syria 2000-2011

Proceedings of ISCAH-Beirut 2015

edited by

Jeanine Abdul Massih
Shinichi Nishiyama

in collaboration with

Hanan Charaf and Ahmad Deb



ARCHAEOPRESS Publishing LTD
Summertown Pavilion
18-24 Middle Way
Summertown
Oxford OX2 7LG

www.archaeopress.com

ISBN 978 1 78491 947 4
ISBN 978 1 78491 948 1 (e-Pdf)

© Archaeopress and the authors 2018

All rights reserved. No part of this book may be reproduced, or transmitted, in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of the copyright owners.

Printed in England by Oxuniprint, Oxford

This book is available direct from Archaeopress or from our website www.archaeopress.com

TRIBUTE TO
KHALED AL-ASSAAD, GIRO ORITA, AND ANTOINE SULEIMAN

The Japanese Society for West Asian Archaeology

and

the Lebanese University Archaeological Mission of Cyrrhus-Syria

**International Syrian Congress on Archaeology and Cultural Heritage
(ISCACH): Results of 2000-2011**

December 3-6, 2015

Beirut, Lebanon

Organizing Committee

Prof. Dr Jeanine Abdul Massih (Director of the Archaeological Mission to Cyrrhus), Lebanese University, Lebanon
Prof. Kiyohide Saito (Director of the Archaeological Mission to Palmyra), President, the Japanese Society for West Asian Archaeology, Japan
Prof. Dr Akira Tsuneki (Director of the Archaeological Mission to Tell El-Kerkh), University of Tsukuba, Japan
Dr Shinichi Nishiyama, Chubu University, Japan
Dr Ahmad Deb (Director of Ain Al-Arab Mission), DGAM, Syria

All our gratitude goes to our collaborators for their invaluable support

Nesrine Aad (Lebanese University)
Mohammad Abdel Sater (Lebanese University)
Mazen Arzouni (Lebanese University)
May Al-Hajj (Lebanese University)
Hiroo Kansha (Tokyo National Research Institute for Cultural Properties)
Akinori Uesugi (Kansai University)
Megumi Yoshitake (Photographer)

To the translators

Marwa Hariri
Sarah Bourached

And to the staff of the Rotana Gefinor Hotel (Hamra, Beirut, Lebanon)

Contents

Introduction	1
Jeanine Abdul Massih and Shinichi Nishiyama	
THE EXCAVATIONS IN SYRIA 2000-2010	
Aleppo	5
The Paleolithic Excavations at the Dederiyeh Cave, Afrin Valley (1989-2011)	5
Takeru Akazawa and Yoshihiro Nishiaki	
Archaeological Excavations at Tell Qaramel 1999-2011 (Aleppo-North Syria)	13
Yousef Kanjou	
The Last Excavation at Arslan Tash/Shiran	21
Serena Maria Cecchini and Fabrizio Venturi	
Unfinished Work at Tell Ahmar. Early and Middle Bronze Age Finds	31
Guy Bunnens	
A Colonnaded Building in a Commercial Area at Seleucid Jebel Khalid	39
Heather Jackson	
The Monuments of Cyrrhus - Nebi Houri	49
Jeanine Abdul Massih	
Archaeological and Architectural Studies in Northern Syria (Dead Cities): General Presentation with Three Missions in El-Bâra and Ruweiha	61
Maamoun Abdulkarim and Gérard Charpentier	
Damascus	65
A New Place of Worship Dedicated to Zeus <i>Theandrios</i> inside the Temple Precinct of Damascene Jupiter ..	65
Houmam Saad	
Al-Qaryatayn in the Heart of the Syrian Desert: Deir Mar Elian Al-Sheikh	73
Wouroud Brahim	
Daraa/Suweida	83
A Survey of Prehistoric Sites in Daraa, Southern Syria	83
Ahmad Diab	
Tell Al-Ashaari in Hauran Throughout the Bronze Age: The 2010 Excavation Results	91
Qasem Al-Mohammad	
Hassake	101
Tell Fekheriye. A Synopsis of Excavations and Ongoing Research Questions	101
Dominik Bonatz	
Tell Halaf (Ancient Guzana) - Excavation Results between 2006-2010	117
Mohammad Fakhro	
The Pre-Pottery to Pottery Neolithic Settlement of Tell Seker Al-Aheimar, Hassake, Upper Mesopotamia	125
Yoshihiro Nishiaki	
Excavations at Tell Taban: Culture and History at Ṭābatum/Ṭābetu during the Second Millennium BC	133
Hirotooshi Numoto, Daisuke Shibata and Shigeo Yamada	

Tell Barri/Kahat 2000-2010: The Contribution of the Excavations to the History of the Jezireh.....	145
Raffaella Pierobon Benoit	
Tell Ferres: The First Proto-Urban Societies in Northern Mesopotamia Through a Rural Perspective	155
Johnny Samuele Baldi and Régis Vallet	
Homs/Hama	169
The Lower Paleolithic of the El-Kowm Area (Central Syria) and the Question of the First Inhabitants of the Syrian Desert	169
Jean-Marie Le Tensorer, Hélène Le Tensorer, Reto Jagher, Pietro Martini, Peter Schmid, Juan José Villalain, Fabio Wegmüller, and Sultan Muhesen	
The Long Paleolithic Sequence of Hummal (Central Syria)	179
D. Wojtczak and J.-M. Le Tensorer	
Japanese Archaeological Work in Palmyra from 1990 to 2010	189
Kiyohide Saito	
Archaeological Investigations of the German Archaeological Institute in the Hama Region 2003-2010	199
Karin Bartl	
Holocene Paleoenvironments and Settlement Patterns in Western Syria and Lebanon: the PaleoSyr/PaleoLib Project	215
Bernard Geyer and Frank Braemer	
Qalaat al-Mudiq, Citadel of Apamea: Past and Present.....	221
Mathilde Gelin and Shaker Al-Shbib	
Tell Maksour	229
Abdel Wahab Abou Saleh	
A Summary of the Archaeological Discoveries in the Homs Gap by a Syrian-Lebanese-Spanish Mission (2004-2010).....	243
Maya Haïdar-Boustani, Juan José Ibáñez and Michel Al-Maqdissi	
Palmyra. 30 Years of Syrian-German-Austrian Archaeological Research (1981-2010).....	251
Andreas Schmidt-Colinet, Khaled Al-Assaad (†), and Waleed Al-Assaad	
The Nymphaeum in Apamea.....	259
Andreas Schmidt-Colinet	
Idlib	267
Tell El-Kerk. A Neolithic Mega Site in the Province of Idlib	267
Akira Tsuneki	
Excavations at Tell Mardikh - Ebla 2004-2010: The Temples of EB IVA-B and the Royal Citadel of MB I-II.	283
Paolo Matthiae	
The Archaeological Park of Ebla. A Long-Term Plan for the Site and its Region.....	297
Frances Pinnock	
Tell Afis: From the Late Bronze to the Iron Age	309
Stefania Mazzoni	
Tell Mastuma: Rise and Fall of an Iron Age Rural Settlement in Northwest Syria	319
Shinichi Nishiyama	
Lattakieh	335
Tell Nahr El-Arab (Al-Shamiyeh).....	335
Ahmad Deb	
Tell Kazel - Sumur and the Kingdom of Amurru	347
Leila Badre	

The Syrian-French Archaeological Mission of Ras Shamra – Ugarit	355
Valérie Matoïan	
Archaeological Excavations at Tell Tweini – Syrian Mission (Field B)	365
Massoud Badawi	
Archaeological Site of Amrit. Excavation Results, Seasons 2003-2011	375
Yasser Youssef	
Raqqa/Deir Ez-Zor	385
Resafa-Sergiupolis/Rusafat Hisham. Pilgrim City and Caliphal Residence. A Multidisciplinary Approach for Reconstructing the Development of the City	385
Dorothee Sack and Martin Gussone	
Emergency Excavations of Hwejet Al-Halaweh, Raqqa Governorate (2011-2012)	399
Ayham Al-Fakhri and Yarob Al-Abdallah	
The Necropolises of Halabiya-Zenobia	407
Sylvie Blétry	
Syrian Excavations in the Byzantine City of Tell Al-Kasra, 2006-2010	417
Yarob Al-Abdallah	
Tell Halula (Euphrates Valley, Syria). New Research Conducted between 2011 and 2015	427
Miquel Molist, Maria Bofill, Chiara Marchiori, Anabel Ortiz and Anna Gómez	
Published Abstracts	435
Final Conclusions and Remarks	449
Jeanine Abdul Massih and Shinichi Nishiyama	

Holocene Paleoenvironments and Settlement Patterns in Western Syria and Lebanon: the PaleoSyr/PaleoLib Project

Bernard Geyer

UMR 5133 – Archéorient, Maison de l'Orient et de la Méditerranée, Université Lyon 2 – CNRS

Frank Braemer

UMR 7264 – CEPAM, Université de Nice CNRS

Abstract

The PaleoSyr/PaleoLib Project was conducted in western Syria and Lebanon from 2011 to 2014. The main aim was to estimate, on a regional scale, not only the local one, the human environment co-evolution, based on archaeological remains and on studies of past environments, with a focus on the steppe world.

The PaleoSyr/PaleoLib Project¹ was designed to study the human environment co-evolution in the Middle Eastern Mediterranean bioclimatic and human contexts during the Holocene. Western Syria and Lebanon (Figure 1) represent one of the cradles of the neolithisation in the Middle East before becoming centres of early urbanization processes and state emergence. Therefore, major historical issues can be tested in this region, which is composed of a wide range of bio-climatic sub-regions from the Mediterranean to the steppe. This region faces severe natural constraints, the main one being aridity. While the development of human societies and their settlement patterns are strongly correlated to the environment and to its evolution, there are surprisingly few paleo-climatic and paleo-environmental studies available. It was also a project aim to take into account recent studies that have focused on the growing significance and the historical leading role of the Syrian steppe world. The methods used are intended to make possible integrated studies and go beyond the micro-regional framework for addressing regional areas. The goal is to achieve modelling of social-economic systems during the phases of environmental stability, which is the most common Holocene situation, and during periods of environmental crisis, which are always shorter. The aim is also to propose a model of reciprocal impacts of human activities and environmental changes, providing opportunities for highlighting any breakdown in the balance. Finally, the project intends to analyse the data obtained across the Middle East and then in the Mediterranean.

Environmental studies

The tragic events in Syria have forced us to reduce the initial field program. While the studies on the settlements patterns are well under way, sometimes beyond the initial goals, those on paleo-climate and paleo-environments have been carried out only partially. Our initial aim was to refine our knowledge of the climatic variability. The results are in this case incomplete, due to a very limited access to the field. Only four sediment cores were analysed: two from the central Bekaa marshes in Lebanon, and two from Syria, one from the coast (Tell Sukas) and the other one from an arid steppe artesian spring ('Ain Al-Zarqa). Nevertheless, these analyses characterized some local effects of global climatic events, for example the so-called 4.2 BP event on the northern Mediterranean Syrian coast (Sorrel and Mathis 2016). Another aim was to estimate, on a regional scale, the different environmental contexts of the first developments of major human revolutions and evolutions. The study is still underway. It will benefit from the results acquired through core analysis, but also from new environmental maps and GIS tools, allowing a better definition of different areas: a rain map based on the refitting of 20th-century data (Traboulsi 2004), a soil map unifying Lebanese and Syrian previous versions, and a bio-climatic vegetation map.

Map models allowing a synthesis of environmental layers at the sub-continental scale were built. These models are necessary to compare local environmental conditions and their possible evolutions in different regions. A remote sensing image classification identifies five classes of 'soil quality'. This calculation produces a base map which can be crossed with archaeological sites and landscape hydraulic development maps by periods. A first general history of land use for comparing the arid margins east of Hama and the Leja region in southern

¹ .PaleoSyr/PaleoLib is a 2011-2014 project selected and granted within the 2010 French Agence Nationale de la Recherche program, led by N. Awad (DGAMS, Damascus), F. Braemer (CNRS, UMR 7264 – CEPAM, Nice), B. Geyer (CNRS, UMR 5133 – Archéorient, Lyon), with J. Argant (ARPA, Lyon), P. Sorrel (Univ. Lyon 1, UMR 5276 – TPE, Lyon), and M. Haydar-Boustani (Univ. St-Joseph, Musée de Préhistoire libanaise, Beyrouth).

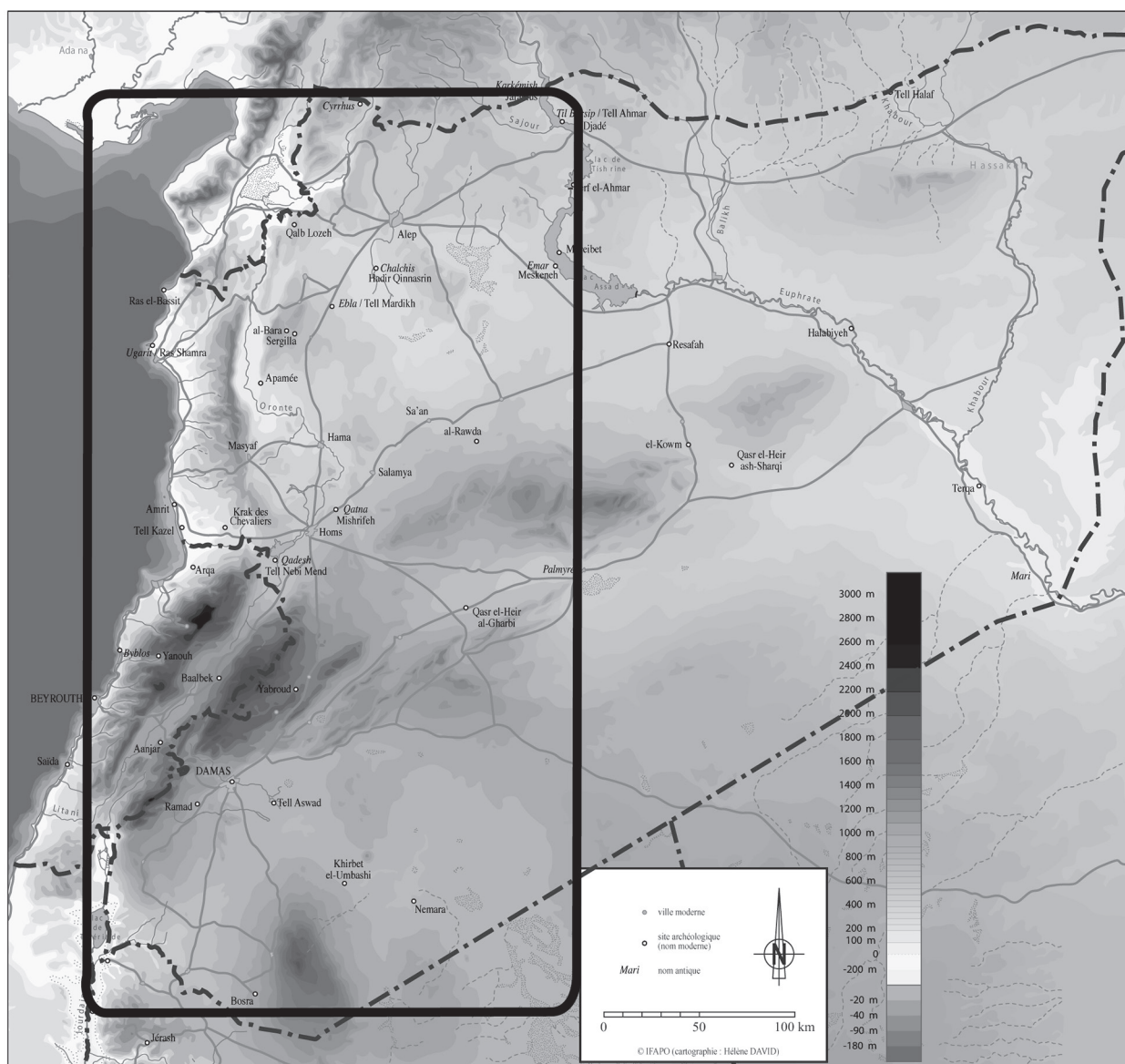


Figure 1: Localisation Map of the PaleoSyr/PaleoLib Project (© PaleoSyr/PaleoLib project).

Syria was proposed (Braemer *et al.* 2016): settlement pattern changes in arid zones are not governed only by variations of rainfalls, but also by a set of factors, each one having an impact that can be qualified and sometimes measured. A good example is the spatial impact of man-made hydraulic developments.

The social responses of human groups to the constraints of climatic variations and their consequences for the landscape can still be estimated on a regional scale. A first study focused on EBA sites by periods, comparing settlement trends during the 3rd millennium in the arid steppe (Figure 2). The resulting database allowed analysis on a much larger scale than before (Braemer *et al.* 2014).

A first study of human development impacts on the milieu during the two last centuries in Lebanon is

underway, identifying the speed of landscape change (Brunel 2015). The first results were presented at an exhibition held simultaneously at Beirut's Saint-Joseph University and Lyon's University Lumière – Lyon 2. This study allows us to analyse the developments of the vegetation cover and the re-organization of space in some areas of Lebanon from the 19th to the 21st centuries, in a context of rapid rural decline and change (Brunel and Jacob-Rousseau forthcoming; Nordiguian and Jacob-Rousseau forthcoming).

New results were obtained for earlier periods. At Tell Sukas, on the Syrian coast, a study based primarily on palynology, and following a sedimentary archive covering a period between 6000 and 2500 cal. BP, allowed the identification of the first probable human impacts on the landscape in the 5th millennium BP, and proposed a new story for the olive tree in the northern

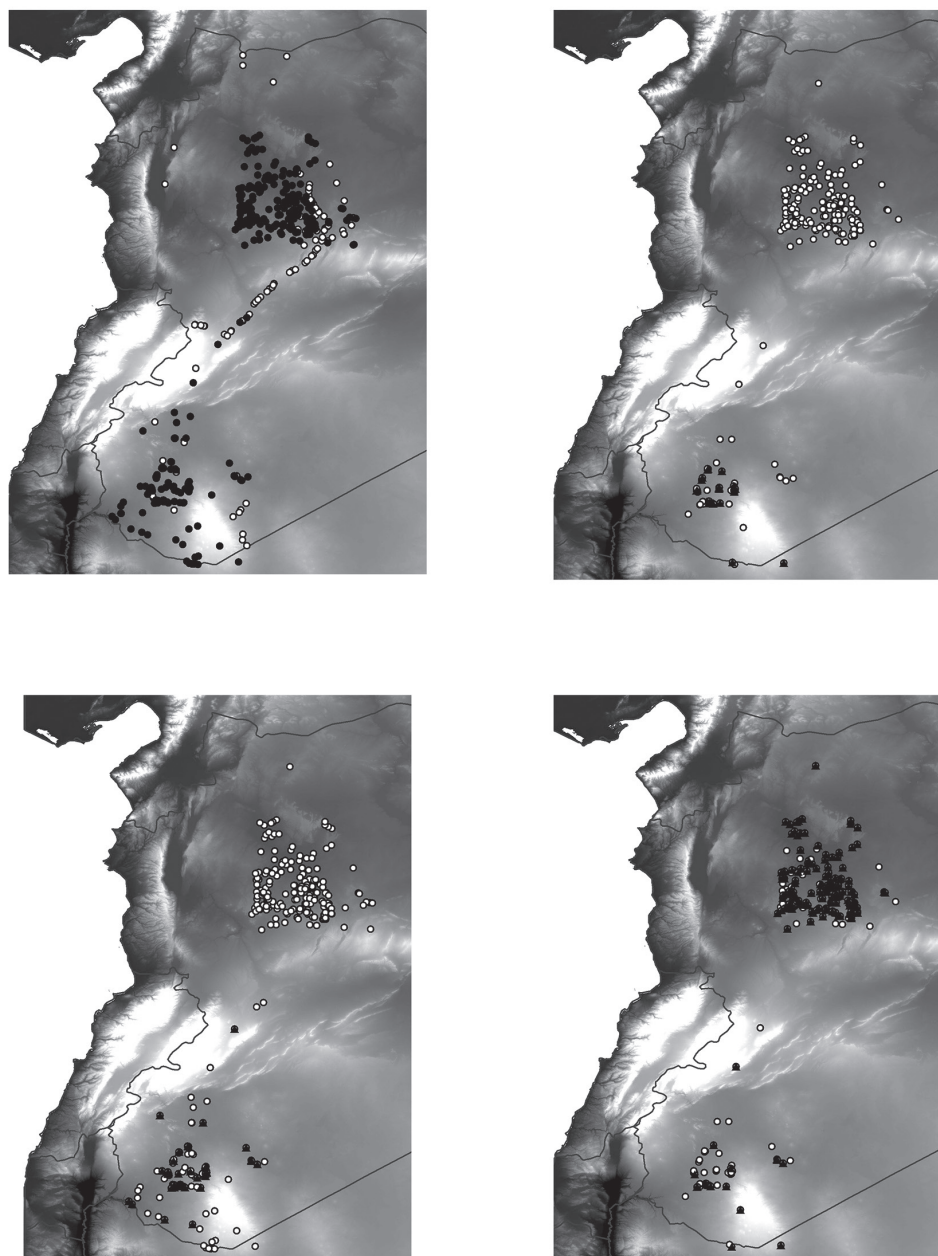


Figure 2: Test comparing settlements trend during the 3rd millennium in the arid steppe. EBA sites repartition by periods: a) black triangles = all EBA dwelling sites; b) black triangles = EBA I dwelling sites; c) black triangles = EBA II-III dwelling sites; d) black triangles = EBA IV dwelling sites (© PaleoSyr/ PaleoLib project).

Levant. It also helped establish a possible link between an early increase in drought and the beginning of the decline of the Late Bronze Age civilization (Sorrel and Mathis 2016).

At ‘Ain Al-Zarqa, in the heart of the Syrian steppe, the ongoing study of a core 10 m-long allows us to rebuild an arid steppe landscape for the last millennium. This landscape has not been subject to major abrupt change during the last 1000 years, but phases of increased aridity were identified. Diatoms and pollen offer the same theoretical curve of ‘drought or wet tendencies’, except between 820 and 700 cm depth, where the lack of diatoms suggests an anthropogenic influence. Finally, the tools newly used in archaeology to help building scenarios of change offer the opportunity to go over the determinist interpretations which look for

direct relations of causes with effects, and to develop co-evolutionary models.

Archaeo-historical studies: the database

The aim was to create an archaeological database allowing regional and multi-scalar analysis from the Syro-Lebanese coast, through the Orontes Valley, up to the ‘Arid Margins’, including also Damascus, southern Syria, and the Lebanese Bekaa. The online database is a collaborative system to which almost all the teams working in the area contributed.² We warmly thank all

² The following regional survey data, published or unpublished, were gathered in the database: Jazr (Univ. Firenze), Rouj, Marges arides (DGAM, MOM Lyon), Ebla Chora (Univ. Roma La Sapienza), Massif Calcaire (DGAM, MOM Lyon), Ghab (DGAM, Univ. Laval), Middle Orontes (DGAM, DAI), Bouqaia (DGAM, Univ. St Joseph, CSIC

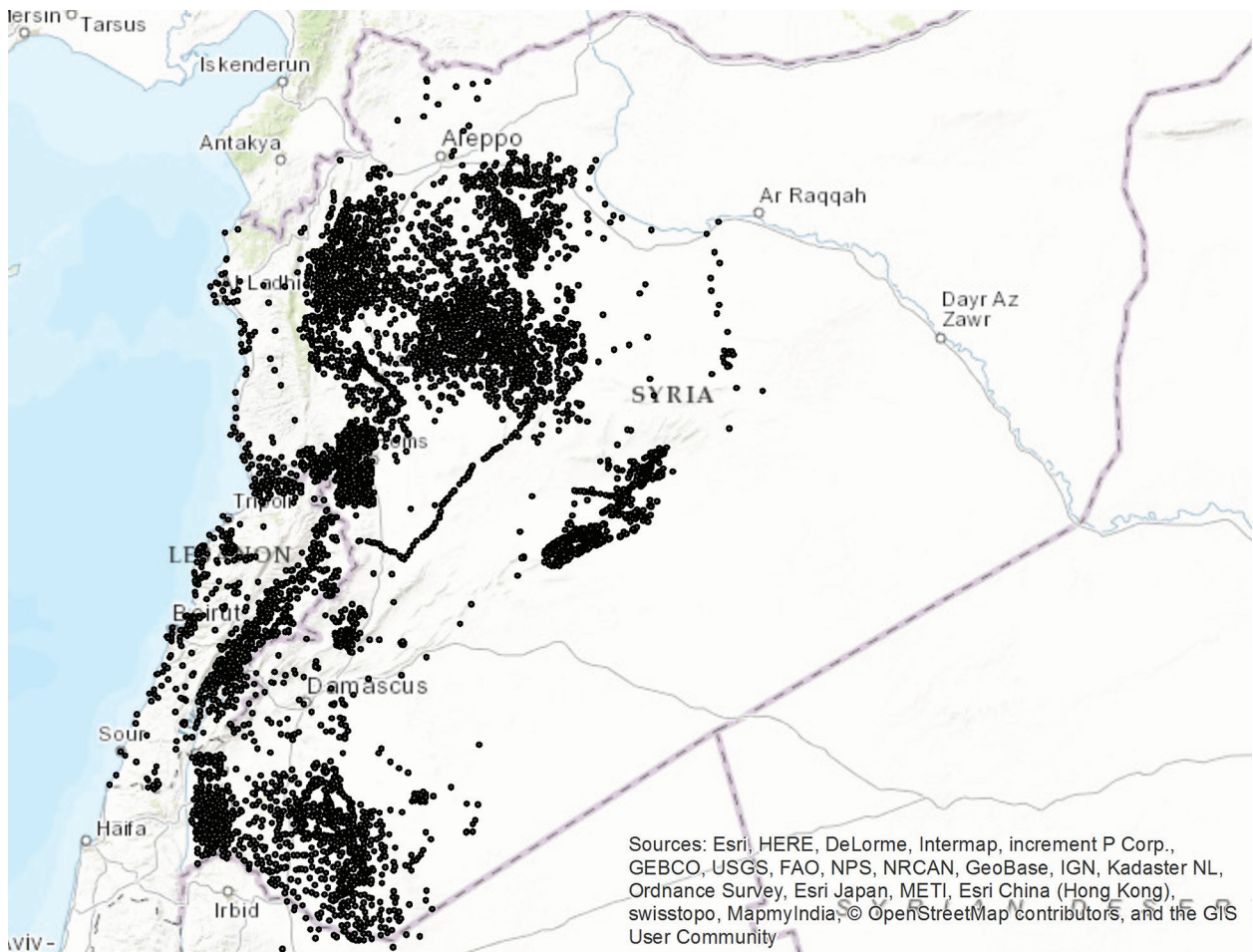


Figure 3: The PaleoSyr/PaleoLib database: in December 2015, 7,315 sites and 16,779 archaeological entities were recorded (© PaleoSyr/PaleoLib project).

our colleagues for this data sharing: the resulting GIS and database are open to the participants, although, so far, they have been used mainly by the project core team.

It was intended to record enough data to obtain a territorial continuity from the Ghab and the Rouj to the southern Hauran, by bringing old and new surveys together, but also by including data records of sites and their components, i.e landscape data, fauna, and botanical samples. Two main tables record site features: one for general references and one for descriptions of a site's archaeological features, including landscape developments (hydraulic structures, agro-pastoral features, etc.). Secondary tables record fauna and vegetation. Today, 7315 sites, classified by 16,779 archaeological units, have been recorded (Figure 3): Bronze Age (700) and Classical (2000) sites are better represented than other periods.

Barcelona), Homs region, Palmyra region (DGAM, Univ. Durham), coastal Syria (DGAM), Qalamun (DGAM, Univ. Tübingen), southern Syria (DGAM, Univ. Paris1, Univ. Nice), Bekaa, ASPRO database (MOM Lyon).

A successful collaboration links the PaleoSyr/PaleoLib Project and Durham University's Fragile Crescent Project by relating the latter's reference system for chronology, glossary and database fields, and thus providing easy database interoperability. This project is still ongoing, through the Heritage Environment Record of Syria Project (Durham University), which aims to build a general archaeological reference map of recorded sites and monuments.

Since this large corpus is not homogeneous, it is necessary to be able to estimate the degree of liability, accuracy, and quantity of samples used, addressing archaeo-historical issues. The archaeological data is recorded with annotations concerning degrees of data certainty and accuracy. The latest data processing, always under review, develops methodologies for integrating uncertainty in our interpretations (Fusco 2016). A first tool is the multi-criteria analysis applied to our data to estimate reliability and accuracy when considering the whole corpus, or when comparing parts of the corpus sorted for specific studies, e.g. that of the 'Arid Margins' and southern Syria. These

methods allow good descriptions of data quality: spatial distribution, chronological distribution, quality and intensity of surveys, dating tools, etc. Consequently, it is possible to select and extract for study specific datasets representing periods, gathering a maximum of data with a maximum of accuracy and a minimum of uncertainty.

The goal is to change our general way of thinking of historical-archaeological interpretations by considering: levels of information, rather than quantities of data; sets of possible *scenarii*, rather than definitive and unique answers; data and questions covering different aspects, rather than ideal graphs or results.

The methods we are developing aim at an understanding on a macro scale, while preserving detail and without impoverishing information, and at proposing degrees of weighting in our comparisons. To reach this goal, we are currently developing spatial-analysis visualisation tools to obtain concurrently different cartographic representations of the spatial distribution of the dataset by periods.

Conclusions

The PaleoSyr/PaleoLib program 2010-2014 is over. Tools and reference data are new and numerous. The next steps are:

- to achieve the ongoing core studies;
- to achieve the development of specialized tools for analysis and interpretation;
- to assess and enlarge the database, and to launch specific studies on periods and on types of archaeological remains;
- to exploit the PaleoSyr FCP main corpus as a shared reference for 'Endangered Heritage' in Syria.

Bibliography

BRAEMER, F., GEYER, B. and DAVTIAN, G.

2016 From Site Catchment Analysis to Regional Settlement Pattern Analysis: Making a Regional Map of Environmental Resources' Potential. The

Case of Arid Syria. In: R. A. Stucky, O. Kaelin, and H. P. Mathys (eds), *Proceedings of the 9th ICAANE*, 2: 819-830. Wiesbaden, Harrassowitz.

2014 Man/environment interactions in the Bronze Age Levant: Climatic crisis or fluctuations, chronology and settlement patterns in the Third Millennium Syrian arid steppe area villages. In: L. Nigro (ed.), *The seven plagues. Catastrophes and destructions in Palestine and Egypt during the pre-classical period. Volcanic eruptions, earthquakes, floods, wars, famines and epidemics in the archaeological record and in Biblical and ancient Egyptian sources: an innovative approach*: 87-116. ROSAPAT 11. Rome, 'La Sapienza' University Studies on the Archaeology of Palestine and Transjordan.

BRUNEL, L.

2015 L'évolution des paysages de pierre sèche au mont Liban, *ArchéOrient - Le Blog*, 9 janvier 2015 [on line: <http://archeorient.hypotheses.org/3576> (accessed 16 May 2017)].

BRUNEL, L. and JACOB-ROUSSEAU, N.

Forthcoming Les rejmet, un élément méconnu des paysages de pierre sèche du Mont-Liban. Exemples dans le Kesrouan. *Tempora, Annales d'histoire et d'archéologie*. Beyrouth, Presses de l'Université Saint-Joseph.

FUSCO, J.

2016 *Analyse des dynamiques spatio-temporelles des systèmes de peuplement dans un contexte d'incertitude. Application à l'archéologie spatiale*. Unpublished PhD Thesis, Nice University.

NORDIGUIAN, L. and JACOB-ROUSSEAU, N.

Forthcoming Les stigmates de la Grande Guerre sur le paysage rural du Mont Liban, *Actes du colloque 'La Grande guerre au Proche-Orient: savoirs, vécus, mémoires'*. Beyrouth.

SORREL, P. and MATHIS, M.

2016 Mid- to late Holocene coastal vegetation patterns in Northern Levant (Tell Sukas, coastal Syria): Olive tree cultivation history and climatic change, *The Holocene* 26: 858-873.

TRABOULSI, M.

2004 *Les précipitations au Proche-Orient: variabilité spatio-temporelle et relations avec la dynamique de l'atmosphère (1960-1961-1989-1990)*. Unpublished PhD Thesis, University of Bourgogne.